

**DRAFT INITIAL STUDY AND  
MITIGATED NEGATIVE DECLARATION**

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**INITIAL STUDY / MITIGATED NEGATIVE  
DECLARATION**

**NEW COMPREHENSIVE HIGH  
SCHOOL – SOUTHWEST  
BAKERSFIELD, CALIFORNIA**



**FEBRUARY 2020**

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**DRAFT INITIAL STUDY AND  
MITIGATED NEGATIVE DECLARATION**

**NEW COMPREHENSIVE HIGH SCHOOL  
– SOUTHWEST BAKERSFIELD,  
CALIFORNIA**

**Prepared for:**

**Kern High School District**  
5801 Sundale Avenue  
Bakersfield, CA 93309  
Contact Person: Jenny Hannah  
Phone: (661) 827-3100

**Consultant:**



5080 California Avenue, Suite 220  
Bakersfield, CA 93309  
Contact: Jaymie L. Brauer, Principal Planner  
Phone: (661) 616-2600



## **NOTICE OF PUBLIC HEARING AND INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION**

This is to advise that the Kern High School District (KHSD) has prepared a Mitigated Negative Declaration for the Project identified below that is scheduled to be held at the Kern High School District – Board of Trustees meeting on April 14, 2020.

PLEASE BE ADVISED that the Kern High School – Board of Trustees will consider adopting the Mitigated Negative Declaration at the Board's meeting to be held on April 14, 2020. Presentations will be made at approximately 7:00 p.m. Action on items on the board agenda will occur after the presentations. The meeting will be held in the EOC Administrative Building, Kern High School District, 5801 Sundale Avenue, Bakersfield, CA 93309.

### ***Project Name***

New Comprehensive High School - Southwest

### ***Project Location***

Southeast corner of Wible Road and Engle Road, south of Bakersfield, CA.

### ***Project Description***

The Kern High School District (KHSD, as lead agency) has proposed to construct and operate a new Comprehensive High School (Project), within the unincorporated area of central Kern County at the southern end of San Joaquin Valley, California. The high school campus will occupy approximately 60-acres of the 80-acre Project site. The additional acreage may be kept by KHSD or sold as surplus land. The enrollment capacity will be 2,000 students with the ability to expand to 2,500 students. There will be multiple buildings, with an approximate area totaling 200,000 to 250,000 square feet (sq. ft.). These buildings will include classrooms, administrative and multi-purpose rooms, athletic and play fields. A portion of the site could be Career Technical classroom area, athletic facilities, or any other education function or expansion to the campus. A photovoltaic solar array will also be installed. School facilities typically include single- and multi-story, permanent building structures and some portable units on temporary or permanent foundations with room for future expansion capabilities. The Project site would be primarily accessed from Wible Road and Engel Road.

The document and documents referenced in the Initial Study/Mitigated Negative Declaration are available for review at Kern High School District Office, 5801 Sundale Avenue, Bakersfield, CA 93309, and at the Kern County Beale Memorial Library located at 701 Truxtun Avenue Bakersfield, CA 93301.

As mandated by the California Environmental Quality Act (CEQA), the public review period for this document was 30 days (CEQA Section 15073[b]). The public review period began on February 28, 2020 and ended on March 30, 2020. For further information, please contact Jaymie L. Brauer at 661-616-2600.



**Notice of Completion & Environmental Document Transmittal**

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613  
 For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

<b>SCH #</b>
--------------

**Project Title:** \_\_\_\_\_

Lead Agency: \_\_\_\_\_ Contact Person: \_\_\_\_\_

Mailing Address: \_\_\_\_\_ Phone: \_\_\_\_\_

City: \_\_\_\_\_ Zip: \_\_\_\_\_ County: \_\_\_\_\_

**Project Location:** County: \_\_\_\_\_ City/Nearest Community: \_\_\_\_\_

Cross Streets: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Longitude/Latitude (degrees, minutes and seconds): \_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_" N / \_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_" W Total Acres: \_\_\_\_\_

Assessor's Parcel No.: \_\_\_\_\_ Section: \_\_\_\_\_ Twp.: \_\_\_\_\_ Range: \_\_\_\_\_ Base: \_\_\_\_\_

Within 2 Miles: State Hwy #: \_\_\_\_\_ Waterways: \_\_\_\_\_

Airports: \_\_\_\_\_ Railways: \_\_\_\_\_ Schools: \_\_\_\_\_

**Document Type:**

CEQA: <input type="checkbox"/> NOP	<input type="checkbox"/> Draft EIR	NEPA: <input type="checkbox"/> NOI	Other: <input type="checkbox"/> Joint Document
<input type="checkbox"/> Early Cons	<input type="checkbox"/> Supplement/Subsequent EIR	<input type="checkbox"/> EA	<input type="checkbox"/> Final Document
<input type="checkbox"/> Neg Dec	(Prior SCH No.) _____	<input type="checkbox"/> Draft EIS	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Mit Neg Dec	Other: _____	<input type="checkbox"/> FONSI	_____

**Local Action Type:**

<input type="checkbox"/> General Plan Update	<input type="checkbox"/> Specific Plan	<input type="checkbox"/> Rezone	<input type="checkbox"/> Annexation
<input type="checkbox"/> General Plan Amendment	<input type="checkbox"/> Master Plan	<input type="checkbox"/> Prezone	<input type="checkbox"/> Redevelopment
<input type="checkbox"/> General Plan Element	<input type="checkbox"/> Planned Unit Development	<input type="checkbox"/> Use Permit	<input type="checkbox"/> Coastal Permit
<input type="checkbox"/> Community Plan	<input type="checkbox"/> Site Plan	<input type="checkbox"/> Land Division (Subdivision, etc.)	<input type="checkbox"/> Other: _____

**Development Type:**

<input type="checkbox"/> Residential: Units _____ Acres _____	<input type="checkbox"/> Transportation: Type _____
<input type="checkbox"/> Office: Sq.ft. _____ Acres _____ Employees _____	<input type="checkbox"/> Mining: Mineral _____
<input type="checkbox"/> Commercial: Sq.ft. _____ Acres _____ Employees _____	<input type="checkbox"/> Power: Type _____ MW _____
<input type="checkbox"/> Industrial: Sq.ft. _____ Acres _____ Employees _____	<input type="checkbox"/> Waste Treatment: Type _____ MGD _____
<input type="checkbox"/> Educational: _____	<input type="checkbox"/> Hazardous Waste: Type _____
<input type="checkbox"/> Recreational: _____	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Water Facilities: Type _____ MGD _____	

**Project Issues Discussed in Document:**

<input type="checkbox"/> Aesthetic/Visual	<input type="checkbox"/> Fiscal	<input type="checkbox"/> Recreation/Parks	<input type="checkbox"/> Vegetation
<input type="checkbox"/> Agricultural Land	<input type="checkbox"/> Flood Plain/Flooding	<input type="checkbox"/> Schools/Universities	<input type="checkbox"/> Water Quality
<input type="checkbox"/> Air Quality	<input type="checkbox"/> Forest Land/Fire Hazard	<input type="checkbox"/> Septic Systems	<input type="checkbox"/> Water Supply/Groundwater
<input type="checkbox"/> Archeological/Historical	<input type="checkbox"/> Geologic/Seismic	<input type="checkbox"/> Sewer Capacity	<input type="checkbox"/> Wetland/Riparian
<input type="checkbox"/> Biological Resources	<input type="checkbox"/> Minerals	<input type="checkbox"/> Soil Erosion/Compaction/Grading	<input type="checkbox"/> Growth Inducement
<input type="checkbox"/> Coastal Zone	<input type="checkbox"/> Noise	<input type="checkbox"/> Solid Waste	<input type="checkbox"/> Land Use
<input type="checkbox"/> Drainage/Absorption	<input type="checkbox"/> Population/Housing Balance	<input type="checkbox"/> Toxic/Hazardous	<input type="checkbox"/> Cumulative Effects
<input type="checkbox"/> Economic/Jobs	<input type="checkbox"/> Public Services/Facilities	<input type="checkbox"/> Traffic/Circulation	<input type="checkbox"/> Other: _____

**Present Land Use/Zoning/General Plan Designation:**

**Project Description:** (please use a separate page if necessary)



## Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X".  
If you have already sent your document to the agency please denote that with an "S".

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<input type="checkbox"/> California Highway Patrol	<input type="checkbox"/> Pesticide Regulation, Department of
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<input type="checkbox"/> Food & Agriculture, Department of	<input type="checkbox"/> Toxic Substances Control, Department of
<input type="checkbox"/> Forestry and Fire Protection, Department of	<input type="checkbox"/> Water Resources, Department of
<input type="checkbox"/> General Services, Department of	
<input type="checkbox"/> Health Services, Department of	<input type="checkbox"/> Other: _____
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<input type="checkbox"/> Native American Heritage Commission	

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### Local Public Review Period (to be filled in by lead agency)

Starting Date \_\_\_\_\_ Ending Date \_\_\_\_\_

---

### Lead Agency (Complete if applicable):

Consulting Firm: _____	Applicant: _____
Address: _____	Address: _____
City/State/Zip: _____	City/State/Zip: _____
Contact: _____	Phone: _____
Phone: _____	

---

Signature of Lead Agency Representative: \_\_\_\_\_ /s/ \_\_\_\_\_ Date: \_\_\_\_\_

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.



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Bakersfield, CA 93305

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Lake Isabella, CA 93240

Tule River Indian Tribe Neil  
Peyron, Chairperson  
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Porterville, CA 93258



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## **MITIGATED NEGATIVE DECLARATION**

As Lead Agency under the California Environmental Quality Act (CEQA), the Kern High School District (KHSD) reviewed the Project described below to determine whether it could have a significant effect on the environment because of its development. In accordance with CEQA Guidelines Section 15382, “[s]ignificant effect on the environment” means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

### **Project Name**

New Comprehensive High School – Southwest

### **Project Location**

East of Wible Road between Engle Road and Houghton Road, south of Bakersfield, CA.

### ***Project Description***

The District is proposing to construct and operate a Comprehensive High School (Project) within the unincorporated area of central Kern County at the southern end of San Joaquin Valley, California. Figure 1-1 is a map of the regional location and Figure 1-2 shows the Project’s vicinity. Figure 1-3 provides the aerial location of the Project site.

The high school campus will occupy approximately 60-acres of the 80-acre Project site. The additional acreage may be kept by KHSD or sold as surplus land. The enrollment capacity will be 2,000 students with the ability to expand to 2,500 students. There will be multiple buildings, with an approximate area totaling 200,000 to 250,000 square feet (sq. ft.). These buildings will include: classrooms, administrative and multi-purpose rooms, athletic and play fields that will occupy approximately 75% of the site. Parking adequate to serve both students and staff/visitors will be provided on the site. The Project may also include the construction a solar array to generate the electricity required to operate the school. A portion of the site could be used as a Career Technical classroom area, athletic facilities, or for any other education function or expansion to the campus.

School facilities typically include single- and multi-story, permanent building structures and some portable units on temporary or permanent foundations with room for future expansion capabilities. School facilities will also include outdoor athletic fields for baseball, soccer, and a stadium for football and track/field events. Outdoor lighting would be provided for the stadium component and parking areas. The Project site would be primarily accessed from Wible Road and Engle Road.

Student population for the new school would come from students within the District, which is currently suffering from overcrowded facilities. The enrollment in the District as of the fall of 2018 is 39,739 students, which is approximately 2,681 students over existing capacity. It



is anticipated that new residential development in the metropolitan Bakersfield area would exacerbate the existing overcrowding conditions without the addition of a new school. The construction of the new school would help alleviate the problem of current overcrowding and is designed to provide a comprehensive high school for future students as the population within the District grows.

### ***California Department of Education, School Siting Requirements***

Education Code Section 17251 and the California Code of Regulations (CCR), Title 5, Sections 14001 through 14012, outline the powers and duties of the California Department of Education (CDE) regarding school sites and the construction of school buildings. Districts using local funds are encouraged to seek the Department's approval for the benefits that such outside, objective reviews provide to the school district and the community.

Safety is the first consideration in the selection and/or construction of school sites. Certain health and safety requirements are governed by state regulations and the policies of the Department. When selecting new school sites, the selection team considers the following factors: (1) proximity to airports; (2) proximity to high-voltage power transmission lines; (3) presence of toxic and hazardous substances; (4) hazardous air emissions and facilities within a quarter mile; (5) other health hazards; (6) proximity to railroads; (7) proximity to high-pressure natural gas lines, gasoline lines, pressurized sewer lines, or high pressure water pipelines; (8) proximity to propane tanks; (9) noise; (10) proximity to major roadways; (11) results of geological studies and soils analyses; (12) condition of traffic and school bus safety; (13) safe routes to school; and (14) safety issues for joint-use projects.

In considering the construction of the SW Comprehensive High School, the Kern High School District considered the factors which apply to new school sites. Figure 1-4 illustrates the location and/or proximity of known hazards using the factors listed above for school site selection and lists the distances to each of the identified hazards from the school.

In general, the school siting criteria provides that hazards should be located greater than 1,500 feet from any new school. Data indicates that the nearest high-pressure gas lines is greater than 1,500 feet from the Project site. There are no high voltage power lines present within 350 feet of the Project site, nor are there solid waste landfills or other hazardous waste operations within ¼ mile of the site (SEI, 2018) .

### **Mailing Address and Phone Number of Contact Person**

Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA 93309  
Contact Person: Jenny Hannah  
Phone: (661) 827-3100



## ***Findings***

As Lead Agency, the KHSD finds that the Project will not have a significant effect on the environment. The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 - Environmental Checklist*) identified one or more potentially significant effects on the environment, but revisions to the Project have been made before the release of this Mitigated Negative Declaration (MND) or mitigation measures would be implemented that reduce all potentially significant impacts less-than-significant levels. The Lead Agency further finds that there is no substantial evidence that this Project would have a significant effect on the environment.

## ***Mitigation Measures Included in the Project to Avoid Potentially Significant Effects***

**MM AES-1:** Security and nighttime lighting installed at the school site shall be designed utilizing “dark skies” standards and guidelines and shall incorporate shielding of lighting and orienting lighting downward to prevent direct uplighting. Lighting used for nighttime events shall be turned off by 11:00pm. All lights in excess of 150 watts shall be directed toward the stadium field and away from adjacent properties. All stadium field light fixtures shall be designed with appropriate reflectors, hoods and side shields to direct the angle of incidence to reflect light downward.

**MM BIO-1:** Prior to initial ground disturbing activities, a qualified wildlife biologist shall conduct a biological clearance survey 14- 30 calendar days prior to the onset of construction. The clearance survey shall include walking transects to identify presence of San Joaquin kit fox or diagnostic signs of that species (e.g., dens, tracks, prey remains), and other special-status species or protected species including but not limited to American badger, Western burrowing owl, etc. A report outlining the results of the survey shall be submitted to the Lead Agency.

If a known, active, or natal kit fox den is discovered during the clearance survey, the appropriate buffers shall be established using fencing or flagging as follows: (1) at least 50 feet around potential or atypical (any manmade structure such as pipes, culverts, and diggings below concrete slabs, that may be occupied by San Joaquin kit fox) den(s) and (2) at least 100 feet around known den(s). The United States Fish and Wildlife Service (USFWS) must be contacted for further guidance if a natal den is discovered. Buffer zones shall be considered Environmentally Sensitive Areas (ESAs) and no ground disturbing activities shall be allowed within a buffer area. The USFWS and California Department of Fish and Wildlife (CDFW) shall be contacted upon the discovery of any natal or pupping dens.

Potential kit fox dens may be excavated provided that the following conditions are satisfied: (1) the den has been monitored for at least five consecutive days and is deemed unoccupied by a qualified biologist; (2) the excavation is conducted by or under the direct supervision of a qualified biologist. Den monitoring and excavation should be conducted in accordance with the Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (United States Fish and Wildlife Service, 2011).



**MM BIO-2:** Prior to ground disturbance activities, or within one week of being deployed at the Project site for newly hired workers, all construction workers at the Project site shall attend a Construction Worker Environmental Awareness Training and Education Program, developed and presented by a qualified biologist.

The Construction Worker Environmental Awareness Training and Education Program shall be presented by the biologist and shall include information on the life history wildlife and plant species that may be encountered during construction activities, their legal protections, the definition of “take” under the Endangered Species Act, measures the Project operator is implementing to protect the species, reporting requirements, specific measures that each worker must employ to avoid take of the species, and penalties for violation of the Act. Identification and information regarding special-status or other sensitive species with the potential to occur on the Project site shall also be provided to construction personnel. The program shall include:

- An acknowledgement form signed by each worker indicating that environmental training has been completed.
- A copy of the training transcript and/or training video/CD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be maintain on site for the duration of construction activities.

**MM BIO-3:** The following measures shall be implemented to reduce potential impacts to Swainson’s hawk: Nesting surveys for the Swainson’s hawks shall be conducted in accordance with the protocol outlined in the Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in California’s Central Valley (Swainson’s Hawk Technical Advisory Committee 2000). If potential Swainson’s hawk nests or nesting substrates are located within 0.5 mile of the Project site, then those nests or substrates must be monitored for activity on a routine and repeating basis throughout the breeding season, or until Swainson’s hawks or other raptor species are verified to be using them. The protocol recommends that the following visits be made to each nest or nesting site: one visit during January 1-March 20 to identify potential nest sites, three visits during March 20-April 5, three visits during April 5-April 20, and three visits during June 10-July 30. A fewer number of visits may be permissible if deemed adequate by the City after consultation with a qualified biologist. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. If Swainson's hawks are not found to nest within the survey area, then no further action is warranted.

If Swainson's hawks are found to nest within the survey area, active Swainson’s hawk nests shall be avoided by 0.5 mile during the nesting period, unless this avoidance buffer is reduced through consultation with the CDFW and/or a qualified biologist with expertise in Swainson’s hawk issues. If a construction area falls within this nesting site, construction must be delayed until the young have fledged (left the nest). The 2,500- foot-radius no-construction zone may be reduced in size but in no case shall be reduced to less than 500 feet except where a qualified biologist concludes that a smaller buffer area is sufficiently



protective. A qualified biologist must conduct construction monitoring on a daily basis, inspect the nest on a daily basis, and ensure that construction activities do not disrupt breeding behaviors.

**MM BIO-4:** A qualified biologist shall conduct a pre-construction survey on the Project site and within 500 feet of its perimeter, where feasible, to identify the presence of the western burrowing owl. The survey shall be conducted between 14 and 30 days prior to the start of construction activities. If any burrowing owl burrows are observed during the preconstruction survey, avoidance measures shall be consistent with those included in the CDFW staff report on burrowing owl mitigation (CDFG 2012). If occupied burrowing owl burrows are observed outside of the breeding season (September 1 through January 31) and within 250 feet of proposed construction activities, a passive relocation effort may be instituted in accordance with the guidelines established by the California Burrowing Owl Consortium (1993) and the California Department of Fish and Wildlife (2012). During the breeding season (February 1 through August 31), a 500-foot (minimum) buffer zone should be maintained unless a qualified biologist verifies through noninvasive methods that either the birds have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

**MM BIO-5:** If construction is planned outside the nesting period for raptors (other than the western burrowing owl) and migratory birds (February 15 to September 15), no mitigation shall be required. If construction is planned during the nesting season for migratory birds and raptors, a preconstruction survey to identify active bird nests shall be conducted by a qualified biologist to evaluate the site and a 250-foot buffer for migratory birds and a 500-foot buffer for raptors. If nesting birds are identified during the survey, active raptor nests shall be avoided by 500 feet and all other migratory bird nests shall be avoided by 250 feet. Avoidance buffers may be reduced if a qualified on-site monitor determines that encroachment into the buffer area is not affecting nest building, the rearing of young, or otherwise affecting the breeding behaviors of the resident birds. Because nesting birds can establish new nests or produce a second or even third clutch at any time during the nesting season, nesting bird surveys shall be repeated every 30 days as construction activities are occurring throughout the nesting season.

No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (left the nest) and have attained sufficient flight skills to avoid Project construction areas. Once the migratory birds or raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can cease.

**MM BIO-6:** During all construction-related activities, the following mitigation shall apply:

- a. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers.



- b. Construction-related vehicle traffic shall be restricted to established roads and predetermined ingress and egress corridors, staging, and parking areas. Vehicle speeds shall not exceed 20 miles per hour (mph) within the Project site.
- c. All Project activities shall occur during daylight hours, but if work must be conducted at night then a night-time construction speed limit of 10 mph shall be established.
- d. Off-road traffic outside of designated Project areas shall be prohibited.
- e. To prevent inadvertent entrapment of kit foxes or other animals during construction of the project, all excavated, steep-walled holes or trenches more than two feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed.
- f. Before holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted before proceeding with the work.
- g. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW shall be contacted for guidance.
- h. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes and burrowing owls before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.
- i. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or Project site.
- j. No pets, such as dogs or cats, shall be permitted on the Project site.
- k. Project-related use of rodenticides and herbicides shall be restricted.
- l. A representative shall be appointed by the Project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative shall be identified during the employee education program and their name and telephone number shall be provided to the USFWS and CDFW.
- m. Any Project personnel who are responsible for inadvertently killing or injuring one of these species shall immediately report the incident to their representative. This representative shall contact the CDFW and USFWS immediately in the case of a dead, injured or entrapped listed animal.



- n. The Sacramento Fish and Wildlife office and CDFW Region 4 office shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information.
- o. New sightings of San Joaquin kit fox shall be reported to the California Natural Diversity Database. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the USFWS.

**MM CUL-1:** If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from Project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource. Therefore, the Project would have a less-than-significant impact with incorporation of mitigation measures.

**MM CUL-2:** If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.

**MM GEO-1:** Prior to construction, the District shall submit an approved copy of: 1) the approved Storm Water Pollution Prevention Plan (SWPPP) and 2) the Notice of Intent (NOI) to comply with the General National Pollutant Discharge Elimination System (NPDES) from the Central Valley Regional Water Quality Control Board. The requirements of the SWPPP and NPDES shall be incorporated into design specifications and construction contracts. Recommended best management practices for the construction phase may include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil properly.
- Protecting existing storm drain inlets and stabilizing disturbed areas.



- Implementing erosion controls.
- Properly managing construction materials.
- Managing waste, aggressively controlling litter, and implementing sediment controls.

**MM GEO-2:** Prior to ground disturbance, an erosion control plan for construction activities will be prepared that describes the best management practices (BMPs) that will be incorporated to reduce the potential for soil erosion and loss of topsoil. The BMPs could include soil stabilizers and silt fencing as well as other measures.

**MM GEO-3:** During any ground disturbance activities, if paleontological resources are encountered, all work within 25 feet of the find shall halt until a qualified paleontologist as defined by the Society of Vertebrate Paleontology Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010), can evaluate the find and make recommendations regarding treatment. Paleontological resource materials may include resources such as fossils, plant impressions, or animal tracks preserved in rock. The qualified paleontologist shall contact the Natural History Museum of Los Angeles County or other appropriate facility regarding any discoveries of paleontological resources.

If the qualified paleontologist determines that the discovery represents a potentially significant paleontological resource, additional investigations and fossil recovery may be required to mitigate adverse impacts from Project implementation. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, they shall be avoided to ensure no adverse effects, or such effects must be mitigated. Construction in that area shall not resume until the resource appropriate measures are recommended or the materials are determined to be less than significant. If the resource is significant and fossil recovery is the identified form of treatment, then the fossil shall be deposited in an accredited and permanent scientific institution. Copies of all correspondence and reports shall be submitted to the Lead Agency.

**MM GHG-1:** The Project includes the addition shade trees to reduce the heat island effect thereby potentially reducing the cooling requirements for the buildings. The onsite landscaping will help to counterbalance the Project's contribution of GHG by providing onsite carbon storage. The trees and shrubs take in carbon dioxide and store it. Landscaping will include efficient irrigation systems and drought tolerant plants where feasible.

**MM GHG-2:** The Kern High School District shall establish a recycling and/or composting program to reduce waste from the school site that will include a reduction goal of 25% of waste generated. The reduction in waste leads to fewer GHG emissions generated at landfills.

**MM GHG-3:** As a measure to reduce emissions from vehicle trips associated with employees' commutes to and from the school, a voluntary ride sharing program will be instituted.



**MM GHG-4:** All interior and exterior coatings will comply with the Low VOC coating standards reducing area source emissions

**MM HAZ-1:** Prior to operation of the Project, the Project proponent shall prepare a Hazardous Materials Business Plan that identifies the new location of the new school campus and submit it to the Kern County Environmental Health Services Division/Hazardous Materials Section for review and approval. The Project proponent shall provide the hazardous materials business plan to all contractors working on the Project and shall ensure that one copy is available at the Project site at all times.

**MM HAZ-2:** Any proposed fill material for the site shall be sampled and analyzed for potential constituents of concern in accordance with DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.

**MM HAZ-3:** If during construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC shall be notified. The Project contractor shall discuss these areas with DTSC to determine the appropriate actions to be taken to lessen and/or remediate these new potential areas of concern.

**MM HYD-1:** The District shall limit grading to the minimum area necessary for construction and operation of the Project. Final grading plans shall include best management practices to limit onsite and offsite erosion.

**MM HYD-2:** Prior to initiation of grading activities, the District shall obtain a water "will serve" letter from Cal Water Service signifying its ability to serve the Project.

**MM HYD-3:** The District shall contact the Kern County Public Works Department regarding the location and construction of the onsite retention basin. In the event there is not currently a basin having capacity to serve the school, the District shall cooperate with the County to achieve adequate stormwater retention.

**MM NSE-1:** During construction, the contractor shall implement the following measures:

- a. All stationary construction equipment on the Project site shall be located so that noise emitting objects or equipment faces away from any potential sensitive receptors.
- b. The construction contractor shall ensure that all construction equipment is equipped with manufacturer-approved mufflers and baffles. During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- c. Construction activities shall not take place outside of the allowable hours specified by Section 8.36.020 of the Kern County Municipal Code.



**MM TRA-1:** The District shall consult with Kern County Public Works Department regarding required roadway improvements. The District shall pay fair share costs of 15.35% for a signal at the intersection of Hughes Lane and Taft Highway to the Kern County Public Works Department prior to project commencement. The District shall also pay Regional Transportation Impact Fees. Based on negotiations with the Public Works Department, it may be determined that full improvements to the Cottonwood Road and Pacheco Road intersection, along with local road improvements along the proposed site's frontage may be acceptable in lieu of RTIF payment.



## **SECTION 1 - INTRODUCTION**

### ***1.1 - Overview***

The District is proposing to construct and operate a Comprehensive High School (Project) within the unincorporated area of central Kern County at the southern end of San Joaquin Valley, California. Figure 1-1 is a map of the regional location and Figure 1-2 shows the Project's vicinity. Figure 1-3 provides the aerial location of the Project site. Site Plan can be found as Appendix F.

### ***1.2 - California Environmental Quality Act***

The KHSD is the Lead Agency for this Project pursuant to the CEQA Guidelines (Public Resources Code Section 15000 et seq.). The Environmental Checklist (CEQA Guidelines Appendix G) or Initial Study (IS) (see *Section 3 – Initial Study*) provides analysis that examines the potential environmental effects of the construction and operation of the Project. Section 15063 of the CEQA Guidelines requires the Lead Agency to prepare an IS to determine whether a discretionary Project will have a significant effect on the environment. A Mitigated Negative Declaration (MND) is appropriate when an IS has been prepared and a determination can be made that no significant environmental effects will occur because revisions to the Project have been made or mitigation measures will be implemented that reduce all potentially significant impacts to less-than-significant levels. The content of a MND is the same as a Negative Declaration, with the addition of identified mitigation measures and a Mitigation Monitoring and Reporting Program (MMRP) (see *Section 6 – Mitigation Monitoring and Reporting Program*).

Based on the IS, the Lead Agency has determined that the environmental review for the proposed application can be completed with a MND.

### ***1.3 - California Department of Education, School Siting Requirements***

Education Code Section 17251 and the California Code of Regulations (CCR), Title 5, Sections 14001 through 14012, outline the powers and duties of the California Department of Education (CDE) regarding school sites and the construction of school buildings. Districts using local funds are encouraged to seek the Department's approval for the benefits that such outside, objective reviews provide to the school district and the community.

Safety is the first consideration in the selection and/or construction of school sites. Certain health and safety requirements are governed by state regulations and the policies of the Department. When selecting new school sites, the selection team considers the following factors: (1) proximity to airports; (2) proximity to high-voltage power transmission lines; (3) presence of toxic and hazardous substances; (4) hazardous air emissions and facilities within a quarter mile; (5) other health hazards; (6) proximity to railroads; (7) proximity to high-pressure natural gas lines, gasoline lines, pressurized sewer lines, or high pressure water pipelines; (8) proximity to propane tanks; (9) noise; (10) proximity to major



roadways; (11) results of geological studies and soils analyses; (12) condition of traffic and school bus safety; (13) safe routes to school; and (14) safety issues for joint-use projects.

In considering the construction of the SW Comprehensive High School, the Kern High School District considered the factors which apply to new school sites. Figure 1-4 illustrates the location and/or proximity of known hazards using the factors listed above for school site selection and lists the distances to each of the identified hazards from the school.

In general, the school siting criteria provides that hazards should be located greater than 1,500 feet from any new school. Data indicate all known factors are greater than 1,500 feet from the Project site.

### ***1.4 - Impact Terminology***

The following terminology is used to describe the level of significance of impacts.

- A finding of “no impact” is appropriate if the analysis concludes that the Project would not affect a topic area in any way.
- An impact is considered “less than significant” if the analysis concludes that it would cause no substantial adverse change to the environment and requires no mitigation.
- An impact is considered “less than significant with mitigation incorporated” if the analysis concludes that it would cause no substantial adverse change to the environment with the inclusion of environmental commitments that have been agreed to by the applicant.
- An impact is considered “potentially significant” if the analysis concludes that it could have a substantial adverse effect on the environment.

### ***1.5 - Document Organization and Contents***

The content and format of this IS/MND is designed to meet the requirements of CEQA. The report contains the following sections:

- *Section 1 – Introduction:* This section provides an overview of CEQA requirements, intended uses of the IS/MND, document organization, and a list of regulations that have been incorporated by reference.
- *Section 2– Project Description:* This section describes the Project and provides data on the site’s location.
- *Section 3 – Environmental Checklist:* This chapter contains the evaluation of 18 different environmental resource factors contained in Appendix G of the CEQA Guidelines. Each environmental resource factor is analyzed to determine whether the proposed Project would have an impact. One of four findings is made which



include: no impact, less-than-significant impact, less than significant with mitigation, or significant and unavoidable. If the evaluation results in a finding of significant and unavoidable for any of the 18 environmental resource factors, then an Environmental Impact Report will be required.

- *Section 4 – List of Preparers:* This chapter identifies the individuals who prepared the IS/MND.
- *Section 5 – Bibliography:* This chapter contains a full list of references that were used in the preparation of this IS/MND.
- *Section 6 – Mitigation Monitoring and Reporting Program - Reserved*

### ***1.6 - Incorporated by Reference***

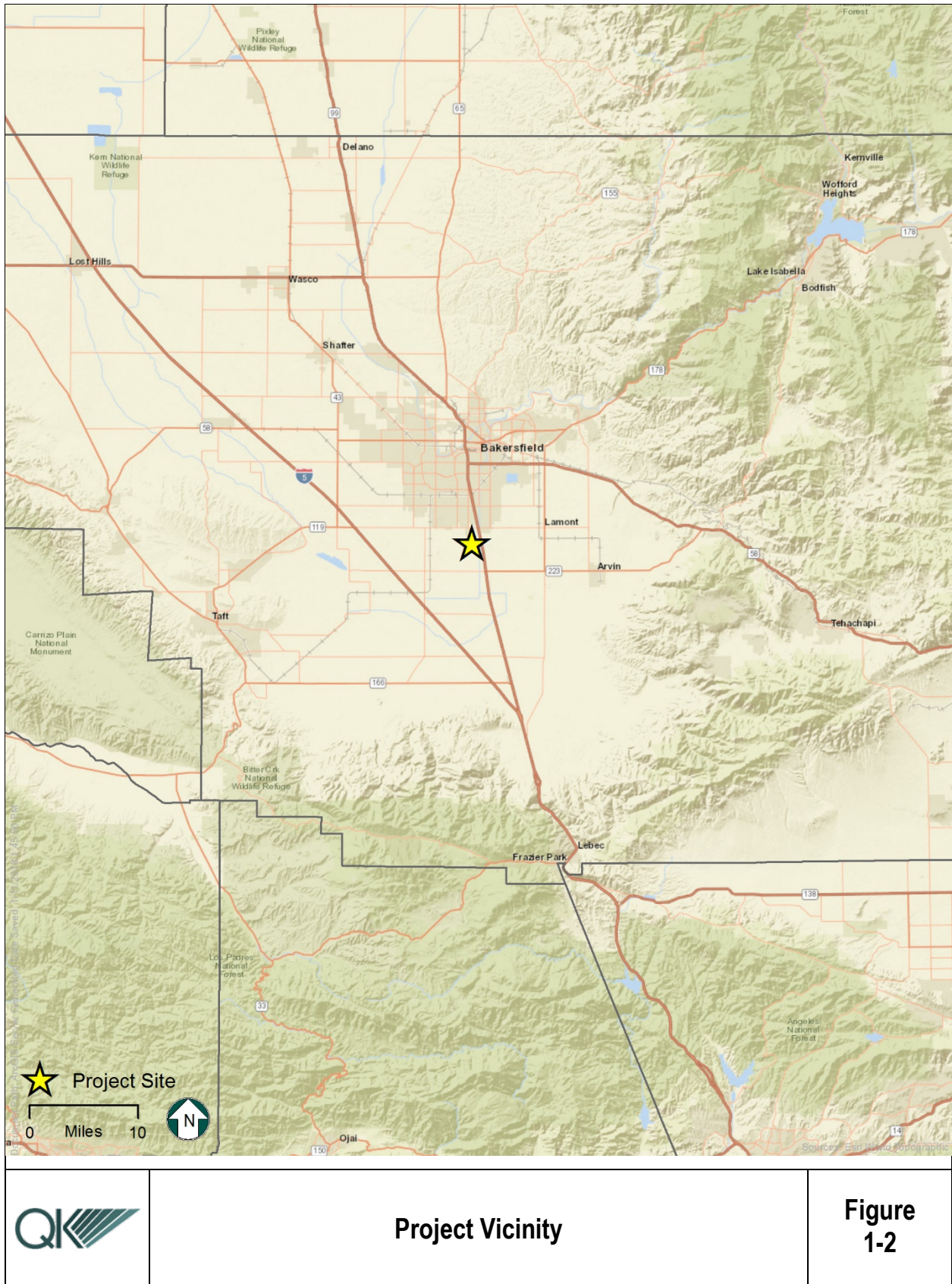
The following documents and/or regulations are incorporated into this IS/MND by reference:

- Kern County Metropolitan Bakersfield General Plan
- Kern County Metropolitan Bakersfield General Plan EIR;
- California Department of Education, Title 5, California Code of Regulation;
- Kern County Airport Land Use Compatibility Plan; and
- Kern County Zoning Ordinance.





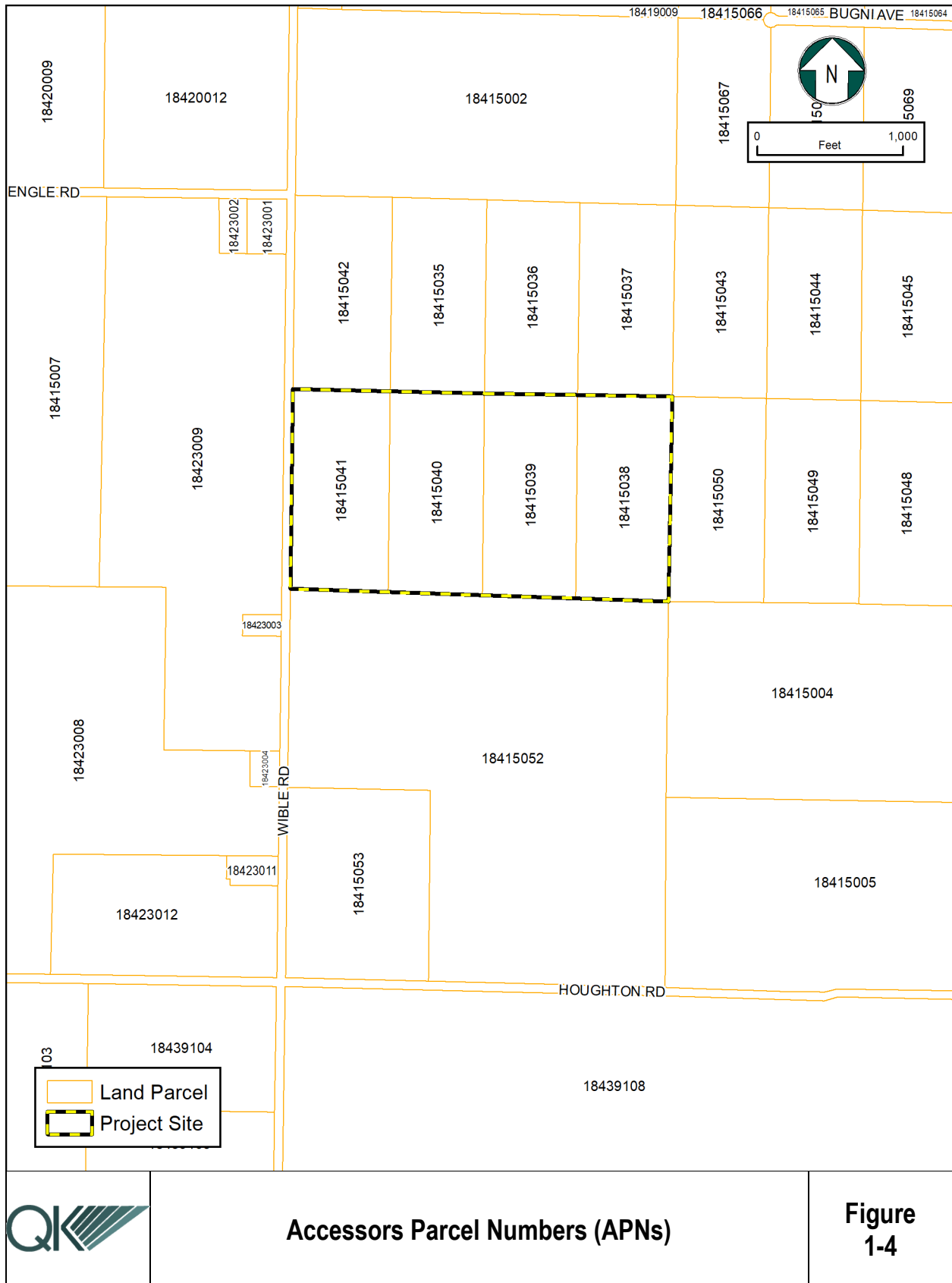




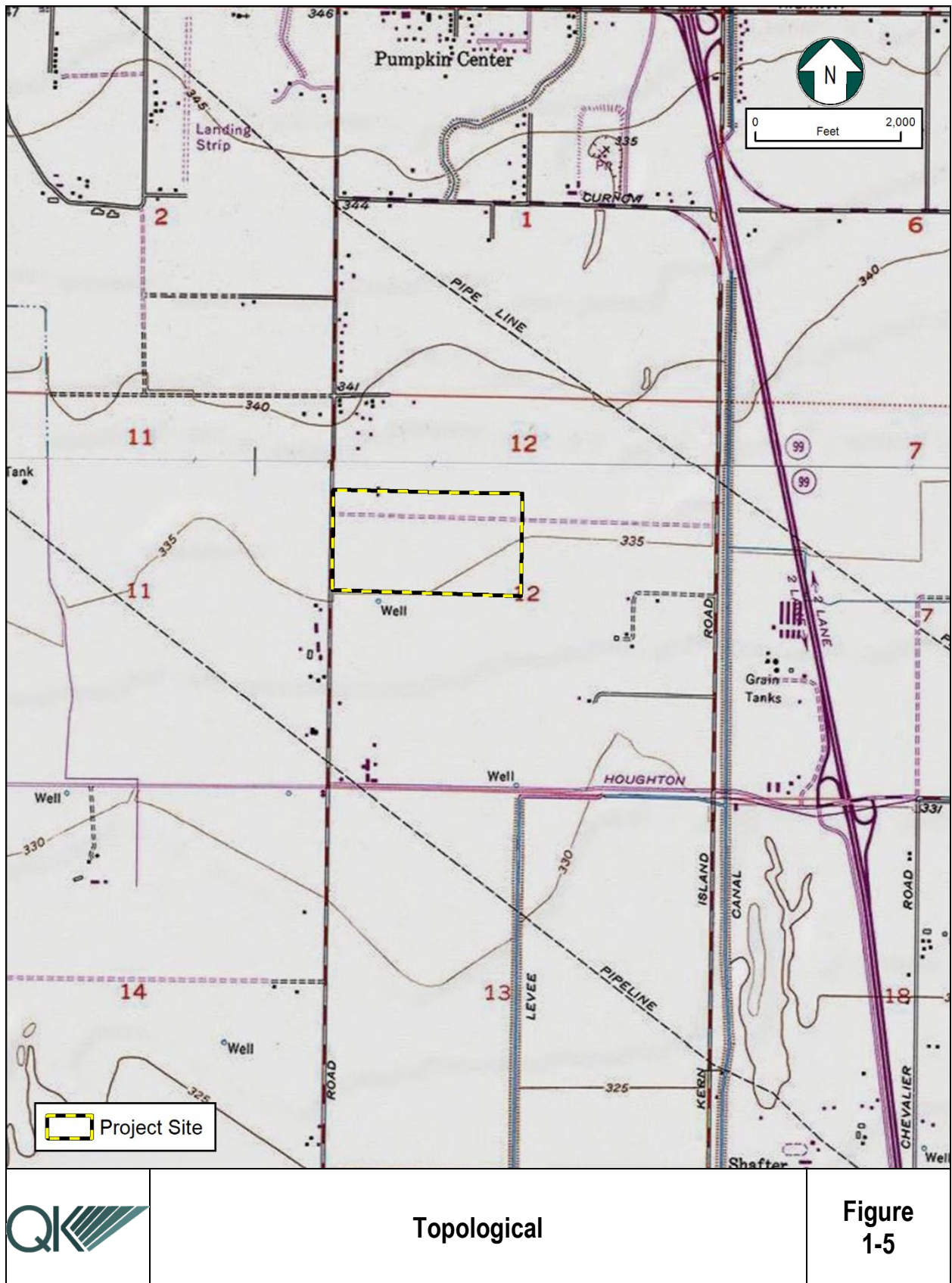




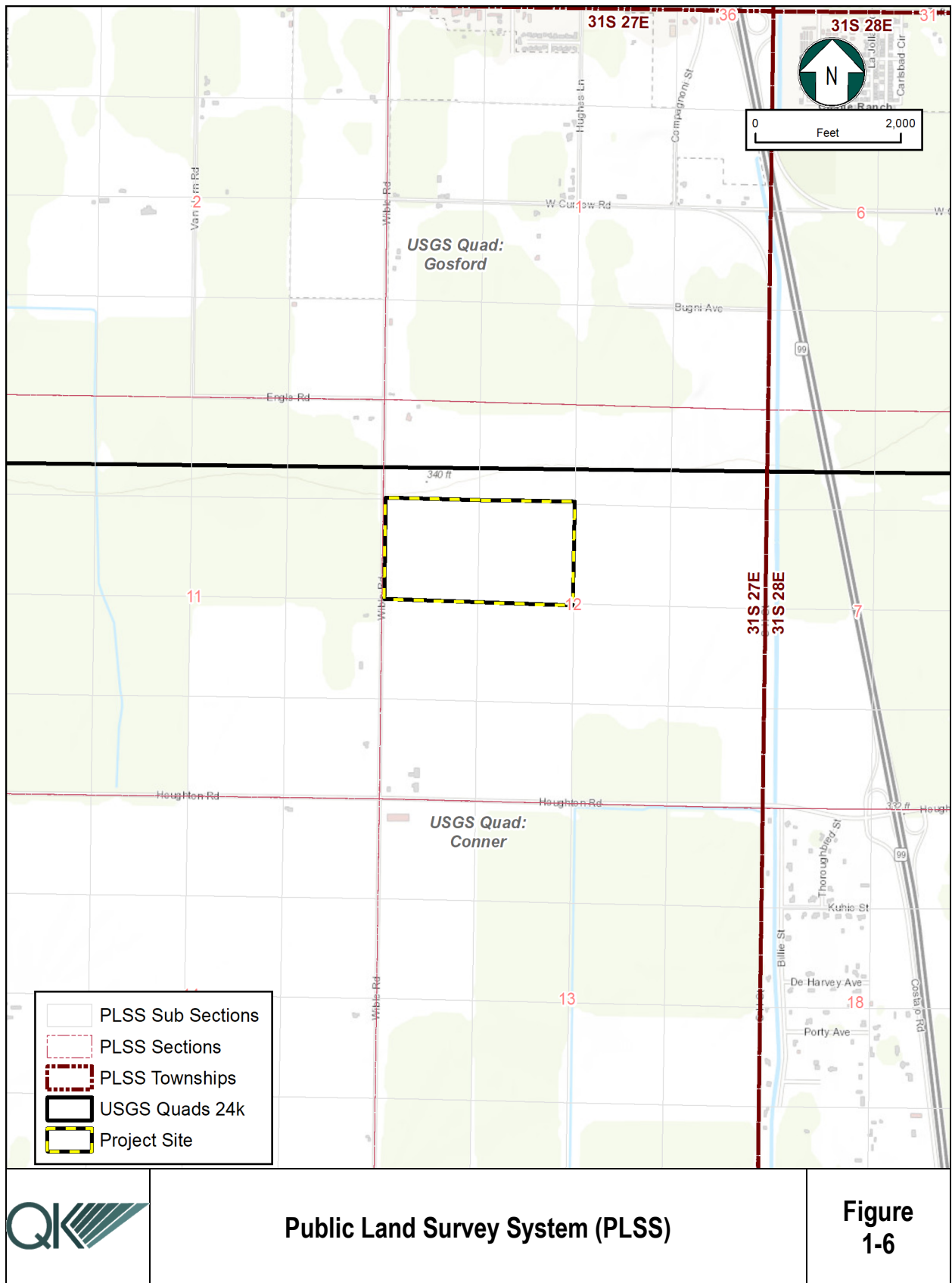




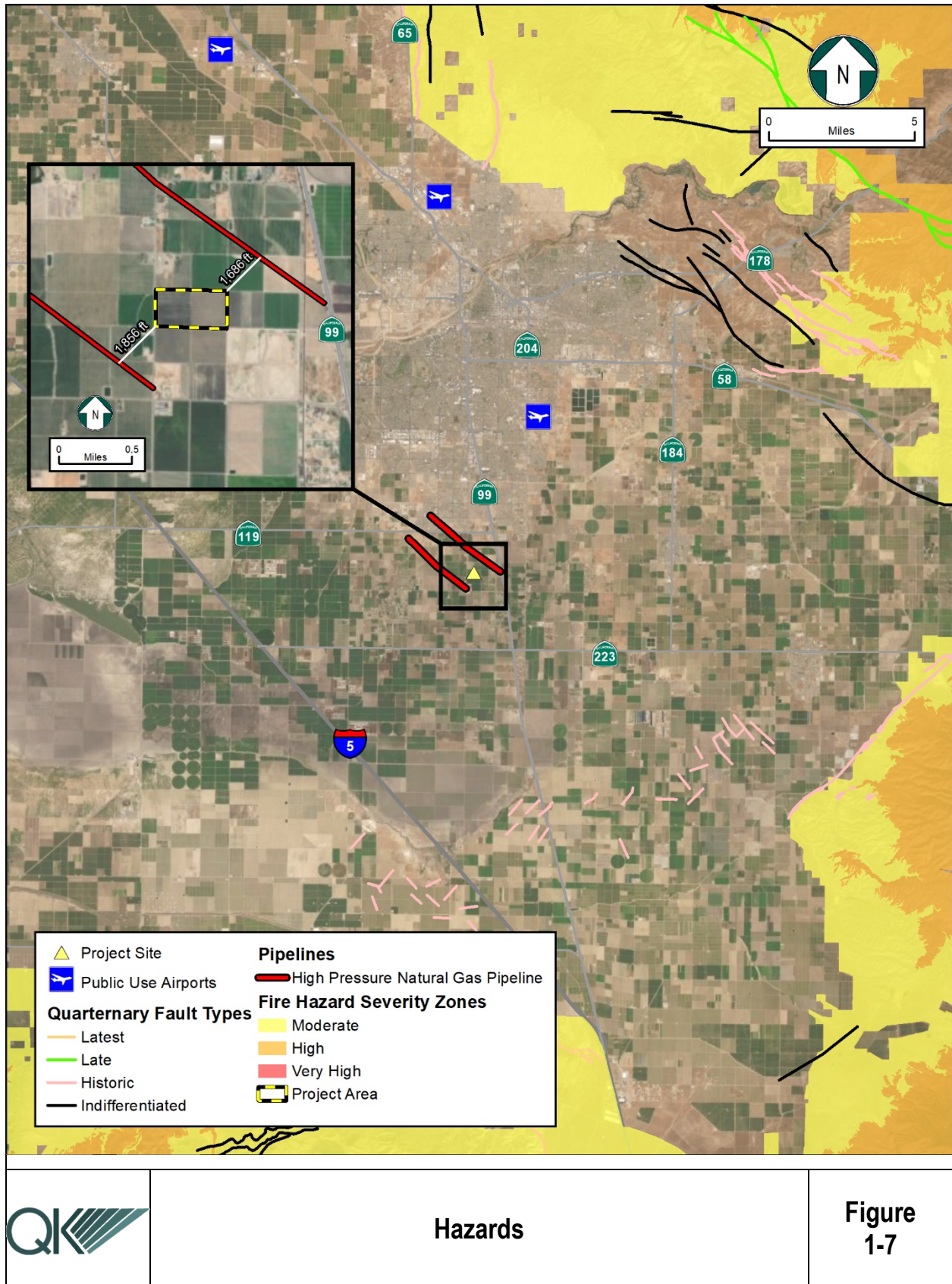














## **SECTION 2 - PROJECT DESCRIPTION**

### ***2.1 - Introduction***

The District is proposing to construct and operate a Comprehensive High School (Project) within the unincorporated area of central Kern County at the southern end of San Joaquin Valley, California. Figure 1-1 is a map of the regional location and Figure 1-2 shows the Project's vicinity. Figure 1-3 provides the aerial location of the Project site.

### ***2.2 - Project Location***

The project site is located within the Conner Quadrangle in the southern 1/2 of the northwestern ¼ of Section 12, Township 31 South, Range 27 East. The site encompasses approximately 80-acre portion of Assessor's Parcel Numbers (APN) 184-150-38, -39, -40, and -41 (see Figure 1-3).

The proposed school site has a specific plan designation of Resource - Intensive Agriculture (R-IA) by the Metropolitan Bakersfield General Plan and a Kern County zone classification of Agricultural District (A & A-1): Exclusive Agriculture (A) and Limited Agriculture (A-1). The surrounding area includes agricultural cultivation to the east, south and north, and a single-family residence to the west.

### ***2.3 - Project Environment***

The site has recently been utilized as agricultural cultivation. The site was historically used for agricultural purposes for the past 50 years. The Project site is within the Metropolitan Bakersfield General Plan, a large plan that consists of residential, commercial, and industrial uses.

The site is bordered by Engle Road to the north, agricultural land to the east and south, and Wible Road to the west.

Police and fire service will be served by the County of Kern. The nearest sewer line is 1-mile from the site, septic tanks will be installed until a sewer line is extended. Sanitation/garbage collection will be provided by Price Environmental, a local waste hauler. Water service will be provided by Cal Water Company.

### ***2.4 - Proposed Project***

The high school campus will occupy approximately 60-acres of the 80-acre Project site. The additional acreage may be kept by KHSD or sold as surplus land. The enrollment capacity will be 2,000 students with the ability to expand to 2,500 students. There will be multiple buildings, with an approximate area totaling 200,000 to 250,000 square feet (sq. ft.). These buildings will include: classrooms, administrative and multi-purpose rooms, athletic and play fields that will occupy approximately 75% of the site. Parking adequate to serve both students and staff/visitors will be provided on the site. The Project may also include the



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construction a solar array to generate the electricity required to operate the school. A portion of the site could be Career Technical classroom area, athletic facilities, or any other education function or expansion to the campus.

School facilities typically include single- and multi-story, permanent building structures and some portable units on temporary or permanent foundations with room for future expansion capabilities. School facilities will also include outdoor athletic fields for baseball, soccer, and a stadium for football and track/field events. Outdoor lighting would be provided for the stadium component and parking areas. The Project site would be primarily accessed from Wible Road and Engle Road. Site Plan can be found in Appendix F.

Student population for the new school would come from students within the District, which is currently suffering from overcrowded facilities. The enrollment in the District as of the fall of 2018 is 39,739 students, which is approximately 2,681 students over existing capacity. It is anticipated that new residential development in the metropolitan Bakersfield area would exacerbate the existing overcrowding conditions without the addition of a new school. The construction of the new school would help alleviate the problem of current overcrowding and is designed to provide a comprehensive high school for future students as the population within the District grows.

No known historic oil activity has occurred on the site. The Project is no located within the boundaries of an oilfield. According to the Division of Oil, Gas and Geothermal Resources (DOGGR) records and maps, no abandoned oil wells are located on the site, and the nearest well is 3,600 feet to the west of the site (see Figure 3.4.11-1).



## **SECTION 3 - INITIAL STUDY**

### ***3.1 - Environmental Checklist***

**1. Project Title:**

New Comprehensive High School - Southwest

**2. Lead Agency Name and Address:**

Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA 93309

**3. Contact Person and Phone Number:**

Jenny Hannah  
(661) 827-3100

**4. Project Location:**

Southeast corner of Wible Road and Engle Road, South of Bakersfield, CA.

**5. General Plan Designation:**

Resource - Intensive Agriculture (R-IA)

**6. Zoning:**

Exclusive Agriculture (A)

**7. Description of Project:**

Please See Section 2.

**8. Surrounding Land Uses and Setting:**

Agricultural cultivation to the east, south and north, and a single-family residences to the west, northwest, north and northeast.

**9. Other Public Agencies Whose Approval is Required:**

- California Department of Education;
- California Department of Toxic Substances Control;
- California Division of the State Architect;
- San Joaquin Valley Air Pollution Control District; and
- Central Valley Regional Water Quality Control Board



### ***3.2 - Environmental Factors Potentially Affected***

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Aesthetics                    | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality                        |
| <input type="checkbox"/> Biological Resources          | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Energy                             |
| <input type="checkbox"/> Geology and Soils             | <input type="checkbox"/> Greenhouse Gas Emissions           | <input type="checkbox"/> Hazards and Hazardous Materials    |
| <input type="checkbox"/> Hydrology and Water Quality   | <input type="checkbox"/> Land Use and Planning              | <input type="checkbox"/> Mineral Resources                  |
| <input type="checkbox"/> Noise                         | <input type="checkbox"/> Population and Housing             | <input type="checkbox"/> Public Services                    |
| <input type="checkbox"/> Recreation                    | <input type="checkbox"/> Transportation                     | <input type="checkbox"/> Tribal Cultural Resources          |
| <input type="checkbox"/> Utilities and Service Systems | <input type="checkbox"/> Wildfire                           | <input type="checkbox"/> Mandatory Findings of Significance |

### ***3.3 - Determination***

On the basis of this initial evaluation:

- ☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed



adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

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Signature

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Date

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Printed Name

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For



### ***3.4 - Evaluation of Environmental Impacts***

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to Projects like the one involved (e.g., the Project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on Project-specific factors as well as general standards (e.g., the Project will not expose sensitive receptors to pollutants, based on a Project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as Project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
  - a. Earlier Analysis Used. Identify and state where they are available for review.
  - b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
  - c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the Project.



6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a Project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
  - a. the significance criteria or threshold, if any, used to evaluate each question; and
  - b. the mitigation measure identified, if any, to reduce the impact to less than significance.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.1 - AESTHETICS

Except as provided in Public Resources Code Section 21099, would the Project:

a.	Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c.	Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public Views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Discussion

#### Impact #3.4.1a – Would the Project have a substantial adverse effect on a scenic vista?

The proposed school site is located in an area characterized by rural, flat, agricultural land that have been historically used for agricultural production. No known aesthetic resources exist on the site. The site is not within any State, city, or county identified scenic vista or scenic highway corridor. Furthermore, development of the Project would not block or preclude views to any area containing important or what would be considered visually appealing landforms. Therefore, no scenic vistas will be impacted by construction of this Project. According to the Caltrans website and Metropolitan Bakersfield General Plan, no eligible or officially designated State Scenic Highways or highway corridors exist within the Project area (County of Kern, 2007) (Caltrans, 2019a). Therefore, no State scenic highway will be impacted or obstructed from this Project. The Project site and surrounding area is predominately agricultural land and does not include scenic resources such as trees, rock outcroppings, or any historic buildings that are scenic or of scenic value. The single-story school buildings will not substantially reduce views of the surrounding mountain ranges.



Therefore, development of the Project will have a less than significant impact on scenic resources.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be **less than significant**.

**Impact #3.4.1b – Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

See Impact 3.4.1 (a), above.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be **less than significant**.

**Impact #3.4.1c – Would the Project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public Views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?**

The project is in an area that is predominantly rural agricultural with some residential developments within a one-mile radius of the Project site. The nearest residence is located approximately 0.2 miles southwest of the Project site. The campus and associated structures will be set back from the roadway but will be visible to traveling motorists. The Project's appearance will change the visual appearance of the immediate area from agricultural fields to an educational facility; however, changes to the visual quality and character of the Project site will not be substantially different in nature to the surrounding agricultural and rural residential development. . Therefore, the Project would not result in a significant impact to the visual character or quality of the area.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.



**Impact #3.4.1d – Would the Project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?**

Construction of the proposed Project would generally occur during daytime hours, typically from 7:00 a.m. to 6:00 p.m. All lighting would be directed downward and shielded to focus illumination on the desired work areas only and prevent light spillage onto adjacent properties. Because lighting used to illuminate work areas would be shielded, focused downward, and turned off by 6:00 p.m., the potential for lighting to affect any residents adversely is minimal. Increased truck traffic and the transport of construction materials to the Project site would temporarily increase glare conditions during construction. However, this increase in glare would be minimal. Construction activity would focus on specific areas on the sites, and any sources of glare would not be stationary for a prolonged period of time. Therefore, construction of the proposed Project would not create a new source of substantial glare that would affect daytime views in the area.

Project operations would include, exterior lighting that would comply with the Kern County Dark Skies Ordinance (19.81) standards, which include outdoor lighting design to minimize reflective glare and light scatter. The school facility would include lighting for classrooms, onsite security and athletic stadium. State law requires the District to follow the California Code of Regulations Title 24 (Part 3) regarding indoor light design. Mitigation Measure AES-1 would require the school's lighting design to be compliance with "dark skies" standards and event lighting to be shut off by 11:00pm. These requirements would substantially reduce potential nuisances from light or glare. With implementation of mitigation measure AES-1, the proposed Project would not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area. Therefore, the Project would have a less than significant impact with mitigation.

***MITIGATION MEASURE(S)***

**MM AES-1:** Security and nighttime lighting installed at the school site shall be designed utilizing "dark skies" standards and guidelines and shall incorporate shielding of lighting and orienting lighting downward to prevent direct uplighting. Lighting used for nighttime events shall be turned off by 11:00pm. All lights in excess of 150 watts shall be directed toward the stadium field and away from adjacent properties. All outdoor light fixtures shall be designed with appropriate reflectors, hoods and side shields to direct the angle of incidence to reflect light downward.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant with mitigation incorporated.*



Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.2 - AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the Project:

- |    |   |                          |                          |                                     |                                     |
|----|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. | Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. | Conflict with existing zoning for agricultural use or a Williamson Act Contract?  | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. | Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| d. | Result in the loss of forest land or conversion of forest land to non-forest use?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| e. | Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

### Discussion

**Impact #3.4.2a – Would the Project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?**



The proposed Project would convert approximately 80 acres of agricultural land to accommodate development of a school facility. In order to determine whether this conversion would result in a significant impact on farmland, several factors must be considered. These factors include the quality of the land being converted, the availability of water to supply farming activities on the land, and the type of use being proposed on the agricultural land. CEQA uses the farmland Mapping and Monitoring Program (FMMP) categories of “Prime Farmland,” “Unique Farmland” and “Farmland of Statewide Importance,” to define “agricultural land” for the purposes of assessing environmental impacts (PRC Section 21060.1(a)).

According to the Farmland Mapping and Monitoring Program, the Project site is designated as Prime Farmland (California Department of Conservation, 2016)(Figure 3.4.2-1).. The Project would convert approximately 80 acres of Prime Farmland to a non-agricultural use. The property has not been under cultivation since 2017 due to the lack of available water. Additionally, the previous property owner considered this land to be less productive than other farmland, and therefore sold the property to the District for the construction of the proposed Project. However, Kern County has approximately 579,295 acres of farmland designated as Prime (California Department of Conservation, 2016). The conversion of 80 acres to a non-agricultural use would represent 0.000138% of the overall available Prime Farmland in the County. Based on this analysis, the impact resulting from this conversion would be less than significant.

#### ***MITIGATION MEASURE(S)***

No mitigation is required.

#### ***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.

#### **Impact #3.4.2b – Would the Project conflict with existing zoning for agricultural use or a Williamson Act Contract?**

The Project site is not under a Williamson Act land use contract (Figure 3.4.2-2). The Project site is designated as Resource-Intensive Agriculture (R-IA) by the Metropolitan Bakersfield General Plan. According to the Kern County Zoning Ordinance, the Project site and surrounding areas are classified as Exclusive Agriculture (A) The lands to the north, east and west of the Project are currently subject to a Williamson Act contract, but construction activities will be limited within the Project boundary and are not anticipated to affect the surrounding parcels.

The Project site has historically been used for agricultural purposes, which is consistent with the existing zoning designation. However, as a special district, the Kern High School District does not fall under the jurisdiction of the Kern County Zoning Ordinance or General Plan, and therefore is not subject to land use regulations. The Project does not conflict with the existing



zoning requirements or interfere with a Williamson Act Contract. Therefore, the Project would have a less than significant impact

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.

**Impact #3.4.2c – Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?**

See Impact #3.4.2b for discussion of existing zoning.

The Public Resources Code Section 12220 (g) and Section 4526 defines “Forest land” as land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. There would be no conflict with or impacts to zoning for forest land or timberland. The Project would not result in the loss or conversion of forest land to a non-forest use. Therefore, the Project would have no impact.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

There would be *no impact*.

**Impact #3.4.2d – Would the Project result in the loss of forest land or conversion of forest land to non-forest use?**

See discussion of Impact #3.4.2c, above.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

There would be *no impact*.



**Impact #3.4.2e – Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?**

See discussion of Impacts #3.4.2a, #3.4.2b, and #3.4.2c, above.

***MITIGATION MEASURE(S)***

No mitigation is required.

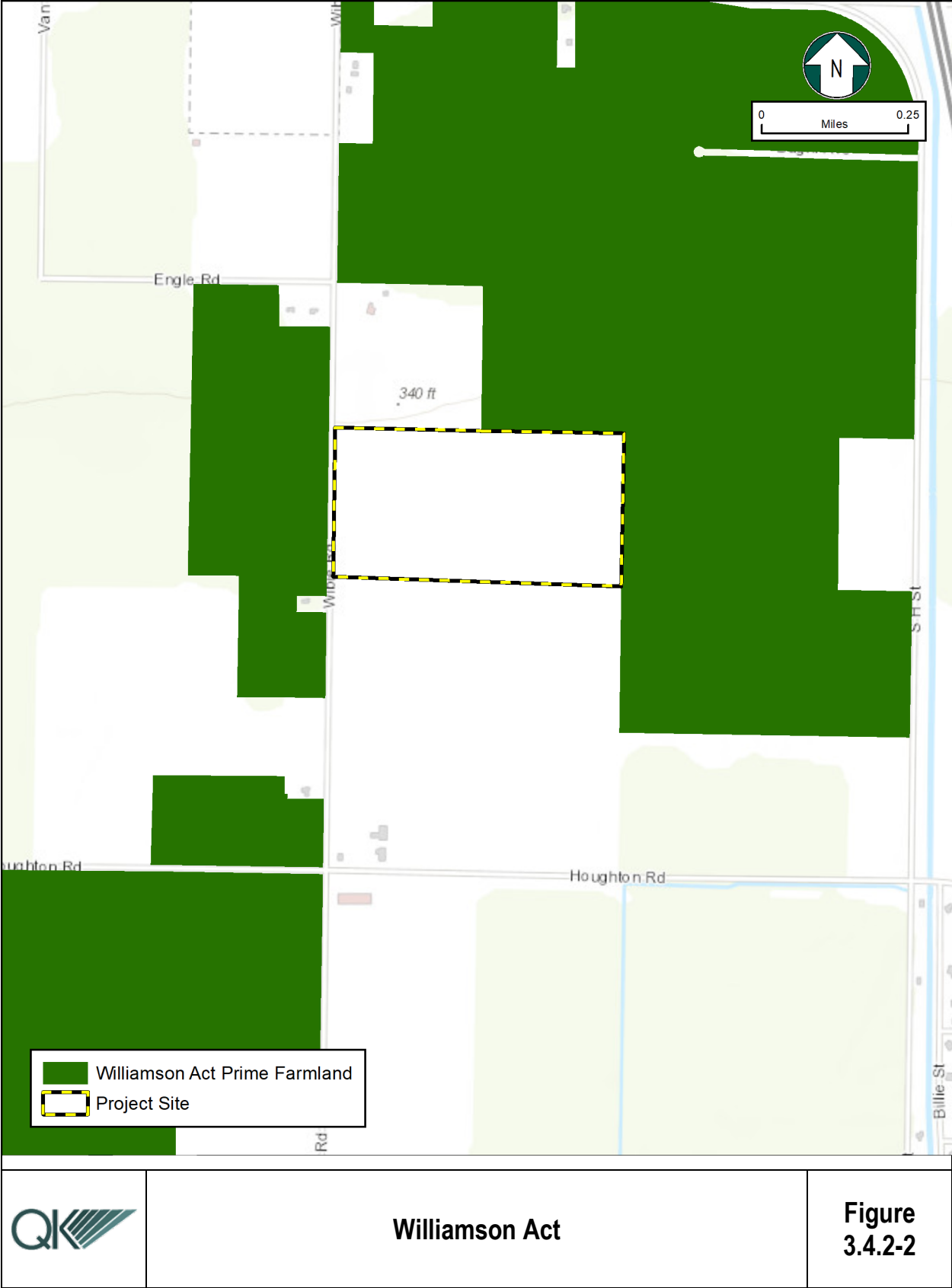
***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.











	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.3 - AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the Project:

a.	Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c.	Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Discussion

An Air Quality Impact Analysis (Insight Environmental Consultants, 2018), which is provided as Appendix A was prepared in accordance with the San Joaquin Valley Air Pollution Control District's (SJVAPCDs) instructions which are included in the district's *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD, 2015). In addition to providing an assessment of the project's impacts to air quality and GHGs, The AQIA includes a detailed description of the regulatory environment as it relates to air quality.

#### Impact #3.4.3a – Would the Project Conflict with or obstruct implementation of the applicable air quality plan?

The CEQA Guidelines indicate that a significant impact would occur if the proposed Project would conflict with or obstruct implementation of the applicable air quality plan. The San Joaquin Valley Air Basin (SJVAB) is designated nonattainment of State and federal health-based air quality standards for ozone and particulate matter less than 2.5 microns (PM2.5). The SJVAB is designated attainment for federal particulate matter less than 10 microns (PM10) standards and nonattainment of state PM10. To meet federal Clean Air Act (CAA) requirements, the SJVAPCD has multiple air quality attainment plan (AQAP) documents, including:



- Extreme Ozone Attainment Demonstration Plan (EOADP) for attainment of the 1-hour ozone standard (2004);
- 2007 Ozone Plan for attainment of the 8-hour ozone standard;
- 2007 PM10 Maintenance Plan and Request for Redesignation; and
- 2008 PM2.5 Plan.

Because of the region's federal nonattainment status for ozone and PM2.5, and State nonattainment status for ozone, PM2.5, and PM10, if the project-generated emissions of either the ozone precursor pollutants [reactive organic gases (ROG) or oxides of nitrogen (NOx)], PM10, or PM2.5 were to exceed the SJVAPCD's significance thresholds, then the project uses would be considered to conflict with the attainment plans. In addition, if the project uses were to result in a change in land use and corresponding increases in vehicle miles traveled, they may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

The GAMAQI states that the SJVAPCD's established thresholds of significance for criteria pollutant emissions, which are based on the NSR, require offsets for stationary sources. "Emission reductions achieved through implementation of District offset requirements are a major component of the District's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to 'Not conflict or obstruct implementation of the District's air quality plan'" (SJVAPCD, 2015).

### ***Project's Contribution to Air Quality Violations***

As discussed in Impact c. below, predicted construction and operational emissions would not exceed the SJVAPCD's significance thresholds for ROG, NOx, PM10, and PM2.5. As a result, the project would not conflict with emissions inventories contained in regional AQAPs, and would not result in a significant contribution to the region's air quality non-attainment status.

### ***Consistency with Assumptions in Air Quality Attainment Plans***

The primary way of determining consistency with the AQAP's assumptions is determining consistency with the applicable General Plan to ensure that the project's population density and land use are consistent with the growth assumptions used in the AQAPs for the air basin.

As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and that designates locations for land uses to regulate growth. The Kern County Council of Governments uses the growth projections and land use information in adopted general plans to estimate future average daily trips and then vehicle miles traveled (VMT), which are then provided to SJVAPCD to estimate future emissions in the AQAPs. Existing and future pollutant emissions computed in the AQAP are based on land uses from area general plans. AQAPs detail the control measures and emission reductions required for reaching attainment of the air standards.



The General Plan designates the Project site as R-IA and within the A (Exclusive Agriculture) and A-1 (Limited Agriculture) zone districts. While schools are not expressly allowed in this designation, they are conditionally permitted by the County. However, Government Code Section 53091 does not require a school district to comply with County land use or zoning and therefore, the District is not seeking a Specific Plan amendment or zone change for the subject site. The project is not anticipated to result in substantial direct or indirect population growth that was not previously anticipated by the Specific Plan. Accordingly, it can be concluded the proposed project's uses are consistent with the growth and vehicle miles traveled projections contained in the AQP. Therefore, the Project impact is less than significant.

### ***Control Measures***

The AQAPs contain a number of control measures, including the rules outlined by the SJVAPCD. The control measures in the AQAP are enforceable requirements. The project would comply with all of the SJVAPCD's applicable rules and regulations. Therefore, the project complies with this criterion.

### ***MITIGATION MEASURE(S)***

No mitigation is required.

### ***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.

**Impact #3.4.3b – Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?**

The CEQA Guidelines indicate that a significant impact would occur if the proposed project would conflict with or obstruct implementation of the applicable air quality plan. The San Joaquin Valley Air Basin (SJVAB) is designated nonattainment of State and federal health-based air quality standards for ozone and particulate matter less than 2.5 microns (PM<sub>2.5</sub>). In order to maintain consistency with CEQA, the SJVAPCD (2015) adopted guidelines to assist applicants in complying with the various requirements. According to the SJVAPCD's GAMAQI, a project would have potentially significant air quality impacts when the project:

- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated non-attainment under a NAAQS and CAAQS (including emissions which exceed quantitative thresholds for O<sub>3</sub> precursors) (AQIA KHSD SW, 2019)

The SJVAB is designated attainment for federal particulate matter less than 10 microns (PM<sub>10</sub>) standards and nonattainment of state PM<sub>10</sub>. To meet federal Clean Air Act (CAA) requirements, the SJVAPCD has multiple air quality attainment plan (AQAP) documents, including



A cumulatively considerable net increase could be said to occur if the project would exceed thresholds established by agencies having jurisdiction within the project area or region. As discussed in b, above, the Project would not exceed the thresholds established by the SJVAPCD and thus would not be considered cumulatively considerable. The table below identify the cumulative regional air quality impacts for the Project.

**Table 3.4.3-1: Comparative Analysis Based on SJV Air basin 2012 Inventory.**

Emissions Inventory Source	Pollutant (tons/year)					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Kern County - 2012 <sup>1</sup>	79,826	26,463	58,145	949	16,097	4,964
SJVAB - 2012 <sup>1</sup>	447,344	123,078	473,369	5,147	117,348	39,968
Proposed Project	2.18	3.52	9.66	0.03	2.44	0.68
Proposed Project's % of Kern	0.0027	0.013	0.017	0.0032	0.015	0.014
Proposed Project's % of SJVAB	0.0005	0.003	0.002	0.0006	0.002	0.002
<b>NOTES:</b> <sup>1</sup> This is the latest inventory available as of April 2018 SOURCE: CARB 2015						

Source: (Insight Environmental Consultants, 2018)

As shown in table 3.4.3-1, the Project does not substantially increase basin emissions.

Tables 3.4.3-2 – 3.4.3-4 provide CARB Emissions Inventory projections for the year 2020 for both the SJVAB and the Kern County portion of the air basin.

**Table 3.4.3-2: Emission Inventory SJVAB- Kern County Portion 2020 Estimate Projection- Tons Per year.**

	ROG	NO <sub>x</sub>	PM <sub>10</sub>
Total Emissions	429,934	81,833	115,961
Percent Stationary Sources	8.38%	12.58	4.72
Percent Area-Wide Sources	15.94%	5.93	78.12
Percent Mobile Sources	4.98%	76.09	4.56
Percent Natural Sources	71.71%	5.35	12.56
Total Stationary Source Emissions	36,026	10,293	5,475
Total Area-Wide Source Emissions	68,511	4,855	90,593
Total Mobile Source Emissions	21,426	62,269	5,293
Total Natural Source Emissions	304,009	4,380	14,564
Source: CARB 2015			
Note: Total may not add due to rounding.			

Source: (Insight Environmental Consultants, 2018)



**Table 3.4.3-3: 2020 Emissions Projections – Proposed Project, Kern County and San Joaquin Valley Air Basin.**

	ROG	NO <sub>x</sub>	PM <sub>10</sub>
<b>Proposed Project</b>	<b>2.18</b>	<b>3.52</b>	<b>2.44</b>
Kern County	72,343	16,243	15,294
SJVAB	429,934	81,833	115,961
Proposed Project Percent of Kern County	0.0030%	0.022%	0.0160%
Proposed Project Percent of SJVAB	0.0005%	0.004%	0.0021%
Kern County Percent of SJVAB	16.83%	19.85%	13.19%
Source: CARB 2015			

Source: (Insight Environmental Consultants, 2018)

**Table 3.4.3-4: 2020 Emissions Projections – Proposed Project, Kern County and San Joaquin Valley Air Basin**

	ROG	NO <sub>x</sub>	PM <sub>10</sub>
<b>Proposed Project</b>	<b>2.18</b>	<b>3.52</b>	<b>2.44</b>
Kern County	72,343	16,243	15,294
SJVAB	429,934	81,833	115,961
Proposed Project Percent of Kern County	0.0030%	0.022%	0.0160%
Proposed Project Percent of SJVAB	0.0005%	0.004%	0.0021%
Kern County Percent of SJVAB	16.83%	19.85%	13.19%
Source: CARB 2015			

Source: (Insight Environmental Consultants, 2018)

The SJVAB Emissions predicted in the tables above by the CARB year 2020 emissions inventory, the Kern County portion of the air basin is a moderate source of the emissions. The proposed Project produces a small portion of the total emissions in both Kern County and the entire SJVAB (Insight Environmental Consultants, 2018).

As shown above, the proposed Project would pose an inconsequential impact on regional O<sub>3</sub> and PM<sub>10</sub> formation. Because the regional contribution to these cumulative impacts would be negligible, the Project would not be considered cumulatively considerable in its contribution to regional O<sub>3</sub> and PM<sub>10</sub> impacts.

Additionally, a review of the City of Bakersfield Planning Department Tentative Tract Map, Kern County GIS Geocortex IMP Map Viewer, and the City of Bakersfield Cumulative Projects Map indicates that there are one hundred three (103) other planned developments found within a six-mile radius of the Project. Tables 3.4.3-5 and 3.4.3-6 evaluate the cumulative impacts for the construction and operation of the Project.

**Table 3.4.3-5: Cumulative Construction Projects**



Six-Mile Radius Projects	Pollutant (tons/year) <sup>(1)</sup>					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Kern County</b>						
Total Cumulative Six-Mile Projects	377.82	1,181.0	1,116.6	3.18	218.64	97.21
<i>This Project</i>	3.05	10.30	7.76	0.02	1.30	0.64
<b>Total Cumulative Projects</b>	<b>380.87</b>	<b>1,191</b>	<b>1,124</b>	<b>3.20</b>	<b>219.94</b>	<b>97.85</b>
(1) These emissions are overestimated and include all years of construction not just a single year, as they are discretionary projects that are subject to various mitigation measures that have not yet been determined nor their impacts reduced herein.						

Source: (Insight Environmental Consultants, 2018)

**Table 3.4.3-6: Cumulative Operational Projects**

Six-Mile Radius Projects	Pollutant (tons/year) <sup>(1)</sup>					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Kern County</b>						
Total Cumulative Six-Mile Projects	290.11	960.85	1,475.2	6.04	293.39	169.23
<i>This Project</i>	2.18	3.52	9.66	0.03	2.44	0.68
<b>Total Cumulative Projects</b>	<b>292.29</b>	<b>964.37</b>	<b>1,485</b>	<b>6.07</b>	<b>295.83</b>	<b>169.9</b>
(1) These emissions are overestimated, as they are discretionary projects that are subject to various mitigation measures that have not yet been determined nor their impacts reduced herein.						

Source: (Insight Environmental Consultants, 2018)

The emissions estimates presented were modeled using the CalEEMod computer model to predict cumulative impacts, unless otherwise noted. Emissions for the construction and operational phases of each nearby project were based on total number of lots or square footage for maximum Project build-out as noted on the most current City Planning Department Tentative Tract Map, Kern County GIS Geocortex Online Mapping information, and City of Bakersfield Cumulative Projects Map. No mitigation measures were applied to any of the projects as it is not known which, if any, would be required or which may be voluntarily proposed by each developer or required by code or regulation. Additionally, no cumulative significance thresholds are shown since no cumulative thresholds have been established by the SJVAPCD, CARB or other regulatory authority. These projects represent all known and reasonably foreseeable projects in the area. These projects are either currently under construction or, at a minimum, approved by the Bakersfield City and Kern County Planning Departments for consistency with applicable regulation. For the purposes of this analysis, it is assumed that they are in conformance with the regional AQAP. Because the proposed Project would generate less than significant Project-related operational impacts to criteria air pollutants, the Project's contribution to cumulative air quality impacts would not be cumulatively considerable.

Based on the information in the tables and the Air Quality Impact Analysis it is concluded that the Project will have a negligible impact. Therefore, the Project will not have a net increase of pollutants in the region and will have a less than significant impact



**MITIGATION MEASURE(S)**

No mitigation measures are required

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.3c – Would the Project expose sensitive receptors to substantial pollutant concentrations?**

Sensitive receptors are defined as areas where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside. The proposed Project, because of its educational nature, is not expected to result in the generation of odors or substantial pollutant concentrations. Due to the surrounding agricultural uses in the area and limited number of neighbors to the Project site, the construction and operation of the Project would not expose sensitive receptors to substantial concentrations of localized PM10, carbon monoxide, diesel particulate matter, hazardous air pollutants, or naturally occurring asbestos, as discussed below.

***Hazardous Pollutants or Odors***

The GAMAQI guidelines introduce two types of projects that should be assessed when considering hazardous air pollutants (HAPs) which includes: 1) placing a toxic land use in an area where it may have an adverse health impact on an existing sensitive land use and 2) placing a sensitive land use in an area where an adverse health impact may occur from an existing toxic land use. Some examples of projects that may include HAPs are:

- Agricultural products processing;
- Bulk material handling;
- Chemical blending, mixing, manufacturing, storage, etc.;
- Combustion equipment (boilers, engines, heaters, incinerators, etc.);
- Metals etching, melting, plating, refining, etc.;
- Plastics & fiberglass forming and manufacturing;
- Petroleum production, manufacturing, storage, and distribution; and
- Rock & mineral mining and processing.

The proposed Project is located on a site that is currently undeveloped agricultural land that has a history of agricultural use. During the construction phase some odors could result from vehicles and equipment using diesel fuels. However, vehicles and equipment using diesel fuels at the proposed Project would comply with the California Air Resources Board (CARB) guidelines, which limit idling time to five minutes. In addition, the construction period would be temporary. During the operation of the proposed project, school buses may be utilized and would emit diesel, but are also subject to the CARB's ATCM limiting school bus idling and idling at or near schools to only when necessary for safety or operational concerns.



### ***Naturally Occurring Asbestos***

The CARB has an ATCM for construction, grading, quarrying, and surface mining operations requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust. This ATCM applies to road construction and maintenance, construction and grading operations, and quarries and surface mines when the activity occurs in an area where naturally occurring asbestos is likely to be found. No naturally occurring asbestos is suspected within 10 miles of the project site.

### ***Valley Fever Exposure***

Valley Fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, *Coccidioides immitis*. The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and include dust storms, grading, and recreational off-road activities.

There is a potential risk of contracting Valley Fever within the region based on the general similarity between the sediments known to contain the spores and the sediments believed to be present in the area of the proposed Project. In addition, it must be noted that: 1) airborne dust containing the spores can be transported to the project area from other areas within the Bakersfield area potentially exposing those present to the disease and 2) persons who have not resided in the Bakersfield area may be more susceptible to contracting the disease than long-time residents due to any environmental, medical, and personal factors. (Note: The conclusions regarding the potential for either exposure to or contraction of Valley Fever through the construction of the proposed Project should not be construed as a professional medical or public health opinion. These conclusions are merely a review of the geologic condition of the Project site relative to potential presence of sediments known to contain the Valley Fever spore.)

Although construction activities are anticipated to generate fugitive dust, the Project would minimize the generation of fugitive dust by complying with the SJVAPCD's Regulation VIII. Dust-disturbing activities would be limited in scope and duration. By implementing the SJVAPCD's Regulation VIII, the Project will have a less than significant impact.

### ***MITIGATION MEASURE(S)***

No mitigation is required.

### ***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.

**Impact #3.4.3d Would the Project result in emissions (such as those leading to odors) adversely affecting a substantial number of people?**



See Impact #3.4.3c, above. The proposed Project, because of its educational nature, is not expected to result in the emission of odors other than diesel fumes. The Project will not adversely affect a substantial number of people. Therefore, the Project will have a less than significant impact.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.4 - BIOLOGICAL RESOURCES

Would the Project:

a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c.	Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f.	Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Discussion

A biological reconnaissance survey was conducted to determine whether there are sensitive biological resources that might be adversely affected by the proposed Project. The evaluation is based upon existing site conditions, the potential for sensitive biological resources to occur



on and in the vicinity of the Project site, and any respective impacts that could potentially occur.

In addition to providing an evaluation of the Project's impacts to biological resources, the report includes a detailed description of the regulatory environment as it relates to biological resources.

A literature search of the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDB) (CNDDB 2018), California Native Plant Society (CNPS 2018), and United States Fish and Wildlife Service Endangered Species List (USFWS 2018) was conducted to identify special-status plant and wildlife species with the potential to occur within the Project site and vicinity (the surrounding nine quads and a 10-mile radius). Information on the potential presence of wetlands and waters was obtained from the National wetlands Inventory (NWI), National Hydrography database (NHD) and Federal Emergency Management Agency (FEMA). Information regarding the presence of Critical Habitat in the Project vicinity was obtained from the United States Fish and Wildlife Service's Critical Habitat Mapper database. The results of the database inquiries were subsequently reviewed to evaluate the potential for occurrence of special-status species and other sensitive biological resources known to occur on or near the Project site prior to conducting the biological reconnaissance survey.

On January 24, 2018, QK biologists conducted a biological reconnaissance survey of the Project site and a 100-foot buffer area (Survey Area), where feasible. The purpose of the survey was to determine the locations and extent of potential plant communities and sensitive habitats, determine the potential for occurrence of special-status plant and animal species and identify other sensitive biological resources within the Survey Area. Survey methodologies included walking meandering pedestrian transects through all present habitat types. Protocol surveys for specific special-status wildlife species were not conducted for this report as it was determined by the consulting biologist that such surveys were not warranted due to the condition of the Project site. Photographs were taken to document the existing landscape of the Project site and adjacent land uses; detailed notes on observed plant and wildlife species and site conditions were taken while conducting the survey.

### ***General Site Conditions***

Most of the Project site has experienced significant historical and ongoing ground disturbance from past agricultural uses and continued maintenance of the Project site. A pistachio orchard and trucking delivery/washing development exists on the northwest portion of the Project site. The southern portion of the Project site had been previously disked, with little vegetation present. Adjacent land use consists of agriculture, recharging basin and dairy. The wildlife species inhabiting the Project site include those typically found in moderate- to heavily disturbed habitats associated with agricultural development zones of Kern County and the southern San Joaquin Valley. As noted in Impact 3.4.2a, the property has not been under cultivation due to lack of available water, and is regularly disked to reduce weed growth.



A total of two bird species, and two mammal species, or sign of, were identified during the survey. A total of five plant species were identified during the survey. Table 3.4.4-1 illustrates the observed species while conducting the reconnaissance level survey.

**Table 3.4.4-1: List of Plant and Wildlife Species Observed on the Project Site**

Scientific name	Common name
<b>Wildlife</b>	
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Canis latrans</i>	coyote
<i>Corvus brachyrhynchos</i>	American crow
<i>Felis catus</i>	domestic cat
<b>Plants</b>	
<i>Citrus reticulata</i>	orange
<i>Cynodon dactylon</i>	Bermuda grass
<i>Gossypium sp.</i>	cotton
<i>Pistacia vera</i>	pistachio
<i>Salsola kali</i>	Russian thistle
*Indicates that only sign (scat, tracks, prey remains, dens) were observed.	

### **Impact Analysis**

This section describes the results of the database searches and, using conditions present on the Project site as determined by the on-site examination, provides an analysis of Project impacts on each of six biological evaluation criteria. Each of the evaluation criteria are discussed below and mitigation measures are provided as warranted to, when implemented, reduce impacts to below significant levels.

#### **IMPACT #3.4.4A – WOULD THE PROJECT HAVE A SUBSTANTIAL ADVERSE EFFECT, EITHER DIRECTLY OR THROUGH HABITAT MODIFICATIONS, ON ANY SPECIES IDENTIFIED AS A CANDIDATE, SENSITIVE, OR SPECIAL-STATUS SPECIES IN LOCAL OR REGIONAL PLANS, POLICIES, OR REGULATIONS OR BY THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE OR U.S. FISH AND WILDLIFE SERVICE?**

The literature search indicated that there is a potential for several sensitive natural communities and special-status species to be present on the Project site. An evaluation of each of the potentially occurring sensitive natural communities and special-status species, which included habitat requirements, likelihood of required habitat to occur within the Project area, and a comparison to the CNDDDB records was conducted. The results of this evaluation concluded that no sensitive natural community or special-status plant species are anticipated to occur on or near the Project site, and that four wildlife species have a reasonable potential to occur on or near the Project site.



## ***Sensitive Natural Communities and Special-Status Species***

### **SENSITIVE NATURAL COMMUNITIES AND SPECIAL-STATUS PLANTS**

Based on the database query, there were five sensitive natural communities and 20 special-status plant species identified as having potential to occur within the subject quadrangle and eight surrounding quadrangles. According to CNNDDB recorded occurrences there are four sensitive natural communities and 17 plant species found within a 10-mile buffer of the Project site. However, the Project site and vicinity has been highly disturbed for years due to historical agriculture production and nearby residential development, and it does not provide habitat for any of these sensitive natural communities or special-status plant species. As noted above, the site has not been in crop production but has been regularly disked. No special-status plant species were identified during the biological reconnaissance survey. Although protocol-level botanical surveys were not conducted and the reconnaissance survey did not coincide with optimum blooming periods for all plant species, it is not anticipated that special-status plant species occur on the Project site.

### **SPECIAL-STATUS WILDLIFE**

Based on the database query, there are 37 special-status wildlife species that were identified as having a potential to occur within subject quadrangle and eight surrounding quadrangles. According to CNDDDB recorded occurrences there are 26 special-status wildlife species found within a 10-mile buffer of the Project site. Of the 37 species, 33 were eliminated from consideration due to the lack of suitable habitat within the Project site. The remaining six species have a low, moderate, or high potential to occur within the Project site and vicinity. There was one species with a low potential [American Badger (*Taxidea taxus*)] to occur on the Project site, two species [western burrowing owl (*Athene cunicularia*) and San Joaquin kit fox (*Vulpes macrotis mutica*)] with a moderate potential to occur, and one species [Swainson's hawk (*Buteo swainsoni*)] with a high potential to occur on or near the Project site.

#### ***American Badger***

American badger (*Taxidea taxus*) has a low potential to occur within the Project site and immediate surrounding area. The most recent CNDDDB record occurrence [EONDX 57313(1900)] of an American badger is approximately 3.0 miles northeast of the Project site. There is a low potential for American badger to reside or forage on the Project site. The American badger is known to occur in the vicinity of the Project site and could potentially be present from time to time as a transient forager.

#### ***Western burrowing owl***

Western burrowing owl (*Athene cunicularia*) has a moderate potential to occur within the Project site and immediate surrounding area. The nearest historical CNDDDB record [EONDX 66285(2006)] for Western burrowing owl occurred approximately 1.6 miles west of the Project site. There is a moderate potential for Western burrowing owl to reside or forage in



open fields in the vicinity of the Project site. However, due to the high potential of coyotes there is a low potential for Western burrowing owl to reside or forage in the area. There were no potential burrows observed within the Project site. No Western burrowing owl or sign were observed at the time of the survey.

#### *San Joaquin Kit Fox*

San Joaquin kit fox (*Vulpes macrotis mutica*) has a moderate potential to occur within the Project site and immediate surrounding area. The nearest historical CNDDDB record [EONDX 53951(2006)] for San Joaquin kit fox (SJKF) observation occurred approximately 1.5 miles north of the Project site. There is a low potential for SJKF to reside or forage in the agricultural fields surrounding the Project site to the north, south, east and west of the Project site. However, due to high potential of coyotes there is low potential for SJKF to reside or forage in the area. There were no potential dens observed within the Project site. No San Joaquin kit fox or sign were observed at the time of the survey.

#### *Swainson's Hawk*

The Swainson's hawk (*Buteo swainsoni*) has a high potential to occur within the Project site and immediate surrounding area. The nearest historical CNDDDB record [EONDX 115317(2017)] for Swainson's hawk observation occurred approximately 1.7 miles southeast of the Project site. Swainson's hawk are known to forage in open agricultural fields, such as hay or alfalfa. The area surrounding the Project site has been historically used for agricultural production; however, no Swainson's hawks or sign of the species was observed at the time of the survey. The site does not support suitable foraging habitat for Swainson's hawk, although hawks may be in the area from time to time as transient foragers.

### **CONCLUSION**

No special-status wildlife species or sign of were observed during the survey. The Project site and surrounding area has been disturbed for many years by ongoing agriculture crop cultivation. Through implementation of mitigation measures listed below, impacts of the Project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS). Therefore, the Project will have a less-than-significant impact with incorporation of mitigation measures.

### **MITIGATION MEASURE(S)**

**MM BIO-1:** Prior to initial ground disturbing activities, a qualified wildlife biologist shall conduct a biological clearance survey 14- 30 calendar days prior to the onset of construction. The clearance survey shall include walking transects to identify presence of San Joaquin kit fox or diagnostic signs of that species (e.g., dens, tracks, prey remains), and other special-status species or protected species including but not limited to American badger, Western



burrowing owl, etc. A report outlining the results of the survey shall be submitted to the Lead Agency.

If a known, active, or natal kit fox den is discovered during the clearance survey, the appropriate buffers shall be established using fencing or flagging as follows: (1) at least 50 feet around potential or atypical (any manmade structure such as pipes, culverts, and diggings below concrete slabs, that may be occupied by San Joaquin kit fox) den(s) and (2) at least 100 feet around known den(s). The United States Fish and Wildlife Service (USFWS) must be contacted for further guidance if a natal den is discovered. Buffer zones shall be considered Environmentally Sensitive Areas (ESAs) and no ground disturbing activities shall be allowed within a buffer area. The USFWS and California Department of Fish and Wildlife (CDFW) shall be contacted upon the discovery of any natal or pupping dens.

Potential kit fox dens may be excavated provided that the following conditions are satisfied: (1) the den has been monitored for at least five consecutive days and is deemed unoccupied by a qualified biologist; (2) the excavation is conducted by or under the direct supervision of a qualified biologist. Den monitoring and excavation should be conducted in accordance with the Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (United States Fish and Wildlife Service, 2011).

**MM BIO-2:** Prior to ground disturbance activities, or within one week of being deployed at the Project site for newly hired workers, all construction workers at the Project site shall attend a Construction Worker Environmental Awareness Training and Education Program, developed and presented by a qualified biologist.

The Construction Worker Environmental Awareness Training and Education Program shall be presented by the biologist and shall include information on the life history wildlife and plant species that may be encountered during construction activities, their legal protections, the definition of “take” under the Endangered Species Act, measures the Project operator is implementing to protect the species, reporting requirements, specific measures that each worker must employ to avoid take of the species, and penalties for violation of the Act. Identification and information regarding special-status or other sensitive species with the potential to occur on the Project site shall also be provided to construction personnel. The program shall include:

- An acknowledgement form signed by each worker indicating that environmental training has been completed.
- A copy of the training transcript and/or training video/CD, as well as a list of the names of all personnel who attended the training and copies of the signed acknowledgement forms shall be maintain on site for the duration of construction activities.

**MM BIO-3:** The following measures shall be implemented to reduce potential impacts to Swainson’s hawk: Nesting surveys for the Swainson’s hawks shall be conducted in accordance with the protocol outlined in the Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in California’s Central Valley (Swainson’s Hawk Technical



Advisory Committee 2000). If potential Swainson's hawk nests or nesting substrates are located within 0.5 mile of the Project site, then those nests or substrates must be monitored for activity on a routine and repeating basis throughout the breeding season, or until Swainson's hawks or other raptor species are verified to be using them. The protocol recommends that the following visits be made to each nest or nesting site: one visit during January 1-March 20 to identify potential nest sites, three visits during March 20-April 5, three visits during April 5-April 20, and three visits during June 10-July 30. A fewer number of visits may be permissible if deemed adequate by the City after consultation with a qualified biologist. To meet the minimum level of protection for the species, surveys shall be completed for at least the two survey periods immediately prior to Project-related ground disturbance activities. If Swainson's hawks are not found to nest within the survey area, then no further action is warranted.

If Swainson's hawks are found to nest within the survey area, active Swainson's hawk nests shall be avoided by 0.5 mile during the nesting period, unless this avoidance buffer is reduced through consultation with the CDFW and/or a qualified biologist with expertise in Swainson's hawk issues. If a construction area falls within this nesting site, construction must be delayed until the young have fledged (left the nest). The 2,500-foot-radius no-construction zone may be reduced in size but in no case shall be reduced to less than 500 feet except where a qualified biologist concludes that a smaller buffer area is sufficiently protective. A qualified biologist must conduct construction monitoring on a daily basis, inspect the nest on a daily basis, and ensure that construction activities do not disrupt breeding behaviors.

**MM BIO-4:** A qualified biologist shall conduct a pre-construction survey on the Project site and within 500 feet of its perimeter, where feasible, to identify the presence of the western burrowing owl. The survey shall be conducted between 14 and 30 days prior to the start of construction activities. If any burrowing owl burrows are observed during the preconstruction survey, avoidance measures shall be consistent with those included in the CDFW staff report on burrowing owl mitigation (CDFG 2012). If occupied burrowing owl burrows are observed outside of the breeding season (September 1 through January 31) and within 250 feet of proposed construction activities, a passive relocation effort may be instituted in accordance with the guidelines established by the California Burrowing Owl Consortium (1993) and the California Department of Fish and Wildlife (2012). During the breeding season (February 1 through August 31), a 500-foot (minimum) buffer zone should be maintained unless a qualified biologist verifies through noninvasive methods that either the birds have not begun egg laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

**MM BIO-5:** If construction is planned outside the nesting period for raptors (other than the western burrowing owl) and migratory birds (February 15 to September 15), no mitigation shall be required. If construction is planned during the nesting season for migratory birds and raptors, a preconstruction survey to identify active bird nests shall be conducted by a qualified biologist to evaluate the site and a 250-foot buffer for migratory birds and a 500-foot buffer for raptors. If nesting birds are identified during the survey, active raptor nests shall be avoided by 500 feet and all other migratory bird nests shall be avoided by 250 feet.



Avoidance buffers may be reduced if a qualified on-site monitor determines that encroachment into the buffer area is not affecting nest building, the rearing of young, or otherwise affecting the breeding behaviors of the resident birds. Because nesting birds can establish new nests or produce a second or even third clutch at any time during the nesting season, nesting bird surveys shall be repeated every 30 days as construction activities are occurring throughout the nesting season.

No construction or earth-moving activity shall occur within a non-disturbance buffer until it is determined by a qualified biologist that the young have fledged (left the nest) and have attained sufficient flight skills to avoid Project construction areas. Once the migratory birds or raptors have completed nesting and young have fledged, disturbance buffers will no longer be needed and can be removed, and monitoring can cease.

**MM BIO-6:** During all construction-related activities, the following mitigation shall apply:

- a. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers.
- b. Construction-related vehicle traffic shall be restricted to established roads and predetermined ingress and egress corridors, staging, and parking areas. Vehicle speeds shall not exceed 20 miles per hour (mph) within the Project site.
- c. All Project activities shall occur during daylight hours, but if work must be conducted at night then a night-time construction speed limit of 10 mph shall be established.
- d. Off-road traffic outside of designated Project areas shall be prohibited.
- e. To prevent inadvertent entrapment of kit foxes or other animals during construction of the project, all excavated, steep-walled holes or trenches more than two feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed.
- f. Before holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW shall be contacted before proceeding with the work.
- g. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the USFWS and CDFW shall be contacted for guidance.
- h. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes and burrowing owls before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe shall not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the



biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

- i. All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from a construction or Project site.
- j. No pets, such as dogs or cats, shall be permitted on the Project site.
- k. Project-related use of rodenticides and herbicides shall be restricted.
- l. A representative shall be appointed by the Project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative shall be identified during the employee education program and their name and telephone number shall be provided to the USFWS and CDFW.
- m. Any Project personnel who are responsible for inadvertently killing or injuring one of these species shall immediately report the incident to their representative. This representative shall contact the CDFW and USFWS immediately in the case of a dead, injured or entrapped listed animal.
- n. The Sacramento Fish and Wildlife office and CDFW Region 4 office shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information.
- o. New sightings of San Joaquin kit fox shall be reported to the California Natural Diversity Database. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed shall also be provided to the USFWS.

#### **LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant impact with mitigation incorporated*.

**Impact #3.4.4b – Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

There are four sensitive natural communities, including Great Valley Cottonwood Riparian Forest, Great Valley Mesquite Scrub, Valley Saltbush Scrub, and Valley Sink Scrub, with the potential to occur within 10-miles of the Project site (see Figure 9). The Project site is highly disturbed and does not provide habitat to maintain these communities. No sensitive natural communities were identified within the Project site or buffer area during the biological reconnaissance survey. Although protocol-level botanical surveys were not conducted, it is unlikely that these habitat communities exist in the Project area due to heavy disturbance of the Project site and surrounding vicinity. There are no anticipated impacts to sensitive



natural communities as a result of the proposed Project. The Project site covers an area of approximately 80 acres in size and consists of vacant, previously disturbed land. The Project site is currently utilized and is surrounded by disturbed cultivated land.

Riparian habitat is defined as lands that are influenced by a river, specifically the land area that encompasses the river channel and its current or potential floodplain. The Project is not located within a river or an area that encompasses a river or potential floodplain. With respect to sensitive natural communities, due to the extensive urban development that has occurred, there are no identified sensitive natural communities located within or in close proximity to the Project site. The proposed Project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. Therefore, the Project's impacts would be less than significant.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.4c – Would the Project have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

The United States Army Corps of Engineers (USACE) has regulatory authority over the Clean Water Act (CWA), as provided for by the EPA. The USACE has established specific criteria for the determination of wetlands based upon the presence of wetland hydrology, hydric soils, and hydrophilic vegetation. There are no federally protected wetlands or vernal pools that occur within the Project site.

Wetlands, streams, reservoirs, sloughs, and ponds typically meet the criteria for federal jurisdiction under Section 404 of the CWA and state jurisdiction under the Porter-Cologne Water Quality Control Act. Streams and ponds typically meet the criteria for State jurisdiction under Section 1602 of the California Fish and Game Code. There are no features on the Project site that would meet the criteria for either federal or State jurisdiction. Accordingly, there are no wetlands or Waters of the U.S. occurring on the Project site. There would be no impact to federally protected wetlands or waterways as a result of the proposed Project. Therefore, the Project would have no impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

There would be *no impact*.



**Impact #3.4.4d – Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Wildlife migratory corridors are described as a narrow stretch of land that connects two open pieces of habitat that would otherwise be unconnected. These routes provide shelter and sufficient food supplies to support wildlife species during migration. Movement corridors generally consist of riparian, woodlands, or forested habitats that span contiguous acres of undisturbed habitat and are important elements of resident species' home ranges.

No potential San Joaquin kit fox dens were observed on the Project site and there are no known nursery sites located within the Project site or immediate surrounding area. The various irrigation canals (i.e. irrigation canal to the east of the Project site) and the dirt roads bisecting the agricultural fields may be utilized by some wildlife species as a migratory corridor. However, there is no native habitat in the immediate area of the Project site for wildlife species to inhabit. Additionally, the land surrounding the Project site is already planned for continuation of urban development that would sever wildlife movement through the site and eliminate any nursery site. The proposed Project would not interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. Therefore, the Project's impacts would be less than significant.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.

**Impact #3.4.4e – Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

There are no adopted local policies or ordinances protecting biological resources that would apply to this Project site. Therefore, implementation of the proposed Project would have no conflict related to an adopted local policies or ordinances protecting biological resources.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

There would be *no impact*.



**Impact #3.4.4f – Would the Project conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?**

The Project site is within the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP) boundaries. However, under the MBHCP other agencies that do not obtain permits from the City or County such as schools and hospitals are not automatically covered by the MBHCP. The proposed Project would not be covered under the Incidental Take Permit (ITP) issued by the California Department of Fish and Wildlife and intends to avoid take and impacts to biological resources by compliance with MM BIO-1 through MM Bio-6.

The Project is subject to biological resources mitigation and this environmental analysis has concluded that the Project would have a less-than-significant impact with incorporation of mitigation. The Project would follow approved survey protocols and avoidance and minimization measures similar to or more stringent than what is required under the MBHCP ITP.

The Project is not located within any other Natural Community Conservation Plan or any other local, regional, or state conservation plan. With mitigation, the proposed Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.5 - CULTURAL RESOURCES

Would the Project:

- |    |   |                          |                                     |                          |                          |
|----|---|--------------------------|-------------------------------------|--------------------------|--------------------------|
| a. | Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?      | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. | Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. | Disturb any human remains, including those interred outside of formal cemeteries?   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Discussion

This section is based on a cultural resource record search obtained from the Southern San Joaquin Valley Information Center of the California Historical Resources Information System at the California State University, Bakersfield (see Appendix B).

#### Impact #3.4.5a – Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?

Pursuant to CEQA Guidelines Section 15064.5, "historical resources" are:

- A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Public Resource Code Section 5024.1, Title 14 California Code of Regulations, Section 4850 et seq.).
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social,



political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Public Resources Code Section 5024.1, Title 14 CCR, Section 4852) including the following:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

A records search (RS# 17-545) was conducted, the search revealed that no previous cultural resource study had been conducted within the Project area, and four previous cultural resource surveys were completed within a ½ -mile radius of the Project site. As a result of these surveys, it was determined that there were no recorded cultural resources including unique architectural features on the Project site, but there is one archaeological site (P-15-012209 [CA-KER-6913/H]) was recorded within ½ mile, that contains historic and prehistoric components. This site was not

On December 13, 2017, letters were mailed to each of the Native American tribes within the geographic area (see Appendix B). The letters included a brief Project description and location maps. To date, no responses have been received from any Tribe.

Although there is no obvious evidence of historical or archaeological resources on the Project site, there is the potential during construction for the discovery of cultural resources. Grading and trenching, as well as other ground-disturbing actions, have the potential to damage or destroy these previously unidentified and potentially significant cultural resources within the Project area, including historical resources. Disturbance of any deposits that have the potential to provide significant cultural data would be considered a significant impact under CEQA.

#### ***MITIGATION MEASURE(S)***

**MM CUL-1:** If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the



discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from Project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation. Implementation of the mitigation measure below would ensure that the proposed Project would not cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5. Therefore, the Project would have a less-than-significant impact with incorporation of mitigation measures.

**LEVEL OF SIGNIFICANCE**

Impact would be *less than significant with mitigation incorporated*.

**Impact #3.4.5b – Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?**

See discussion of Impact #3.4.5a, above.

**MITIGATION MEASURE(S)**

Implementation of Mitigation Measure MM CUL-1

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.5c – Would the Project disturb any human remains, including those interred outside of formal cemeteries?**

Although unlikely, subsurface construction activities, such as trenching and grading, associated with the proposed Project could potentially disturb previously undiscovered human burial sites. Accordingly, this is a potentially significant impact. Although considered unlikely subsurface construction activities could cause a potentially significant impact to previously undiscovered human burial sites. The records searches did not indicate the presence of human remains, burials, or cemeteries within the Project site. No human remains have been discovered at the Project site, and no burials or cemeteries are known to occur within the area of the site. However, construction would involve earth-disturbing activities, and it is still possible that human remains may be discovered, possibly in association with archaeological sites. Implementation of the below mitigation measure would ensure that the proposed Project would not directly or indirectly destroy previously unknown human remains. The proposed Project would not disturb any known human remains, including those interred outside of formal cemeteries. Therefore, the Project would have a less than significant impact with incorporation of mitigation measures.

**MITIGATION MEASURE(S)**

**MM CUL-2:** If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the



California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner.

***LEVEL OF SIGNIFICANCE***

Impact would be *less than significant with mitigation incorporated*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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### 3.4.6 - ENERGY

Would the Project:

- |   |                          |                          |                                     |                          |
|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

The following analysis is based primarily on *the AQIA* prepared for this Project (Appendix A), the measurement guide from CalEEMod along with horsepower hour to gallon (U.S.) of Diesel Oil conversion ratios (Convert Units, 2019).

**Impact #3.4.6a – Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

#### Construction

Energy demand during the construction phase would result from the transportation of materials, construction equipment, and employee vehicle trips. Using a typical fuel efficiency of 5.85 miles per gallon, the delivery of building materials is expected to require approximately 23,250 gallons of diesel per construction phase (Insight Environmental Consultants, 2018). Construction equipment includes rubber-tired dozers, tractors, loaders, backhoes, excavators, graders, scrapers, cranes, generator sets, off-highway trucks, forklifts, cement and mortar mixers. The Project would comply with the SJVAPCD requirements regarding the use of fuel-efficient vehicles and equipment, to the extent feasible. The construction phase of the proposed Project is expected to require a total of approximately 23,250 gallons of diesel fuel. The Project will not use natural gas during the construction phase. Compliance with standard regional and local regulations, the Project would minimize fuel consumption during construction. Table 3.4.3-1 displays how the breakdown of construction related items will use approximately 23,250 gallons of fuel.



Table 3.4.6-1: Energy Consumption – Construction Breakdown

Phase Name	Offroad Equipment Type	total hours	Amount	Usage Hours	Horse Power	Load Factor	HP-Hour	Fuel Consumption (gal)	Total per phase per day	days	total gallons per phase
Site Preparation	Rubber Tired Dozers	24	3	8.00	247	0.40	2371.2	121.40544			
Site Preparation	Tractors/ Loaders/ Backhoes	32	4	8.00	97	0.37	1148.48	58.802176	180.2076	18	3243.737
Grading	Excavators	16	2	8.00	158	0.38	960.64	49.184768			
Grading	Graders	8	1	8.00	187	0.41	613.36	31.404032			
Grading	Rubber Tired Dozers	8	1	8.00	247	0.40	790.4	40.46848			
Grading	Scrapers	16	2	8.00	367	0.48	2818.56	144.310272			
Grading	Tractors/ Loaders/ Backhoes	16	2	8.00	97	0.37	574.24	29.401088	294.7686	46	13559.36
Building Constructio	Cranes	7	1	7.00	231	0.29	468.93	24.009216			
Building Constructio	Forklifts	24	3	8.00	89	0.20	427.2	21.87264			
Building Constructio	Generator Sets	8	1	8.00	84	0.74	497.28	25.460736			
Building Constructio	Tractors/ Loaders/ Backhoes	21	3	7.00	97	0.37	753.69	38.588928			
Building Constructio	Welders	8	1	8.00	46	0.45	165.6	8.47872	118.41024	22	2605.0253
Paving	Pavers	16	2	8.00	130	0.42	873.6	44.72832			
Paving	Paving Equipment	16	2	8.00	132	0.36	760.32	38.928384			
Paving	Rollers	16	2	8.00	80	0.38	486.4	24.90368	108.56038	32	3473.9323
Architectural Coating	Air Compressors	6	1	6.00	78	0.48	224.64	11.501568	11.501568	32	368.05018
HP-Hour = Load Factor x Total Hours x Horsepower				Fuel Consumption = HP-Hour x .01832 of diesel oil						<b>Total</b>	<b>23250.1</b>

Source: *Energy Consumption Technical Memo* (QK, 2019)

There are no unusual project characteristics that would cause construction equipment to be less energy efficient compared with other similar construction sites in other parts of the State. Thus, construction-related fuel consumption at the project would not result in inefficient, wasteful, or unnecessary energy use.

## Operation

Energy demand during the operational phase would result from ongoing school activities the use of typical appliances and equipment, maintenance equipment and seventeen existing school buses making two trips per day (34 trips). According to calculations based on construction equipment data provided by the applicant, the total fuel consumption for the Project would not increase, based off current existing bus routes, parent drop-offs, and pick-ups. The school district will not be expanding their district. The Project includes the



installation and operation of a solar array that would generate sufficient energy to meet the needs of the proposed school. By using renewable energy the Project will offset reliance on energy generated by fossil fuel (e.g., coal or oil fired electrical power plants), reducing GHG emissions, and helping the State meet GHG emissions reduction goal by 2020 and 2030 as required by the California Global Warming Solutions Act (AB 32), as amended by SB 32 in 2016. It will also be a viable source of clean energy to assist California and its utilities in fulfilling California's Renewables Portfolio Standard Program.

Construction and operationally related fuel consumption is not expected to result in an inefficient, wasteful, or unnecessary energy use. Therefore, the Project would have a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.6b – Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

The Project must comply with Title 24, Chapter 4 of the California Building Standards Commission for all school buildings and Part 6, of the California Energy Code (CEC) (California Building Standards Commission, 2019). Additionally, the Project must comply with Section 100 of the CEC for information and applications of CEC adoptions (California Building Standards Commission, 2019). Finally, the Project must comply with the California Code of Regulations (CCR), Title 20 with adoptions of the California Energy Commission (California Building Standards Commission, 2019)

The Project would result in the construction of a new school in an undeveloped area. Energy saving strategies will be implemented where possible to further reduce the Project's energy consumption, during the construction phase. Strategies being implemented include those recommended by the California Air Resources Board (CARB) that may reduce both the Project's energy consumption, including diesel anti-idling measures, light-duty vehicle technology, usage of alternative fuels such as biodiesel blends and ethanol, and heavy-duty vehicle design measures to reduce energy consumption. Additionally, as outlined in the SJVAPCD's GAMAQI, the Project includes recommendations to reduce energy consumption by shutting down equipment when not in use for extended periods, limiting the usage of construction equipment to eight cumulative hours per day, usage of electric equipment for construction whenever possible in lieu of diesel or gasoline powered equipment, and encouragement of employees to carpool to retail establishments or to remain on-site during lunch breaks.



The Project will also incorporate energy efficient and energy saving design features to offset electrical lighting use in the facility by installing dual-pane glass windows with window treatments throughout the campus and the possible use of renewable energy. The Project will consider rooftop solar panels and/or solar panels as covered parking, if feasible. Energy efficient lighting, motion detector switches, will be installed throughout the interior of the facility. In addition, the Project will use low flow toilets, xeriscaping, drought tolerant plants and drip irrigation to reduce water consumption. Based on this analysis, the Project would be consistent and not conflict with or obstruct a State of local plan related to renewable energy or energy consumption. Impacts would be less than significant.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.



Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.7 - GEOLOGY AND SOILS

Would the Project:

- a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



- f. Directly or indirectly destroy a unique paleontological resource or site or unique feature? ☐ ☒ ☐ ☐

### ***Discussion***

The following analysis is based primarily on the *Preliminary Geotechnical Investigation and Geohazards Report* (Soils Engineering, Inc, 2018a), includes as Appendix C, prepared for this Project.

**Impact #3.4.7a(i) – Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?**

The Project is located in Kern County and the Central Valley. All of Kern County and the Central Valley is considered seismically active. The Project would change the use of the proposed site from undeveloped agricultural land to a new school site. The proposed construction and operation of a new comprehensive high school would increase the potential exposure of persons living and working on the project site to seismic events including risk of loss, injury, and death related to earthquakes and related hazards.

Although the project site is within the vicinity of several active faults, it is not located within an Alquist-Priolo special study (Earthquake) Zone. The nearest active Seismic Fault Traces are located at nine and thirteen miles from the project site. The White Wolf (9 miles) fault line and the Kern Front (13 miles) fault line are significant as they are both located within 15 miles of the project site.

In addition, pursuant to the California Educational Code Sections 17212 and 17212.5 construction of school buildings will have to comply with safety standards that prohibit schools to be located on an active earthquake fault or fault trace. The proposed Project would comply with the most recent California Building Standards Code which is implemented by the State Architect and provides criteria for the seismic design of buildings. The Project would not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Therefore, the Project would have a less than significant impact

### ***MITIGATION MEASURE(S)***

No mitigation is required.

### ***LEVEL OF SIGNIFICANCE***

Impact would be *less than significant*.



**Impact #3.4.7a(ii) – Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?**

Due to the high amount of seismic activity in the southern San Joaquin Valley region, moderate to severe ground shaking associated with earthquakes on the nearby faults can be expected within the project area and throughout Kern County. A study prepared for this Project indicates that the “two closest active fault lines are, the White Wolf Fault located approximately 14.5 kilometers to the southeast and the Kern Front Fault, located approximately 20.9 kilometers to the northeast” (Soils Engineering, Inc, 2018a). In the event of an earthquake on one of the nearby faults, it is likely that the project site would experience ground shaking and expose people and structures associated with the Project. An estimated ground motion of 0.308g occurred at the site from an aftershock resulting from a 7.7 magnitude earthquake on the White Wolf Fault in July 1952; and, the White Wolf Fault has produced most of the historical earthquakes in the vicinity of the project site.

Structures constructed as part of the Project would be required by State law to be constructed in accordance with all applicable International Building Code (IBC) and California Building Code (CBC) earthquake construction standards, including those relating to soil characteristics. Adherence to all applicable regulations would avoid any direct or indirect potentially substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking impacts to structures resulting from at the Project site. Therefore, there the Project would have a less than significant impact.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.

**Impact #3.4.7a(iii) – Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?**

Liquefaction could result in local areas during a strong earthquake or seismic ground shaking where unconsolidated sediments and a high-water table coincide. The subsurface soils generally consisted of silty sand and sandy silty clay in the upper 5 feet. The material varied between silty sand, silty clay, sandy silt, sand, and sandy clay throughout the site (Soils Engineering, Inc, 2018a).

The Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure including liquefaction. Structures constructed as part of the project would be required by State law to be constructed in accordance with all applicable International Building Code (IBC) and



California Building Code (CBC) earthquake construction standards, including those relating to soil characteristics. Adherence to all applicable regulations would avoid any potential impacts to structures resulting from liquefaction at the Project site. Therefore, there would be less than significant impacts as a result of ground failure and liquefaction.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.7a(iv) – Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?**

There is no potential for rock fall or landslides to directly or indirectly cause potentially substantial adverse effects, including the risk or loss, injury or death in the event of a major earthquake, as the proposed site and surrounding areas are all flat agricultural lands and do not include dramatic elevation changes. Based on the predicted maximum horizontal accelerations at the Project site and the soil types, minor subsurface settlement may occur on site during a major earthquake, and this is considered less than significant. The property is flat and there is a no potential for landslides. The Project site would not be subject to landslide impacts due to the flat agricultural grounds. Therefore, there would be a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.7b – Would the Project result in substantial soil erosion or the loss of topsoil?**

Construction activities associated with the proposed Project would disrupt surface vegetation and soils and would expose these disturbed areas to erosion by wind and water. National Pollutant Discharge Elimination System (NPDES) stormwater permitting programs regulate stormwater quality from construction sites, which includes erosion and sedimentation. Under the NPDES permitting program, the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) are required for construction activities that would disturb an area of one acre or more. A SWPPP must identify potential sources of erosion or sedimentation that may be reasonably expected to affect the quality of stormwater discharges as well as identify and implement best management practices (BMPs) that ensure the reduction of these pollutants during stormwater discharges. Typical BMPs intended to control erosion include sandbags, detention basins, silt fencing, storm



drain inlet protection, street sweeping, and monitoring of water bodies. Mitigation Measure MM GEO-1 requires the approval of a SWPPP to comply with the NPDES General Construction Permit from the Central Valley Regional Water Quality Control Board.

In the long-term and after construction activities have been completed on the Project site, the ground surface will have impermeable surfaces as well as permeable surfaces. The impermeable surfaces would include roadways, driveways, parking lots, and building sites. The permeable surfaces would include the ball fields and landscape areas which would stabilize the permeable areas. Overall, development of the Project would not result in conditions where substantial surface soils would be exposed to wind and water erosion.

The Project would not result in substantial soil erosion or the loss of topsoil. Impacts would be less than significant with incorporation of mitigation measures.

#### **MITIGATION MEASURE(S)**

**MM GEO-1:** Prior to construction, the District shall submit an approved copy of: 1) the approved Storm Water Pollution Prevention Plan (SWPPP) and 2) the Notice of Intent (NOI) to comply with the General National Pollutant Discharge Elimination System (NPDES) from the Central Valley Regional Water Quality Control Board. The requirements of the SWPPP and NPDES shall be incorporated into design specifications and construction contracts. Recommended best management practices for the construction phase may include the following:

- Stockpiling and disposing of demolition debris, concrete, and soil properly.
- Protecting existing storm drain inlets and stabilizing disturbed areas.
- Implementing erosion controls.
- Properly managing construction materials.
- Managing waste, aggressively controlling litter, and implementing sediment controls.

**MM GEO-2:** Prior to ground disturbance, an erosion control plan for construction activities will be prepared that describes the best management practices (BMPs) that will be incorporated to reduce the potential for soil erosion and loss of top soil. The BMPs could include soil stabilizers and silt fencing as well as other measures.

#### **LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.7c – Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?**



There is no evidence of landslides on the Project site, and the Project is not located in an unstable geologic unit or on soil that is considered unstable. The United States Department of Agriculture Natural Resources Conservation Service indicates that the Project site is predominately composed of Bakersfield Fine Sandy Loam and a small southeast corner of the site is comprised of Granoso sandy loam (Figure 3.4.6-1). According to the Geotechnical and Geological Hazard Study prepared for this Project, site conditions indicate that regional subsidence would not be an issue that would require additional mitigation or design requirements (Soils Engineering, Inc, 2018a). . The proposed Project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. Therefore, the Project would have a less-than-significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.7d – Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**

Based on the lithology encountered in the top 10 feet in the soil borings it appears unlikely that highly expansive surface soils will be present at this site (Soils Engineering, Inc, 2018a). The proposed school site is located within the area where the lowest amount of historic land subsidence has occurred and outside of the area of hydrocompaction (Soils Engineering, Inc, 2018a). The Project would comply with all applicable requirements of the California Department of Education Title 5, California Code of Regulations, and the most recent California Building Standards Code that provides criteria for the appropriate design of buildings. The proposed project would not be located on any identified expansive soils, as defined in the California Building Code. Therefore, the Project would have a less-than-significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.7e – Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?**



The proposed Project will include septic tank installation, until such time as sewer connection is available to the City of Bakersfield, per the policies of the Metropolitan Bakersfield General Plan. As mentioned above, the soils on site are well drained and can support septic tank disposal systems (Soils Engineering, Inc, 2018a). Therefore, the Project would have a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.7f – Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

Geological records of the region indicate that the Project area is underlain by recent alluvial deposits to all depths likely to be reached by excavations associated with development. These alluvial deposits appear to be too young geologically to contain significant fossil remains based on the age of Buena Vista Lake deposits, which represent the distal end of the Kern River deposits. However, there remains the possibility for previously unknown, buried paleontological resources or unique geological sites to be uncovered during subsurface construction activities. The Project is not anticipated to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Therefore, this would be a potentially significant impact. Mitigation is proposed requiring standard inadvertent discovery procedures to be implemented to reduce this impact to a level of less than significant.

**MITIGATION MEASURE(S)**

**MM GEO-3:** During any ground disturbance activities, if paleontological resources are encountered, all work within 25 feet of the find shall halt until a qualified paleontologist as defined by the Society of Vertebrate Paleontology Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010), can evaluate the find and make recommendations regarding treatment. Paleontological resource materials may include resources such as fossils, plant impressions, or animal tracks preserved in rock. The qualified paleontologist shall contact the Natural History Museum of Los Angeles County or other appropriate facility regarding any discoveries of paleontological resources.

If the qualified paleontologist determines that the discovery represents a potentially significant paleontological resource, additional investigations and fossil recovery may be required to mitigate adverse impacts from Project implementation. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, they shall be avoided to ensure no adverse effects, or such effects must be mitigated. Construction

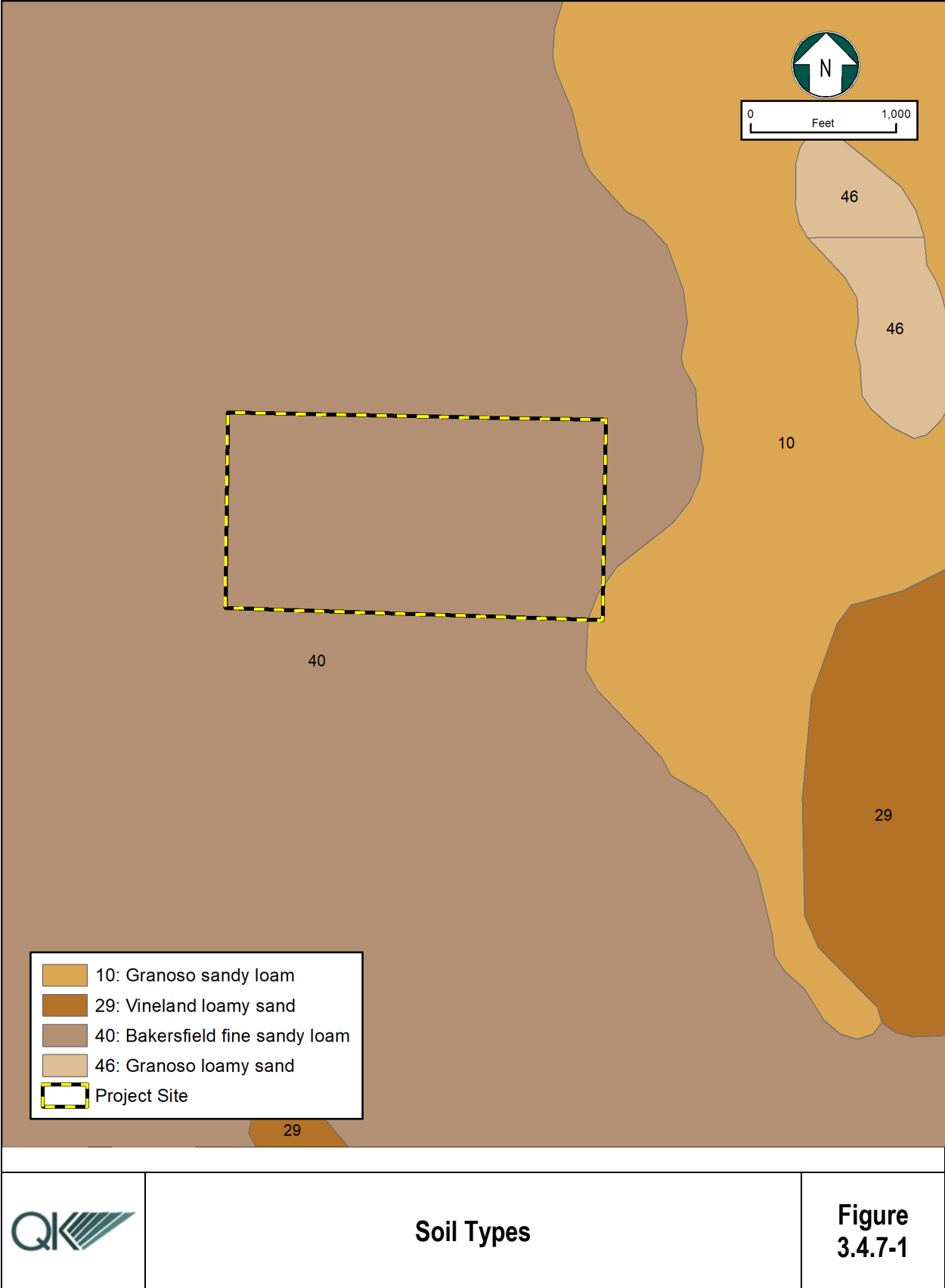


in that area shall not resume until the resource appropriate measures are recommended or the materials are determined to be less than significant. If the resource is significant and fossil recovery is the identified form of treatment, then the fossil shall be deposited in an accredited and permanent scientific institution. Copies of all correspondence and reports shall be submitted to the Lead Agency.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant with mitigation incorporated.*







	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.8 - GREENHOUSE GAS EMISSIONS

Would the Project:

- |    |   |                          |                                     |                                     |                          |
|----|---|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| a. | Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?        | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |
| b. | Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

An air quality and greenhouse gas analysis report was relied upon in the analysis of impacts related to greenhouse gases (GHGs) (Appendix A). This report was prepared in accordance with the SJVAPCDs guidelines and adopted policies of CARB.

In addition to providing an assessment of the Project's impacts to GHGs, the report includes a detailed description of the regulatory environment as it relates to GHGs.

GHGs are identified as any gas that absorbs infrared radiation in the atmosphere. GHGs include water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), halogenated fluorocarbons (HCFCs), ozone (O<sub>3</sub>), perfluorinated carbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF<sub>6</sub>). On December 7, 2009, the EPA issued an Endangerment Finding on the above referenced key well-mixed GHGs. These GHGs are considered "pollutants" under the Endangerment Finding. However, these findings do not themselves impose any requirements on industry or other entities.

The Global Warming Solutions Act [Assembly Bill (AB) 32] was passed by the California Legislature and signed into law by the Governor in 2006. AB 32 requires that GHGs emissions in 2020 be reduced to 1990 levels. GHGs rules and market mechanisms for emissions reduction were required to be in place by January 2012.

**Impact #3.4.8a – Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Both construction and operation of the proposed Project would result in emissions of GHGs. Construction activities would require the use of on-road heavy equipment to deliver all off-road equipment to the Project site. Depending on the construction phase, varying numbers of workers would commute to the Project site in motor vehicles during construction which is anticipated to start in the year 2022 or 2023 depending on funding.



## Construction

The SJVAPCD does not have thresholds or guidance regarding the significance of construction related emissions. Overall, the impacts to occur during the construction phase would be short-term and temporary in nature. As there are no current significance thresholds to quantify construction emissions and because construction-related impacts are considered temporary they are therefore, generally considered less than significant. In addition, construction of the proposed Project would still have to comply with the SJVAPCD's regulation and requirements as discussed in the air quality section.

## Operation

Operational or long-term emissions occur over the life of the Project. The operational emissions for the Project are shown in Table 3.4.7-1. For assumptions and descriptions for the emission sources, please refer to Appendix A. As shown in the Table 3.4.8-1, mitigation and regulation are required to reduce emissions beyond 29%.

**Table 3.4.8-1: Comparison of Unmitigated and Mitigated GHG Emissions (MT/Year)**

	<b>Project Unmitigated</b>	<b>Project Mitigated (2020)</b>
<b>CO<sub>2</sub>e Emissions</b>	4,102.5	2741.5
<b>Percent Reduction</b>		33.17%

Source: Appendix A.

The Project will not result in the emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF<sub>6</sub>), the other gases identified as GHG in AB32. The proposed Project will be subject to any regulations developed under AB32 as determined by CARB. The Project will reduce GHG emissions by 33.17%; thus, it will meet the required 29% reduction to meet the AB32 goals; therefore, the Project would have less than significant GHG impacts.

## Mitigation Measure(s)

**MM GHG-1:** The Project includes the addition shade trees to reduce the heat island effect thereby potentially reducing the cooling requirements for the buildings. The onsite landscaping will help to counterbalance the Project's contribution of GHG by providing onsite carbon storage. The trees and shrubs take in carbon dioxide and store it. Landscaping will include efficient irrigation systems and drought tolerant plants where feasible.

**MM GHG-2:** The Kern High School District shall establish a recycling and/or composting program to reduce waste from the school site that will include a reduction goal of 25% of waste generated. The reduction in waste leads to fewer GHG emissions generated at landfills.

**MM GHG-3:** As a measure to reduce emissions from vehicle trips associated with employees' commutes to and from the school, a voluntary ride sharing program will be instituted.



**MM GHG-4:** All interior and exterior coatings will comply with the Low VOC coating standards reducing area source emissions.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.8b – Would the Project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

The County of Kern does not have a GHG reduction plan or an adopted climate action plan. Therefore, there is no local or regional GHG reduction plan applicable to the Project. The Project would comply with all applicable regulations related to greenhouse gas emissions.

As discussed under the previous significance criteria, the proposed Project would be consistent with the SJVAPCD's recommendations in its guidance for addressing GHGs in CEQA. The SJVAPCD's guidance is based on a minimum of 29% reduction from business as usual, which is the same reduction that California would need to reduce GHG emissions to 1990 levels by the year 2020.

In the absence of an applicable local or regional GHG reduction plan, the Project's compliance with AB 32 is evaluated through compliance with the applicable measures in the Scoping Plan below.

***Scoping Plan***

Emission reductions in California alone would not be able to stabilize the concentration of GHGs in the earth's atmosphere. However, California's actions set an example and drive progress towards a reduction in GHGs elsewhere. If other states and countries were to follow California's emission reduction targets, this could avoid medium or higher ranges of global temperature increases. Thus, severe consequences of climate change could also be avoided.

The CARB Governing Board approved a Climate Change Scoping Plan (CARB 2008). The Scoping Plan outlines the State's strategy to achieve the 2020 GHG emissions limit. The Scoping Plan "proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health" (CARB 2008).

Project consistency with applicable strategies in the Scoping Plan is assessed in Table 3.4.8-2. As shown, the Project is consistent with the applicable strategies in the Scoping Plan.



Table 3.4.8-2: Consistency with Applicable Scoping Plan Reduction Measures

Scoping Plan Reduction Measure	Project Consistency or Reason Why Not Applicable
California Cap-and-Trade Program Linked to Western Climate Initiative. Implement a broad based California Cap-and-Trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater benefits for California.	Not Applicable. When this cap-and-trade system begins, products or services (such as electricity) would be covered and the cost of the cap-and-trade system would be transferred to the consumers.
California Light-Duty Vehicle Greenhouse Gas Standards. Implement adopted standards and planned second phase of the program. Align zero emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	Not Applicable. This is a statewide measure that cannot be implemented by a Project applicant or lead agency. When this measure is initiated, the standards would be applicable to the light-duty vehicles that would access the Project site.
Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California	Consistent. This is a measure for the State to increase its energy efficiency standards. However, the applicant shall consider implementing Title 24 and Green Building Standards.
Renewable Portfolio Standard. Achieve 33% renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.	Consistent. The applicant shall consider installing solar panels.
Low Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard	Not Applicable. This is a statewide measure that cannot be implemented by a Project applicant or lead agency. When this measure is initiated, the standard would be applicable to the fuel used by vehicles that would access the Project site.
Regional Transportation-Related Greenhouse Gas Targets. Develop regional greenhouse gas emissions reduction targets for passenger vehicles. This measure refers to SB 375.	Not Applicable. The Project is not related to developing GHG emission reduction targets.
Vehicle Efficiency Measures. Implement light duty vehicle efficiency measures.	Not Applicable. When this measure is initiated, the standards would be applicable to the light-duty vehicles that would access the Project site.



Goods Movement. Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.	Not Applicable. The Project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
Million Solar Roofs Program. Install 3,000 MW of solar-electric capacity under California's existing solar programs.	Consistent. This measure is being implemented by various agencies throughout California. The applicant shall consider implementing Title 24 and Green Building Standards
Medium/Heavy-Duty Vehicles. Adopt medium and heavy-duty vehicle efficiency measures.	Not Applicable. This is a statewide measure that cannot be implemented by a Project applicant or lead agency. When this measure is initiated, the standards would be applicable to vehicles that access the Project site.
Industrial Emissions. Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.	Not Applicable. The Project is not an industrial land use.
High Speed Rail. Support implementation of a high-speed rail system.	Not Applicable. This is a Statewide measure that cannot be implemented by a Project applicant or the County.
Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	Consistent. The State's goal is to increase the use of green building practices. The Project would implement some green building strategies through Project design features.
High Global Warming Potential Gases. Adopt measures to reduce high global warming potential gases.	Not Applicable. When this measure is initiated, it would be applicable to those gases that have high global warming potential that would be used by the Project (such as in air conditioning and refrigerators).
Recycling and Waste. Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	Consistent. The Project would not contain a landfill. The State's goal is to help increase waste diversion. The Project would participate in the County of Kern's recycling program.
Sustainable Forests. Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	Not Applicable. No forested lands exist onsite.



Water. Continue efficiency programs and use cleaner energy sources to move and treat water.

Consistent. This is a measure for state and local agencies. The Project would implement water conservation features in its BMPs.

Agriculture. In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.

Not Applicable. The proposed Project would include school. Previous agricultural activities did not include animals.

Source: California Air Resources Board 2008.

In summary, the Project would not obstruct attainment of any of the goals established under AB 32. The Project would comply with all present and future regulatory measures developed in accordance with AB 32 and CARB's Scoping Plan. The proposed Project would incorporate a number of mitigation measures and design features that would minimize GHG emissions beyond existing regulatory requirements. Such measures also are consistent with the California Air Pollution Control Officers Association paper and general guidance provided by the SJVAPCD.

With the incorporation of standard measures, Project design features, mitigation measures and applicable laws, the Project's forecasted emission reduction is 34%, which not only shows compliance with SJVAPCD thresholds, but also promotion of AB 32 goals for 2020.

#### **MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM GHG-1 through MM GHG-4.

#### **LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated.*



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
<b>3.4.9 - HAZARDS AND HAZARDOUS MATERIALS</b>				
Would the Project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



## ***Discussion***

This section is based on a Preliminary Environmental Assessment Equivalent Report (PEA) and Addendums 1 and 2, in addition to the Supplemental Site Investigation Completion Report prepared for this Project (Soils Engineering, Inc, 2018b) found in Appendix D.

### **Impact #3.4.9a – Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

The building and operation of the proposed Project would not involve the transport, use, and storage of large quantities of hazardous materials. Although, construction of the site would involve the transport and use of minor quantities of hazardous materials, such materials would be limited to fuels, oils, lubricants, hydraulic fluids, paints and solvents utilized at the Project site for construction purposes. Moreover, use of such materials would be temporary in nature and would cease upon completion of the Project. However, minor amounts of custodial chemicals would be used on site for cleaning supplies. The presence of such materials could present risk if not managed properly.

The presence and use of these materials, which can be classified as hazardous materials, create the potential for accidental spillage and exposure of workers to these substances. The District has procedures in place for the transport, use, and storage of hazardous materials which comply with the California Department of Education Title 5, California Code of Regulations. Hazardous and non-hazardous wastes would likely be transported to and from the Project site during the construction phase of the proposed Project. Construction would involve the use of some hazardous materials, such as diesel fuel, hydraulic oil, grease, solvents, adhesives, paints, and other petroleum-based products, although these materials are commonly used during construction activities and would not be disposed of on the Project site. Any hazardous waste or debris that is generated during construction of the proposed Project would be collected and transported away from the site and disposed of at an approved off-site landfill or other such facility in accordance with all applicable regulations. In addition, sanitary waste generated during construction would be managed through the use of portable toilets, which would be located at reasonably accessible on-site locations. Hazardous materials such as paint, bleach, water treatment chemicals, gasoline, oil, etc, may be used at the proposed school. These materials are stored in appropriate storage locations and containers in the manner specified by the manufacturer and disposed of in accordance with local, federal, and State regulations. Additionally, and in accordance with applicable federal and State Health and Safety Codes, and Kern County regulations, the Project proponent would be required to prepare and submit an updated hazardous materials business plan to include the new school site (Mitigation Measure MM HAZ-1) to the Kern County Environmental Health Services Division/Hazardous Materials Section. Therefore, with implementation of Mitigation Measure MM HAZ-1, no significant hazard to the public or to the environment through the routine transport, use, or disposal of hazardous waste during construction or operation of the new school campus would occur.



The site has been utilized for agricultural purposes for more than 80 years with the application of pesticides and herbicides during this time period. The PEA prepared for the Project analyzed multiple soil samples around the Project site collected and analyzed for organo-chlorine pesticides (OCPs), arsenic and total petroleum hydrocarbons (TPH). Results from the agricultural field area samples indicated that all elevated concentrations were reported below the EPA Residential Screening Levels (RSLs) or within the range of regional arsenic concentrations. Elevated trace concentrations of TPH were reported in the soil sample collected in the southwestern tailwater sump, no other samples collected reported elevated TPH concentrations. However, the Project will not impact the sump area.

The PEA also included a soil gas survey. Soil gas probes were installed, and the results do not exceed the screening levels for methane. No H<sub>2</sub>S or VOCs of concern were reported.

A human health screening evaluation was conducted and indicates the total cumulative risk is  $7.71 \times 10^{-4}$  and the hazard level is 20.72. According to the PEA, these levels are above the level of potential concern ( $1 \times 10^{-6}$ ) and hazard level of concern of (1.), due to the elevated TPH, DDT, and Dieldrin in some of the soil samples. The PEA concludes that there is an elevated risk and hazard to future occupants at the site and mitigation will be required.

Addendums 1 and 2 to the PEA concluded that the following remedial activities were conducted by the owner of the property:

- Remedial Excavations of Area 1 (Southwest Tail Water Sump)
- Remedial Excavations of Area 4 (Southwest Irrigation Well)

Subsequently, soils were removed from the Project site and disposed of at an appropriate non-hazardous waste facility. Based on the recommendation of the PEA and Addenda, Mitigation Measures MM HAZ-1 through MM HAZ-3 has been proposed to mitigate potential impacts resulting from historic use of the Project site. Additionally, HYD-2 requires the construction contractor to minimize the amount of grading done. With this mitigation, the proposed Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials nor create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. Therefore, the Project would have a less-than-significant impact with implementation of mitigation measures.

### ***MITIGATION MEASURE(S)***

**MM HAZ-1:** Prior to operation of the Project, the Project proponent shall prepare a Hazardous Materials Business Plan that identifies the new location of the new school campus and submit it to the Kern County Environmental Health Services Division/Hazardous Materials Section for review and approval. The Project proponent shall provide the hazardous materials business plan to all contractors working on the Project and shall ensure that one copy is available at the Project site at all times.



**MM HAZ-2:** Any proposed fill material for the site shall be sampled and analyzed for potential constituents of concern in accordance with DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.

**MM HAZ-3:** If during construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC shall be notified. The Project contractor shall discuss these areas with DTSC to determine the appropriate actions to be taken to lessen and/or remediate these new potential areas of concern.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.9b – Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

See Impact #3.4.9a, above.

As noted in Figure 1.7, there are two high pressure natural gas lines in the vicinity of the Project site. However, these pipelines are over 1,500 feet away and would not create a significant hazard to the Project, public or the environment. No underground power lines are present within or along the borders of the site.

**MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM HAZ-1 through MM HAZ-3.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.9c – Would the Project emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

See Impact #3.4.9a, above.

**MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM HAZ-1 through MM HAZ-3.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.



**Impact #3.4.9d – Would the Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

A database search was conducted of the California Environmental Protection Agency (CAL EPA) for Cortese Act locations on or near the Project site (CalEPA, 2019b). The Department of Toxic Substances Control (DTSC) EnviroStor database, indicated that there are no hazardous or toxic sites in the vicinity (within one mile) of the Project site (DTSC, 2019). The State Water Resources Control Board website indicated that there are no Permitted Underground Storage Tanks, Leaking Underground Storage Tanks, or any other cleanup sites on or in the vicinity (within one mile) of the project site (WRCB, 2019).

The Project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and would not create a significant hazard to the public or the environment. The project site is not within the immediate vicinity of a hazardous materials site and would not impact a listed site. Literature review of available federal, State, and local database information systems was performed for the purpose of identifying known recognized environmental conditions present on the site and the nearby properties that have the potential to adversely impact the site. There is no data identifying any facilities within ¼ mile of the site that might reasonably be anticipated to emit hazardous air emissions or handle hazardous materials, substances, or wastes that might affect the proposed school site. Therefore, the Project would have no impact.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

The Project would have *no impact*.

**Impact #3.4.9e – For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard or excessive noise for people residing or working in the Project area?**

The nearest public or private airport is Bakersfield Municipal Airport, located on East Planz Road, approximately five miles to the northeast of the project site. The proposed Project is not located within the Kern County Airport Land Use Compatibility Plan and is not within two miles of a public airport or public use airport (Kern County, 2012). Therefore, the Project would not result in a safety hazard or excessive noise for people residing or working in the and impacts would be less than significant.

***MITIGATION MEASURE(S)***

No mitigation is required.



**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.9f – Would the Project Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?**

The proposed Project is required to adhere to the standards set forth in the Uniform Fire Code, which identifies the design standards for emergency access during both the Project's construction and operational phases. The proposed Project would not inhibit the ability of local roadways to continue to accommodate emergency response and evacuation activities. The proposed Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, the Project would have a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.9g – Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?**

The proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, because there are no wildlands surrounding the Project site. According to the Hazard Map (see Figure 1-7), the Project site is not located within a hazard zone classified as Very High, High or Moderate for wildland fires. Construction and operation of the Project is not expected to increase the risk of wildfires on and adjacent to the Project site. The Project will also be required to comply with all applicable standards as required by the Kern County Fire Department.

The proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. Therefore, the Project would have a less than significant impact.

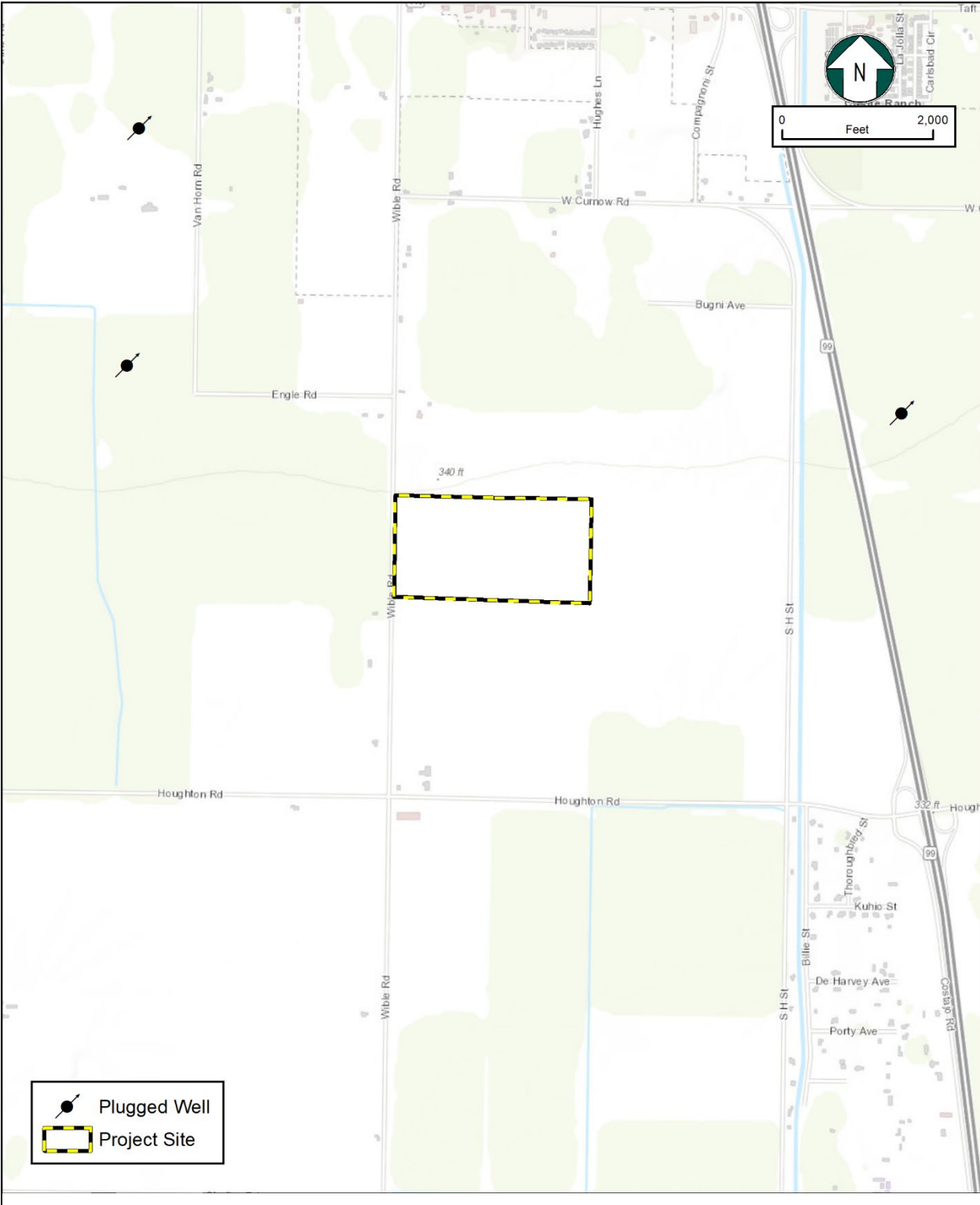
**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.





Oil and Gas Wells

Figure  
3.4.8-2



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
<b>3.4.10 - HYDROLOGY AND WATER QUALITY</b>				
Would the Project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## ***Discussion***

### **Impact #3.4.10a – Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?**

Construction of the Project would involve excavation, soil stockpiling, mass and fine grading, the installation of supporting drainage facilities, and associated infrastructure. During site grading and construction activities, large areas of bare soil could be exposed to erosive forces for long periods of time. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading activities could result in increased erosion and sedimentation to surface waters.

Additionally, accidental spills or disposal of potentially harmful materials used during construction could possibly wash into and pollute surface water runoff. Materials that could potentially contaminate the construction area, or spill or leak, include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. A SWPPP for construction-related activities would include, but not be limited to, the following types of BMPs to minimize the potential for pollution related to material spills:

- Vehicles and equipment will be cleaned.
- Vehicle and equipment fueling and maintenance requirements will be established.
- A spill containment and clean-up plan will be in place prior to and during construction activities.

In order to reduce potential impacts to water quality during construction activities, Mitigation Measure MM GEO-1 requires the Project proponent to file a Notice of Intent (NOI) to comply with the NPDES General Construction Permit and prepare a SWPPP. The Project SWPPP would include BMPs targeted at minimizing and controlling construction and post-construction runoff and erosion to the “maximum extent practicable.” Mitigation Measure MM HYD-2 requires the District to limit grading to the minimum area necessary for construction and operation of the Project. Additionally, as noted in Section VIII, *Hazards and Hazardous Materials*, Mitigation Measure MM HAZ-1 requires that all hazardous wastes be stored and properly managed in accordance with the approved Kern County Waste Management Department Hazardous Waste Exclusion Plan and hazardous materials business plan.

In order to reduce potential impacts to water quality during construction and operation activities, Mitigation Measures MM HAZ-1 as well as MM GEO-1 and MM HYD-1 would be required. With mitigation, the proposed Project would not violate any water quality standards or waste discharge requirements. Therefore, the Project would have a less-than-significant impact with incorporation of mitigation.



**MITIGATION MEASURE(S)**

**MM HYD-1:** The District shall limit grading to the minimum area necessary for construction and operation of the Project. Final grading plans shall include best management practices to limit onsite and offsite erosion.

Implementation of Mitigation Measure GEO-1.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.10b – Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

The water purveyor for the Project would be California Water Service, supplied by combination of groundwater wells, treated and untreated surface water, and imported water. The 2015 Urban Water Management Plan (UWMP) Bakersfield District prepared by California Water Service concludes that sufficient water supplies will exist to satisfy all current and projected future customers, of the water district, during normal, single-dry, and multiple-dry years (California Water Service, 2016). The proposed Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that there would not impede sustainable groundwater management of the basin. Mitigation Measure HYD-2 requires the District to obtain a water “will serve” letter from Cal Water. Therefore, the Project would have a less than significant impact.

**MITIGATION MEASURE(S)**

**MM HYD-2:** Prior to initiation of grading activities, the District shall obtain a water “will serve” letter from Cal Water Service signifying its ability to serve the Project.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.10c(i) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on site or off site?**

The rate and amount of surface runoff is determined by multiple factors, including the following: topography, the amount and intensity of precipitation, the amount of evaporation that occurs in the watershed and the amount of precipitation and water that infiltrates to the groundwater. The proposed Project would alter the existing drainage pattern of the site, which would have the potential to result in erosion, siltation, or flooding on- or off-site. The disturbance of soils on-site during construction could cause erosion, resulting in temporary



construction impacts. In addition, the placement of permanent structures and impervious surfaces would affect drainage in the long-term. Impacts from construction and operation are discussed below.

As discussed in Impact a. above, potential impacts on water quality arising from erosion and sedimentation are expected to be localized and temporary during construction. Construction-related erosion and sedimentation impacts as a result of soil disturbance would be less than significant after implementation of an SWPPP (see Mitigation Measure MM GEO-1) and BMPs required by the NPDES. No drainages or other water bodies are present on the Project site, and therefore, the proposed Project would not change the course of any such drainages; however, erosion may occur on-site during rain events or high winds. Mitigation Measure MM HYD-1 requires the District to limit grading to the minimum area necessary for construction and operation of the Project. Additionally, as noted in Section VIII, *Hazards and Hazardous Materials*, Mitigation Measure MM HAZ-1 requires that all hazardous wastes be stored and properly managed in accordance with the approved Kern County Waste Management Department Hazardous Waste Exclusion Plan and hazardous materials business plan.

With mitigation, the Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site. Therefore, the Project would have a less-than-significant impact with incorporation of mitigation.

#### **MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM GEO-1, MM HAZ-1, and MM HYD-1.

#### **LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.10c(ii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?**

Existing drainage pattern of the site or area would be affected by Project development or implementation because of the increase in impervious surfaces at the Project site. The Project site would require grading and the collection and distribution of stormwater. The stormwater drainage retention basin necessary for Project construction would be located on-site. Mitigation Measures MM HYD-4 requires the District to contact the Kern County Public Works Department regarding the location and construction of a retention basin on the site.



No streams or rivers exist within the Project's vicinity that would result in substantial increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite. With mitigation, the Project would not alter the existing drainage pattern of the site or area by altering the course of a stream or river, substantially increase the rate or amount of surface runoff in a manner, that would result in flooding on- or off-site, contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, nor provide additional sources of polluted runoff. Therefore, the Project would have a less than significant impact with the incorporation of mitigation.

**MITIGATION MEASURE(S)**

**MM HYD-3:** The District shall contact the Kern County Public Works Department regarding the location and construction of the onsite retention basin. In the event there is not currently a basin having capacity to serve the school, the District shall cooperate with the County to achieve adequate stormwater retention.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.10c(iii) – Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

Please see response #3.4.10(a through c (ii)), above.

The Project would comply with all applicable State and City codes and regulations to mitigate site runoff. Additionally, there is a previously existing sump on site. Therefore, the Project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

No streams or rivers exist within the Project's vicinity that would result in substantial erosion or siltation on- or off-site. With implementation of MM HAZ-1, MM GEO-1 and MM HYD-1 as noted above, the Project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site, contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, nor provide additional sources of polluted runoff.

**MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM GEO-1, MM HAZ-1 and HYD-1.



**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.10d – Would the Project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Project inundation?**

A seiche is a wave generated by the periodic oscillation of a body of water whose period is a function of the resonant characteristics of the containing basin as controlled by its physical dimensions. These periods generally range from a few minutes to an hour or more. The site is not near any large bodies of water, so seiches are not considered a significant hazard at the site.

Tsunamis are waves generated in oceans from seismic activity. Due to the inland location of the site, tsunamis are not considered a hazard for the site.

Mudflows occur when soils on a slope become partially or fully liquified by the addition of significant amounts of water to the source material. Since the Project site is located on relatively flat land with no nearby slopes, mudflows are not considered a hazard at the site.

The proposed Project would not expose people or structures to inundation by seiche, tsunami, or mudflow. Therefore, the Project would have no impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

There would be *no impact*.

**Impact #3.4.10e – Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

At this time a groundwater sustainability management plan has not been prepared for the Kern County Sub basin, within the San Joaquin Valley Groundwater Basin Sub basin. Therefore, no additional requirements or implementation measures are applicable. The Project. Mitigation measure HYD-2 requires the District to obtain a water “will serve” letter from California Water Service. It is not anticipated that the Project would substantially deplete groundwater supplies or conflict with any future adopted groundwater management plan.

**MITIGATION MEASURE(S)**

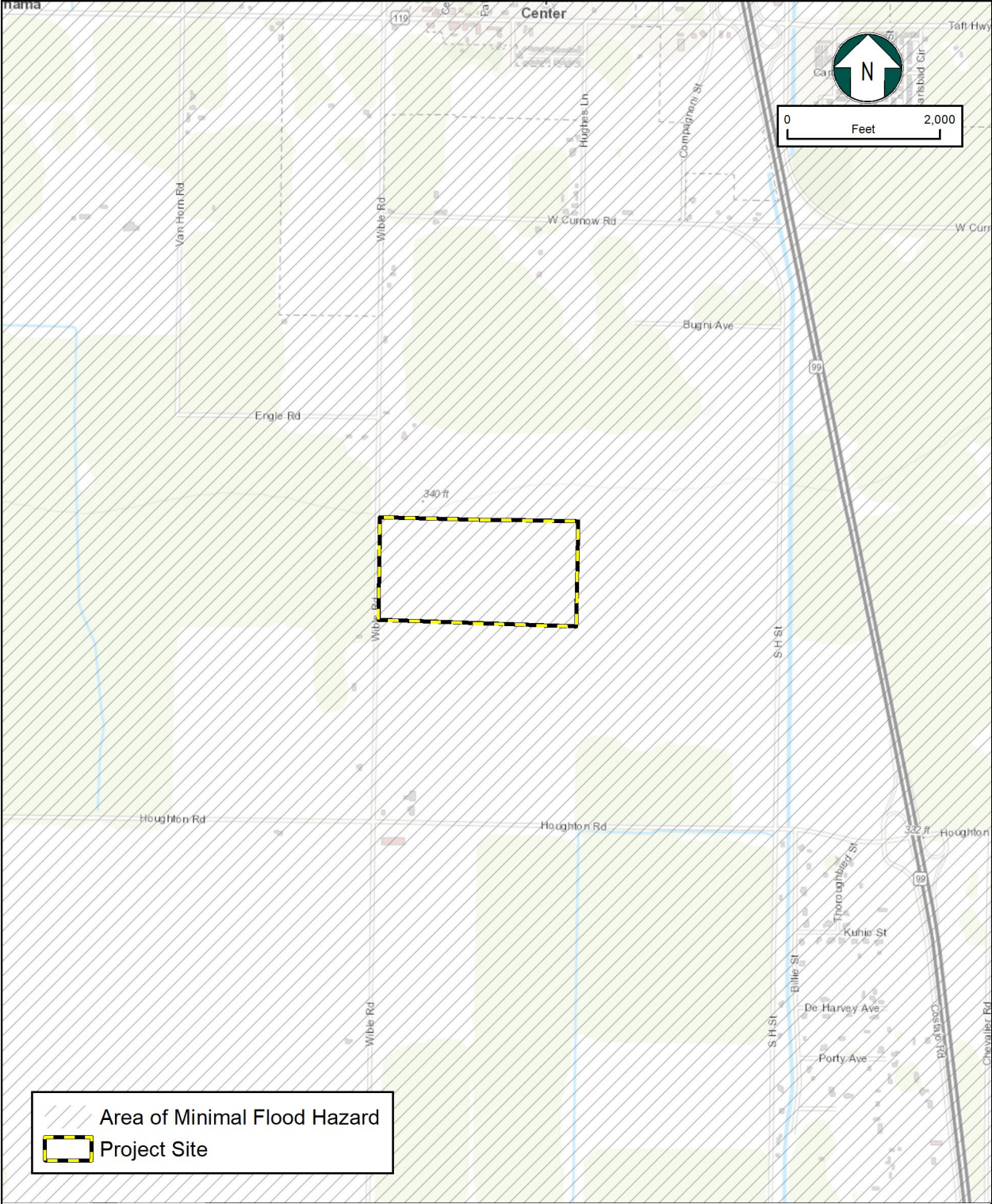
Implementation of Mitigation Measures MM HYD-3.



**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated.*





FEMA Floodplains

Figure  
3.4.10-1



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.11 - LAND USE AND PLANNING

Would the Project:

- |    |   |                          |                          |                                     |                                     |
|----|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. | Physically divide an established community?   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| b. | Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

### Discussion

#### Impact #3.4.11a – Would the Project physically divide an established community?

The proposed Project site is presently undeveloped land and is surrounded by agricultural land in every direction. The closest established community is located to the southeast of the Project site and the surrounding agricultural land in the area is in the process of being converted to urban uses as envisioned by the Metropolitan Bakersfield General Plan. The proposed project would not physically divide an established community. Therefore, the Project would have no impact.

#### MITIGATION MEASURE(S)

No mitigation is required.

#### LEVEL OF SIGNIFICANCE

There would be *no impact*.

#### Impact #3.4.11b – Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The applicable General Plan for the project is the Metropolitan Bakersfield General Plan, (MBGP) which designates the Project site as Resource-Intensive Agriculture(R-IA). While schools are not expressly allowed in this designation, they are conditionally permitted by the County. However, Government Code Section 53091 does not require a school district to



comply with County land use designations and therefore, the District is not seeking a General Plan amendment or zone change for the subject site. The Project is not anticipated to result in substantial direct or indirect population growth that was not previously anticipated by the General Plan. The proposed Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, the Project would have a less than significant impact.

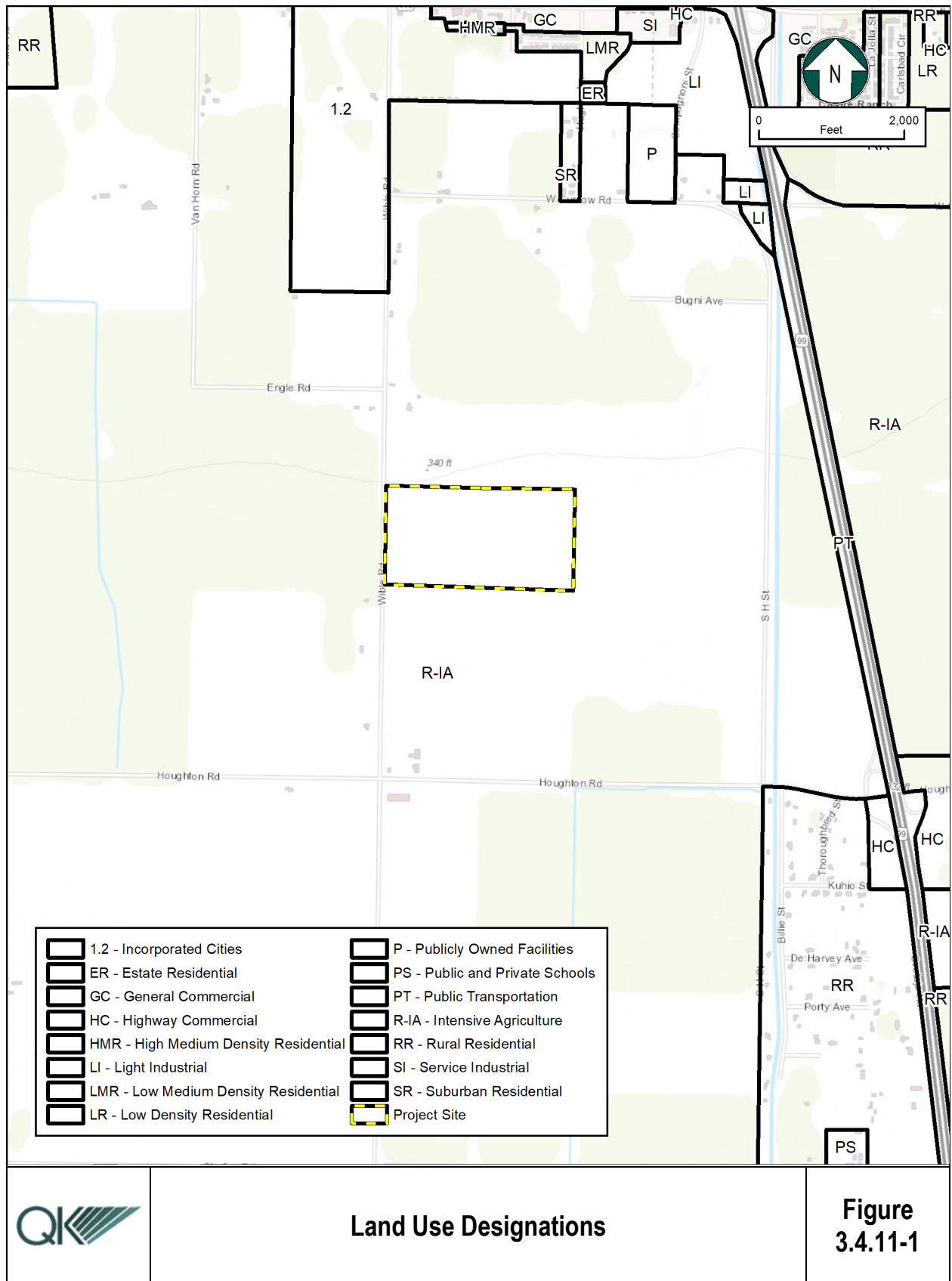
***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.

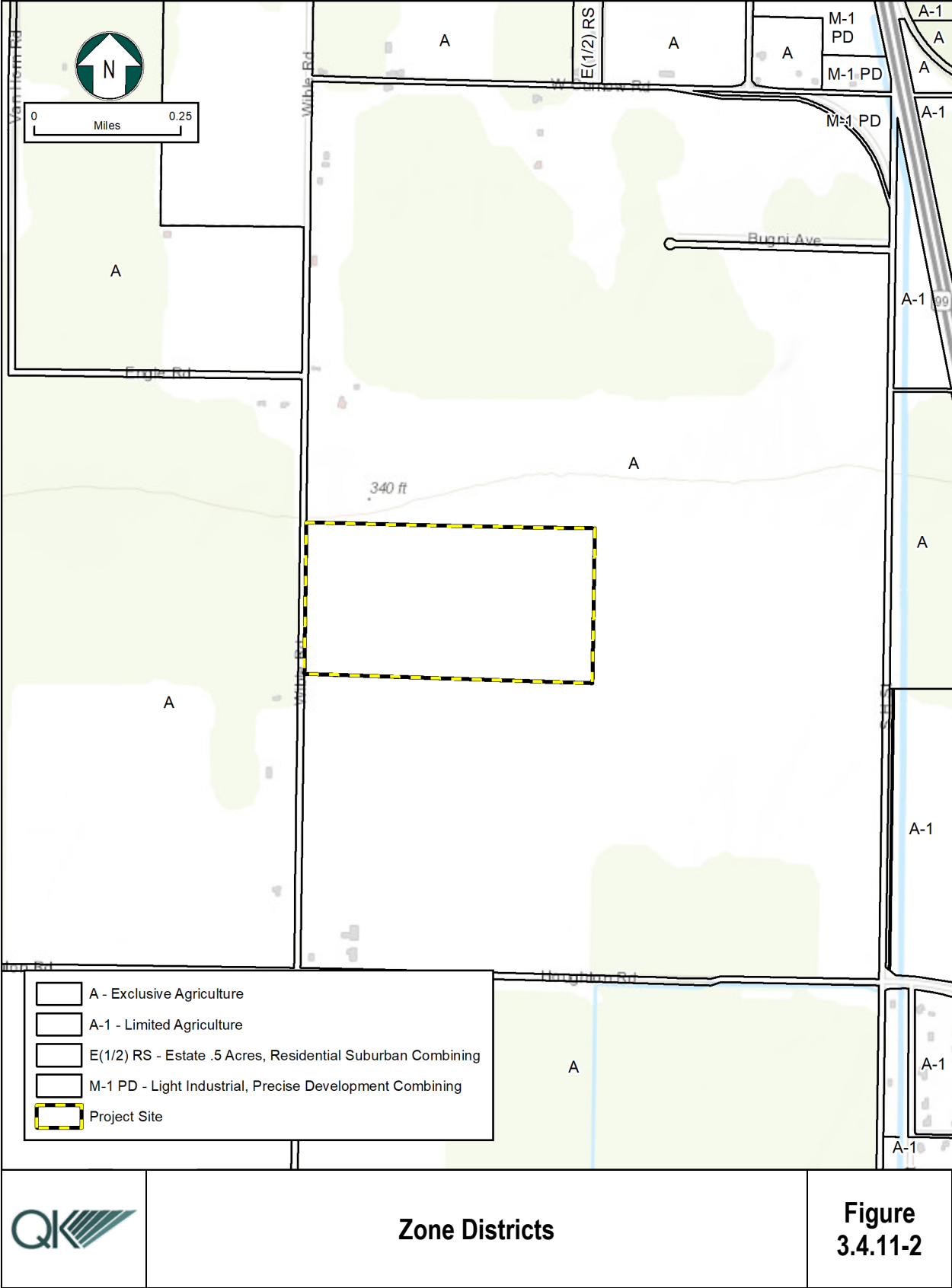




Land Use Designations

Figure  
3.4.11-1







	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.12 - MINERAL RESOURCES

Would the Project:

- |    |   |                          |                          |                                     |                                     |
|----|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a. | Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b. | Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.12a – Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

No current mineral extraction activities exist on the Project site nor are any mineral extraction activities included in the Project design. As illustrated in Figure 3.4.11-1, the Project site is not located in an oilfield and there are no known wells located on the site. The closest oil wells are located over 3/4-mile to the west of the Project site. The proposed Project would not result in the loss of availability of mineral resources as the Project does not propose the extraction of mineral resources. Additionally, the proposed Project would not restrict the ability of mineral rights' holders, in the area, to exercise their legal rights to access surrounding sites for the exploration and/or extraction of underlying oil research or other natural resources.

The proposed Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. Therefore, impacts would be less than significant.

### MITIGATION MEASURE(S)

No mitigation is required.

### LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.



**Impact #3.4.12b – Would the Project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?**

As seen in Figure 3.4.10-1 and 3.4.10-2 in Section 3.4.11, *Land Use and Planning*, the proposed Project is not designated as a mineral recovery area by the Metropolitan Bakersfield General Plan. The Project would not alter any existing plans that protect mineral resources. As a result, the proposed Project would not interfere with mining operations and would not result in the loss of land designated for mineral and petroleum.

The proposed Project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Therefore, the Project would have no impact.

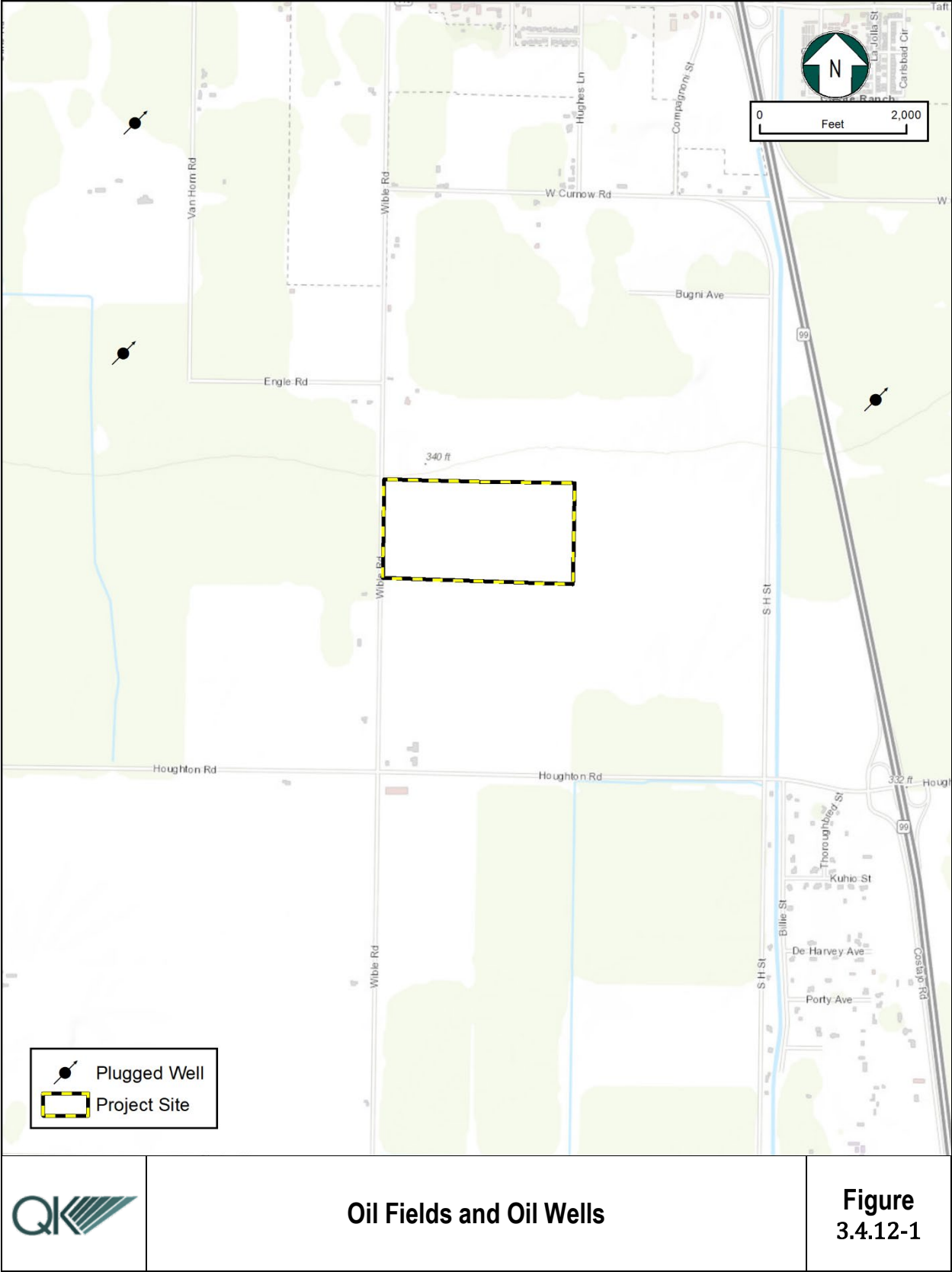
***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

There would be ***no impact***.







	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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### 3.4.13 - NOISE

Would the Project result in:

- |    |  |                          |                                     |                                     |                                     |
|----|--|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| a. | Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?  | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| b. | Generation of excessive groundborne vibration or groundborne noise levels?   | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| c. | For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels? | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

### Discussion

**Impact #3.4.13a – Would the Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?**

The Metropolitan Bakersfield General Plan has noise policies within the Noise Element of the plan (County of Kern, 2007). The Noise Element establishes noise level criteria in terms of the Community Noise Equivalent Level (CNEL) metric. The CNEL is the time-weighted energy average noise level used to compare the noisiness of neighborhoods. CNEL is a single number result that is calculated for a complete 24-hour period and usually made up of results taken at shorter intervals such as 5 minutes or 1 hour and then averaged over the whole 24 hours. CNEL is the average sound level over a 24-hour period, with a penalty of 5 dB added between 7 pm and 10 pm. and a penalty of 10 dB added for the nighttime hours of 10 pm to 7 am.

The Noise Element establishes a land use compatibility criterion of 65 dB CNEL for exterior noise levels generated by stationary sources and 45 dB CNEL for interior living spaces. Outdoor activity areas generally include backyards of single-family residences, individual patios or decks of multi-family developments, and common outdoor recreation areas of



transient lodging developments. The intent of the exterior noise level requirement is to provide an acceptable noise environment for outdoor activities and recreation.

Additionally, Section 8.36.020 of the Kern County Municipal Code outlines standards and regulations for the emission of noise. In order to comply with this Section, the Project contractor will not operate construction equipment between the hours of 9:00pm and 6:00am on weekdays, and 9:00pm and 8:00am on weekends.

Once operational, traffic on local roadways would be expected to increase. The school-related activities could also result in an increase in ambient noise levels in the immediate Project vicinity. Activities that could be expected to generate noise include voices from students and staff, bell or alarm systems, bus movements and mechanical systems related to heating, ventilation, and air conditioning (HVAC) systems on school buildings. Additionally, nearby existing sensitive uses could be affected by noise and vibration during the construction of the Project.

Noise levels from school activities would be intermittent and mostly occur during periods when students are arriving at school in the morning or leaving school in the afternoon, and during periods of recess or physical education classes on the play fields. The noise levels generated by such activities would occasionally be audible in the existing residential areas to the west, northwest, north and northeast of the Project site, but would not exceed the County's 65 dB CNEL standard. It is noted that student gathering and play areas are located near the center of the campus at a distance of more than 900 feet from the closest home. School bells or alarms would also be audible by the closest residence but would not generate noise levels in excess of applicable noise standards.

The closest school buildings would be at least 200 feet from nearby residences. School buildings would have ground- or roof-mounted HVAC equipment that would generate noise. Details on the number, size and placement of such units were not available for analysis. However, based upon data from similar Projects, it is estimated that hourly values from the continuous operation of HVAC systems could be less than 40 dB at the closest noise-sensitive receivers. Even if it is assumed that HVAC systems could operate continuously, 24 hours per day, HVAC system noise would not approach or exceed the County's 65 dB CNEL standard at the closest residential uses.

As indicated in the foregoing discussion of the Project's noise impacts, because the Project would generate noise levels below standards established in the Metropolitan Bakersfield General Plan or noise ordinance, and applicable standards of other agencies, its permanent increase in ambient noise levels in the Project vicinity and temporary or periodic increases in ambient noise levels in the Project vicinity would not be considered substantial. Therefore, the Project would have a less than significant impact with mitigation incorporated.

#### ***MITIGATION MEASURE(S)***

**MM NSE-1:** During construction, the contractor shall situate implement the following measures:



- a. All stationary construction equipment on the Project site shall be located so that noise emitting objects or equipment faces away from any potential sensitive receptors.
- b. The construction contractor shall ensure that all construction equipment is equipped with manufacturer-approved mufflers and baffles. During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- c. Construction activities shall not take place outside of the allowable hours specified by Section 8.6.020 of the County Noise Ordinance.

### **LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.13b – Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?**

#### ***Construction***

Construction activities in general can have the potential to create groundborne vibrations. However, based on the soil types found in the general Project vicinity, it is unlikely that any blasting or pile-driving would be required in connection with construction of the school. Therefore, the potential for groundborne vibrations to occur as part of the construction of the Project is considered minimal.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative even for sustained pile driving. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The typical vibration produced by construction equipment is illustrated in Table 3.4.13-1.



**Table 3.4.13-1. Typical Vibration Levels for Construction Equipment**

<b>Equipment</b>	<b>Reference peak particle velocity at 25 feet (inches/second)<sup>1</sup></b>	<b>Approximate peak particle velocity at 100 feet (inches/second)<sup>2</sup></b>
Large bulldozer	0.089	0.011
Loaded trucks	0.076	0.010
Small bulldozer	0.003	0.0004
Jackhammer	0.035	0.004
Vibratory compactor/roller	0.210	0.026

Source: Kern County Planning Department, 2013.

Notes:

1 – Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006. Table 12-2.

2 – Calculated using the following formula:

$$PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA Transit Noise and Vibration Impact Assessment Guidelines

D = the distance from the equipment to the receiver

As indicated in Table 3.4.13-1, based on the FTA data, vibration velocities from typical heavy construction equipment that would be used during Project construction range from 0.003 to 0.644 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. With regard to the proposed project, ground-borne vibration would be generated during site clearing and grading activities on-site facilitated by implementation of the proposed project. As demonstrated in Table 3.4-13-1, vibration levels at 100 feet would range from 0.0004 to 0.026 PPV. Therefore, the anticipated vibration levels would not exceed the 0.2 inch-per-second PPV significance threshold during construction operations at the nearest receptors, which are 1,400 feet to the east. It should be noted that 0.2 inch-per-second PPV is a conservative threshold, as that is the construction vibration damage criteria for non-engineered timber and masonry buildings (Kern County Planning Department, 2013). Buildings within the project area would be better represented by the 0.5 inch-per-second PPV significance threshold (construction vibration damage criteria for a reinforced concrete, steel or timber buildings) (Kern County Planning Department, 2013). Therefore, vibration impacts associated with construction are anticipated to be less than significant.

### **Operations**

Further, operation of the school would not contain any activities that would create groundborne vibrations. The proposed Project would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Therefore, the Project would have a less than significant impact.



**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.13c – For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?**

The proposed Project is not located within the vicinity of an airport land use plan or within two miles of a public or private airport. The proposed Project would not expose people residing in or working in the Project area to excessive noise levels related to public or private airports. There would be no impact associated with the Project relating to excessive noise at a public or private airport. Therefore, the Project would have no impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

There would be *no impact*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less- than Significant Impact	No Impact
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### 3.4.14 - POPULATION AND HOUSING

Would the Project:

- |    |  |                          |                          |                                     |                          |
|----|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. | Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. | Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

This analysis relied upon the Metropolitan Bakersfield General Plan for evaluating the significance of the Project's impacts to Population and Housing issues outlined in this section.

**Impact #3.4.14a – Would the Project Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

Development of the Project is in response to the need for expanded school facilities from existing and proposed increased growth in and around the City of Bakersfield and the County of Kern in compliance with the adopted Metropolitan Bakersfield General Plan. The General Plan was adopted in response to rapid growth in the area and was designed to provide goals and policies to support orderly growth. The provision of public services, such as schools, was one of the main implementation measures listed to secure orderly growth.

The proposed Project would not induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). Therefore, the Project would have a less than significant impact.

### MITIGATION MEASURE(S)

No mitigation is required.



**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.14b – Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?**

The Project is being constructed in an area that is currently an agricultural field. There are no existing people or housing on the Project site that will be displaced. The proposed Project does not propose to displace any existing housing or people in the Project area, nor would implementation of the Project require construction or replacement of housing.

In addition, it is anticipated that construction workers would come from the surrounding area and would not require new housing. The proposed Project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. Therefore, the Project would have a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

There would be *less than significant*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.15 - PUBLIC SERVICES

Would the Project:

a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
v. Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Discussion

The proposed Project would have to comply with the California Department of Education Title 5, California Code of Regulations Section 14001, which requires that “all schools are designed to meet federal, State, and local statutory requirements for structure, fire, and public safety, and shall be conveniently located for public services including but not limited to fire protection, police protection, public transit and trash disposal whenever feasible.”

The addition of the Project is not anticipated to directly require the employment of additional fire fighters or law enforcement officers. The proposed Project was anticipated in the growth projections for the Metropolitan Bakersfield General Plan and therefore, the school’s public services needs have already been accounted for in projecting future public service needs for the City and county, including police and fire protection services. It is anticipated that existing and future public facilities and equipment would be able to maintain the current level of service. No other public services would be significantly affected by the Project.



**Impact #3.4.14a(i) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services - Fire Protection?**

The existing Kern County Fire Department Station 52 would provide fire suppression and emergency medical services at the Project site (see Figure 3.4.14-1). Station 52 is located about 2 miles to the northeast of the Project site on Taft Highway.

An approved water supply system capable of supplying required fire flow for fire protection purposes is to be provided to all portions of the school campus where buildings are to be located. The establishment of gallons-per-minute requirements for fire flow shall be based on the Guide for Determination of Required Fire Flow, published by the State Insurance Service Office and County of Kern's adopted Fire Code.

Fire hydrants would also be located and installed per County standards. The District would install the required infrastructure to meet water supply demands for municipal fire protection services. These design standards coupled with existing fire protection infrastructure would provide for proper fire suppression services on site. Further, by meeting these standards and incorporating needed design features in the Project design, no additional fire protection services would be required.

As discussed above, future growth and school district overcapacity is driving the need for this school and has been anticipated by the Metropolitan Bakersfield General Plan, including fire protection services. Therefore, the Project would not result in significant impacts to fire protection services.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.14a(ii) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Police Protection?**

The Kern County Sheriff's Office (KCSO) provides law enforcement services to the unincorporated areas of the County. KCSO would provide primary public protection to the Project site and surrounding areas. In addition, the Project site is located in the California Highway Patrol's Central Division.



As discussed above, future growth and school district overcapacity is driving the need for this school and has been anticipated by the Metropolitan Bakersfield General Plan, including effects to police protection services. Therefore, the Project would not increase the need for such services beyond the baseline condition.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.14a(iii) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Schools?**

As stated previously, the new school site would serve students in the vicinity and alleviate overcrowding and high teacher-student ratios. The new school would also provide for the existing and future student, faculty and staff population and would alleviate the overcrowding issues. Therefore, the Project would have a less than significant impact on schools.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.14a(iv) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Parks?**

No parks are located within the vicinity of the Project. The Project would provide recreational space for the students during the school day. Existing parks would not be affected by the Project because the MBGP has anticipated the growth that is driving the need for the school as well as the need for future parks to serve the anticipated population. Therefore, the Project would have a less than significant impact on parks.



**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.14a(v) – Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services – Other Public Facilities?**

The Project is proposed as a part of the MBGP and the predicted residential development in the area in order to reduce classroom overcrowding and teacher/student ratios. The Project would not induce the appreciable use of other public facilities such as libraries, courts, and other Kern County services.

The Project would indirectly affect the demand for public services through the addition of school/educational capacity to serve increased population growth. However, this growth is in accordance with the MBGP.

The Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause a significant environmental impact, in order to maintain acceptable service ratios for any of the public services. Therefore, the Project would have a less-than-significant impact on other public facilities.

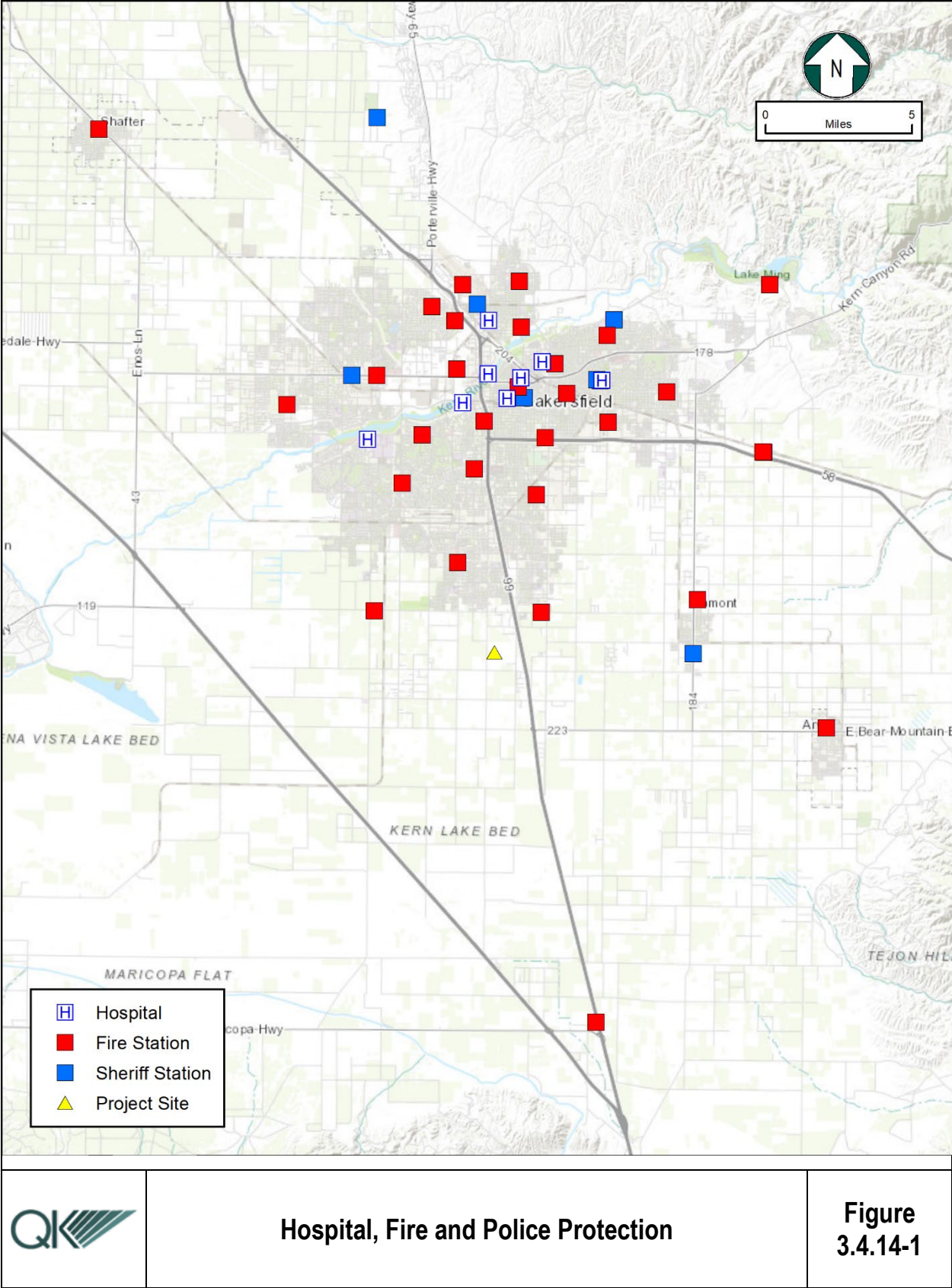
**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.







	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.16 - RECREATION

Would the Project:

- |  |                          |                          |                                     |                          |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?                        | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Discussion

**Impact #3.4.16a – Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

The proposed Project would not increase the use of existing neighborhood and regional parks. Existing parks would not be affected by the Project because the MBGP has anticipated the growth that is driving the need for the school as well as the need for future parks to serve the anticipated population. The closest public park is Kern Delta Park, which is approximately two miles northeast of the Project site. On-site recreational space would be provided within the school campus. The Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment. Therefore, the Project would have a less than significant impact.

### MITIGATION MEASURE(S)

No mitigation is required.

### LEVEL OF SIGNIFICANCE

Impacts would be *less than significant*.



**Impact #3.4.16b – Would the Project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?**

See Impact #3.4.16a, above.

***MITIGATION MEASURE(S)***

No mitigation is required.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.17 - TRANSPORTATION

Would the Project:

a.	Conflict with program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d.	Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Discussion

A Traffic Impact Study (TIS) was prepared for this project (Ruetters & Schuler, 2018) found in Appendix E. The Traffic Study was prepared using trip generation and design hour volumes calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition as well as data provided in the Project description.

The following traffic scenarios were analyzed in the Traffic Study:

- Existing (2018);
- Existing plus Project (2018);
- Future (2040); and
- Future plus Project (2040).

**Impact #3.4.17a – Would the Project Conflict with program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

The existing roadways, providing the main circulation in the vicinity of the Project, include the following:



Akers Road is a north-south collector located in south Bakersfield. Within the study area south of Taft Highway (SR 119), Akers Road currently exists as an unstriped two-lane rural road and provides access to agricultural areas.

Curnow Road is an east-west collector located in southwest Bakersfield. Within the study area, Curnow Road extends from Wible Road to Compagnoni Street midway between Engle Road and State Route 119. It currently exists as a two-lane facility and provides access to agricultural areas.

Engle Road is an east-west, partially paved roadway in the project vicinity. It currently exists as a two-lane facility without striping and provides access to agricultural areas. Engle Road will be improved along the frontage of the proposed school property.

Houghton Road is an east-west arterial that provides access to State Route 99 as well as agricultural and residential areas, and it currently exists as two-lane facility within the project vicinity.

Hughes Lane is a north-south collector that is currently at various stages of improvement adjacent to development in the project vicinity. To the south of Taft Highway (SR 119) Hughes Lane is discontinuous and provides access to developing residential areas as well as to agricultural areas.

Shafter Road is an east-west roadway that currently provides access to agricultural areas in the project vicinity. Shafter Road exists as a two-lane roadway east of Wible Road and is intermittently paved west of Wible Road. Shafter Road extends to Costajo Street in the east and Old River Road in the west.

South H Street is a north-south arterial which extends from Taft Highway to Brundage Lane and continues northward through downtown Bakersfield as H Street. It exists as a two-lane roadway in the vicinity of the project.

Stine Road is a north-south arterial which currently exists as a fully improved facility north of Panama Lane and at various stages of widening adjacent to development south of Panama Lane. Stine Road provides access from residential and commercial areas to east-west arterials and from southern metropolitan Bakersfield to central Bakersfield via New Stine Road and California Avenue.

Taft Highway (SR 119) an east-west roadway, is designated as an expressway west of State Route 99 and as an arterial east of State Route 99. It currently exists as a two-lane roadway at various stages of widening adjacent to development between State Route 99 and South Union Avenue.

Wible Road is a north-south arterial located adjacent to State Route 99. It currently operates as a four-lane roadway north of Berkshire Road and as a two-lane roadway at



various widths and stages of improvement south of Berkshire Road. It provides access to residential and agricultural land uses within the study area (Ruettggers & Schuler, 2018).

### Existing and Future Traffic

Existing peak hour turn movement volumes were field measured in January 2018 at the study intersections and are shown in Figure 4. Existing + Project peak hour volumes are shown in Figure 6 of Appendix E.

Annual growth rates from approximately 2.00% to 4.22% were applied to existing traffic volumes to estimate future traffic volumes for the year 2040. These growth rates were estimated based on Kern COG traffic model data. Future peak hour and peak hour plus project volumes are shown in Figures 6 and 7 of the TIS. Table 3.4.16-1 shows the project's trip generation assumptions used for the traffic modeling.

**Table 3.4.17-1: Project Trip Generation**

General Information			Daily Trips		Rate	AM Peak Hour Trips		Rate	PM Peak Hour Trips	
ITE CODE	Development Type	Variable	ADT RATE	ADT		In % Split/ Trips	Out % Split/ Trips		In % Split/ Trips	Out % Split/ Trips
530	High School	2500 Students	eq	3632	0.43	68% 731	32% 344	0.29	33% 239	67% 486

Source: (Ruettggers & Schuler, 2018).

### ***Levels of Service***

Criteria for intersection level of service (LOS) are shown in the tables below.

**Table 3.4-17-2: Level of Service Criteria – Unsignalized Intersections**

Average Control Delay (sec/veh)	Level of Service	Expected Delay to Minor Street Traffic
≤10	A	Little or no delay
10 and ≤15	B	Short traffic delays
15 and ≤25	C	Average traffic delays
25 and ≤35	D	Long traffic delays
35 and ≤50	E	Very long traffic delays
>50	F	Extreme delays

**Table 3.4.17-3: Level of Service Criteria Signalized Intersections**

Volume/Capacity Control Delay (sec/veh) Level of Service	Volume/Capacity Control Delay (sec/veh) Level of Service	Volume/Capacity Control Delay (sec/veh) Level of Service
0.60	≤10	A



0.61-0.70	10 and $\leq 20$	B
0.71-0.80	20 and $\leq 35$	C
0.81-0.90	35 and $\leq 55$	D
0.91-1.00	55 and $\leq 80$	E
1.00	$> 80$	F

Level of service for the study intersections is presented in Tables 3.4.16-2 and 3.4.16-3. According to the County of Kern's Roads Department, the level of service goal for the roadways within the scope of this study is "C".

**Table 3.4.17-4: AM Unsignalized Intersection Level of Service**

#	Intersection	Movement	2018	2018+ Project	2040	2040+ Project	2040+ Project w/Mitigation <sup>1</sup>
1	Akers Rd/Van Horn Rd & Taft Hwy (SR 119)	NB SB	B B	B C	E F	D F	C
2	Hughes Ln & Taft Hwy (SR 119)	NB	B	C	D	E	B
3	Wible Rd & Curnow Rd	WB	A	B	A	B	-
4	Wible Rd & Engle Rd	EB	A	B	A	B	-
5	Stine Rd & Houghton Rd	Overall Intersection	A	A	A	A	-
6	Wible Rd & Houghton Rd	Overall Intersection	A	A	A	B	-
7	S H St & Houghton Rd	Overall Int	A	A	A	A	-
8	Wible Rd & Shafter Rd	Overall Int	A	A	A	A	-
9	S H St & Shafter Rd	Overall Int	A	A	A	A	-

<sup>1</sup>See Table 7 of Appendix E for mitigation details.

Source: (Ruettgers & Schuler, 2018)

**Table 3.4.17-5: PM Unsignalized Intersection Level of Service**

#	Intersection	Movement	2018	2018+ Project	2040	2040+ Project	2040+ Project w/Mitigation <sup>1</sup>
1	Akers Rd/Van Horn Rd & Taft Hwy (SR 119)	NB SB	B C	B C	C F	D F	C
2	Hughes Ln & Taft Hwy (SR 119)	NB	B	B	C	D	C 2



3	Wible Rd & Curnow Rd	WB	A	B	A	B	-
4	Wible Rd & Engle Rd	EB	A	A	A	A	-
5	Stine Rd & Houghton Rd	Overall Intersection	A	A	A	A	-
6	Wible Rd & Houghton Rd	Overall Intersection	A	A	A	B	-
7	S H St & Houghton Rd	Overall Int	A	A	A	A	-
8	Wible Rd & Shafter Rd	Overall Int	A	A	A	A	-
9	S H St & Shafter Rd	Overall Int	A	A	A	A	-

<sup>1</sup>See Table 7 of Appendix E for mitigation details.

Source: (Ruettgers & Schuler, 2018)

**Table 3.4.17-6: AM Signalized Intersection Level of Service**

#	Intersection	2018	2018+ Project	2040	2040+ Project	2040+ Project w/Mitigation <sup>1</sup>
1	Stine Rd & Taft Hwy (SR 119)	A	B	B	C	-
2	Wible Rd & Taft Hwy (SR 119)	D	D	F	F	C
3	SR 99 SB Ramps & Taft Hwy (SR 119)	A	A	B	B	-

<sup>1</sup>See Table 7 for mitigation details.

Source: (Ruettgers & Schuler, 2018)

**Table 3.4.17-7: PM Signalized Intersection Level of Service**

#	Intersection	2018	2018+ Project	2040	2040+ Project	2040+ Project w/Mitigation <sup>1</sup>
1	Stine Rd & Taft Hwy (SR 119)	B	C	B	C	-
2	Wible Rd & Taft Hwy (SR 119)	D	D	F	F	C
3	SR 99 SB Ramps & Taft Hwy (SR 119)	B	B	C	C	-

<sup>1</sup>See Table 7 of Appendix E for mitigation details.

Source: (Ruettgers & Schuler, 2018)



Peak hour signal warrants were evaluated for each of the unsignalized intersections within the study based on the California Manual on Uniform Traffic Control Devices (MUTCD). Peak hour signal warrants assess delay to traffic on the minor street approaches when entering or crossing a major street. Signal warrant analysis results for AM and PM peak hours are shown below:

**Table 3.4.17-8: AM Traffic Signal Warrants**

#	Intersection	2018			2018+Project			2040			2040+Project		
		Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	Akers Rd at Taft Hwy (SR 119)	727	114	NO	888	144	NO	1554	176	YES	1715	206	YES
2	Hughes Ln at Taft Hwy (SR	985	23	NO	1141	23	NO	1695	36	NO	1851	36	NO
3	Wible Rd at Curnow Rd	89	24	NO	601	34	NO	138	37	NO	650	47	NO
4	Wible Rd at Engle Rd	84	1	NO	650	60	NO	130	2	NO	696	61	NO
5	Stine Rd at Houghton Rd	153	16	NO	215	56	NO	237	25	NO	299	65	NO
6	Wible Rd at Houghton Rd	169	39	NO	351	183	NO	262	60	NO	444	204	NO
7	S H St at Houghton Rd	206	46	NO	263	71	NO	319	70	NO	376	95	NO
8	Wible Rd at Shafter Rd	42	9	NO	109	55	NO	65	14	NO	132	60	NO
9	S H St at Shafter Rd	64	37	NO	93	53	NO	99	57	NO	120	79	NO

Source: (Ruettgers & Schuler, 2018)



**Table 3.4.17-9: PM Traffic Signal Warrants**

#	Intersection	2018			2018+Project			2040			2040+Project		
		Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	Akers Rd at Taft Hwy (SR 119)	868	48	NO	994	58	NO	1890	74	NO	2016	84	NO
2	Hughes Ln at Taft Hwy (SR	797	6	NO	902	6	NO	1372	10	NO	1477	10	NO
3	Wible Rd at Curnow Rd	124	27	NO	466	30	NO	191	41	NO	533	44	NO
4	Wible Rd at Engle Rd	113	1	NO	509	20	NO	175	2	NO	571	21	NO
5	Stine Rd at Houghton Rd	180	39	NO	241	52	NO	279	61	NO	340	74	NO
6	Wible Rd at Houghton Rd	187	50	NO	333	132	NO	290	78	NO	382	188	NO
7	S H St at Houghton Rd	220	36	NO	273	44	NO	341	56	NO	394	64	NO
8	Wible Rd at Shafter Rd	56	12	NO	124	27	NO	86	18	NO	154	33	NO
9	S H St at Shafter Rd	26	10	NO	61	17	NO	42	16	NO	77	23	NO

Mitigation is required where project traffic reduces the LOS to below LOS C, or where the pre-existing condition of the roadway is below LOS C, and the LOS degrades below the pre-existing level of service with the addition of the project. As shown above, all modeled signalized and unsignalized intersections and roadways in the vicinity of the Project currently operate at or above LOS C and are anticipated to do so with the addition of project traffic through 2040, except for intersections 2, 3, and 4. Based on the analysis performed in the Traffic Study, unsignalized intersection 2 would require a signal and improved intersection by 2040 to maintain LOS at or above level C. Unsignalized intersection 3 would require an improved intersection by 2040 to maintain LOS at or above level C. Unsignalized intersection 4 would require a signal by 2040 to maintain LOS at or above level C. In addition, the following roadway segments would need to be add 2 lanes and a median by 2040 to maintain LOS at or above level C:

- Taft Hwy (SR 119): Stine Rd to Akers Rd
- Taft Hwy (SR 119): Akers Rd to Wible Rd
- Taft Hwy (SR 119): Wible Rd to SR 99

It is recommended that the Project pay fees in accordance with the Regional Traffic Impact Fee (RTIF) as its sole responsibility for traffic mitigation. Improvements currently planned for implementation in the RTIF would reduce the project's incremental contribution to less-than-significant levels in the year 2040.

The Regional Transportation Impact Fee (RTIF) Program is a fee imposed on new development and contains a Regional Transportation Facilities List and a Transportation Impact Fee Schedule. The Facilities List includes many of the facilities needed to maintain a



Level of Service (LOS) C or better for new growth or to prevent the degradation of facilities which are currently operating below LOS C. The Fee Schedule sets forth the fees to be collected from new development to mitigate the need for the facilities.

Intersections 2 and 3 and all three roadway segments listed above would be covered under the RTIF program. Intersection 4 is not current listed in the RTIF program and the Project's share of the improvements would be 15.35%. With implementation of RTIF program and payment of fair share costs for intersection 4, the project would have a less-than-significant impact.

**MITIGATION MEASURE(S)**

**MM TRA-1:** The District shall consult with Kern County Public Works Department regarding required roadway improvements. The District shall pay fair share costs of 15.35% for a signal at the intersection of Hughes Lane and Taft Hwy to the Kern County Public Works Department prior to project commencement. The District shall also pay Regional Transportation Impact Fees. Based on negotiations with the Public Works Department, it may be determined that full improvements to the Cottonwood Road and Pacheco Road intersection, along with local road improvements along the proposed site's frontage may be acceptable in lieu of RTIF payment.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.17b – Would the Project Conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?**

See Impact #3.4.17a, above.

**MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM TRA-1.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant with mitigation incorporated*.

**Impact #3.4.17c – Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**

The Project would not introduce new curves and/or hazardous intersections into the Project vicinity. All roads surrounding the Project sites are straight and set in a grid pattern. No new design or features would be introduced that would result in transportation-related hazards or safety concerns. During construction at the Project, construction-related delivery trucks would be present. However, these trucks would be traveling along the existing and proposed



local roadways and rights-of-ways and would not interfere with access points surrounding the site. Coupled with this, once construction is completed, truck activity would cease to access the site with the exception of periodic operational maintenance. The Project would not result in an increase in hazards due to a design feature or incompatible use. Therefore, the project would have a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.17d – Would the Project result in inadequate emergency access?**

The California Fire Code establishes standards by which emergency access may be determined. The Project would have to provide adequate unobstructed space for fire trucks to turn around. The Project site would have adequate internal circulation capacity including entrance and exit routes to provide adequate unobstructed space for fire trucks and other emergency vehicles to gain access and to turn around.

As described above, the minimal increase of Project-related traffic would not cause a significant increase in congestion and would not reduce the existing level of service on area roads, which could indirectly affect emergency access. The Project is not expected to require closures of public roads, which could inhibit access by emergency vehicles. The Project would not result in inadequate emergency access. Therefore, the project would have a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.



Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.18 - TRIBAL CULTURAL RESOURCES

Would the Project:

- a. Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Discussion

Impact #3.4.18a(i) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?



These questions were addressed in the discussion presented in Section 3.4.5 - *Cultural Resources*.

See discussion for Impacts #3.4.5a and #3.4.5c.

***MITIGATION MEASURE(S)***

Implementation of Mitigation Measures MM CUL-1 and MM CUL-2.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant with mitigation incorporated*.

Impact #3.4.18a(ii) – Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

See discussion for Impacts #3.4.5a and #3.4.5c.

***MITIGATION MEASURE(S)***

Implementation of Mitigation Measures MM CUL-1 and MM CUL-2.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant with mitigation incorporated*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than- Significant Impact	No Impact
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### 3.4.19 - UTILITIES AND SERVICE SYSTEMS

Would the Project:

a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### Discussion

This analysis relied upon review of applicable requirements of the Central Valley RWQCB as provided on their web site, the Kern County Waste Management Department online resources, analysis provided by the Metropolitan Bakersfield County General Plan and the Preliminary Environmental Assessment (PEA) Equivalent Reports (Soils Engineering, Inc, 2018b) (County of Kern, 2007).

**Impact #3.4.19a – Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?**



The Project is located within the Cal Water service area, which supplies potable water to this area for residential, commercial, agricultural, and industrial uses. Cal Water presently operates twelve groundwater wells within KDWD and more than 1,000 wells have been drilled within the district boundary. The water well closest to the facility, within a mile of the same section, had a 2015 spring water depth of 146 feet and a fall 2015 water depth of 171 feet (SEI, 2018).

The Project will incorporate septic tanks until a sewer line is extended. The nearest sewer line is approximately 1-mile from the site (City of Bakersfield, 2019). There is an existing sump on site and will be used for storm water drainage. Electric power will be supplied by Pacific Gas and Electricity (PG&E). The Project will not connect to or use natural gas. No telecommunication lines or facilities are proposed to be built within the Project. Sanitation/garbage collection will be provided by Price Environmental, a local waste hauler. Water service will be provided by Cal Water Company.

All septic tanks would be constructed to meet all state and local standards and the Project has indicated that once sewer connections are available, the proposed Project would then connect to the provided line. The sewer lines would connect to the City of Bakersfield's existing sanitary sewer system. This system is regulated by the Central Valley RWQCB and the State Water Resources Control Board. The RWQCB is responsible for protecting water resources in the region, and as such prescribes standards for the treatment and disposal of wastewater.

The Metropolitan Bakersfield General Plan policies allow for septic tanks on parcels greater than 6-acres in size. The Project has indicated that once sewer connection is available, the proposed Project would connect once the sewer line has been extended. The City's facilities operate according to the Metropolitan Bakersfield General Plan's goals, policies, and implementation measures. These policies are implemented under approval of the City Public Works Department and comply with the requirements of the applicable RWQCB. Therefore, the proposed project would not exceed the wastewater treatment requirements of the RWQCB. There is adequate capacity in the City's existing sewer system and there is adequate amount of water to meet the demands of the new school. Mitigation Measure MM HYD-2 requires the District to obtain a "will serve" letter from Cal Water Service signifying its ability to serve the Project. Therefore, no new water or wastewater facilities or expansion to the existing facilities would be necessary.

The Project would not need to relocate or construct a new or expanded water, wastewater treatment or stormwater drainage. Electrical power will be supplied by a local provider and no telecommunication facilities will need to be built. Therefore, the Project would have less than significant impact with the implementation of MM HYD-2.

#### ***MITIGATION MEASURE(S)***

Implementation of MM HYD-2.



**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant impact with mitigation incorporated*.

**Impact #3.4.19b – Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?**

The Project and the surrounding areas are sufficiently supplied with water as, Cal Water presently operates twelve groundwater wells within KDWD and more than 1,000 wells have been drilled within the district boundary (SEI, 2018). The Project will have adequate available water supply to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years. Therefore, the Project would have a less-than-significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.19c – Would the Project result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?**

There is adequate capacity in the City's existing sewer system and there is adequate amount of water to meet the demands of the new school. Therefore, no new water or wastewater facilities or expansion to the existing facilities would be necessary (SEI, 2018).

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.19d – Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

Implementation of the Project would result in the generation of solid waste on the project site, which would increase the demand for solid waste disposal. Solid waste removed from the site would be transported to the Bena Landfill, located approximately seventeen miles to the northeast. According to the CalRecycle, Bena Landfill has a maximum disposal capacity



of 4,500 tons/day. A generation of solid waste resulting in a significant impact is not anticipated, as Bena Landfill has a remaining capacity of 32,808,260 cubic yards (CalRecycle, 2013). The Bena Landfill has sufficient capacity to accommodate the proposed Project.

The Project, in compliance with federal, State, and local statutes and regulations related to solid waste, would dispose of all waste generated on-site at an approved solid waste facility (Bena Landfill). The Project does not, and would not conflict with federal, State, or local regulations related to solid waste. The proposed Project would be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs in compliance with federal, State, and local statutes and regulations related to solid waste. Therefore, the Project would have a less than significant impact.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

The Project would have a *less than significant impact*.

**Impact #3.4.19e – Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

See discussion for Impact #3.4.19f.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

The Project would have a *less than significant impact*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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### 3.4.20 - WILDFIRE

if located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b.	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c.	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d.	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Discussion

#### Impact #3.4.20a – Would the Project, substantially impair an adopted emergency response plan or emergency evacuation plan?

As previously noted in Impact #3.4.9g, the proposed Project site is not located in or near State Responsible Area (SRA) or lands classified as being a very high hazard severity zone. The construction of the Project would not impair implementation of the Kern County Emergency Operations Plan or other applicable emergency response plan or evacuation plan. The Project will also be required to comply with all applicable standards as required by the State Fire Marshall, CDE Title 5 and Title 24 regulations, as well as local fire codes. Once operational, the school would also develop and implement an emergency response plan in case of a fire or other emergency. Therefore, impacts would be less than significant.



**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.20b - Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

As discussed in Impact #3.4.20a, above, the Project site is not located in or near SRA or land classified as very high hazard severity zones. Additionally, the proposed Project site is flat and does not exacerbate the risk of exposure of Project occupants to wildfire. Therefore, impacts would be less than significant.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.

**Impact #3.4.20c - Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?**

See Impacts # 3.4.9a and g, #3.4.20a and b.

As discussed, the proposed Project site is not located in or near SRA or lands classified as very high hazard severity zones. The area is still generally agricultural in nature, with residential development starting to the north and south. The Project will connect to existing transmission lines and other infrastructure; it would not require the installation or maintenance of new or additional infrastructure that would exacerbate fire risk or result in environmental impacts. Therefore, impacts would be less than significant.

**MITIGATION MEASURE(S)**

No mitigation is required.

**LEVEL OF SIGNIFICANCE**

Impacts would be *less than significant*.



**Impact #3.4.20c - Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?**

See Impacts # 3.4.9a and g, #3.4.20a, b and c, above.

The topography of the site and the surrounding area is relatively flat, and there is very little risk of the Project causing downstream or downslope runoff or flooding issues. The Project is within a FEMA-designated 100-year floodplain and will meet all local and State building codes and regulations related to the construction of a school within a floodplain.

Additionally, MM GEO-1 requires the preparation of a SWPPP to mitigate the site drainage changes during the construction of the proposed Project. Therefore, no flooding is anticipated as a result of runoff, post-fire slope instability, or drainage changes, and impacts would be less than significant.

***MITIGATION MEASURE(S)***

Implementation of MM GEO-1.

***LEVEL OF SIGNIFICANCE***

Impacts would be *less than significant with mitigation incorporated*.



	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
--	--------------------------------------	--	------------------------------------	--------------

### 3.4.21 - MANDATORY FINDINGS OF SIGNIFICANCE

a.	Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Discussion

**Impact #3.4.21a – Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?**

As evaluated in this IS/MND, the proposed Project would not substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory.



With mitigation, the proposed Project would not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. Therefore, the project would have a less-than-significant impact with mitigation incorporated.

**MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM BIO-1, through MM BIO-6, MM CUL-1 and MM CUL-2, MM GEO-3.

**LEVEL OF SIGNIFICANCE**

The Project would have a *less than significant impact with mitigation incorporated*.

**Impact #3.4.21b - Does the Project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a Project are significant when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects.)?**

As described in the impact analyses in Sections #3.4.1 through #3.4.20 of this IS/MND, any potentially significant impacts of the proposed Project would be reduced to a less than significant level following incorporation of the mitigation measures listed in Section 6, *Mitigation Monitoring and Reporting Program*. Projects completed in the past have also implemented mitigation as necessary. Accordingly, the proposed Project would not otherwise combine with impacts of related development to add considerably to any cumulative impacts in the region. With mitigation, the Project would not have impacts that are individually limited, but cumulatively considerable. Therefore, the Project would have a less than cumulatively considerable impact with mitigation incorporated.

**MITIGATION MEASURE(S)**

Implementation of Mitigation Measures MM AES-1, MM BIO-1 through MM BIO-6, MM CUL-1 and MM CUL-2, MM GEO-1 through MM GEO-3, MM GHG-1 through MM GHG-4, MM HAZ-1 through MM HAZ-3, MM HYD-1 through MM HYD-3, NSE-1, and MM TRA-1.

**LEVEL OF SIGNIFICANCE**

The Project would have a *less than significant impact with mitigation incorporated*.

**Impact #3.4.21c - Does the Project have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?**

All Project impacts, both direct and indirect, that are attributable to the Project were identified and mitigated. As shown in Section 6, *Mitigation Monitoring and Reporting*



*Program*, the District has agreed to implement mitigation substantially reducing or eliminating impacts from the Project. Therefore, the proposed Project would not either directly or indirectly cause substantial adverse effects on human beings because all potentially adverse direct impacts of the proposed Project are identified as having no impact, less than significant impact, or less than significant impact with mitigation.

***MITIGATION MEASURE(S)***

Implementation of Mitigation Measures MM AES-1, MM BIO-1 through MM BIO-6, MM CUL-1 and MM CUL-2, MM GEO-1 through MM GEO-3, MM GHG-1 through MM GHG-4, MM HAZ-1 through MM HAZ-3, MM HYD-1 through MM HYD-3, NSE-1, and MM TRA-1.

***LEVEL OF SIGNIFICANCE***

The Project would have a *less than significant impact with mitigation incorporated*.



## **SECTION 4 - LIST OF PREPARERS**

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## **SECTION 6 - MITIGATION MONITORING AND REPORTING PROGRAM**

RESERVED



**APPENDIX A**  
**AIR QUALITY IMPACT ANALYSIS/GREENHOUSE GASES**  
**ANALYSIS**





## AIR QUALITY IMPACT ANALYSIS

### **Kern High School District Southwest School Site Project Bakersfield, California**

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**July 2018**

Project 170505.0226





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Attachment B: Project Emission Calculations

Attachment C: Cumulative Projects Emission Calculations

Attachment D: California Air Resources Board 2012 and 2020 Estimated Emissions Inventories

Attachment E: Health Risk Analysis Modeling Files (Electronic)

Attachment F: Ambient Air Quality Assessment Modeling Files (Electronic)



## 1. EXECUTIVE SUMMARY

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Insight Environmental Consultants, Inc., a Trinity Consultants Company, has completed an Air Quality Impact Analysis (AQIA) for the development of a new high school by the Kern High School District. The Southwest High School Project (Project) would be located near southwest Bakersfield, CA at the intersection of Wible Road and Engle Road and would provide educational facilities for 2,000 students on 80 acres.

The proposed Project's construction would include the following criteria pollutant emissions: reactive organic gases (ROG), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and suspended particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Project operations would generate air pollutant emissions from mobile sources (vehicle activity from students, parents and employees), energy sources (natural gas usage), and area sources (incidental activities related to architectural coating, consumer products and landscape maintenance). Project construction and operational activities would also generate greenhouse gas (GHG) emissions. Criteria and GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 (California Air Pollution Control Officers Association (CAPCOA) 2017), which is the most current version of the model approved for use by the San Joaquin Valley Air Pollution Control District (SJVAPCD).

**Table 4-3** presents the Project's construction emissions and provides substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. **Table 4-4** presents the Project's operations emissions and provides substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. With the application of various mitigation measures, the Project's GHG emissions would be reduced by more than the 29% reduction target for GHGs. Based on the foregoing conclusions, the Project is considered to have *less than significant* air quality impacts on the San Joaquin Valley Air Basin.

Cumulative impacts were also evaluated. A records search of the City of Bakersfield Planning Department Tentative Tract Map, Kern County GIS Geocortex IMP Map Viewer, and the City of Bakersfield Cumulative Projects Map identified one hundred three other projects within a six-mile radius of the proposed Project. Evaluation of the cumulative emissions supports a finding that the Project's contribution would not be cumulatively considerable because the proposed Project's increment does not exceed significance thresholds. Additionally, compliance with the SJVAPCD's Air Quality Attainment Plan (AQAP) is presumably required by all projects located within the SJVAPCD's jurisdiction. Because projects included in the cumulative analysis presumably comply with the requirements of one or both of these plans, the Project's incremental contribution to a cumulative effect is considered *less than cumulatively considerable* (CEQA Guidelines Section 15064(h)(3); SJVAPCD 2015).



## 2. INTRODUCTION

### 2.1. PURPOSE

This AQIA was prepared pursuant to the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) (SJVAPCD 2015), the Kern County Planning and Community Development Department's (KCPD) Air Quality Preparation Guidelines (KCPD 2006), and the California Environmental Quality Act (CEQA) Statute and Guidelines (CEQA 2016).

### 2.2. GENERAL PROJECT DESCRIPTION

The Kern High School District Southwest School Site Project is the development of a new high school designed to serve 2,000 students on 80 acres. The current county zoning is agricultural. The Project would be located near southwest Bakersfield, CA at the intersection of Wible Road and Engle Lane. **Figure 2-1** depicts the regional location and **Figure 2-2** depicts an aerial view of the Project location. There is no specific development or phasing start date but a 24 to 27 month construction schedule is estimated; therefore most of the defaults in the CalEEMod emissions model were applied to estimate construction, operational and Greenhouse Gas emissions.

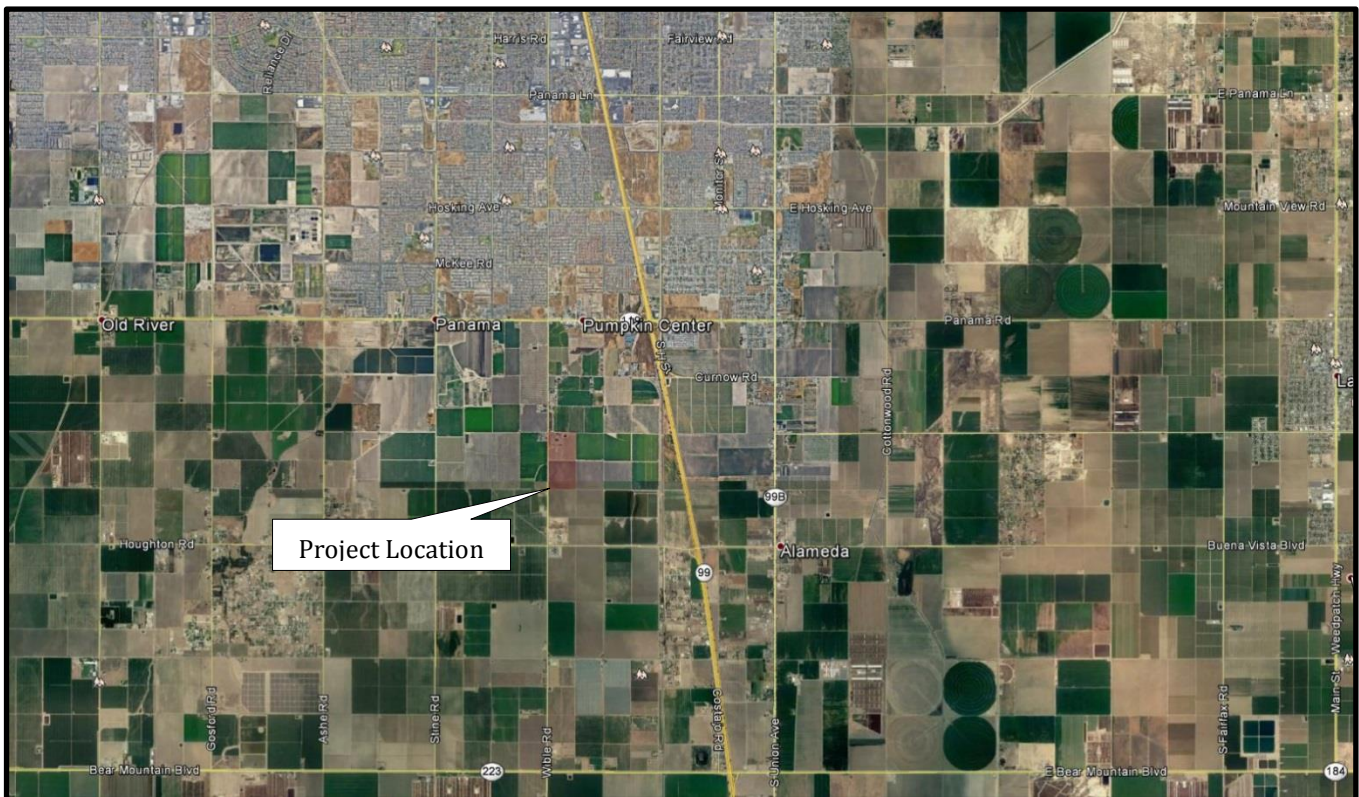


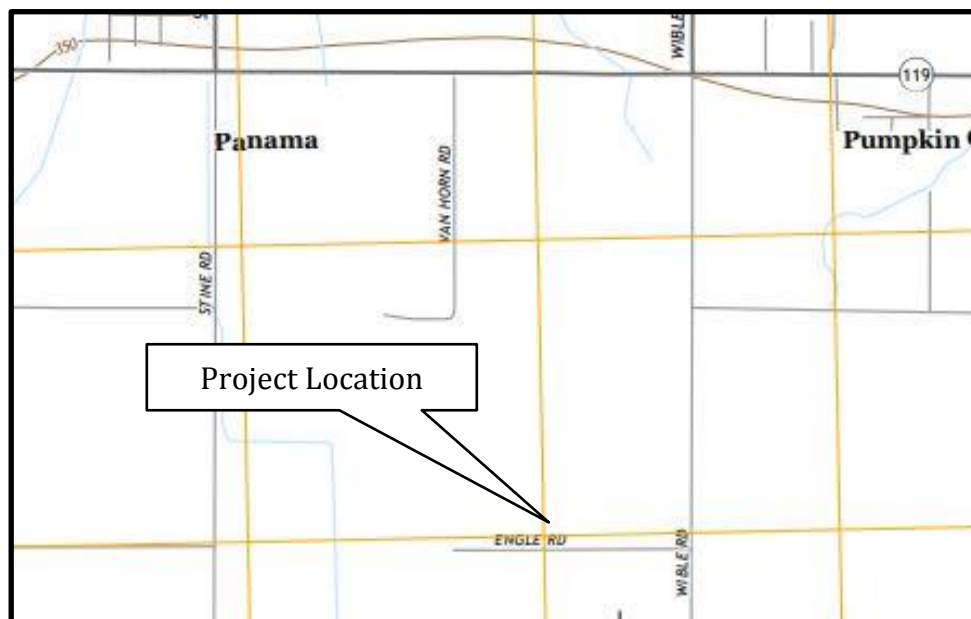
Figure 2-1 - Regional Location





Figure 2-2 - Project Location

**Figure 2-3** depicts the Project site's topography based on United States Geological Survey's (USGS) National Map (USGS 2015). The Project site is located at an elevation of approximately 340 feet above mean sea level and is surrounded by residential and agricultural land uses.



Source: USGS 2015

Figure 2-3 – Project Site Topography



Protection of the public health is maintained through the attainment and maintenance of ambient air quality standards for various atmospheric compounds and the enforcement of emissions limits for individual stationary sources. The Federal Clean Air Act requires that the U.S. Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) to protect the health, safety, and welfare of the public. NAAQS have been established for ozone (O<sub>3</sub>), CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>, and lead (Pb). California has also adopted ambient air quality standards (CAAQS) for these "criteria" air pollutants. CAAQS are more stringent than the corresponding NAAQS and include standards for hydrogen sulfide (H<sub>2</sub>S), vinyl chloride (chloroethene) and visibility reducing particles. The U.S. Clean Air Act Amendments of 1977 required each state to identify areas that were in non-attainment of the NAAQS and to develop State Implementation Plans (SIP's) containing strategies to bring these non-attainment areas into compliance. NAAQS and CAAQS designation/classification for Kern County are presented in **Section 3.1** below.

Responsibility for regulation of air quality in California lies with the California Air Resources Board (CARB), the 35 local air districts with oversight responsibility held by the EPA. CARB is responsible for regulating mobile source emissions, establishing CAAQS, conducting research, managing regulation development, and providing oversight and coordination of the activities of the 35 air districts. The air districts are primarily responsible for regulating stationary source emissions and monitoring ambient pollutant concentrations. CARB also determines whether air basins, or portions thereof, are "unclassified," in "attainment" or in "non-attainment" for the NAAQS and CAAQS relying on statewide air quality monitoring data.

### 3.1. AIR QUALITY STANDARDS

The Project area is located within Kern County's portion of the San Joaquin Valley Air Basin (SJVAB or Basin). Kern County is included among the eight counties that comprise the SJVAPCD. The SJVAPCD acts as the regulatory agency for air pollution control in the Basin and is the local agency empowered to regulate air pollutant emissions for the plan area. **Table 3-1** provides the NAAQS and CAAQS.



**Table 3-1 - Federal & California Standards**

Pollutant	Averaging Time	NAAQS	CAAQS
		Concentration	
O <sub>3</sub>	8-Hour	0.070 ppm (137 µg/m <sup>3</sup> ) <sup>a</sup>	0.070 ppm (137 µg/m <sup>3</sup> )
	1-Hour		0.09 ppm (180 µg/m <sup>3</sup> )
CO	8-Hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )
	1-Hour	35 ppm (40 mg/m <sup>3</sup> )	20 ppm (23 mg/m <sup>3</sup> )
NO <sub>2</sub>	Annual Average	53 ppb (100 µg/m <sup>3</sup> )	0.030 ppm (57 µg/m <sup>3</sup> )
	1-Hour	100 ppb (188.68 µg/m <sup>3</sup> )	0.18 ppm (339 µg/m <sup>3</sup> )
SO <sub>2</sub>	3-Hour	0.5 ppm (1,300 µg/m <sup>3</sup> )	
	24 Hour	0.14 ppm (365 µg/m <sup>3</sup> )	0.04 ppm (105 µg/m <sup>3</sup> )
	1-Hour	75 ppb (196 µg/m <sup>3</sup> )	0.25 ppm (655 µg/m <sup>3</sup> )
Particulate Matter (PM <sub>10</sub> )	Annual Arithmetic Mean		20 µg/m <sup>3</sup>
	24-Hour	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
Fine Particulate Matter (PM <sub>2.5</sub> )	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>
	24-Hour	35 µg/m <sup>3</sup>	
Sulfates	24-Hour		25 µg/m <sup>3</sup>
Pb <sup>d</sup>	Rolling Three-Month Average	0.15 µg/m <sup>3</sup>	
	30 Day Average		1.5 µg/m <sup>3</sup>
H <sub>2</sub> S	1-Hour		0.03 ppm (42 µg/m <sup>3</sup> )
Vinyl Chloride (chloroethene)	24-Hour		0.010 ppm (26 µg/m <sup>3</sup> )
Visibility Reducing particles	8 Hour (1000 to 1800 PST)		b
ppm = parts per million      mg/m <sup>3</sup> = milligrams per cubic meter      µg/m <sup>3</sup> = micrograms per cubic meter ppb = parts per billion			
Source: CARB 2016 a On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm b In 1989, the CARB converted both the general statewide 10-mile visibility standards and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.			

Under the provisions of the U.S. Clean Air Act, the Kern County portion of the SJVAB has been classified as nonattainment/extreme, nonattainment/severe, nonattainment, attainment/unclassified, attainment, or unclassified under the established NAAQS and CAAQS for various criteria pollutants. **Table 3-2** provides the SJVAB's designation and classification based on the various criteria pollutants under both NAAQS and CAAQS.



**Table 3-2 - SJVAB Attainment Status**

<b>Pollutant</b>	<b>NAAQS<sup>a</sup></b>	<b>CAAQS<sup>b</sup></b>
O <sub>3</sub> , 1-hour	No Federal Standard <sup>f</sup>	Nonattainment/Severe
O <sub>3</sub> , 8-hour	Nonattainment/Extreme <sup>e</sup>	Nonattainment
PM <sub>10</sub>	Attainment <sup>c</sup>	Nonattainment
PM <sub>2.5</sub>	Nonattainment <sup>d</sup>	Nonattainment
CO	Attainment/Unclassified	Attainment/Unclassified
NO <sub>2</sub>	Attainment/Unclassified	Attainment
SO <sub>2</sub>	Attainment/Unclassified	Attainment
Pb (Particulate)	No Designation/Classification	Attainment
H <sub>2</sub> S	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing particulates	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: SJVAPCD 2017a

Note:

a See 40 CFR Part 81

b See CCR Title 17 Sections 60200-60210

c On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM<sub>10</sub> National Ambient Air Quality Standard (NAAQS) and approved the PM<sub>10</sub> Maintenance Plan.

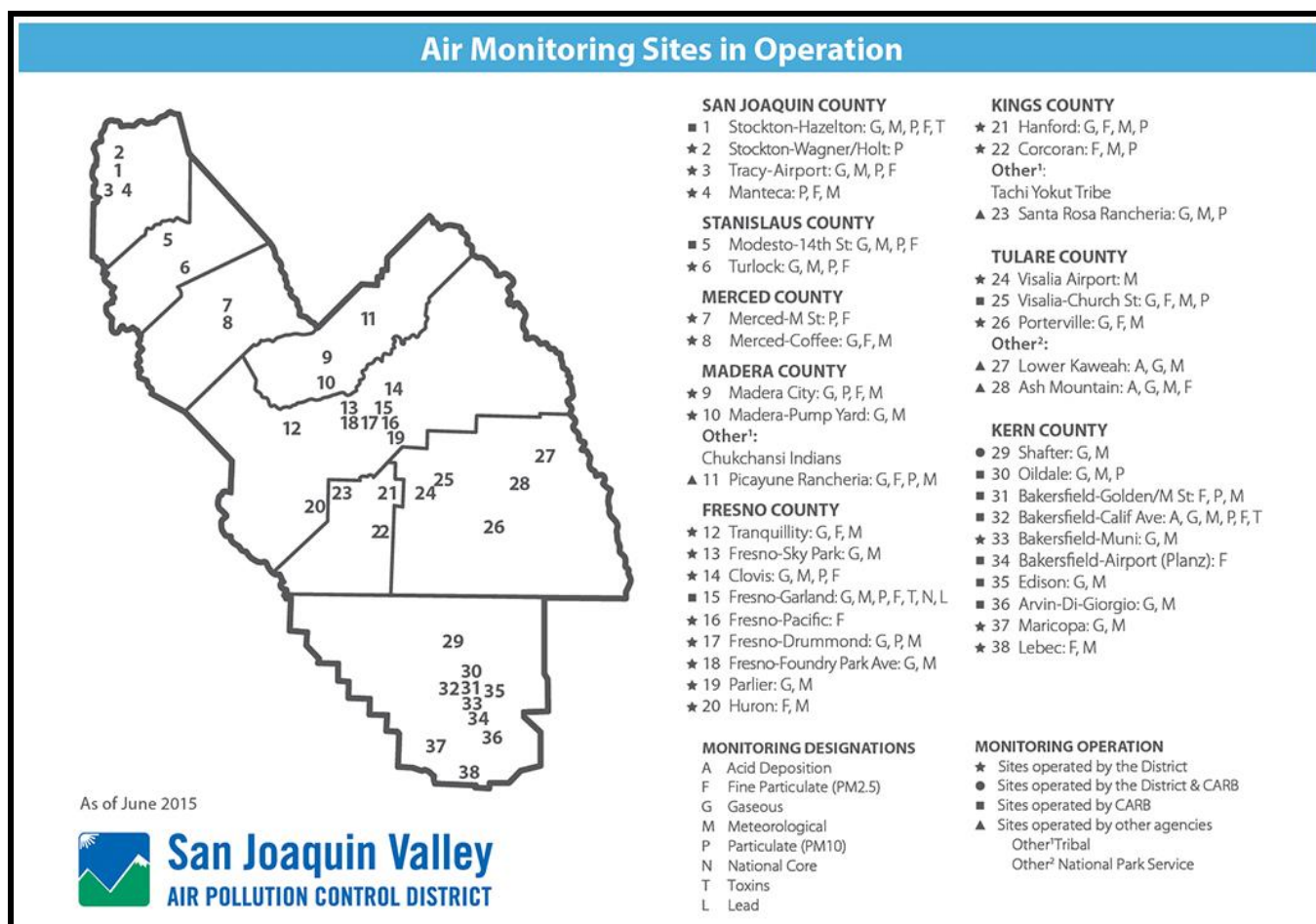
d The Valley is designated nonattainment for the 1997 PM<sub>2.5</sub> NAAQS. EPA designated the Valley as nonattainment for the 2006 PM<sub>2.5</sub> NAAQS on November 13, 2009 (effective December 14, 2009).

e Though the Valley was initially classified as serious nonattainment for the 1997 8-hour O<sub>3</sub> standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).

f Effective June 15, 2005, the EPA revoked the federal 1-hour O<sub>3</sub> standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour O<sub>3</sub> nonattainment areas continue to apply to the SJVAB.

The SJVAPCD along with the CARB operates an air quality monitoring network that provides information on average concentrations of those pollutants for which state or Federal agencies have established NAAQS and CAAQS. The monitoring stations in the San Joaquin Valley are depicted in **Figure 3-1**.





Source: SJVAPCD 2017b

Figure 3-1 – SJVAPCD Monitoring Network

### 3.2. EXISTING AIR QUALITY

For the purposes of background data and this air quality analysis, this analysis relied on data collected in the last three years for the CARB monitoring stations that are located in the closest proximity to the project site. **Table 3-3** provides the background concentrations for O<sub>3</sub>, particulate matter of 10 microns (PM<sub>10</sub>), particulate matter of less than 2.5 microns (PM<sub>2.5</sub>), CO, NO<sub>2</sub>, SO<sub>2</sub>, and Pb as of June 2015. Information is provided for the Bakersfield-5558 California Avenue, Oildale – 3311 Manor St., Edison, Bakersfield – 410 E. Planz Rd., Bakersfield-Municipal Airport, and Fresno – 1st St. monitoring stations for 2014 through 2016. No data is available for H<sub>2</sub>S, Vinyl Chloride or other toxic air contaminants in Kern County.



**Table 3-3 - Existing Air Quality Monitoring Data in Project Area**

Pollutant and Monitoring Station Location	Maximum Concentration			Days Exceeding Standard		
	2014	2015	2016	2014	2015	2016
<b>O<sub>3</sub> - 1-hour CAAQS (0.09 ppm)</b>						
Bakersfield-5558 California Ave.	0.102	0.104	0.092	3	6	0
Bakersfield - Municipal Airport	0.108	0.118	0.102	10	23	8
Edison	0.107	0.112	0.109	15	17	14
<b>O<sub>3</sub> - 8-hour CAAQS (0.07 ppm)</b>						
Bakersfield-5558 California Ave.	0.093	0.097	0.086	39	54	63
Bakersfield - Municipal Airport	0.095	0.106	0.093	60	73	66
Edison	0.092	0.099	0.090	55	45	68
<b>O<sub>3</sub> - 8-hour NAAQS (0.070 ppm)</b>						
Bakersfield-5558 California Ave.	0.092	0.096	0.085	36	52	60
Bakersfield - Municipal Airport	0.095	0.106	0.093	58	69	63
Edison	0.091	0.099	0.090	52	42	64
<b>PM<sub>10</sub> - 24-hour CAAQS (50 µg/m<sup>3</sup>)</b>						
Bakersfield-5558 California Ave.	419.5	103.6	92.2	*	121.4	121.4
Oildale - 3311 Manor St.	335.6	104.4	88.4	*	*	*
<b>PM<sub>10</sub> - 24-hour NAAQS (150 µg/m<sup>3</sup>)</b>						
Bakersfield-5558 California Ave.	*	100.5	91.6	*	*	0
Oildale - 3311 Manor St.	336.4	98.5	89.1	*	*	0
<b>PM<sub>2.5</sub> - 24-hour NAAQS (35 µg/m<sup>3</sup>)</b>						
Bakersfield - 410 E Planz Rd.	91.0	83.2	51.4	*	38.0	*
Bakersfield - 5558 California Ave.	101.9	107.8	66.4	39.3	32.3	25.5
<b>CO - 8-Hour CAAQS &amp; NAAQS (9.0 ppm)</b>						
Fresno - 1 <sup>st</sup> St.	*	*	*	*	*	*
<b>NO<sub>2</sub> - 1-Hour CAAQS (0.18 ppm)</b>						
Bakersfield - 5558 California Ave.	0.060	0.060	0.060	0	0	0
<b>NO<sub>2</sub> - 1-Hour NAAQS (0.10 ppm)</b>						
Bakersfield - 5558 California Ave.	0.059	0.050	0.050	0	0	0
<b>SO<sub>2</sub> - 24-hour Concentration - CAAQS (0.04 ppm) &amp; NAAQS (0.14 ppm)</b>						
No data collected	*	*	*	*	*	*
<b>Pb - Maximum 30-Day Concentration CAAQS (1500 ng/m<sup>3</sup>)</b>						
Bakersfield - 5558 California Ave	14	9.5	19.8	*	*	*

Source: CARB 2017a

Notes: ppm= parts per million

\* There was insufficient (or no) data available to determine the value.

The following is a description of criteria air pollutants, typical sources and health effects and the recently documented pollutant levels in the project vicinity.

### 3.2.1. Ozone (O<sub>3</sub>)

The most severe air quality problem in the San Joaquin Valley is high concentrations of O<sub>3</sub>. High levels of O<sub>3</sub> cause eye irritation and can impair respiratory functions. High levels of O<sub>3</sub> can also affect plants and materials. Grapes, lettuce, spinach and many types of garden flowers and shrubs are particularly vulnerable to O<sub>3</sub> damage. O<sub>3</sub> is not



emitted directly into the atmosphere but is a secondary pollutant produced through photochemical reactions involving hydrocarbons and nitrogen oxides (NO<sub>x</sub>). Significant O<sub>3</sub> generation requires about one to three hours in a stable atmosphere with strong sunlight. For this reason, the months of April through October comprise the "ozone season." O<sub>3</sub> is a regional pollutant because O<sub>3</sub> precursors are transported and diffused by wind concurrently with the reaction process. The data contained in **Table 3-3** shows that the Bakersfield area exceeded the 1-hour average ambient O<sub>3</sub> CAAQS and the 8-hour average ambient O<sub>3</sub> NAAQS and CAAQS for the 2014 through 2016 period.

### 3.2.2. Suspended Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

Both State and Federal particulate standards now apply to particulates under 10 microns (PM<sub>10</sub>) rather than to total suspended particulate, which includes particulates up to 30 microns in diameter. Continuing studies have shown that the smaller-diameter fraction of TSP represents the greatest health hazard posed by the pollutant; therefore, EPA has recently established NAAQS for PM<sub>2.5</sub>. The project area is classified as attainment for PM<sub>10</sub> and non-attainment for PM<sub>2.5</sub> for NAAQS.

Particulate matter consists of particles in the atmosphere resulting from many kinds of dust and fume-producing industrial and agricultural operations, from combustion, and from atmospheric photochemical reactions. Natural activities also increase the level of particulates in the atmosphere; wind-raised dust and ocean spray are two sources of naturally occurring particulates. The largest sources of PM<sub>10</sub> and PM<sub>2.5</sub> in Kern County are vehicle movement over paved and unpaved roads, demolition and construction activities, farming operations, and unplanned fires. PM<sub>10</sub> and PM<sub>2.5</sub> are considered regional pollutants with elevated levels typically occurring over a wide geographic area. Concentrations tend to be highest in the winter, during periods of high atmospheric stability and low wind speed. In the respiratory tract, very small particles of certain substances may produce injury by themselves, or may contain absorbed gases that are injurious. Particulates of aerosol size suspended in the air can both scatter and absorb sunlight, producing haze and reducing visibility. They can also cause a wide range of damage to materials.

**Table 3-3** shows that PM<sub>10</sub> levels regularly exceeded the CAAQS but not the NAAQS at three monitoring stations over the three-year period of 2014 through 2016. **Table 3-3** shows that PM<sub>2.5</sub> NAAQS were exceeded from 2014 through 2016. Similar levels can be expected to occur in the vicinity of the project site.

### 3.2.3. Carbon Monoxide (CO)

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. Wind speed and atmospheric mixing also influence CO concentrations; however, under inversion conditions prevalent in the San Joaquin valley, CO concentrations may be more uniformly distributed over a broad area.

Internal combustion engines, principally in vehicles, produce CO due to incomplete fuel combustion. Various industrial processes also produce CO emissions through incomplete combustion. Gasoline-powered motor vehicles are typically the major source of this contaminant. CO does not irritate the respiratory tract, but passes through the lungs directly into the blood stream, and by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues of oxygen, thereby aggravate cardiovascular disease, causing fatigue, headaches, and dizziness. CO is not known to have adverse effects on vegetation, visibility or materials.

**Table 3-3** reports no CO levels at the Bakersfield monitoring station during the three-year period from 2014 through 2016; historically Bakersfield data for CO has been below the CAAQS and NAAQS.



### 3.2.4. Nitrogen Dioxide (NO<sub>2</sub>) and Hydrocarbons

Kern County has been designated as an attainment area for the NAAQS for NO<sub>2</sub>. NO<sub>2</sub> is the "whiskey brown" colored gas readily visible during periods of heavy air pollution. Mobile sources and oil and gas production account for nearly all of the county's NO<sub>x</sub> emissions, most of which is emitted as NO<sub>2</sub>. Combustion in motor vehicle engines, power plants, refineries and other industrial operations are the primary sources in the region. Railroads and aircraft are other potentially significant sources of combustion air contaminants. Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide, combines with oxygen in the atmosphere in the presence of hydrocarbons and sunlight to form NO<sub>2</sub> and O<sub>3</sub>. NO<sub>2</sub>, the most significant of these pollutants, can color the atmosphere at concentrations as low as 0.5 ppm on days of 10-mile visibility. NO<sub>x</sub> is an important air pollutant in the region because it is a primary receptor of ultraviolet light, which initiates the reactions producing photochemical smog. It also reacts in the air to form nitrate particulates.

Motor vehicles are the major source of reactive hydrocarbons in the basin. Other sources include evaporation of organic solvents and petroleum production and refining operations. Certain hydrocarbons can damage plants by inhibiting growth and by causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminant group are important components in the reactions, which produce photochemical oxidants.

**Table 3-3** shows that the Federal or State NO<sub>2</sub> standards have not been exceeded at the Edison or the Bakersfield area-monitoring stations over the three-year period of 2014 through 2016. Hydrocarbons are not currently monitored.

### 3.2.5. Sulfur Dioxide (SO<sub>2</sub>)

Kern County has been designated as an attainment area for the NAAQS for SO<sub>2</sub>. SO<sub>2</sub> is the primary combustion product of sulfur, or sulfur containing fuels. Fuel combustion is the major source of this pollutant, while chemical plants, sulfur recovery plants, and metal processing facilities are minor contributors. Gaseous fuels (natural gas, propane, etc.) typically have lower percentages of sulfur containing compounds than liquid fuels such as diesel or crude oil. SO<sub>2</sub> levels are generally higher in the winter months. Decreasing levels of SO<sub>2</sub> in the atmosphere reflect the use of natural gas in power plants and boilers.

At high concentrations, SO<sub>2</sub> irritates the upper respiratory tract. At lower concentrations, when respiration in combination with particulates, SO<sub>2</sub> can result in greater harm by injuring lung tissues. Sulfur oxides (SO<sub>x</sub>), in combination with moisture and oxygen, results in the formation of sulfuric acid, which can yellow the leaves of plants, dissolve marble, and oxidize iron and steel. SO<sub>x</sub> can also react to produce sulfates that reduce visibility and sunlight.

**Table 3-3** shows no data has been reported over the three-year period in Bakersfield.

### 3.2.6. Lead (Pb) and Suspended Sulfate

Ambient Pb levels have dropped dramatically due to the increase in the percentage of motor vehicles that run exclusively on unleaded fuel. Ambient Pb levels in Bakersfield are well below the ambient standard and are expected to continue to decline; the data reported in **Table 3-3** only shows the highest concentration as the number of days exceeding standards are not reported. Suspended sulfate levels have stabilized to the point where no excesses of the State standard are expected in any given year.



### 3.3. CLIMATE

The most significant single control on the weather pattern of the San Joaquin Valley is the semi-permanent subtropical high-pressure cell, referred to as the "Pacific High." During the summer, the Pacific High is positioned off the coast of northern California, diverting ocean-derived storms to the north. Hence, the summer months are virtually rainless. During the winter, the Pacific High moves southward allowing storms to pass through the San Joaquin Valley. Almost all of the precipitation expected during a given year occurs from December through April. During the summer, the predominant surface winds are out of the northwest. Air enters the Valley through the Carquinez strait and flows toward the Tehachapi Mountains. This up-valley (northwesterly) wind flow is interrupted in early fall by the emergence of nocturnal, down-valley (southeasterly) winds which become progressively more predominant as winter approaches. Wind speeds are generally highest during the spring and lightest in fall and winter. The relatively cool air flowing through the Carquinez strait is warmed on its journey south through the Valley. On reaching the southern end of the Valley, the average high temperature during the summer is nearly 100 degrees Fahrenheit (°F). Relative humidity during the summer is quite low, causing large diurnal temperature variations. Temperatures during the summer often drop into the upper 60s. In winter, the average high temperatures reach into the mid-50s and the average low drops to the mid-30s. In addition, another high-pressure cell, known as the "Great Basin High," develops east of the Sierra Nevada Mountain Range during winter. When this cell is weak, a layer of cool, damp air becomes trapped in the basin and extensive fog results. During inversions, vertical dispersion is restricted, and pollutant emissions are trapped beneath the inversion and pushed against the mountains, adversely affecting regional air quality. Surface-based inversions, while shallow and typically short-lived, are present most mornings. Elevated inversions, while less frequent than ground-based inversions, are typically longer lasting and create the more severe air stagnation problems. The winter season characteristically has the poorest conditions for vertical mixing of the entire year.

Meteorological data for various monitoring stations is maintained by the Western Regional Climate Center. Meteorological data for the project site is expected to be similar to the data recorded at the Bakersfield monitoring station. This data is provided in **Table 3-4 – Bakersfield Weather Data**, which contains average precipitation data recorded at the Bakersfield monitoring station. Over the 79-year period from October of 1937 through June of 2016 (the most recent data available), the average annual precipitation was 6.17 inches.

**Table 3-4 – Bakersfield Weather Data**

<b>Period of Record Monthly Climate Summary for the Period 10/01/1937 to 6/09/2016</b>													
	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Annual</b>
Avg. Maximum Temp (F)	57.4	63.6	69.0	75.7	84.2	92.1	98.6	96.7	91.0	80.5	67.3	57.8	77.8
Avg. Minimum Temp (F)	38.5	42.1	45.4	49.7	56.6	63.3	69.2	67.7	63.1	54.0	44.1	38.5	52.7
Average Total Precip.(in.)	1.04	1.16	1.12	0.67	0.21	0.07	0.01	0.04	0.10	0.30	0.59	0.85	6.17
Average Snowfall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent of possible observations for period of record: Max. Temp.: 99.6% Min. Temp.: 99.6% Precipitation: 99.7% Snowfall: 92.4% Snow Depth: 92.2%													

**Source: Western Regional Climate Center, 2018.**



## 3.4. CLIMATE CHANGE AND GREENHOUSE GASES

### 3.4.1. Global Climate Change

“Global climate change” refers to change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms, lasting for decades or longer. The term “global climate change” is often used interchangeably with the term “global warming,” but “global climate change” is preferred by some scientists and policy makers to “global warming” because it helps convey the notion that in addition to rising temperatures, other changes in global climate may occur. Climate change may result from the following influences:

- Natural factors, such as changes in the sun’s intensity or slow changes in the Earth’s orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation); and/or
- Human activities that change the atmosphere’s composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, and desertification).

As determined from worldwide meteorological measurements between 1990 and 2005, the primary observed effect of global climate change has been a rise in the average global tropospheric temperature of 0.36 degree Fahrenheit (°F) per decade. Climate change modeling shows that further warming could occur, which could induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns or more energetic aspects of extreme weather (e.g., droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones). Specific effects from climate change in California may include a decline in the Sierra Nevada snowpack, erosion of California’s coastline, and seawater intrusion in the Sacramento-San Joaquin River Delta.

Human activities, including fossil fuel combustion and land use changes, release carbon dioxide (CO<sub>2</sub>) and other compounds cumulatively termed greenhouse gases. GHGs are effective at trapping radiation that would otherwise escape the atmosphere. This trapped radiation warms the atmosphere, the oceans, and the earth’s surface (USGCRP, 2014). Many scientists believe “most of the warming observed over the last 50 years is attributable to human activities” (IPCC, 2017). The increased amount of CO<sub>2</sub> and other GHGs in the atmosphere is the alleged primary result of human-induced warming.

GHGs are present in the atmosphere naturally, released by natural sources, or formed from secondary reactions taking place in the atmosphere. They include CO<sub>2</sub>, methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and O<sub>3</sub>. In the last 200 years, substantial quantities of GHGs have been released into the atmosphere, primarily from fossil fuel combustion. These human-induced emissions are increasing GHG concentrations in the atmosphere, therefore enhancing the natural greenhouse effect. The GHGs resulting from human activity are believed to be causing global climate change. While human-made GHGs include CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, some (like chlorofluorocarbons [CFCs]) are completely new to the atmosphere. GHGs vary considerably in terms of Global Warming Potential (GWP), the comparative ability of each GHG to trap heat in the atmosphere. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere (“atmospheric lifetime”). The GWP of each gas is measured relative to CO<sub>2</sub>, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO<sub>2</sub> over a specified time period. GHG emissions are typically measured in terms of pounds or tons of “CO<sub>2</sub> equivalents” (CO<sub>2</sub>e).

Natural sources of CO<sub>2</sub> include the respiration (breathing) of humans and animals and evaporation from the oceans. Together, these natural sources release approximately 150 billion metric tons of CO<sub>2</sub> each year, far outweighing the 7 billion metric tons of GHG emissions from fossil fuel burning, waste incineration, deforestation,



cement manufacturing, and other human activity. Nevertheless, natural GHG removal processes such as photosynthesis cannot keep pace with the additional output of CO<sub>2</sub> from human activities. Consequently GHGs are building up in the atmosphere (Environpedia, 2017).

Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources of CH<sub>4</sub> production include wetlands, termites, and oceans. Human activity accounts for the majority of the approximately 500 million metric tons of CH<sub>4</sub> emitted annually. These anthropogenic sources include the mining and burning of fossil fuels; digestive processes in ruminant livestock such as cattle; rice cultivation; and the decomposition of waste in landfills. The major removal process for atmospheric CH<sub>4</sub>, the chemical breakdown in the atmosphere, cannot keep pace with source emissions; therefore, CH<sub>4</sub> concentrations in the atmosphere are rising.

Worldwide emissions of GHGs in 2008 were 30.1 billion metric tons of CO<sub>2</sub>e and have increased considerably since that time (United Nations, 2011). It is important to note that the global emissions inventory data are not all from the same year and may vary depending on the source of the data (U.S. EPA, 2016). Emissions from the top five emitting countries and the European Union accounted for approximately 55% of total global GHG emissions. The United States was the number two producer of GHG emissions. The primary GHG emitted by human activities in the United States was CO<sub>2</sub>, representing approximately 84% of total GHG emissions (U.S. EPA, 2016).

In 2009, the United States emitted approximately 6.6 billion metric tons of CO<sub>2</sub>e or approximately 25 tons per year (tpy) per person. Of the six major sectors nationwide (electric power industry, transportation, industry, agriculture, commercial, and residential), the electric power industry and transportation sectors combined account for approximately 62% of the GHG emissions; the majority of the electrical power industry and all of the transportation emissions are generated from direct fossil fuel combustion. Between 1990 and 2006, total United States GHG emissions rose approximately 14.7% (U.S. EPA, 2016).

Worldwide CO<sub>2</sub> emissions are expected to increase by 1.9% annually between 2001 and 2025 (U.S. Energy Information Center, 2017). Much of the increase in these emissions is expected to occur in the developing world where emerging economies, such as China and India, fuel economic development with fossil fuel energy. Developing countries' emissions are expected to grow above the world average at 2.7% annually between 2001 and 2025, and surpass emissions of industrialized countries around 2018.

CARB is responsible for developing and maintaining the California GHG emissions inventory. This inventory estimates the amount of GHGs emitted into and removed from the atmosphere by human activities within the state of California and supports the Assembly Bill (AB) 32 Climate Change Program. CARB's current GHG emission inventory covers the years 1990 through 2008 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, and agricultural lands).

California's net emissions of GHG decreased 1.3% from 459 million metric tons (MMT) of CO<sub>2</sub>e in 2000 to 453 MMT in 2009, with a maximum of 483.9 MMT in 2004. Driven by a noticeable drop in on-road transportation emissions, statewide GHG emissions dropped from 485 MMT CO<sub>2</sub>e in 2008 to 457 MMT in 2009. (2009 also reflects the beginning of the economic recession and fuel price spikes.) As the economy recovers, GHG emissions are likely to rise again without other mitigation actions. During the same period from 2000 to 2009, California's GHG emissions per person decreased by 9.7%, but the emissions reductions were offset by the state's population increase of 9.0%.

CARB estimates that transportation was the source of approximately 38% of California's GHG emissions in 2009, followed by electricity generation at 23%. Other sources of GHG emissions were industrial sources at 20%, residential plus commercial activities at 9%, and agriculture at 7%.



CARB has projected statewide GHG emissions for the year 2020, which represent the emissions that would be expected to occur with reductions anticipated from Pavley I and the Renewables Portfolio Standard (RPS) (38 MMT CO<sub>2</sub>e total), will be 507 MMT of CO<sub>2</sub>e (CARB, 2014a). GHG emissions from the transportation and electricity sectors as a whole are expected to increase at approximately 36% and 22% of total CO<sub>2</sub>e emissions, respectively, as compared to 2009. The industrial sector consists of large stationary sources of GHG emissions and the percentage of the total 2020 emissions is projected to be 18% of total CO<sub>2</sub>e emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases at 7%, residential and commercial activities at 9%, agriculture at 6%, and recycling and waste at 2%.

### 3.4.2. Effects of Global Climate Change

Changes in the global climate are assessed using historical records of temperature changes that have occurred in the past. Climate change scientists use this temperature data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from past climate changes in rate and magnitude.

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fifth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, could range from 1.1 degree Celsius (°C) to 6.4 °C (8 to 10.4 °Fahrenheit). Global average temperatures and sea levels are expected to rise under all scenarios (IPCC, 2014). The IPCC concluded that global climate change was largely the result of human activity, mainly the burning of fossil fuels. However, the scientific literature is not consistent regarding many of the aspects of climate change, the actual temperature changes during the 20th century, and contributions from human versus non-human activities.

Effects from global climate change may arise from temperature increases, climate sensitive diseases, extreme weather events, and degradation of air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke, drought, etc. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.

According to the 2006 California Climate Action Team (CAT) Report, several climate change effects can be expected in California over the course of the next century (CalEPA, 2006). These are based on trends established by the IPCC and are summarized below.

- A diminishing Sierra snowpack declining by 70% to 90%, threatening the state's water supply.
- A rise in sea levels, resulting in the displacement of coastal businesses and residences. During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Sea level rises of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. (Note: This condition would not affect the Proposed Project area as it is a significant distance away from coastal areas.)



- An increase in temperature and extreme weather events. Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- Increased risk of large wildfires if rain increases as temperatures rise. Wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30% toward the end of the 21st century because more winter rain will stimulate the growth of more plant fuel available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90% more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- Increasing temperatures from 8 to 10.4 °F under the higher emission scenarios, leading to a 25% to 35% increase in the number of days that ozone pollution levels are exceeded in most urban areas (see below).
- Increased vulnerability of forests due to forest fires, pest infestation, and increased temperatures.
- Reductions in the quality and quantity of certain agricultural products. The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- Exacerbation of air quality problems. If temperatures rise to the medium warming range, there could be 75 to 85% more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- A decrease in the health and productivity of California's forests. Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.
- Increased electricity demand, particularly in the hot summer months.
- Increased ground-level ozone formation due to higher reaction rates of ozone precursors.

### 3.4.3. Global Climate Change Regulatory Issues

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United Nations Framework Convention on Climate Change established an agreement with the goal of controlling GHG emissions, including methane. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs. Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete O<sub>3</sub> in the stratosphere (chlorofluorocarbons [CFCs], halons, carbon tetrachloride, and methyl chloroform) were phased out by 2000 (methyl chloroform was phased out by 2005).

On September 27, 2006, Assembly Bill 32 (AB32), the California Global Warming Solutions Act of 2006 (the Act) was enacted by the State of California. The legislature stated, "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." The Act caps California's GHG emissions at 1990 levels by 2020. The Act defines GHG emissions as all of the following gases: carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. This agreement represents the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB32 lays out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB32 charges CARB with responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. CARB has adopted a list of discrete early action measures that can be implemented to reduce GHG emissions. CARB has defined the 1990 baseline emissions for California, and has adopted that baseline as the 2020



statewide emissions cap. CARB is conducting rulemaking for reducing GHG emissions to achieve the emissions cap by 2020. In designing emission reduction measures, CARB must aim to minimize costs, maximize benefits, improve and modernize California's energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state's efforts to improve air quality.

Global warming and climate change have received substantial public attention for more than 20 years. For example, the United States Global Change Research Program was established by the Global Change Research Act of 1990 to enhance the understanding of natural and human-induced changes in the Earth's global environmental system, to monitor, understand and predict global change, and to provide a sound scientific basis for national and international decision-making. Even so, the analytical tools have not been developed to determine the effect on worldwide global warming from a particular increase in GHG emissions, or the resulting effects on climate change in a particular locale. The scientific tools needed to evaluate the impacts that a specific project may have on the environment are even farther in the future.

The California Supreme Court's most recent CEQA decision on the Newhall Ranch development case, *Center for Biological v. California Department of Fish and Wildlife* (November 30, 2015, Case No. 217763), determined that the project's Environmental Impact Report (EIR) did not substantiate the conclusion that the GHG cumulative impacts would be less than significant. The EIR determined that the Newhall Ranch development project would reduce GHG emissions by 31 percent from business as usual (BAU). This reduction was compared to the California's target of reducing GHG emissions statewide by 29 percent from business as usual. The Court determined that "the EIR's deficiency stems from taking a quantitative comparison method developed by the Scoping Plan as a measure of the greenhouse gas reduction effort required by the state as a whole, and attempting to use that method, without adjustments, for a purpose very different from its original design." In the Court's final ruling it offered suggestions that were deemed appropriate use of the BAU methodology:

1. Lead agencies can use the comparison to BAU methodology if they determine what reduction a particular project must achieve in order to comply with statewide goals,
2. Project design features that comply with regulations to reduce emissions may demonstrate that those components of emissions are less than significant, and
3. Lead agencies could also demonstrate compliance with locally adopted climate plans, or could apply specific numerical thresholds developed by some local agencies.

The KCPD, the lead CEQA agency, has not developed specific thresholds for GHG. As discussed in Section 4.1, Significance Criteria, the SJVAPCD, a CEQA Trustee Agency for this Project, has developed thresholds to determine significance of a proposed project – either implement Best Performance Standards or achieve a 29% reduction from BAU (a specific numerical threshold). A Best Performance Standards threshold has not been established. Therefore the 29% reduction from BAU is applied to the subject Project in order to determine significance. Therefore, the GHG analysis for this Project follows the suggestions from the Court's ruling on the Newhall Ranch development project in order to determine significance using the project design features.



## 4. IMPACT ASSESSMENT

### 4.1. SIGNIFICANCE CRITERIA

To determine whether a proposed Project could create a potential CEQA impact, local, state and federal agencies have developed various means by which a project's impacts may be measured and evaluated. Such means can generally be categorized as follows:

- Thresholds of significance adopted by air quality agencies to guide lead agencies in their evaluation of air quality impacts under the CEQA.
- Regulations established by air districts, CARB and EPA for the evaluation of stationary sources when applying for Authorities to Construct, Permits to Operate and other permit program requirements (e.g., New Source Review).
- Thresholds utilized to determine if a project would cause or contribute significantly to violations of the ambient air quality standards or other concentration-based limits.
- Regulations applied in areas where severe air quality problems exist.

Summary tables of these emission-based and concentration-based thresholds of significance for each pollutant are provided below along with a discussion of their applicability.

#### 4.1.1. Thresholds Adopted for the Evaluation of Air Quality Impacts under CEQA

In order to maintain consistency with CEQA, the SJVAPCD (2015) adopted guidelines to assist applicants in complying with the various requirements. According to the SJVAPCD's GAMAQI, a project would have potentially significant air quality impacts when the project:

- Creates a conflict with or obstructs implementation of the applicable air quality plan;
- Causes a violation of any air quality standard or generates substantial contribution towards exceeding an existing or projected air quality standard;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated non-attainment under a NAAQS and CAAQS (including emissions which exceed quantitative thresholds for O<sub>3</sub> precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors that affect a substantial number of people.

The SJVAPCD GAMAQI thresholds are designed to implement the general criteria for air quality emissions as required in the CEQA Guidelines, Appendix G, Paragraph III (Title 14 of the California Code of Regulations §15064.7) and CEQA (California Public Resources Code Sections 21000 et. al). SJVAPCD's specific CEQA air quality thresholds are presented in **Table 4-1**.

**Table 4-1 SJVAPCD CEQA Thresholds of Significance**

Criteria Pollutant	Significance Level	
	Construction	Operational
CO	100 tons/yr	100 tons/yr
NOx	10 tons/yr	10 tons/yr
ROG	10 tons/yr	10 tons/yr
SOx	27 tons/yr	27 tons/yr
PM10	15 tons/yr	15 tons/yr
PM2.5	15 tons/yr	15 tons/yr
Source: SJVAPCD 2015		



#### 4.1.2. Thresholds for Ambient Air Quality Impacts

CEQA Guidelines – Appendix G (Environmental Checklist) states that a project that would “*violate any air quality standard or contribute substantially to an existing or projected air quality violation*” would be considered to create significant impacts on air quality. Therefore, an AQIA should determine whether the emissions from a project would cause or contribute significantly to violations of the NAAQS or CAAQS (presented above in **Table 3-1**) when added to existing ambient concentrations.

The EPA has established the federal Prevention of Significant Deterioration (PSD) program to determine what comprises “significant impact levels” (SIL) to NAAQS attainment areas. A project’s impacts are considered less than significant if emissions are below PSD SIL for a particular pollutant. When a SIL is exceeded, an additional “increment analysis” is required. As the Project would not include modification to the stationary source under NSR, it would not be subject to either PSD or NSR review. The PSD SIL thresholds are used with ambient air quality modeling for a CEQA project to address whether the Project would “*violate any air quality standard or contribute substantially to an existing or projected air quality violation*.” Ambient air quality emissions estimates below the PSD SIL thresholds would result in less than significant ambient air quality impacts on both a project and cumulative CEQA impact analysis. The SJVAPCD is classified as non-attainment for the O<sub>3</sub> NAAQS and, as such, is subject to “non-attainment new source review” (NSR). PSD SILs and increments are more stringent than the CAAQS or NAAQS and represent the most stringent thresholds of significance.

#### 4.1.3. Thresholds for Hazardous Air Pollutants

The SJVAPCD’s GAMAQI states, “From a health risk perspective there are basically two types of land use projects that have the potential to cause long-term public health risk impacts:

- Type A Projects: Land use projects that will place new toxic sources in the vicinity of existing receptors, and
- Type B Projects: Land use projects that will place new receptors in the vicinity of existing toxics sources” (SJVAPCD 2015).

**Table 4-2** presents the thresholds of significance uses with toxic air contaminants when evaluating hazardous air pollutants (HAPs).

**Table 4-2 Measures of Significance – Toxic Air Contaminants**

Agency	Level	Description
Significance Thresholds Adopted for the Evaluation of Impacts Under CEQA		
SJVAPCD	Carcinogens	Maximally Exposed Individual risk <b>equals or exceeds</b> 20 in one million.
	Non-Carcinogens	<b>Acute:</b> Hazard Index <b>equals or exceeds</b> 1 for the Maximally Exposed Individual.
		<b>Chronic:</b> Hazard Index <b>equals or exceeds</b> 1 for the Maximally Exposed Individual.
Source: SJVAPCD 2015		

#### 4.1.4. Global Climate Change Thresholds of Significance

On December 17, 2009, SJVAPCD adopted *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (SJVAPCD 2009); which outlined the SJVAPCD’s methodology for assessing a project’s significance for GHGs under CEQA. The following criteria was outlined in the document to determine whether a project could have a significant impact:

- Projects determined to be exempt from the requirements of CEQA would be determined to have a less than significant individual and cumulative impact for GHG emissions and would not require further



environmental review, including analysis of project specific GHG emissions. Projects exempt under CEQA would be evaluated consistent with established rules and regulations governing project approval and would not be required to implement BPS.

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement BPS.
- Projects implementing Best Performance Standards would not require quantification of project specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing Best Performance Standards would require quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business-as-Usual (BAU\*), including GHG emission reductions achieved since the 2002-2004 baseline period. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.
- Notwithstanding any of the above provisions, projects requiring preparation of an Environmental Impact Report for any other reason would require quantification of project specific GHG emissions. Projects implementing BPS or achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

## 4.2. PROJECT RELATED EMISSIONS

This document was prepared pursuant to the SJVAPCD's GAMAQI. The GAMAQI identifies separate thresholds for a project's short-term (construction) and long-term (operational) emissions.

Project emissions were estimated for the following project development stages:

- Short-term (Construction and Demolition) – Construction emissions of the proposed Project were estimated in CalEEMod using model a 27 month construction schedule and defaults for construction equipment for the development of a 2,000 student school on 80 net acres. There is no emissions estimate for demolition activities as none are planned for the Project.
- Long-term (Operations) – Long term emissions were also estimated in CalEEMod using on model defaults for operations of a 2,000-student school.

### 4.2.1. Short-Term Emissions

Short-term emissions are primarily from the construction phase of a project, and would have temporary impacts on air quality.

The Project applicant did not provide a list of specific construction equipment; the construction emissions were therefore based on the default CalEEMod equipment list accordingly for the proposed Project's land use type and development intensity. Applying model defaults as well as a conservative analysis approach, construction emissions were estimated as if construction started in September of 2018. Based on estimates from the KHSD, the Project construction is 27 months and operations would begin during Year 2020. The dates entered into the CalEEMod program may not represent the actual dates the equipment will operate; however, the total construction time is accurate, and therefore, all estimated emission totals are conservative and a reasonable and



legally sufficient estimate of potential impacts. All construction equipment activity levels were the defaults CalEEMod specifies for type and number of equipment, hours per day and horse power.

SJVAPCD's required measures for all projects were also applied:

- Water exposed areas 3 times per day; and
- Reduce vehicle speed to less than 15 miles per hour.

**Table 4-3** presents the Project's short-term emissions based on the anticipated construction period.

**Table 4-3 – Short-Term Project Emissions**

Emissions Source	Pollutant (tons/year)					
	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Unmitigated</b>						
2018	0.21	2.25	1.37	0.003	0.58	0.26
2019	0.54	4.84	3.74	0.011	0.59	0.28
2020	2.30	3.21	2.66	0.008	0.40	0.19
<b>Maximum Annual Emission</b>	<b>2.30</b>	<b>4.84</b>	<b>3.74</b>	<b>0.011</b>	<b>0.59</b>	<b>0.28</b>
<b>Mitigated</b>						
2018	0.21	2.25	1.37	0.003	0.31	0.16
2019	0.54	4.84	3.74	0.011	0.59	0.28
2020	2.30	3.21	2.66	0.008	0.40	0.19
<b>Maximum Annual Emission</b>	<b>2.30</b>	<b>4.84</b>	<b>3.74</b>	<b>0.011</b>	<b>0.59</b>	<b>0.28</b>
Significance Threshold	10	10	100	27	15	15
Is Threshold Exceeded For a Single Year After Mitigation?	NO	NO	NO	NO	NO	NO
<i>Source: Insight Environmental Consultants 2018</i>						

As calculated with CalEEMod, the estimated short-term construction-related emissions would not exceed SJVAPCD significance threshold levels during any given year and would therefore be *less than significant*.

#### 4.2.2. Long-Term Operations Emissions

Long-term emissions are caused by operational mobile, area and energy sources. Long-term emissions would consist of the following components.

##### 4.2.2.1. Fugitive Dust Emissions

Operation of the Project site at full build-out is not expected to present a substantial source of fugitive dust (PM<sub>10</sub>) emissions. The main source of PM<sub>10</sub> emissions would be from vehicular traffic associated with the Project site.

PM<sub>10</sub> on its own as well as in combination with other pollutants creates a health hazard. The SJVAPCD's Regulation VIII establishes required controls to reduce and minimizing fugitive dust emissions. The following SJVAPCD Rules and Regulations apply to the proposed Project (and all projects):

- Rule 4102 - Nuisance
- Regulation VIII – Fugitive PM<sub>10</sub> Prohibitions
  - Rule 8011 - General Requirements
  - Rule 8021 - Construction, Demolition, Excavation, Extraction, and Other



- Earthmoving Activities
  - Rule 8041 - Carryout and Trackout
  - Rule 8051 - Open Areas

The Project would comply with applicable SJVAPCD Rules and Regulations, the local zoning codes, and additional emissions reduction measures recommended later in this analysis, in Section 7, Mitigation and Other Recommended Measures.

#### 4.2.2.2. Exhaust Emissions

Project-related transportation activities from employees, students and parents would generate mobile source ROG, NO<sub>x</sub>, SO<sub>x</sub>, CO, PM<sub>10</sub> and PM<sub>2.5</sub> exhaust emissions. Exhaust emissions would vary substantially from day to day but would average out over the course of an operational year. The variables factored into estimating total Project emissions include: level of activity, site characteristics, weather conditions, and number of residents and visitors. As the Project is not expected to generate an adverse change in current activity levels, substantial emissions are not anticipated.

#### 4.2.2.3. Projected Emissions

The proposed project is expected to have long-term air quality impacts as shown in **Table 4-4**. The output from the CalEEMod runs are available in **Attachment B**. Mitigation measures implemented within CalEEMod include:

- Improve Destination Accessibility (3.60 miles to shopping center);
- Improve Pedestrian Network (Project site and connecting off-site);
- Implement School Bus Program (33% usage); and
- 3% Electric Lawnmower, Leaf blower, and chainsaw.

**Table 4-4 – Post-Project (Operational) Emissions**

Emissions Source	Pollutant (tons/year)					
	ROG	NOX	CO	SOX	PM10	PM2.5
Unmitigated Operational Emissions	2.21	3.82	10.52	0.03	2.72	0.77
Mitigated Operational Emissions	2.18	3.52	9.66	0.03	2.44	0.68
SJVAPCD Threshold	10	10	100	27	15	15
Is Threshold Exceeded After Mitigation?	NO	NO	NO	NO	NO	NO

Source: Insight Environmental Consultants 2018

As shown in **Table 4-4**, operations-related emissions, as calculated by CalEEMod (See **Attachment B**), would be less than the SJVAPCD significant threshold levels. Therefore, the proposed Project would have a *less than significant impact* during Project operations.

### 4.3. POTENTIAL IMPACTS ON SENSITIVE RECEPTORS

Sensitive receptors are defined as locations where young children, chronically ill individuals, the elderly or people who are more sensitive than the general population reside, such as schools, hospitals, nursing homes and daycare centers. The nearest residential sensitive receptor to the proposed Project site is 0.01 miles north of the Project. The two known non-residential sensitive receptor within 2 miles of the Project site are listed below in **Table 4-5**.



**Table 4-5 – Sensitive Receptors Located < 2 Miles from Project**

<b>Receptor</b>	<b>Type of Facility</b>	<b>Distance from Project in Miles</b>	<b>Direction from Project</b>
General Shafter School	K-8 Public	1.63	S
Ridgeview High School	9-12 Public	1.89	NW

#### **4.4. POTENTIAL IMPACTS TO VISIBILITY TO NEARBY CLASS 1 AREAS**

Visibility impact analyses are intended for stationary sources of emissions which are subject to the Prevention of Significant Deterioration (PSD) requirements in 40 CFR Part 60; they are not usually conducted for area sources. Because the Project's PM10 emissions increase is predicted to be less than the PSD threshold levels, an impact at any Class 1 area within 100 kilometers of the Project (including Edwards Air Force Base, China Lake Naval Weapons Station and the entire R-2508 Airspace Complex) is extremely unlikely. Therefore, based on the Project's predicted less-than significant PM10 emissions, the Project would be expected to have a less than significant impact to visibility at any Class 1 Area.

#### **4.5. POTENTIAL IMPACTS FROM CARBON MONOXIDE**

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. CO concentrations are also influenced by wind speed and atmospheric mixing. CO concentrations may be more uniformly distributed when inversion conditions are prevalent in the valley. Under certain meteorological conditions CO concentrations along a congested roadway or intersection may reach unhealthful levels for sensitive receptors, e.g. children, the elderly, hospital patients, etc. This localized impact can result in elevated levels of CO, or "hotspots" even though concentrations at the closest air quality monitoring station may be below NAAQS and CAAQS.

The localized project impacts depend on whether ambient CO levels in the Project vicinity would be above or below NAAQS. If ambient levels are below the standards, a project is considered to have significant impacts if a project's emissions would exceed one or more of these standards. If ambient levels already exceed a state standard, a project's emissions are considered significant if they would increase one-hour CO concentrations by 10 ppm or more or eight-hour CO concentrations by 0.45 ppm or more. There are two criteria established by the SJVAPCD's GAMAQI by which CO "Hot Spot" modeling is required:

- I. A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to LOS E or F; or
- II. A traffic study indicates that the project would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

According to the Project applicant, at the time of this analysis no traffic generation assessment impact study has been prepared for this project. However, impacted intersections and roadway segments are anticipated to operate at a LOS of C or better. Therefore, CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

#### **4.6. PREDICTED HEALTH RISK IMPACTS**

GAMAQI recommends that Lead Agencies consider situations wherein a new or modified source of HAPs is proposed for a location near an existing residential area or other sensitive receptor when evaluating potential impacts related to HAPs.



The proposed Project would result in emissions of Hazardous Air Pollutants (HAPs) and would be located near existing residents and is a school site; therefore, an assessment of the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed Project is required.

To predict the potential health risk to the population attributable to emissions of HAPs from the proposed Project, ambient air concentrations were predicted with dispersion modeling to arrive at a conservative estimate of increased individual carcinogenic risk that might occur as a result of continuous exposure over a 70-year lifetime. Similarly, predicted concentrations were used to calculate non-cancer chronic and acute hazard indices (HIs), which are the ratio of expected exposure to acceptable exposure. The basis for evaluating potential health risk is the identification of sources with increased HAPs. HAP emissions from anticipated on-site school buses were evaluated.

Health risk is determined using the Hotspots Analysis and Reporting Program (HARP2) software distributed by the CARB; HARP2 requires peak 1-hour emission rates and annual-averaged emission rates for all pollutants for each modeling source (CARB 2014b). Assumptions used to calculate the emission rates for the proposed Project are outlined below.

The most recent version of EPA's AMS/EPA Regulatory Model - AERMOD (recompiled for the Lakes ISC-AERMOD View 9.4.0 interface) was used to predict the dispersion of emissions from the proposed Project (Lakes Environmental Software 2017). The analysis employed all of the regulatory default AERMOD model keyword parameters, including elevated terrain options.

Diesel combustion emissions from 17 school buses making two trips per day each (34 trips) were modeled as volume line sources for on-site travel following the most impactful route of travel along the southern border of the property. School bus idling emissions were modeled as a point source with fifteen minutes of idling per bus trip. The assumed 34 bus trips per day was based on the bus schedule from another local high school (Independence High School) of similar size. Diesel particulate matter was calculated using EMFAC approved emission factors for school buses traveling at 5 miles per hour (representative of on-site speed). EMFAC idling emissions were used for Kern County, year 2020, annual. EMFAC emission factors are provided by the California Air Resources Board (CARB 2014). A unit emission rate of 1 grams/second (g/sec) was input to AERMOD for each source.

Discrete receptors were placed on scattered agricultural houses and businesses within close proximity to the Project site. Discrete receptors were also placed of schools within two miles of the Project site. Receptor grids were placed over the more densely populated areas. A total of 1329 discrete off-site receptors were analyzed. Additionally, a grid consisting of 100 receptors was placed on the school site. Elevated terrain options were employed even though there is not complex terrain in the Project area.

SJVAPCD-provided, AERMET UStar processed meteorological datasets for the Bakersfield monitoring station, calendar years 2010 through 2014 was input to AERMOD (SJVAPCD 2016b). This was the most recent available dataset available at the time the modeling was conducted. Rural dispersion parameters were used because the operation and the majority of the land surrounding the facility is considered "rural" under the Auer land use classification method (Auer 1978).

Plot files generated by AERMOD were imported to HARP CONVERSION software (Villalvazo 2015). HARP CONVERSION was used to adjust the AERMOD-predicted air concentrations calculated with unit emission rates to pollutant-specific emission rates and to generate source, X/Q and emission import files for HARP.



The files generated in HARP CONVERSION were then uploaded into the HARP to HARP 2 Converter (Villalvazo 2015), then to the Air Dispersion Modeling and Risk Assessment Tool (ADMRT) program in the Hotspots Analysis and Reporting Program Version 2 (HARP 2) (CARB 2015). ADMRT post-processing was used to assess the potential for excess cancer risk and chronic non-cancer effects using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA).

HARP post-processing was used to assess the potential for excess chronic non-cancer effects and cancer risk using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA). HARP2 site parameters were set for the inhalation pathway only since DPM only affects the inhalation pathway. Risk reports were generated using the derived OEHHA analysis method for carcinogenic risk and non-carcinogenic chronic and acute risk. Site parameters are included in the HARP2 output files. Total cancer risk was predicted for the inhalation pathway at each receptor. A hazard index was computed for chronic non-cancer health effects for each applicable endpoint and each receptor. There is currently no acute risk associated with DPM emissions, therefore, acute risk has not been calculated. SJVAPCD has set the level of significance for carcinogenic risk at twenty in one million, which is understood as the possibility of causing twenty additional cancer cases in a population of one million people. The level of significance for chronic non-cancer risk is a hazard index of 1.0. All receptors were modeled as residential receptors with a 70 year exposure. This is conservative since all on-site receptors and business receptors would be exposed less than 70 years.

The carcinogenic risk and the health hazard index (HI) for chronic non-cancer risk at the point of maximum impact (PMI) do not exceed the significance levels of twenty in one million ( $20 \times 10^{-6}$ ) and 1.0, respectively for the proposed Project. The PMIs, are identified by receptor location and risk, and are provided in **Table 4-6**. The electronic AERMOD and HARP2 output files are provided in **Attachment E**.

**Table 4-6 – Potential Maximum Impacts Predicted By HARP**

	Value	UTM East	UTM North
Excess Cancer Risk	5.70E-07	314632.28	3902918.13
Chronic Hazard Index	1.16E-04	314632.28	3902918.13

As shown above in **Table 4-6**, the maximum predicted cancer risk for the proposed Project is 5.70E-07. The maximum chronic non-cancer hazard index for the proposed Project is 1.16E-04. Since the PMI remained below the significance threshold for cancer and chronic risk, this Project would not have an adverse effect to any of the surrounding communities.

*The potential health risk attributable to the proposed Project is determined to be less than significant based on the following conclusions:*

- 1) Potential carcinogenic risk from the proposed Project is *below* the significance level of ten in a million at each of the modeled receptors; and
- 2) The hazard index for the potential chronic non-cancer risk from the proposed Project is *below* the significance level of 1.0 at each of the modeled receptors.
- 3) The hazard index for the potential acute non-cancer risk was not calculated since there is no acute risk associated with DPM emission, therefore, the proposed Project is considered *below* the significance level.

Therefore, potential risk to the population attributable to emissions of HAPs from the proposed Project would be *less than significant*.



## 4.7. ODOR IMPACTS AND MITIGATION

The SJVAPCD's GAMAQI states "An analysis of potential odor impacts should be conducted for both of the following two situations:

1. Generators – projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
2. Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources." (SJVAPCD 2015).

GAMAQI also states "The District has identified some common types of facilities that have been known to produce odors in the San Joaquin Valley Air Basin. These are presented in Table 6 (Screening Levels for Potential Odor Sources), can be used as a screening tool to qualitatively assess a project's potential to adversely affect area receptors." (SJVAPCD, 2015). Because the Project is a school site and the anticipated activities for the Project site are not listed in Table 6 of the GAMAQI as a source which would create objectionable odors the Project is not expected to be a source of objectionable odors.

Based on the provisions of the SJVAPCD's GAMAQI, the proposed Project would not exceed any screening trigger levels to be considered a source of objectionable odors or odorous compounds (SJVAPCD, 2015). Furthermore, there does not appear to be any significant source of objectionable odors in close proximity that may adversely impact the project site when it is in operation. Additionally, the Project emission estimates indicate that the proposed Project would not be expected to adversely impact surrounding receptors. As such, the proposed Project would not be a source of any odorous compounds nor would it likely be impacted by any odorous source.

## 4.8. IMPACTS TO AMBIENT AIR QUALITY

An ambient air quality analysis was performed to determine if the proposed Project has the potential to impact ambient air quality through a violation of the ambient air quality standards or a substantial contribution to an existing or projected air quality standard. The basis for the analysis is dispersion modeling and the Project's long-term air quality impacts shown in **Table 7-2**.

The maximum off-site ground level concentration of each pollutant for the 1-hour, 3-hour, 8-hour, 24-hour and annual periods was predicted using the most recent version of EPA's AMS/EPA Regulatory Model (AERMOD) dispersion software under the Lakes Environmental ISC-AERMOD View interface. SJVAPCD-approved, AERMET-processed U Star meteorological datasets for calendar years 2010 through 2014 was input to AERMOD (SJVAPCD 2016b). This was the most recent available dataset available at the time the modeling runs were conducted. All of the regulatory default AERMOD model keyword parameters were employed. Rural dispersion parameters were used for this project, which differs from the urban setting used in the CalEEMod model. The CalEEMod selection criteria is based on trip distances to the project site while the AERMOD selection criteria is based on the majority of the land use surrounding the facility. The majority of the land surrounding the project site is considered "rural" under the Auer land use classification method (Auer 1978).

Emissions were evaluated for each pollutant on a short-term (correlating to pollutant averaging period) and long-term (annual) basis, with the exception of CO that was evaluated only for short-term exposures since there are no long term significance thresholds for CO.

The majority of mobile emissions predicted by CalEEMod will occur beyond the project boundary because of vehicle trips. In order to determine the on-site vehicle emissions an estimated on-site trip distance was determined by calculating the average trip distance to the center of the parking lot of another local high school (Independence High School). The on-site estimated trip distance for the Project was determined to be 0.15 miles.



The on-site estimated trip distance was then divided by the average trip length used in CalEEMod, 9.01 miles, in order to determine the on-site to off-site mobile emissions ratio, 1.66%. The total mobile emissions calculated by CalEEMod for the Project were then reduced by 98.34% to estimate the mobile on-site emissions used for ambient air quality modeling.

A fence-line coordinate grid of receptor points was constructed. The grid consisted of a 25-meter fence-line spacing and one receptor tier. The tier had 25-meter tier spacing extending a distance of 100 meters with initial receptors starting 25 meters from the facility boundary. Elevated terrain options were employed even though there is not complex terrain in the Project area.

For each pollutant and averaging period modeled, a “total” concentration was estimated by adding the maximum measured background air concentration to the maximum predicted Project impacts. The maximum measured background air concentrations used in this analysis were calculated from measured concentrations at the nearest monitoring stations.

The results of the air dispersion modeling, presented in **Table 4-7**, demonstrate that the maximum impacts attributable to the Project, when considered in addition to the existing background concentrations, are below the applicable ambient air quality standard for NO<sub>x</sub>, SO<sub>x</sub> and CO. The electronic AERMOD output files are provided in **Attachment F**.

**Table 4-7 – Predicted Ambient Air Quality Impacts**

Pollutant	Averaging Period	Background (µg/m <sup>3</sup> )	Project (µg/m <sup>3</sup> )	Project + Background (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )	CAAQS (µg/m <sup>3</sup> )
NO <sub>2</sub>	1-hour	115.10	4.85	119.95	188.68	338
	Annual	8.15	0.35	8.50	100	56
SO <sub>2</sub>	1-hour	19.20	0.03	19.23	196	655
	3-hour	18.100	0.02	18.12	1,300	---
	24-hour	10.487	0.01	10.49	365	105
	Annual	0.953	0.002	0.96	---	---
CO	1-hour	3091.50	5.72	3097.22	40,000	23,000
	8-hour	1148.82	2.40	1151.22	10,000	10,000
PM <sub>10</sub>	24-hour	109.00	0.19	109.19	150	50
	Annual	59.13	0.06	59.19	---	20
PM <sub>2.5</sub>	24-hour	83.00	0.10	83.10	35	---
	Annual	22.40	0.03	22.43	12	12

Pre-Project concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> exceed their respective ambient air quality standards. PM<sub>10</sub> and PM<sub>2.5</sub> are evaluated in accordance with the SJVAPCD recommended significant impact level (SIL) for fugitive PM<sub>10</sub> and PM<sub>2.5</sub> emissions. It is the SJVAPCD’s policy to use significant impact levels to determine whether a proposed new or modified source will cause or contribute significantly to an AAQS violation. If a project’s maximum impacts are below the District SIL, the project is judged to not cause or contribute significantly to an AAQS or PSD increment violation. A comparison of the proposed impact from the Project to the District SIL values is provided in **Table 4-8**.



**Table 4-8 – Comparison of Maximum Modeled Project Impact with Significance Thresholds**

Pollutant	Averaging Period	Predicted Concentration ( $\mu\text{g}/\text{m}^3$ )	SIL ( $\mu\text{g}/\text{m}^3$ )
PM <sub>10</sub>	24-hour	0.19	10.4
	Annual	0.06	2.08
PM <sub>2.5</sub>	24-hour	0.10	2.5
	Annual	0.03	0.63

Because the Project's modelled PM<sub>10</sub> and PM<sub>2.5</sub> are below the SJVAPCD's significance levels for 24-hour and annual concentrations, the Project's contribution to potential violations of ambient air quality standards would be less-than-significant

## 4.9. IMPACTS TO GREENHOUSE GASES AND CLIMATE CHANGE

The proposed Project's construction and operational GHG emissions were estimated using the CalEEMod program (version 2016.3.2). These emissions are summarized in **Table 4-9**. In order for the Project to conform with the goals of AB32 at least a 29% reduction of GHG emissions must be achieved by 2020. The mitigated emissions were calculated using updated emission factors from CalEEMod. The unmitigated and mitigated GHG emissions are summarized in **Table 4-10**.

**Table 4-9 – Estimated Annual GHG Emissions (MT/Year)**

Source	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
<b>Construction Emissions</b>				
2018 Construction Emissions	252.6	0.061	0.000	254.1
2019 Construction Emissions	1,005.2	0.118	0.000	1,008.1
2020 Construction Emissions	707.1	0.087	0.000	709.2
<b>Mitigated Operational Emissions</b>				
Area Emissions	0.036	0.000	0.000	0.038
Energy Emissions	-142.0	-0.013	0.000	-142.0
Mobile Emissions	2,647.0	0.153	0.000	2,650.8
Waste Emissions	74.09	4.379	0.000	183.6
Water Emissions	39.73	0.289	0.007	49.07
<i>Total Project Operational Emissions</i>	<i>2,681.86</i>	<i>4.808</i>	<i>0.007</i>	<i>2,741.5</i>
<i>Annualized Construction Emissions<sup>1</sup></i>	<i>65.50</i>	<i>0.009</i>	<i>0.000</i>	<i>65.71</i>
<b>Project Emissions</b>	<b>2,684.36</b>	<b>4.817</b>	<b>0.007</b>	<b>2,807.2</b>
*Note: 0.00 could represent <0.00				
1 Per South Coast AQMD's Methodology				

**Table 4-10 – Comparison of Unmitigated and Mitigated GHG Emissions (MT/Year)**

	Project Unmitigated	Project Mitigated (2020)
<b>CO<sub>2</sub>e Emissions</b>	4,102.5	2,741.5
<b>Percent Reduction</b>		33.17%

The Project will not result in the emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF<sub>6</sub>), the other gases identified as GHG in AB32. The proposed Project will be subject to any regulations developed under AB32 as determined by CARB. The Project will reduce GHG emissions by 33.17%; thus it will meet the required 29% reduction to meet the AB32 goals (**Table 4-10**); therefore, the Project would have less than significant GHG impacts.



#### 4.9.1. Feasible and Reasonable Mitigation Relative to Global Warming

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts from construction and operations on air quality. The SJVAPCD's "Non-Residential On-Site Mitigation Checklist" was utilized in preparing the mitigation measures and evaluating the projects features. These measures include using controls that limit the exhaust from construction equipment and using alternatives to diesel when possible. Additional reductions would be achieved through the regulatory process of the air district and CARB as required changes to diesel engines are implemented which would affect the product delivery trucks and limits on idling.

While it is not possible to determine whether the Project individually would have a significant impact on global warming or climate change, the Project would potentially contribute to cumulative GHG emissions in California as well as related health effects. The Project emissions would only be a very small fraction of the statewide GHG emissions. However, without the necessary science and analytical tools, it is not possible to assess, with certainty, whether the Project's contribution would be cumulatively considerable, within the meaning of CEQA Guidelines Sections 15065(a)(3) and 15130. CEQA, however, does note that the more severe environmental problems the lower the thresholds for treating a project's contribution to cumulative impacts as significant. Given the position of the legislature in AB32 which states that global warming poses serious detrimental effects, and the requirements of CEQA for the lead agency to determine that a project not have a cumulatively considerable contribution, the effect of the Project's CO<sub>2</sub> contribution may be considered cumulatively considerable. This determination is "speculative," given the lack of clear scientific evidence or other criteria for determining the significance of the Project's contribution of GHG to the air quality in the SJVAB.

The strategies currently being implemented by CARB may help in reducing the Project's GHG emissions and are summarized in the table below.

**Table 4-11 – Select CARB GHG Emission Reduction Strategies**

<b>Strategy</b>	<b>Description of Strategy</b>
Vehicle Climate Change Standards	AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by CARB in Sept. 2004.
Diesel Anti-Idling	In July 2004, CARB adopted a measure to limit diesel-fueled retail motor vehicle idling.
Other Light-Duty Vehicle Technology	New standards would be adopted to phase in beginning in the 2017 model year.
Alternative Fuels: Biodiesel Blends	CARB would develop regulations to require the use of 1% to 4% Biodiesel displacement of California diesel fuel.
Alternative Fuels: Ethanol	Increased use of ethanol fuel.
Heavy-Duty Vehicle Emission Reduction Measures	Increased efficiency in the design of heavy-duty vehicles and an educational program for the heavy-duty vehicle sector.

Not all of these measures are currently appropriate or applicable to the proposed Project. While future legislation could further reduce the Project's GHG footprint, the analysis of this is speculative and in accordance with CEQA Guidelines Section 15145, will not be further evaluated in this AQIA.

CEQA Guidelines Section 15130 notes that sometimes the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis. Global climate change is this type of issue. The causes and effects may not be just regional or statewide, they may also be worldwide. Given the uncertainties in identifying, let alone quantifying the impact of any single



project on global warming and climate change, and the efforts made to reduce emissions of GHGs from the Project through design, in accordance with CEQA Section 15130, any further feasible emissions reductions would be accomplished through CARB regulations adopted pursuant to AB32. The Project will achieve the required 29% reduction needed to conform with AB32 goals, as demonstrated in **Table 4-10**. Therefore, the Project's contribution to cumulative global climate change impacts would *not be cumulatively considerable*.



## 5. CUMULATIVE IMPACTS

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By its very nature, air pollution has a cumulative impact. The District's nonattainment status is a result of past and present development within the SJVAB. Furthermore, attainment of ambient air quality standards can be jeopardized by increasing emissions-generating activities in the region. No single project would be sufficient in size, by itself, to result in nonattainment of the regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the San Joaquin Valley Air Basin. When assessing whether there is a new significant cumulative effect, the Lead Agency shall consider whether the incremental effects of the project are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [CCR §15064(h)(1)]. Per CEQA Guidelines §15064(h)(3) a Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located. (SJVAPCD 2015a)

GAMAQI also states *"If a project is significant based on the thresholds of significance for criteria pollutants, then it is also cumulatively significant. This does not imply that if the project is below all such significance thresholds, it cannot be cumulatively significant."* (SJVAPCD 2015a). Based on the analysis conducted for this Project, it is individually *less than significant*. This AQIA, however, also considered impacts of the proposed Project in conjunction with the impacts of other projects previously proposed in the area. The following cumulative impacts were considered:

- Cumulative O3 Impacts (ROG and NOx) from numerous sources within the region including transport from outside the region. O3 is formed through chemical reactions of ROG and NOx in the presence of sunlight.
- Cumulative CO Impacts produced primarily by vehicular emissions.
- Cumulative PM10 Impacts from within the region and locally from the various projects. Such projects may cumulatively produce a significant amount of PM10 if several projects conduct grading or earthmoving activities at the same time; and
- Hazardous Air Pollutant (HAP) Impacts on sensitive receptors from within the SJVAPCD recommended screening radius of one mile.

### 5.1. CUMULATIVE REGIONAL AIR QUALITY IMPACTS

The most recent, certified SJVAB Emission Inventory data available from the SJVAPCD is based on data gathered for the 2012 annual inventory.<sup>1</sup> This data will be used to assist the SJVAPCD in demonstrating attainment of Federal 1-hour O3 Standards (SJVAPCD 2007). **Table 5-1** provides a comparative look at the impacts proposed by the proposed Project to the SJVAB Emissions Inventory.

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<sup>1</sup> SJVAPCD Emissions for Aggregated Stationary, Area-Wide, Mobile and Natural Sources



**Table 5-1 – Comparative Analysis Based on SJV Air Basin 2012 Inventory**

Emissions Inventory Source	Pollutant (tons/year)					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Kern County - 2012 <sup>1</sup>	79,826	26,463	58,145	949	16,097	4,964
SJVAB - 2012 <sup>1</sup>	447,344	123,078	473,369	5,147	117,348	39,968
Proposed Project	2.18	3.52	9.66	0.03	2.44	0.68
Proposed Project's % of Kern	0.0027	0.013	0.017	0.0032	0.015	0.014
Proposed Project's % of SJVAB	0.0005	0.003	0.002	0.0006	0.002	0.002
<b>NOTES:</b> <sup>1</sup> This is the latest inventory available as of April 2018 SOURCE: CARB 2015						

As shown in **Table 5-1** the proposed Project does not pose a substantial increase to basin emissions, as such basin emissions would be essentially the same if the Project is approved.

**Tables 5-2** through **5-4** provide CARB Emissions Inventory projections for the year 2020 for both the SJVAB and the Kern County portion of the air basin. Looking at the SJVAB Emissions predicted by the CARB year 2020 emissions inventory, the Kern County portion of the air basin is a moderate source of the emissions. The proposed Project produces a small portion of the total emissions in both Kern County and the entire SJVAB.

**Table 5-2 – Emission Inventory SJVAB 2020 Projection – Tons per Year**

	ROG	NO <sub>x</sub>	PM <sub>10</sub>
Total Emissions	429,934	81,833	115,961
Percent Stationary Sources	8.38%	12.58	4.72
Percent Area-Wide Sources	15.94%	5.93	78.12
Percent Mobile Sources	4.98%	76.09	4.56
Percent Natural Sources	71.71%	5.35	12.56
Total Stationary Source Emissions	36,026	10,293	5,475
Total Area-Wide Source Emissions	68,511	4,855	90,593
Total Mobile Source Emissions	21,426	62,269	5,293
Total Natural Source Emissions	304,009	4,380	14,564
Source: CARB 2015			
Note: Total may not add due to rounding.			

**Table 5-3 - Emission Inventory SJVAB – Kern County Portion 2020 Estimate Projection – Tons per Year**

	ROG	NO <sub>x</sub>	PM <sub>10</sub>
Total Emissions	72,343	16,243	15,294
Percent Stationary Sources	21.39	17.30	11.46
Percent Area-Wide Sources	11.55	3.37	80.87
Percent Mobile Sources	4.79	78.88	5.97
Percent Natural Sources	62.26	0.45	1.67
Total Stationary Source Emissions	15,476	2,811	1,752
Total Area-Wide Source Emissions	8,359	548	12,337
Total Mobile Source Emissions	3,468	12,812	913
Total Natural Source Emissions	45,041	73	256
Source: CARB 2015			
Note: Total may not add due to rounding.			



**Table 5-4 - 2020 Emissions Projections – Proposed Project, Kern County, and San Joaquin Valley Air Basin**

	ROG	NO <sub>x</sub>	PM <sub>10</sub>
<b>Proposed Project</b>	<b>2.18</b>	<b>3.52</b>	<b>2.44</b>
Kern County	72,343	16,243	15,294
SJVAB	429,934	81,833	115,961
Proposed Project Percent of Kern County	0.0030%	0.022%	0.0160%
Proposed Project Percent of SJVAB	0.0005%	0.004%	0.0021%
Kern County Percent of SJVAB	16.83%	19.85%	13.19%
Source: CARB 2015			

As shown above, the proposed Project would pose an inconsequential impact on regional O<sub>3</sub> and PM<sub>10</sub> formation. Because the regional contribution to these cumulative impacts would be negligible, the Project would *not be considered cumulatively considerable* in its contribution to regional O<sub>3</sub> and PM<sub>10</sub> impacts.

## 5.2. CUMULATIVE LOCAL AIR QUALITY IMPACTS

A review of the City of Bakersfield Planning Department Tentative Tract Map, Kern County GIS Geocortex IMP Map Viewer, and the City of Bakersfield Cumulative Projects Map indicates that there are one hundred three (103) other planned developments found within a six-mile radius of the project.

The listings provided below in **Tables 5-5** and **5-6** is only a geographical reference to demonstrate the construction activity in the project vicinity. *The number or size of these projects is of no particular significance since no “cumulative” emissions thresholds have been established by the SJVAPCD or the Kern County Planning Department.*

**Table 5-5 – Cumulative Construction Projects**

Six-Mile Radius Projects	Pollutant (tons/year) <sup>(1)</sup>					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Kern County</b>						
Total Cumulative Six-Mile Projects	377.82	1,181.0	1,116.6	3.18	218.64	97.21
<i>This Project</i>	<i>3.05</i>	<i>10.30</i>	<i>7.76</i>	<i>0.02</i>	<i>1.30</i>	<i>0.64</i>
<b>Total Cumulative Projects</b>	<b>380.87</b>	<b>1,191</b>	<b>1,124</b>	<b>3.20</b>	<b>219.94</b>	<b>97.85</b>
(1) These emissions are overestimated and include all years of construction not just a single year, as they are discretionary projects that are subject to various mitigation measures that have not yet been determined nor their impacts reduced herein.						

**Table 5-6 – Cumulative Operational Projects**

Six-Mile Radius Projects	Pollutant (tons/year) <sup>(1)</sup>					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Kern County</b>						
Total Cumulative Six-Mile Projects	290.11	960.85	1,475.2	6.04	293.39	169.23
<i>This Project</i>	<i>2.18</i>	<i>3.52</i>	<i>9.66</i>	<i>0.03</i>	<i>2.44</i>	<i>0.68</i>
<b>Total Cumulative Projects</b>	<b>292.29</b>	<b>964.37</b>	<b>1,485</b>	<b>6.07</b>	<b>295.83</b>	<b>169.9</b>
(1) These emissions are overestimated, as they are discretionary projects that are subject to various mitigation measures that have not yet been determined nor their impacts reduced herein.						

As details regarding the potential emissions from the various cumulative projects were not readily available through the Kern County Planning Department, the emissions estimates presented were modeled using the CalEEMod computer model to predict cumulative impacts (see **Attachment C** for output results) unless otherwise



noted. Emissions for the construction and operational phases of each project were based on total number of lots or square footage for maximum project build-out as noted on the most current City Planning Department Tentative Tract Map, Kern County GIS Geocortex Online Mapping information, and City of Bakersfield Cumulative Projects Map. No mitigation measures were applied to any of the projects as it is not known which, if any, would be required or which may be voluntarily proposed by each developer or required by code or regulation. Additionally, no cumulative significance thresholds are shown since no cumulative thresholds have been established by the SJVAPCD, CARB or other regulatory authority. These projects represent all known and reasonably foreseeable projects in the area. As these projects are either currently under construction or, at a minimum, approved by the Bakersfield City and Kern County Planning Departments for consistency with applicable regulation, for the purposes of this analysis, it is assumed that they are in conformance with the regional AQAP. Because the proposed Project would generate less than significant Project-related operational impacts to criteria air pollutants, the Project's contribution to cumulative air quality impacts would not be cumulatively considerable.

### 5.3. CUMULATIVE HAZARDOUS AIR POLLUTANTS

The GAMAQI also states that when evaluating potential impacts related to HAPs, *"impacts of local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards."* Because the Project would not be a significant sources of HAPS, the proposed Project would also *not be expected to pose a significant cumulative CO or HAPs impact.*

### 5.4. CUMULATIVE CARBON MONOXIDE (CO) - MOBILE SOURCES

The SJVAPCD's GAMAQI has identified CO impacts from impacted traffic intersections and roadway segments as being potentially cumulatively considerable. Traffic increases and added congestion caused by a project can combine to cause a violation of the SJVAPCD's CO standard also known as a "Hotspot". There are two criteria established by the GAMAQI by which CO "Hot Spot" modeling is required:

- A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or
- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

According to the Project applicant, at the time of this analysis no traffic generation assessment impact study has been prepared for this project. However, impacted intersections and roadway segments are anticipated to operate at a LOS of C or better. Therefore, CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.



## 6. CONSISTENCY WITH THE AIR QUALITY ATTAINMENT PLAN

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Air quality impacts from proposed projects within Kern County are controlled through policies and provisions of the SJVAPCD and the Kern County General Plan (KCPD 2004). In order to demonstrate that a proposed project would not cause further air quality degradation in either of the SJVAPCD's plan to improve air quality within the air basin or federal requirements to meet certain air quality compliance goals, each project should also demonstrate consistency with the SJVAPCD's adopted Air Quality Attainment Plans (AQAP) for O<sub>3</sub> and PM<sub>10</sub>. The SJVAPCD is required to submit a "Rate of Progress" document to the CARB that demonstrates past and planned progress toward reaching attainment for all criteria pollutants. The California Clean Air Act (CCAA) requires air pollution control districts with severe or extreme air quality problems to provide for a 5% reduction in non-attainment emissions per year. The AQAP prepared for the San Joaquin Valley by the SJVAPCD complies with this requirement. CARB reviews, approves or amends the document and forwards the plan to the EPA for final review and approval within the SIP.

Air pollution sources associated with stationary sources are regulated through the permitting authority of the SJVAPCD under the New and Modified Stationary Source Review Rule (SJVAPCD Rule 2201). Owners of any new or modified equipment that emits, reduces or controls air contaminants, except those specifically exempted by the SJVAPCD, are required to apply for an Authority to Construct and Permit to Operate (SJVAPCD Rule 2010). Additionally, best available control technology (BACT) is required on specific types of stationary equipment and are required to offset both stationary source emission increases along with increases in cargo carrier emissions if the specified threshold levels are exceeded (SJVAPCD Rule 2201, 4.7.1). Through this mechanism, the SJVAPCD would ensure that all stationary sources within the project area would be subject to the standards of the SJVAPCD to ensure that new developments do not result in net increases in stationary sources of criteria air pollutants.

### 6.1. REQUIRED EVALUATION GUIDELINES

State CEQA Guidelines and the Federal Clean Air Act (Sections 176 and 316) contain specific references on the need to evaluate consistencies between the proposed project and the applicable AQAP for the project site. To accomplish this, CARB has developed a three-step approach to determine project conformity with the applicable AQAP:

1. *Determination that an AQAP is being implemented in the area where the project is being proposed. The SJVAPCD has implemented the current, modified, AQAP as approved by the CARB. The current AQAP is under review by the U.S. EPA.*
2. *The proposed project must be consistent with the growth assumptions of the applicable AQAP. The proposed project land use type was not anticipated in the current growth assumptions. Therefore, employee growth assumptions in the Metropolitan Bakersfield and Kern County General Plans will be modified with the approval of the proposed Project.*
3. *The project must contain in its design all reasonably available and feasible air quality control measures. The proposed project incorporates various policy and rule-required implementation measures that will reduce related emissions.*

The CCAA and AQAP identify transportation control measures as methods to further reduce emissions from mobile sources. Strategies identified to reduce vehicular emissions such as reductions in vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, and traffic congestion, in order to reduce vehicular emissions, can be implemented as control measures under the CCAA as well. Additional measures may also be implemented through the building process such as providing electrical outlets on exterior walls of structures to encourage use of



electrical landscape maintenance equipment or measures such as electrical outlets for electrical systems on diesel trucks to reduce or eliminate idling time.

As the growth represented by the proposed Project will be updated in the Kern County General Plan and incorporated into the AQAP, conclusions may be drawn from the following criteria:

1. That, by definition, the proposed emissions from the project are below the SJVAPCD's established emissions impact thresholds;
2. That the primary source of emissions from the project will be motor vehicles that are licensed through the State of California and whose emissions are already incorporated into the CARB's San Joaquin Valley Emissions Inventory; and

Based on these factors, the project appears to be *consistent with the AQAP*.

## **6.2. CONSISTENCY WITH THE KERN COUNTY COUNCIL OF GOVERNMENT'S REGIONAL CONFORMITY ANALYSIS**

The Kern Council of Governments (Kern COG) Regional Conformity Analysis (Kern COG 2002) Determination demonstrates that the regional transportation expenditure plans (Destination 2030 Regional Transportation Plan and Federal Transportation Improvement Program) in the Kern County portion of the San Joaquin Valley air quality attainment areas would not hinder the efforts set out in the CARB's SIP for each area's non-attainment pollutants (CO, O<sub>3</sub> and PM<sub>10</sub>). The analysis uses an adopted regional growth forecast, governed by both the adopted Kern COG Policy and Procedure Manual and a Memorandum of Understanding between the County of Kern and Kern COG (representing itself and outlying municipal member agencies).

The Kern COG Regional Conformity Analysis considers General Plan Amendments (GPA) and zone changes that were enacted at the time of the analysis as projected growth within the area based on land use designations incorporated within the Kern County General Plan. Land use designations that are altered based on subsequent GPAs that were not included in the Regional Conformity Analysis were not incorporated into the Kern COG analysis. Consequently, if a proposed project is not included in the regional growth forecast using the latest planning assumptions, it may not be said to conform to the regional growth forecast. Under the current Kern County Zoning, the project site is designated as "A: Agricultural" (see **Figure 6-1**).



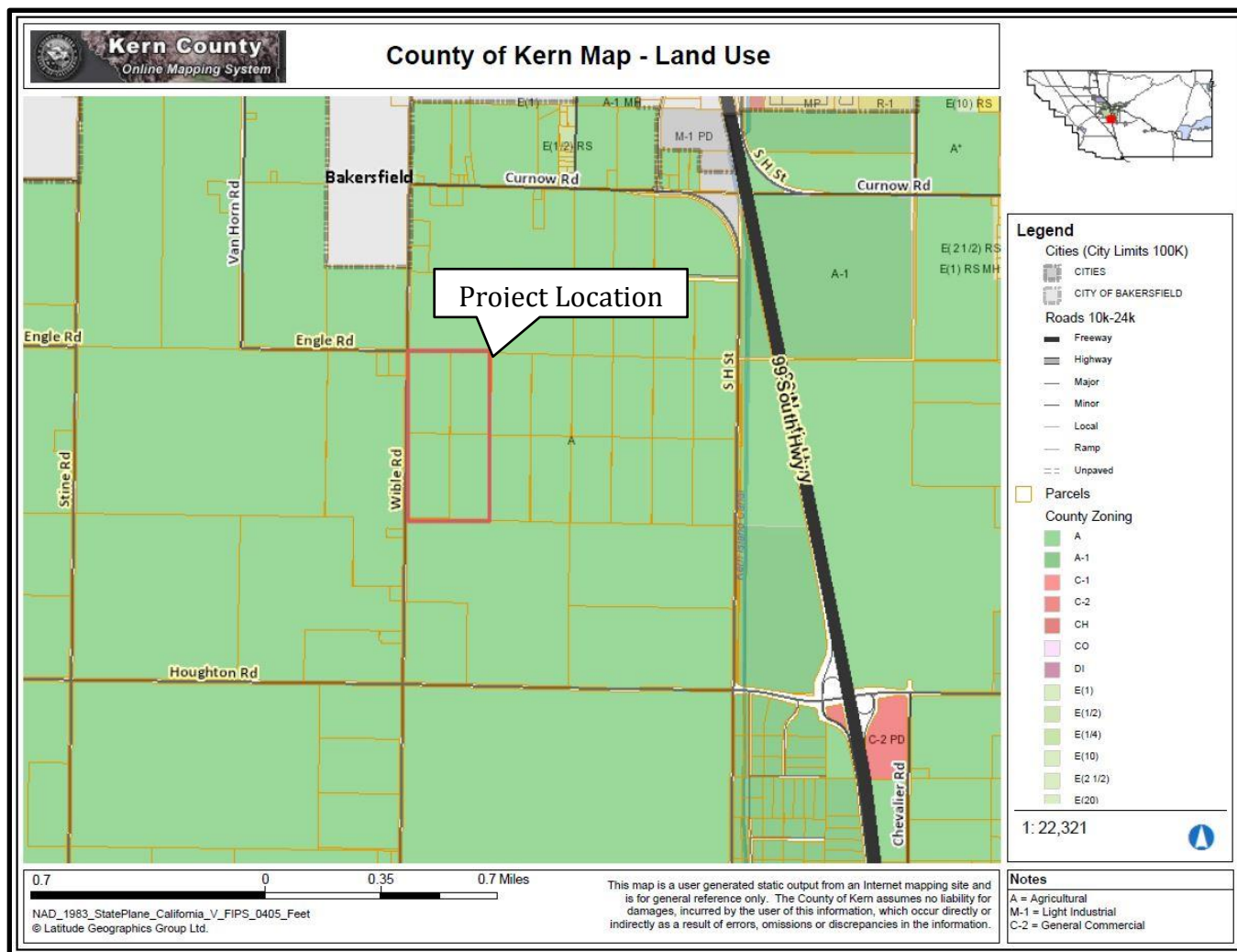


Figure 6-1 – Kern County Zoning

Item 2 under Section 3 – Model Maintenance Procedure, of the Kern COG Regional Transportation Modeling Policy and Procedure Manual states “*Land Use Data – General Plan land capacity data or “Build -out capacity” is used to distribute the forecasted County totals, and may be updated as new information becomes available, and is revised in regular consultation with local planning departments.*”

Under current policies, only after a General Plan Amendment (GPA) is approved, can housing and employment assumptions be updated to reflect the capacity changes. Since the proposed development does require a GPA and zone change, the existing growth forecast will be modified to reflect these changes. In order to determine whether the forecasted growth for the project area is sufficient to account for the projected increases in employment, an analysis based on Kern COG regional forecast was conducted.

The adopted growth forecast for the project site is distributed to Traffic Analysis Zones (TAZ) (see **Figure 6-2**). In order to evaluate the impacts to the proposed Project area, a one-mile radius analysis was conducted that included TAZs 817, 853, 854, 857, 1137, 1138, 1139, 1140, 1141, 1152, 1153, 1154, 1155, 1156, and 1157. This placed the Project site at the center of the analysis area and provides a conservative evaluation of the TAZ data. Kern COG has predicted an increase in growth in population (13%), an increase in growth in housing (14%) and



an increase in employment (9%) between 2017 and 2020. Employment forecast for the TAZ analysis area does not appear to be sufficient to account for 100% of the planned employment growth attributed to the proposed Project. In order to be considered “consistent” and, therefore, in conformance with the AQAP, these increases would need to occur over the same time as the adopted growth forecast. From 2017 through 2020, 51 new jobs are forecast to be added to the analysis area. Additionally, the proposed development does require a GPA and zone change, the existing growth forecast will need to be modified to reflect the increase in employment the proposed Project will require.

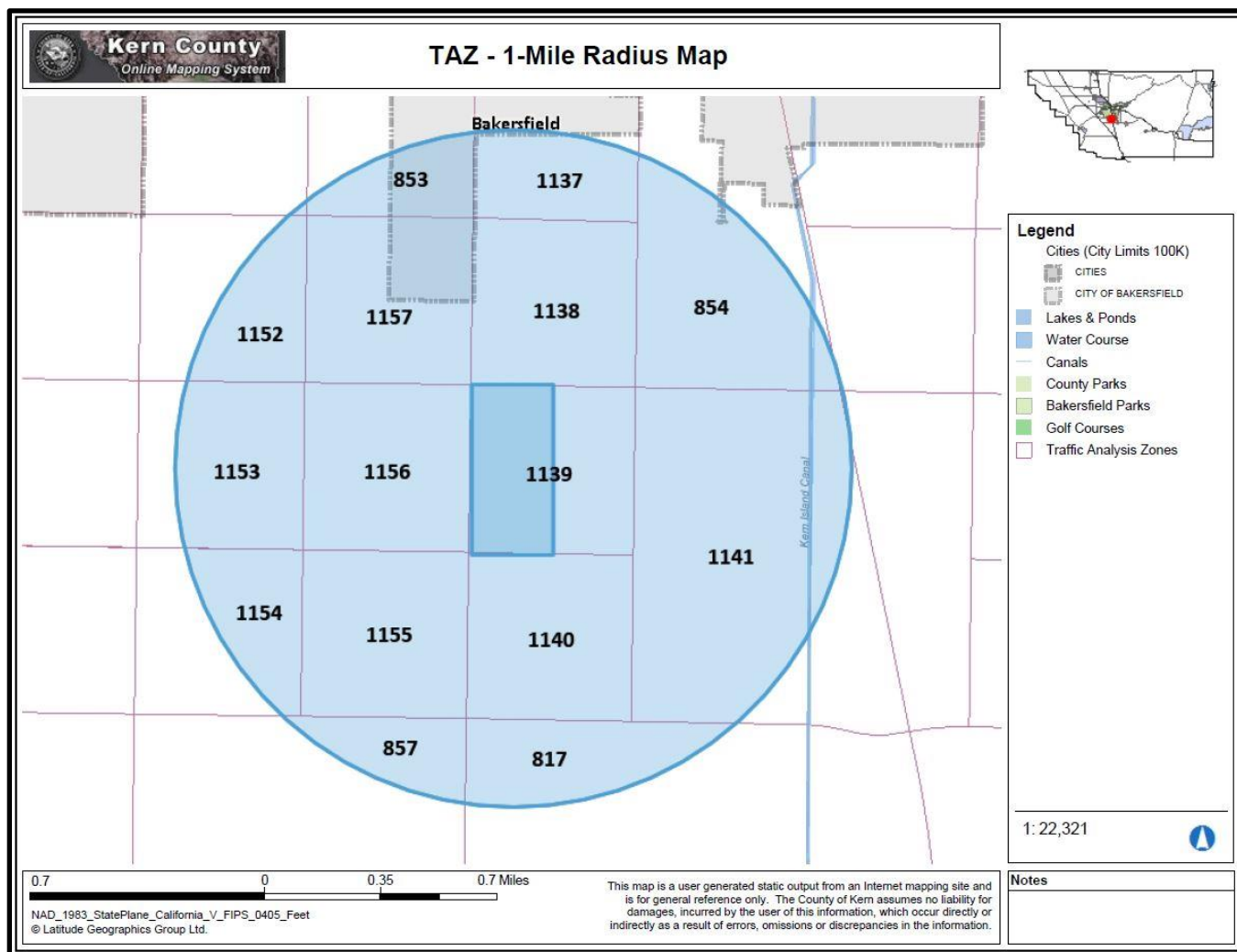


Figure 6-2 – TAZ Analysis Map

**Table 6-1** provides the projected growth rates for the TAZ analysis area.

**Table 6-1 – TAZ Analysis Area Projected Growth Analysis<sup>2</sup>**

Years:	2015	2020	2030
Population	796	900	1,436
Households	267	303	489
Employment	398	435	565

<sup>2</sup> Kern Council of Governments Regional Conformity Analysis Data, 2008



**Table 6-2** provides the percent increase/decrease for the analysis area population, households and employment.

**Table 6-2 – Percent Increase/Decrease on TAZ Analysis Area**

Years	Percent Increase / Decrease		
	Population	Households	Employment
2017*	0	0	0
2020	13	14	9
2030	80	73	42

\*Baseline year of 2017 was valued at “0” to measure net percent increase/decrease.



## 7. MITIGATION AND OTHER RECOMMENDED MEASURES

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As the estimated construction and operational emissions from the proposed Project would be *less than significant*, no specific mitigation measures would be required. However, to ensure that Project is in compliance with all applicable SJVAPCD rules and regulations and emissions are further reduced, the applicant should implement and comply with a number of measures that are either recommended as a “good operating practice” for environmental stewardship or they are required by regulation. Some of the listed measures are regulatory requirements or construction requirements that would result in further emission reductions through their inclusion in Project construction and long-term design. The following measures either have been applied to the Project through the CalEEMod model and would be incorporated into the Project by design or would be implemented in conjunction with SJVAPCD rules as conditions of approval:

### 7.1. SJVAPCD REQUIRED PM10 REDUCTION MEASURES

As the Project would be completed in compliance with SJVAPCD Regulation VIII, dust control measures would be taken to ensure compliance specifically during grading and construction phases. The required Regulation VII measures are as follows:

- Water previously exposed surfaces (soil) whenever visible dust is capable of drifting from the site or approaches 20% opacity.
- Water all unpaved haul roads a minimum of three-times/day or whenever visible dust from such roads is capable of drifting from the site or approaches 20% opacity.
- Reduce speed on unpaved roads to less than 15 miles per hour.
- Install and maintain a track out control device that meets the specifications of SJVAPCD Rule 8041 if the site exceeds 150 vehicle trips per day or more than 20 vehicle trips per day by vehicles with three or more axles.
- Stabilize all disturbed areas, including storage piles, which are not being actively utilized for production purposes using water, chemical stabilizers or by covering with a tarp or other suitable cover.
- Control fugitive dust emissions during land clearing, grubbing, scraping, excavation, leveling, grading, or cut and fill operations with application of water or by presoaking.
- When transporting materials offsite, maintain a freeboard limit of at least 6 inches and cover or effectively wet to limit visible dust emissions.
- Limit and remove the accumulation of mud and/or dirt from adjacent public roadways at the end of each workday. (Use of dry rotary brushes is prohibited except when preceded or accompanied by sufficient wetting to limit visible dust emissions and use of blowers is expressly forbidden).
- Stabilize the surface of storage piles following the addition or removal of materials using water or chemical stabilizer/suppressants.
- Remove visible track-out from the site at the end of each workday.
- Cease grading or other activities that cause excessive (greater than 20% opacity) dust formation during periods of high winds (greater than 20 mph over a one-hour period).



## 7.2. RECOMMENDED MEASURES TO REDUCE EQUIPMENT EXHAUST

In addition, the GAMAQI guidance document lists the following measures as approved and recommended for construction activities. These measures are recommended:

- Maintain all construction equipment as recommended by manufacturer manuals.
- Shut down equipment when not in use for extended periods.
- Construction equipment shall operate no longer than eight (8) cumulative hours per day.
- Use electric equipment for construction whenever possible in lieu of diesel or gasoline powered equipment.
- Curtail use of high-emitting construction equipment during periods of high or excessive ambient pollutant concentrations.
- All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NO<sub>x</sub> emissions.
- On-Road and Off-Road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.
- On-Road and Off-Road diesel equipment shall use cooled exhaust gas recirculation (EGR) if permitted under manufacturer's guidelines.
- All construction workers shall be encouraged to shuttle (car-pool) to retail establishments or to remain on-site during lunch breaks.
- All construction activities within the project area shall be discontinued during the first stage smog alerts.
- Construction and grading activities shall not be allowed during first stage O<sub>3</sub> alerts. First stage O<sub>3</sub> alerts are declared when the O<sub>3</sub> level exceeds 0.20 ppm (1-hour average).

## 7.3. OTHER MEASURES TO REDUCE PROJECT IMPACTS

The following measures are recommended to further reduce the potential for long-term emissions from the Project. These measures are required as a matter of regulatory compliance:

- The Project design shall comply with applicable standards set forth in Title 24 of the Uniform Building Code to minimize total consumption of energy.
- Applicants shall be required to comply with applicable mitigation measures in the AQAP, SJVAPCD Rules, Traffic Control Measures, Regulation VIII and Indirect Source Rules for the SJVAPCD.
- The developer shall comply with the provisions of SJVAPCD Rule 4601 - Architectural Coatings, during the construction of all buildings and facilities. Application of architectural coatings shall be completed in a manner that poses the least emissions impacts whenever such application is deemed proficient.
- The applicant shall comply with the provisions of SJVAPCD Rule 4641 during the construction and pavement of all roads and parking areas within the project area. Specifically, the applicant shall not allow the use of:
  - Rapid cure cutback asphalt;
  - Medium cure cutback asphalt;
  - Slow cure cutback asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.3); or Emulsified asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.4).
  - The developer shall comply with applicable provisions of SJVAPCD Rule 9510 (Indirect Source Review).



## 8. LEVEL OF SIGNIFICANCE AFTER MITIGATION

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The proposed Project would have short-term air quality impacts due to facility construction activities as well as vehicular emissions. Both of these impacts would be mitigated and *were found to be less than significant* before and after mitigation.

The proposed Project would result in long-term air quality impacts due to operational and related mobile source emissions. These impacts would be mitigated and *were found to be less than significant* before and after mitigation.

The proposed Project, in conjunction with other past, present and foreseeable future projects, will result in cumulative short-term and long-term impacts to air quality. The proposed Project's incremental contribution to these impacts would be mitigated and are below thresholds of significance and would be not be considered cumulatively considerable. Therefore, the Project's contribution to cumulative impacts *were found to be less than significant*.

The proposed Project in conjunction with other past, present and foreseeable future projects would result in cumulative long-term impacts to global climate change. The proposed Project's incremental contribution to these impacts will be mitigated to the extent feasible and are considered *less than significant*.



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## ATTACHMENT A: EXISTING AIR QUALITY MONITORING DATA

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**Air Resources Board**



**Select 8 Summary**

**FAQs**

Monitoring Sites	Ozone					
	#Days > State 1-Hour Standard			Highest 1-Hour Observation		
	2014	2015	2016	2014	2015	2016
<b>Kern County</b>						
Bakersfield- 5558 California Avenue	3	6	0	0.102	0.104	0.092
Bakersfield- Municipal Airport	10	23	8	0.108	0.118	0.102
Edison	15	17	14	0.107	0.112	0.109

**Note:** \* There was insufficient (or no) data available to determine the value.

**Go to:** [Data Statistics Home Page](#)

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## Air Resources Board



### Select 8 Summary

[FAQs](#)

Monitoring Sites	Ozone					
	#Days > State 8-Hour Standard			Highest State 8-Hour Average		
	2014	2015	2016	2014	2015	2016
<b>Kern County</b>						
Bakersfield- 5558 California Avenue	39	54	63	0.093	0.097	0.086
Bakersfield- Municipal Airport	60	73	66	0.095	0.106	0.093
Edison	55	45	68	0.092	0.099	0.090

**Note:** \* There was insufficient (or no) data available to determine the value.

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## Air Resources Board

iADAM

### Select 8 Summary

[FAQs](#)

Monitoring Sites	Ozone					
	#Days > Natl 0.070 8-Hr Standard			Highest Natl 0.070 8-Hr Average		
	2014	2015	2016	2014	2015	2016
<b>Kern County</b>						
Bakersfield- 5558 California Avenue	36	52	60	0.092	0.096	0.085
Bakersfield- Municipal Airport	58	69	63	0.095	0.106	0.093
Edison	52	42	64	0.091	0.099	0.090

**Note:** \* There was insufficient (or no) data available to determine the value.

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Friday, December 29, 2017

## UP LINKS

- [Air Quality & Emissions](#)
- [iADAM: Air Quality Data Statistics](#)
- [iADAM: Top Four Summary](#)
- [Previous Page](#)

## PROGRAM LINKS

- [Frequently Asked Questions](#)

## RESOURCES

- [Contact Us](#)

## Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Bakersfield-5558 California Avenue

iADAM

	2014		2015		2016	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Oct 6	60.9	Sep 9	54.5	Oct 21	58.1
Second High:	Oct 29	58.9	Nov 21	52.7	Oct 22	55.1
Third High:	Nov 10	58.5	Oct 12	52.5	Sep 27	54.8
Fourth High:	Oct 7	58.4	Jan 8	52.2	Nov 14	54.6
California:						
First High:	Oct 6	60	Sep 9	54	Oct 21	58
Second High:	Oct 7	58	Jan 8	52	Oct 22	55
Third High:	Oct 29	58	Oct 12	52	Sep 27	54
Fourth High:	Nov 10	58	Nov 21	52	Nov 14	54
National:						
1-Hour Standard Design Value:	*			*		*
1-Hour Standard 98th Percentile:	58.9			49.5		49.8
# Days Above the Standard:	0			0		0
Annual Standard Design Value:	*			11		12
California:						
1-Hour Std Designation Value:	60			60		60
Expected Peak Day Concentration:	64			57		57
# Days Above the Standard:	0			0		0
Annual Std Designation Value:	15			11		12
Annual Average:	*			11		12
Year Coverage:	42			97		93

◀ Shift Backward 1 year ▼ Shift Forward ▶

### Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2016.

Some years in this range may not be represented.

All concentrations expressed in parts per billion.

**yellow** exceeds a California ambient air quality standard. **orange** exceeds a national ambient air quality standard.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

**\*** means there was insufficient data available to determine the value.

### Available Pollutants:

[8-Hour Ozone](#) | [Hourly Ozone](#) | [PM2.5](#) | [PM10](#) | [Carbon Monoxide](#) | [Nitrogen Dioxide](#) | [State Sulfur Dioxide](#) | [Hydrogen Sulfide](#)



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Air Resources Board

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## Select 8 Summary

FAQs

## PM10

## Est #Days &gt; State 24-Hour Standard

## High State 24-Hour Average

2014

2015

2016

2014

2015

2016

## Kern County

## Monitoring Sites

Bakersfield-  
5558 California Avenue  
Oildale-3311 Manor Street

\*

121.4

121.4

419.5

103.6

92.2

\*

\*

\*

335.6

104.4

88.4

Notes: PM10 statistics may include data that are related to an [exceptional event](#).

\* There was insufficient (or no) data available to determine the value.

Go to:

Data Statistics Home Page

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**Air Resources Board****iADAM****Select 8 Summary****FAQs****PM10****Est #Days > Natl 24-Hour Standard****High National 24-Hour Average****2014****2015****2016****2014****2015****2016****Kern County**

\*

\*

0

\*

100.5

91.6

\*

\*

0

336.4

98.5

89.1

**Notes:** PM10 statistics may include data that are related to an [exceptional event](#).

\* There was insufficient (or no) data available to determine the value.

**Go to:**[Data Statistics Home Page](#)[Select 8 Summary Start Page](#)



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**Air Resources Board****iADAM****Select 8 Summary****FAQs****PM2.5****Est #Days > National 24-Hour Std****High National 24-Hour Average****2014****2015****2016****2014****2015****2016****Kern County**Monitoring Sites  
Bakersfield-410 E Planz Road

\*

38.0

\*

91.0

83.2

51.4

Bakersfield-  
5558 California Avenue

39.3

32.3

25.5

101.9

107.8

66.4

**Note:** \* There was insufficient (or no) data available to determine the value.**Go to:**[Data Statistics Home Page](#)[Select 8 Summary Start Page](#)





## Air Resources Board

View a Different Site  
View a Different Substance  
Order a Data CD

## Annual Toxics Summary

Bakersfield-5558 California Avenue

Lead

nanograms per cubic meter

iADAM

FAQs

## Read About New Estimated Risk

Year	Months Present	Minimum	Median	Mean	90th Percentile	Maximum	Standard Deviation	Number of Observations	Detection Limit	Estimated Risk
2016	■■■■■■■■■■	0.65	4.3	*	6.9	19.8	3.57	33	1.3	*
2015	■■■■■■■■■■	0.65	3.2	3.34	7.6	9.5	2.50	33	1.3	0.1
2014	■■■■■■■■■■	0.85	3.6	*	8.8	14	3.78	16	1.7	*
2013	■■■■■■■■■■	0.5	2.9	*	5.3	6.7	1.71	21	1.0	*
2012	■■■■■■■■■■	1.7	3.4	4.02	8.2	14	2.74	32	1.5	0.1
2011	■■■■■■■■■■	0.75	4.0	*	9.1	11	2.90	20	1.5	*
2010	■■■■■■■■■■	0.75	2.5	*	5.7	8.2	2.07	18	1.5	*
2009	■■■■■■■■■■	1.5	4.5	5.27	11.2	14	3.22	29	1.5	0.2
2008	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
2007	■■■■■■■■■■	0.75	7.1	*	11.7	13	3.23	24	1.5	*
2006	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
2005	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
2004	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
2003	■■■■■■■■■■	4.0	*	*	*	7.0	1.64	5	3.0	*
2002	■■■■■■■■■■	1.5	7.0	6.78	10	17	3.34	36	3.0	0.2
2001	■■■■■■■■■■	2	5.0	5.83	9.2	26	4.41	39	4.0	0.2
2000	■■■■■■■■■■	2	5.0	5.92	14.1	22	4.76	40	4.0	0.2
1999	■■■■■■■■■■	2	5.0	5.70	11.2	25	4.55	39	4.0	0.2
1998	■■■■■■■■■■	2	7.0	9.43	14	78	11.8	42	4.0	0.3
1997	■■■■■■■■■■	2	7.0	7.92	14	20	4.40	34	4.0	0.3
1996	■■■■■■■■■■	2	7.0	7.69	14.5	35	6.10	36	4.0	0.3
1995	■■■■■■■■■■	2	8.0	8.68	15.1	21	5.14	30	4.0	0.3
1994	■■■■■■■■■■	2	10	*	16	39	7.11	25	4.0	*
1993	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
1992	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
1991	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
1990	■■■■■■■■■■	*	*	*	*	*	*	0	*	*
1989	■■■■■■■■■■	*	*	*	*	*	*	0	*	*

Graph It!

Notes: Values below the Limit of Detection (LoD) assumed to be 1/2 LoD.  
Means and risks shown only for years with data in all 12 months.  
"n/a" means there was insufficient or no data available to determine the value.



## ATTACHMENT B: PROJECT EMISSION CALCULATIONS

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## SW High School - Kern-San Joaquin County, Annual

**SW High School**  
**Kern-San Joaquin County, Annual**

## 1.0 Project Characteristics

---

### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	2,000.00	Student	70.22	265,321.96	0
Parking Lot	9.78	Acre	9.78	426,016.80	0

### 1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.7	Precipitation Freq (Days)	32
Climate Zone	3			Operational Year	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

### 1.3 User Entered Comments & Non-Default Data



## SW High School - Kern-San Joaquin County, Annual

Project Characteristics -

Land Use - Estimated acreage based on Project Site (80 acres) minus parking lot (9.78 acres).

Construction Phase - Estimated construction schedule based on a 27 month construcion timeframe.

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Mobile Commute Mitigation -

Area Mitigation -

Energy Mitigation -

Fleet Mix - Default Residential Fleet Mix which best represents a fleet mix for a school.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	110.00	32.00
tblConstructionPhase	NumDays	1,550.00	458.00
tblConstructionPhase	NumDays	155.00	46.00
tblConstructionPhase	NumDays	110.00	32.00
tblConstructionPhase	NumDays	60.00	18.00
tblFleetMix	HHD	0.14	0.02
tblFleetMix	HHD	0.14	0.02
tblFleetMix	LDA	0.47	0.51
tblFleetMix	LDA	0.47	0.51
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT1	0.03	0.21
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LDT2	0.17	0.17
tblFleetMix	LHD1	0.02	2.1000e-003
tblFleetMix	LHD1	0.02	2.1000e-003



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tblFleetMix	LHD2	6.7750e-003	1.0000e-003
tblFleetMix	LHD2	6.7750e-003	1.0000e-003
tblFleetMix	MCY	6.0110e-003	3.1000e-003
tblFleetMix	MCY	6.0110e-003	3.1000e-003
tblFleetMix	MDV	0.13	0.06
tblFleetMix	MDV	0.13	0.06
tblFleetMix	MH	9.4600e-004	2.2000e-003
tblFleetMix	MH	9.4600e-004	2.2000e-003
tblFleetMix	MHD	0.02	9.6000e-003
tblFleetMix	MHD	0.02	9.6000e-003
tblFleetMix	OBUS	1.6340e-003	0.00
tblFleetMix	OBUS	1.6340e-003	0.00
tblFleetMix	SBUS	9.7200e-004	1.0000e-003
tblFleetMix	SBUS	9.7200e-004	1.0000e-003
tblFleetMix	UBUS	1.7850e-003	3.8000e-003
tblFleetMix	UBUS	1.7850e-003	3.8000e-003
tblGrading	AcresOfGrading	90.00	387.50
tblLandUse	LotAcreage	6.09	70.22

## 2.0 Emissions Summary

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**2.1 Overall Construction****Unmitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2124	2.2490	1.3661	2.7600e-003	0.4794	0.1019	0.5813	0.1618	0.0942	0.2560	0.0000	252.5661	252.5661	0.0608	0.0000	254.0848
2019	0.5408	4.8391	3.7375	0.0110	0.4034	0.1854	0.5888	0.1094	0.1745	0.2839	0.0000	1,005.185 2	1,005.185 2	0.1179	0.0000	1,008.133 1
2020	2.2996	3.2106	2.6589	7.8000e-003	0.2799	0.1199	0.3997	0.0759	0.1126	0.1885	0.0000	707.0742	707.0742	0.0869	0.0000	709.2471
Maximum	2.2996	4.8391	3.7375	0.0110	0.4794	0.1854	0.5888	0.1618	0.1745	0.2839	0.0000	1,005.185 2	1,005.185 2	0.1179	0.0000	1,008.133 1

**Mitigated Construction**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2124	2.2490	1.3661	2.7600e-003	0.2107	0.1019	0.3127	0.0696	0.0942	0.1637	0.0000	252.5658	252.5658	0.0608	0.0000	254.0846
2019	0.5408	4.8391	3.7375	0.0110	0.4034	0.1854	0.5888	0.1094	0.1745	0.2839	0.0000	1,005.184 8	1,005.184 8	0.1179	0.0000	1,008.132 7
2020	2.2996	3.2106	2.6589	7.8000e-003	0.2799	0.1199	0.3997	0.0759	0.1126	0.1885	0.0000	707.0739	707.0739	0.0869	0.0000	709.2468
Maximum	2.2996	4.8391	3.7375	0.0110	0.4034	0.1854	0.5888	0.1094	0.1745	0.2839	0.0000	1,005.184 8	1,005.184 8	0.1179	0.0000	1,008.132 7



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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	23.10	0.00	17.11	26.58	0.00	12.67	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	9-1-2018	11-30-2018	1.9883	1.9883
2	12-1-2018	2-28-2019	1.3709	1.3709
3	3-1-2019	5-31-2019	1.3527	1.3527
4	6-1-2019	8-31-2019	1.3500	1.3500
5	9-1-2019	11-30-2019	1.3406	1.3406
6	12-1-2019	2-29-2020	1.2623	1.2623
7	3-1-2020	5-31-2020	1.2300	1.2300
8	6-1-2020	8-31-2020	1.2280	1.2280
9	9-1-2020	9-30-2020	0.1824	0.1824
		Highest	1.9883	1.9883



## SW High School - Kern-San Joaquin County, Annual

**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2589	1.7000e-004	0.0186	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0359	0.0359	1.0000e-004	0.0000	0.0383
Energy	0.0359	0.3266	0.2743	1.9600e-003		0.0248	0.0248		0.0248	0.0248	0.0000	940.7389	940.7389	0.0333	0.0120	945.1447
Mobile	0.9201	3.4903	10.2287	0.0319	2.6626	0.0313	2.6939	0.7124	0.0293	0.7416	0.0000	2,920.6165	2,920.6165	0.1639	0.0000	2,924.7137
Waste						0.0000	0.0000		0.0000	0.0000	74.0917	0.0000	74.0917	4.3787	0.0000	183.5591
Water						0.0000	0.0000		0.0000	0.0000	2.7950	36.9341	39.7290	0.2887	7.1200e-003	49.0705
<b>Total</b>	<b>2.2149</b>	<b>3.8170</b>	<b>10.5216</b>	<b>0.0338</b>	<b>2.6626</b>	<b>0.0562</b>	<b>2.7187</b>	<b>0.7124</b>	<b>0.0541</b>	<b>0.7665</b>	<b>76.8867</b>	<b>3,898.3254</b>	<b>3,975.2120</b>	<b>4.8647</b>	<b>0.0191</b>	<b>4,102.5262</b>



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**2.2 Overall Operational****Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2588	1.7000e-004	0.0184	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0354	0.0354	9.0000e-005	0.0000	0.0378
Energy	0.0248	0.2255	0.1895	1.3500e-003		0.0171	0.0171		0.0171	0.0171	0.0000	-141.9650	-141.9650	-0.0128	8.8000e-004	-142.0243
Mobile	0.8930	3.2940	9.4489	0.0289	2.3934	0.0285	2.4218	0.6404	0.0266	0.6670	0.0000	2,646.9969	2,646.9969	0.1529	0.0000	2,650.8194
Waste						0.0000	0.0000		0.0000	0.0000	74.0917	0.0000	74.0917	4.3787	0.0000	183.5591
Water						0.0000	0.0000		0.0000	0.0000	2.7950	36.9341	39.7290	0.2887	7.1200e-003	49.0705
<b>Total</b>	<b>2.1767</b>	<b>3.5197</b>	<b>9.6567</b>	<b>0.0302</b>	<b>2.3934</b>	<b>0.0457</b>	<b>2.4390</b>	<b>0.6404</b>	<b>0.0438</b>	<b>0.6842</b>	<b>76.8867</b>	<b>2,542.0014</b>	<b>2,618.8880</b>	<b>4.8076</b>	<b>8.0000e-003</b>	<b>2,741.4624</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>1.73</b>	<b>7.79</b>	<b>8.22</b>	<b>10.62</b>	<b>10.11</b>	<b>18.68</b>	<b>10.29</b>	<b>10.11</b>	<b>19.04</b>	<b>10.74</b>	<b>0.00</b>	<b>34.79</b>	<b>34.12</b>	<b>1.17</b>	<b>58.14</b>	<b>33.18</b>

**3.0 Construction Detail****Construction Phase**



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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/1/2018	9/26/2018	5	18	
2	Grading	Grading	9/27/2018	11/29/2018	5	46	
3	Building Construction	Building Construction	11/30/2018	9/1/2020	5	458	
4	Paving	Paving	9/2/2020	10/15/2020	5	32	
5	Architectural Coating	Architectural Coating	10/16/2020	11/30/2020	5	32	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 387.5**

**Acres of Paving: 9.78**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 397,983; Non-Residential Outdoor: 132,661; Striped Parking Area: 25,561 (Architectural Coating – sqft)**

**OffRoad Equipment**



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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	290.00	113.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT



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**3.1 Mitigation Measures Construction**

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

**3.2 Site Preparation - 2018****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1265	0.0000	0.1265	0.0695	0.0000	0.0695	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0411	0.4338	0.2023	3.4000e-004		0.0232	0.0232		0.0213	0.0213	0.0000	31.2839	31.2839	9.7400e-003	0.0000	31.5274
<b>Total</b>	<b>0.0411</b>	<b>0.4338</b>	<b>0.2023</b>	<b>3.4000e-004</b>	<b>0.1265</b>	<b>0.0232</b>	<b>0.1497</b>	<b>0.0695</b>	<b>0.0213</b>	<b>0.0909</b>	<b>0.0000</b>	<b>31.2839</b>	<b>31.2839</b>	<b>9.7400e-003</b>	<b>0.0000</b>	<b>31.5274</b>



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**3.2 Site Preparation - 2018****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	5.5000e-004	5.3700e-003	1.0000e-005	1.3100e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.2759	1.2759	4.0000e-005	0.0000	1.2769
<b>Total</b>	<b>7.7000e-004</b>	<b>5.5000e-004</b>	<b>5.3700e-003</b>	<b>1.0000e-005</b>	<b>1.3100e-003</b>	<b>1.0000e-005</b>	<b>1.3200e-003</b>	<b>3.5000e-004</b>	<b>1.0000e-005</b>	<b>3.6000e-004</b>	<b>0.0000</b>	<b>1.2759</b>	<b>1.2759</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>1.2769</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0493	0.0000	0.0493	0.0271	0.0000	0.0271	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0411	0.4338	0.2023	3.4000e-004		0.0232	0.0232		0.0213	0.0213	0.0000	31.2839	31.2839	9.7400e-003	0.0000	31.5274
<b>Total</b>	<b>0.0411</b>	<b>0.4338</b>	<b>0.2023</b>	<b>3.4000e-004</b>	<b>0.0493</b>	<b>0.0232</b>	<b>0.0725</b>	<b>0.0271</b>	<b>0.0213</b>	<b>0.0485</b>	<b>0.0000</b>	<b>31.2839</b>	<b>31.2839</b>	<b>9.7400e-003</b>	<b>0.0000</b>	<b>31.5274</b>



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**3.2 Site Preparation - 2018****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	5.5000e-004	5.3700e-003	1.0000e-005	1.3100e-003	1.0000e-005	1.3200e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.2759	1.2759	4.0000e-005	0.0000	1.2769
<b>Total</b>	<b>7.7000e-004</b>	<b>5.5000e-004</b>	<b>5.3700e-003</b>	<b>1.0000e-005</b>	<b>1.3100e-003</b>	<b>1.0000e-005</b>	<b>1.3200e-003</b>	<b>3.5000e-004</b>	<b>1.0000e-005</b>	<b>3.6000e-004</b>	<b>0.0000</b>	<b>1.2759</b>	<b>1.2759</b>	<b>4.0000e-005</b>	<b>0.0000</b>	<b>1.2769</b>

**3.3 Grading - 2018****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3139	0.0000	0.3139	0.0818	0.0000	0.0818	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1171	1.3690	0.8071	1.4300e-003		0.0606	0.0606		0.0557	0.0557	0.0000	130.2916	130.2916	0.0406	0.0000	131.3056
<b>Total</b>	<b>0.1171</b>	<b>1.3690</b>	<b>0.8071</b>	<b>1.4300e-003</b>	<b>0.3139</b>	<b>0.0606</b>	<b>0.3745</b>	<b>0.0818</b>	<b>0.0557</b>	<b>0.1375</b>	<b>0.0000</b>	<b>130.2916</b>	<b>130.2916</b>	<b>0.0406</b>	<b>0.0000</b>	<b>131.3056</b>



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**3.3 Grading - 2018****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1800e-003	1.5700e-003	0.0152	4.0000e-005	3.7100e-003	3.0000e-005	3.7300e-003	9.8000e-004	3.0000e-005	1.0100e-003	0.0000	3.6230	3.6230	1.2000e-004	0.0000	3.6258
<b>Total</b>	<b>2.1800e-003</b>	<b>1.5700e-003</b>	<b>0.0152</b>	<b>4.0000e-005</b>	<b>3.7100e-003</b>	<b>3.0000e-005</b>	<b>3.7300e-003</b>	<b>9.8000e-004</b>	<b>3.0000e-005</b>	<b>1.0100e-003</b>	<b>0.0000</b>	<b>3.6230</b>	<b>3.6230</b>	<b>1.2000e-004</b>	<b>0.0000</b>	<b>3.6258</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1224	0.0000	0.1224	0.0319	0.0000	0.0319	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1171	1.3690	0.8071	1.4300e-003		0.0606	0.0606		0.0557	0.0557	0.0000	130.2914	130.2914	0.0406	0.0000	131.3054
<b>Total</b>	<b>0.1171</b>	<b>1.3690</b>	<b>0.8071</b>	<b>1.4300e-003</b>	<b>0.1224</b>	<b>0.0606</b>	<b>0.1830</b>	<b>0.0319</b>	<b>0.0557</b>	<b>0.0876</b>	<b>0.0000</b>	<b>130.2914</b>	<b>130.2914</b>	<b>0.0406</b>	<b>0.0000</b>	<b>131.3054</b>



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**3.3 Grading - 2018****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1800e-003	1.5700e-003	0.0152	4.0000e-005	3.7100e-003	3.0000e-005	3.7300e-003	9.8000e-004	3.0000e-005	1.0100e-003	0.0000	3.6230	3.6230	1.2000e-004	0.0000	3.6258
<b>Total</b>	<b>2.1800e-003</b>	<b>1.5700e-003</b>	<b>0.0152</b>	<b>4.0000e-005</b>	<b>3.7100e-003</b>	<b>3.0000e-005</b>	<b>3.7300e-003</b>	<b>9.8000e-004</b>	<b>3.0000e-005</b>	<b>1.0100e-003</b>	<b>0.0000</b>	<b>3.6230</b>	<b>3.6230</b>	<b>1.2000e-004</b>	<b>0.0000</b>	<b>3.6258</b>

**3.4 Building Construction - 2018****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0295	0.2573	0.1934	3.0000e-004		0.0165	0.0165		0.0155	0.0155	0.0000	26.1544	26.1544	6.4100e-003	0.0000	26.3146
<b>Total</b>	<b>0.0295</b>	<b>0.2573</b>	<b>0.1934</b>	<b>3.0000e-004</b>		<b>0.0165</b>	<b>0.0165</b>		<b>0.0155</b>	<b>0.0155</b>	<b>0.0000</b>	<b>26.1544</b>	<b>26.1544</b>	<b>6.4100e-003</b>	<b>0.0000</b>	<b>26.3146</b>



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**3.4 Building Construction - 2018****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.7400e-003	0.1759	0.0371	3.7000e-004	8.3000e-003	1.4500e-003	9.7500e-003	2.3900e-003	1.3900e-003	3.7800e-003	0.0000	34.8129	34.8129	3.0900e-003	0.0000	34.8900
Worker	0.0151	0.0109	0.1057	2.8000e-004	0.0257	1.9000e-004	0.0259	6.8300e-003	1.8000e-004	7.0000e-003	0.0000	25.1245	25.1245	8.0000e-004	0.0000	25.1444
<b>Total</b>	<b>0.0219</b>	<b>0.1868</b>	<b>0.1428</b>	<b>6.5000e-004</b>	<b>0.0340</b>	<b>1.6400e-003</b>	<b>0.0357</b>	<b>9.2200e-003</b>	<b>1.5700e-003</b>	<b>0.0108</b>	<b>0.0000</b>	<b>59.9373</b>	<b>59.9373</b>	<b>3.8900e-003</b>	<b>0.0000</b>	<b>60.0345</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0295	0.2573	0.1934	3.0000e-004		0.0165	0.0165		0.0155	0.0155	0.0000	26.1544	26.1544	6.4100e-003	0.0000	26.3146
<b>Total</b>	<b>0.0295</b>	<b>0.2573</b>	<b>0.1934</b>	<b>3.0000e-004</b>		<b>0.0165</b>	<b>0.0165</b>		<b>0.0155</b>	<b>0.0155</b>	<b>0.0000</b>	<b>26.1544</b>	<b>26.1544</b>	<b>6.4100e-003</b>	<b>0.0000</b>	<b>26.3146</b>



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**3.4 Building Construction - 2018****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.7400e-003	0.1759	0.0371	3.7000e-004	8.3000e-003	1.4500e-003	9.7500e-003	2.3900e-003	1.3900e-003	3.7800e-003	0.0000	34.8129	34.8129	3.0900e-003	0.0000	34.8900
Worker	0.0151	0.0109	0.1057	2.8000e-004	0.0257	1.9000e-004	0.0259	6.8300e-003	1.8000e-004	7.0000e-003	0.0000	25.1245	25.1245	8.0000e-004	0.0000	25.1444
<b>Total</b>	<b>0.0219</b>	<b>0.1868</b>	<b>0.1428</b>	<b>6.5000e-004</b>	<b>0.0340</b>	<b>1.6400e-003</b>	<b>0.0357</b>	<b>9.2200e-003</b>	<b>1.5700e-003</b>	<b>0.0108</b>	<b>0.0000</b>	<b>59.9373</b>	<b>59.9373</b>	<b>3.8900e-003</b>	<b>0.0000</b>	<b>60.0345</b>

**3.4 Building Construction - 2019****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3081	2.7508	2.2399	3.5100e-003		0.1683	0.1683		0.1583	0.1583	0.0000	306.8110	306.8110	0.0747	0.0000	308.6795
<b>Total</b>	<b>0.3081</b>	<b>2.7508</b>	<b>2.2399</b>	<b>3.5100e-003</b>		<b>0.1683</b>	<b>0.1683</b>		<b>0.1583</b>	<b>0.1583</b>	<b>0.0000</b>	<b>306.8110</b>	<b>306.8110</b>	<b>0.0747</b>	<b>0.0000</b>	<b>308.6795</b>



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**3.4 Building Construction - 2019****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0723	1.9762	0.3983	4.3100e-003	0.0984	0.0148	0.1133	0.0284	0.0142	0.0426	0.0000	409.5064	409.5064	0.0349	0.0000	410.3787
Worker	0.1604	0.1121	1.0993	3.2000e-003	0.3050	2.2100e-003	0.3072	0.0810	2.0400e-003	0.0831	0.0000	288.8678	288.8678	8.2800e-003	0.0000	289.0749
<b>Total</b>	<b>0.2327</b>	<b>2.0883</b>	<b>1.4976</b>	<b>7.5100e-003</b>	<b>0.4034</b>	<b>0.0171</b>	<b>0.4204</b>	<b>0.1094</b>	<b>0.0162</b>	<b>0.1257</b>	<b>0.0000</b>	<b>698.3742</b>	<b>698.3742</b>	<b>0.0432</b>	<b>0.0000</b>	<b>699.4536</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3081	2.7508	2.2399	3.5100e-003		0.1683	0.1683		0.1583	0.1583	0.0000	306.8106	306.8106	0.0747	0.0000	308.6792
<b>Total</b>	<b>0.3081</b>	<b>2.7508</b>	<b>2.2399</b>	<b>3.5100e-003</b>		<b>0.1683</b>	<b>0.1683</b>		<b>0.1583</b>	<b>0.1583</b>	<b>0.0000</b>	<b>306.8106</b>	<b>306.8106</b>	<b>0.0747</b>	<b>0.0000</b>	<b>308.6792</b>



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**3.4 Building Construction - 2019****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0723	1.9762	0.3983	4.3100e-003	0.0984	0.0148	0.1133	0.0284	0.0142	0.0426	0.0000	409.5064	409.5064	0.0349	0.0000	410.3787
Worker	0.1604	0.1121	1.0993	3.2000e-003	0.3050	2.2100e-003	0.3072	0.0810	2.0400e-003	0.0831	0.0000	288.8678	288.8678	8.2800e-003	0.0000	289.0749
<b>Total</b>	<b>0.2327</b>	<b>2.0883</b>	<b>1.4976</b>	<b>7.5100e-003</b>	<b>0.4034</b>	<b>0.0171</b>	<b>0.4204</b>	<b>0.1094</b>	<b>0.0162</b>	<b>0.1257</b>	<b>0.0000</b>	<b>698.3742</b>	<b>698.3742</b>	<b>0.0432</b>	<b>0.0000</b>	<b>699.4536</b>

**3.4 Building Construction - 2020****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1855	1.6788	1.4742	2.3500e-003		0.0977	0.0977		0.0919	0.0919	0.0000	202.6587	202.6587	0.0494	0.0000	203.8948
<b>Total</b>	<b>0.1855</b>	<b>1.6788</b>	<b>1.4742</b>	<b>2.3500e-003</b>		<b>0.0977</b>	<b>0.0977</b>		<b>0.0919</b>	<b>0.0919</b>	<b>0.0000</b>	<b>202.6587</b>	<b>202.6587</b>	<b>0.0494</b>	<b>0.0000</b>	<b>203.8948</b>



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**3.4 Building Construction - 2020****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0401	1.2108	0.2342	2.8700e-003	0.0660	6.7800e-003	0.0728	0.0191	6.4900e-003	0.0255	0.0000	272.1469	272.1469	0.0217	0.0000	272.6903
Worker	0.0977	0.0660	0.6565	2.0700e-003	0.2045	1.4500e-003	0.2059	0.0543	1.3300e-003	0.0557	0.0000	187.5073	187.5073	4.8400e-003	0.0000	187.6282
<b>Total</b>	<b>0.1377</b>	<b>1.2768</b>	<b>0.8907</b>	<b>4.9400e-003</b>	<b>0.2705</b>	<b>8.2300e-003</b>	<b>0.2787</b>	<b>0.0734</b>	<b>7.8200e-003</b>	<b>0.0812</b>	<b>0.0000</b>	<b>459.6542</b>	<b>459.6542</b>	<b>0.0266</b>	<b>0.0000</b>	<b>460.3185</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1855	1.6788	1.4742	2.3500e-003		0.0977	0.0977		0.0919	0.0919	0.0000	202.6585	202.6585	0.0494	0.0000	203.8945
<b>Total</b>	<b>0.1855</b>	<b>1.6788</b>	<b>1.4742</b>	<b>2.3500e-003</b>		<b>0.0977</b>	<b>0.0977</b>		<b>0.0919</b>	<b>0.0919</b>	<b>0.0000</b>	<b>202.6585</b>	<b>202.6585</b>	<b>0.0494</b>	<b>0.0000</b>	<b>203.8945</b>



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**3.4 Building Construction - 2020****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0401	1.2108	0.2342	2.8700e-003	0.0660	6.7800e-003	0.0728	0.0191	6.4900e-003	0.0255	0.0000	272.1469	272.1469	0.0217	0.0000	272.6903
Worker	0.0977	0.0660	0.6565	2.0700e-003	0.2045	1.4500e-003	0.2059	0.0543	1.3300e-003	0.0557	0.0000	187.5073	187.5073	4.8400e-003	0.0000	187.6282
<b>Total</b>	<b>0.1377</b>	<b>1.2768</b>	<b>0.8907</b>	<b>4.9400e-003</b>	<b>0.2705</b>	<b>8.2300e-003</b>	<b>0.2787</b>	<b>0.0734</b>	<b>7.8200e-003</b>	<b>0.0812</b>	<b>0.0000</b>	<b>459.6542</b>	<b>459.6542</b>	<b>0.0266</b>	<b>0.0000</b>	<b>460.3185</b>

**3.5 Paving - 2020****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0217	0.2251	0.2344	3.6000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	32.0452	32.0452	0.0104	0.0000	32.3043
Paving	0.0128					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0345</b>	<b>0.2251</b>	<b>0.2344</b>	<b>3.6000e-004</b>		<b>0.0120</b>	<b>0.0120</b>		<b>0.0111</b>	<b>0.0111</b>	<b>0.0000</b>	<b>32.0452</b>	<b>32.0452</b>	<b>0.0104</b>	<b>0.0000</b>	<b>32.3043</b>



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**3.5 Paving - 2020****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	6.2000e-004	6.2100e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9500e-003	5.1000e-004	1.0000e-005	5.3000e-004	0.0000	1.7735	1.7735	5.0000e-005	0.0000	1.7746
<b>Total</b>	<b>9.2000e-004</b>	<b>6.2000e-004</b>	<b>6.2100e-003</b>	<b>2.0000e-005</b>	<b>1.9300e-003</b>	<b>1.0000e-005</b>	<b>1.9500e-003</b>	<b>5.1000e-004</b>	<b>1.0000e-005</b>	<b>5.3000e-004</b>	<b>0.0000</b>	<b>1.7735</b>	<b>1.7735</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>1.7746</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0217	0.2251	0.2344	3.6000e-004		0.0120	0.0120		0.0111	0.0111	0.0000	32.0451	32.0451	0.0104	0.0000	32.3042
Paving	0.0128					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0345</b>	<b>0.2251</b>	<b>0.2344</b>	<b>3.6000e-004</b>		<b>0.0120</b>	<b>0.0120</b>		<b>0.0111</b>	<b>0.0111</b>	<b>0.0000</b>	<b>32.0451</b>	<b>32.0451</b>	<b>0.0104</b>	<b>0.0000</b>	<b>32.3042</b>



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**3.5 Paving - 2020****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	6.2000e-004	6.2100e-003	2.0000e-005	1.9300e-003	1.0000e-005	1.9500e-003	5.1000e-004	1.0000e-005	5.3000e-004	0.0000	1.7735	1.7735	5.0000e-005	0.0000	1.7746
<b>Total</b>	<b>9.2000e-004</b>	<b>6.2000e-004</b>	<b>6.2100e-003</b>	<b>2.0000e-005</b>	<b>1.9300e-003</b>	<b>1.0000e-005</b>	<b>1.9500e-003</b>	<b>5.1000e-004</b>	<b>1.0000e-005</b>	<b>5.3000e-004</b>	<b>0.0000</b>	<b>1.7735</b>	<b>1.7735</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>1.7746</b>

**3.6 Architectural Coating - 2020****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.9335					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8700e-003	0.0269	0.0293	5.0000e-005		1.7700e-003	1.7700e-003		1.7700e-003	1.7700e-003	0.0000	4.0852	4.0852	3.2000e-004	0.0000	4.0931
<b>Total</b>	<b>1.9374</b>	<b>0.0269</b>	<b>0.0293</b>	<b>5.0000e-005</b>		<b>1.7700e-003</b>	<b>1.7700e-003</b>		<b>1.7700e-003</b>	<b>1.7700e-003</b>	<b>0.0000</b>	<b>4.0852</b>	<b>4.0852</b>	<b>3.2000e-004</b>	<b>0.0000</b>	<b>4.0931</b>



## SW High School - Kern-San Joaquin County, Annual

**3.6 Architectural Coating - 2020****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5700e-003	2.4200e-003	0.0240	8.0000e-005	7.4800e-003	5.0000e-005	7.5300e-003	1.9900e-003	5.0000e-005	2.0400e-003	0.0000	6.8574	6.8574	1.8000e-004	0.0000	6.8618
<b>Total</b>	<b>3.5700e-003</b>	<b>2.4200e-003</b>	<b>0.0240</b>	<b>8.0000e-005</b>	<b>7.4800e-003</b>	<b>5.0000e-005</b>	<b>7.5300e-003</b>	<b>1.9900e-003</b>	<b>5.0000e-005</b>	<b>2.0400e-003</b>	<b>0.0000</b>	<b>6.8574</b>	<b>6.8574</b>	<b>1.8000e-004</b>	<b>0.0000</b>	<b>6.8618</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.9335					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.8700e-003	0.0269	0.0293	5.0000e-005		1.7700e-003	1.7700e-003		1.7700e-003	1.7700e-003	0.0000	4.0852	4.0852	3.2000e-004	0.0000	4.0931
<b>Total</b>	<b>1.9374</b>	<b>0.0269</b>	<b>0.0293</b>	<b>5.0000e-005</b>		<b>1.7700e-003</b>	<b>1.7700e-003</b>		<b>1.7700e-003</b>	<b>1.7700e-003</b>	<b>0.0000</b>	<b>4.0852</b>	<b>4.0852</b>	<b>3.2000e-004</b>	<b>0.0000</b>	<b>4.0931</b>



## SW High School - Kern-San Joaquin County, Annual

**3.6 Architectural Coating - 2020****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5700e-003	2.4200e-003	0.0240	8.0000e-005	7.4800e-003	5.0000e-005	7.5300e-003	1.9900e-003	5.0000e-005	2.0400e-003	0.0000	6.8574	6.8574	1.8000e-004	0.0000	6.8618
<b>Total</b>	<b>3.5700e-003</b>	<b>2.4200e-003</b>	<b>0.0240</b>	<b>8.0000e-005</b>	<b>7.4800e-003</b>	<b>5.0000e-005</b>	<b>7.5300e-003</b>	<b>1.9900e-003</b>	<b>5.0000e-005</b>	<b>2.0400e-003</b>	<b>0.0000</b>	<b>6.8574</b>	<b>6.8574</b>	<b>1.8000e-004</b>	<b>0.0000</b>	<b>6.8618</b>

**4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

Improve Destination Accessibility

Improve Pedestrian Network

Implement School Bus Program



## SW High School - Kern-San Joaquin County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8930	3.2940	9.4489	0.0289	2.3934	0.0285	2.4218	0.6404	0.0266	0.6670	0.0000	2,646.9969	2,646.9969	0.1529	0.0000	2,650.8194
Unmitigated	0.9201	3.4903	10.2287	0.0319	2.6626	0.0313	2.6939	0.7124	0.0293	0.7416	0.0000	2,920.6165	2,920.6165	0.1639	0.0000	2,924.7137

## 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	3,420.00	1,220.00	500.00	7,039,114	6,327,379
Parking Lot	0.00	0.00	0.00		
Total	3,420.00	1,220.00	500.00	7,039,114	6,327,379

## 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High School	9.50	7.30	7.30	77.80	17.20	5.00	75	19	6
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

## 4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.511200	0.213700	0.169200	0.061000	0.002100	0.001000	0.009600	0.022100	0.000000	0.003800	0.003100	0.001000	0.002200
Parking Lot	0.511200	0.213700	0.169200	0.061000	0.002100	0.001000	0.009600	0.022100	0.000000	0.003800	0.003100	0.001000	0.002200



## SW High School - Kern-San Joaquin County, Annual

**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	-387.4941	-387.4941	-0.0175	-0.0036	-389.0124
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	585.2167	585.2167	0.0265	5.4700e-003	587.5098
NaturalGas Mitigated	0.0248	0.2255	0.1895	1.3500e-003		0.0171	0.0171		0.0171	0.0171	0.0000	245.5291	245.5291	4.7100e-003	4.5000e-003	246.9881
NaturalGas Unmitigated	0.0359	0.3266	0.2743	1.9600e-003		0.0248	0.0248		0.0248	0.0248	0.0000	355.5222	355.5222	6.8100e-003	6.5200e-003	357.6349



## SW High School - Kern-San Joaquin County, Annual

**5.2 Energy by Land Use - NaturalGas****Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	6.66223e+006	0.0359	0.3266	0.2743	1.9600e-003		0.0248	0.0248		0.0248	0.0248	0.0000	355.5222	355.5222	6.8100e-003	6.5200e-003	357.6349
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0359</b>	<b>0.3266</b>	<b>0.2743</b>	<b>1.9600e-003</b>		<b>0.0248</b>	<b>0.0248</b>		<b>0.0248</b>	<b>0.0248</b>	<b>0.0000</b>	<b>355.5222</b>	<b>355.5222</b>	<b>6.8100e-003</b>	<b>6.5200e-003</b>	<b>357.6349</b>

**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	4.60104e+006	0.0248	0.2255	0.1895	1.3500e-003		0.0171	0.0171		0.0171	0.0171	0.0000	245.5291	245.5291	4.7100e-003	4.5000e-003	246.9881
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0248</b>	<b>0.2255</b>	<b>0.1895</b>	<b>1.3500e-003</b>		<b>0.0171</b>	<b>0.0171</b>		<b>0.0171</b>	<b>0.0171</b>	<b>0.0000</b>	<b>245.5291</b>	<b>245.5291</b>	<b>4.7100e-003</b>	<b>4.5000e-003</b>	<b>246.9881</b>



## SW High School - Kern-San Joaquin County, Annual

**5.3 Energy by Land Use - Electricity****Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	1.86256e+006	541.8401	0.0245	5.0700e-003	543.9632
Parking Lot	149106	43.3766	1.9600e-003	4.1000e-004	43.5466
<b>Total</b>		<b>585.2167</b>	<b>0.0265</b>	<b>5.4800e-003</b>	<b>587.5098</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	-666000	-193.7470	-0.0088	-0.0018	-194.5062
Parking Lot	-666000	-193.7470	-0.0088	-0.0018	-194.5062
<b>Total</b>		<b>-387.4941</b>	<b>-0.0175</b>	<b>-0.0036</b>	<b>-389.0124</b>

**6.0 Area Detail****6.1 Mitigation Measures Area**



## SW High School - Kern-San Joaquin County, Annual

Use Electric Lawnmower

Use Electric Leafblower

Use Electric Chainsaw

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.2588	1.7000e-004	0.0184	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0354	0.0354	9.0000e-005	0.0000	0.0378
Unmitigated	1.2589	1.7000e-004	0.0186	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0359	0.0359	1.0000e-004	0.0000	0.0383



## SW High School - Kern-San Joaquin County, Annual

**6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1934					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0638					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7500e-003	1.7000e-004	0.0186	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0359	0.0359	1.0000e-004	0.0000	0.0383
<b>Total</b>	<b>1.2589</b>	<b>1.7000e-004</b>	<b>0.0186</b>	<b>0.0000</b>		<b>7.0000e-005</b>	<b>7.0000e-005</b>		<b>7.0000e-005</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>0.0359</b>	<b>0.0359</b>	<b>1.0000e-004</b>	<b>0.0000</b>	<b>0.0383</b>

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1934					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0638					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7200e-003	1.7000e-004	0.0184	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0354	0.0354	9.0000e-005	0.0000	0.0378
<b>Total</b>	<b>1.2588</b>	<b>1.7000e-004</b>	<b>0.0184</b>	<b>0.0000</b>		<b>7.0000e-005</b>	<b>7.0000e-005</b>		<b>7.0000e-005</b>	<b>7.0000e-005</b>	<b>0.0000</b>	<b>0.0354</b>	<b>0.0354</b>	<b>9.0000e-005</b>	<b>0.0000</b>	<b>0.0378</b>

**7.0 Water Detail**



## SW High School - Kern-San Joaquin County, Annual

**7.1 Mitigation Measures Water**

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	39.7290	0.2887	7.1200e-003	49.0705
Unmitigated	39.7290	0.2887	7.1200e-003	49.0705

**7.2 Water by Land Use****Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	8.80992 / 22.6541	39.7290	0.2887	7.1200e-003	49.0705
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>39.7290</b>	<b>0.2887</b>	<b>7.1200e-003</b>	<b>49.0705</b>



## SW High School - Kern-San Joaquin County, Annual

**7.2 Water by Land Use****Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	8.80992 / 22.6541	39.7290	0.2887	7.1200e-003	49.0705
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>39.7290</b>	<b>0.2887</b>	<b>7.1200e-003</b>	<b>49.0705</b>

**8.0 Waste Detail****8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	74.0917	4.3787	0.0000	183.5591
Unmitigated	74.0917	4.3787	0.0000	183.5591



## SW High School - Kern-San Joaquin County, Annual

**8.2 Waste by Land Use****Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	365	74.0917	4.3787	0.0000	183.5591
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>74.0917</b>	<b>4.3787</b>	<b>0.0000</b>	<b>183.5591</b>

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	365	74.0917	4.3787	0.0000	183.5591
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>74.0917</b>	<b>4.3787</b>	<b>0.0000</b>	<b>183.5591</b>

**9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## SW High School - Kern-San Joaquin County, Annual

**10.0 Stationary Equipment**

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**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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**Boilers**

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## ATTACHMENT C: CUMULATIVE PROJECTS EMISSION CALCULATIONS

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(Electronic Files)



## ATTACHMENT D: CARB 2012 AND 2020 ESTIMATED EMISSION INVENTORIES

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**ALMANAC EMISSION PROJECTION DATA (PUBLISHED IN 2013)**  
**2012 Estimated Annual Average Emissions**  
**SAN JOAQUIN VALLEY AIR BASIN**

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

[See detailed information.](#)  
[Start a new query.](#)

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION	18.8	3.6	23.8	29.2	4.3	6.0	5.5	5.3
WASTE DISPOSAL	457.4	21.0	0.5	0.3	0.1	0.6	0.2	0.1
CLEANING AND SURFACE COATINGS	23.3	20.3	0.0	-	-	0.1	0.1	0.1
PETROLEUM PRODUCTION AND MARKETING	130.9	33.6	0.6	0.3	0.1	0.2	0.2	0.1
INDUSTRIAL PROCESSES	16.7	15.7	0.8	6.7	3.4	16.5	8.0	3.2
* TOTAL STATIONARY SOURCES	647.1	94.2	25.7	36.4	7.9	23.4	14.0	8.8
AREAWIDE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
SOLVENT EVAPORATION	53.1	47.6	-	-	-	-	-	-
MISCELLANEOUS PROCESSES	969.0	128.6	186.8	13.2	1.3	488.4	250.2	54.0
* TOTAL AREAWIDE SOURCES	1022.1	176.2	186.8	13.2	1.3	488.4	250.2	54.0
MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES	53.2	48.5	437.6	177.9	0.7	10.8	10.8	6.7
OTHER MOBILE SOURCES	41.6	39.0	252.5	97.6	0.5	5.9	6.6	6.1
* TOTAL MOBILE SOURCES	94.8	87.5	690.1	275.5	1.2	16.7	17.4	12.8
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES	282.0	242.0	442.7	1.7	2.0	42.2	40.5	34.3
* TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	282.0	242.0	442.7	1.7	2.0	42.2	40.5	34.3
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	2046.1	599.9	1345.2	326.8	12.4	570.6	322.1	110.0

[Start a new query.](#)





**ALMANAC EMISSION PROJECTION DATA (PUBLISHED IN 2013)**

**2012 Estimated Annual Average Emissions**

**KERN COUNTY**

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

[See detailed information.](#)

[Start a new query.](#)

**KERN COUNTY COUNTY - MOJAVE DESERT AIR BASIN**

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION	0.5	0.1	0.6	2.5	0.2	0.4	0.4	0.4
WASTE DISPOSAL	7.3	0.0	-	-	0.0	0.0	0.0	0.0
CLEANING AND SURFACE COATINGS	0.9	0.8	-	-	-	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING	0.2	0.2	-	-	-	-	-	-
INDUSTRIAL PROCESSES	0.1	0.1	6.8	15.4	2.2	5.7	3.7	1.6
* TOTAL STATIONARY SOURCES	9.0	1.2	7.4	17.9	2.5	6.1	4.0	1.9
AREAWIDE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
SOLVENT EVAPORATION	1.4	1.2	-	-	-	-	-	-
MISCELLANEOUS PROCESSES	1.8	0.3	1.4	0.3	0.0	17.1	8.3	1.4
* TOTAL AREAWIDE SOURCES	3.3	1.5	1.4	0.3	0.0	17.1	8.3	1.4
MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES	2.6	2.4	23.5	9.7	0.0	0.5	0.5	0.4
OTHER MOBILE SOURCES	5.7	5.5	24.9	7.8	0.3	3.1	3.1	3.0
* TOTAL MOBILE SOURCES	8.3	7.9	48.4	17.5	0.3	3.7	3.6	3.4
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES	38.3	30.9	119.6	0.3	0.5	11.3	10.8	9.2
* TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	38.3	30.9	119.6	0.3	0.5	11.3	10.8	9.2
TOTAL KERN COUNTY IN MOJAVE DESERT	58.8	41.5	176.8	36.0	3.3	38.1	26.7	15.9

**KERN COUNTY COUNTY - SAN JOAQUIN VALLEY AIR BASIN**

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION	13.0	1.9	10.8	9.3	2.0	3.7	3.5	3.4
WASTE DISPOSAL	184.5	11.0	0.1	0.1	0.0	0.0	0.0	0.0
CLEANING AND SURFACE COATINGS	2.6	2.5	0.0	-	-	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING	64.2	26.4	0.6	0.2	0.1	0.2	0.2	0.1
INDUSTRIAL PROCESSES	2.3	2.2	0.1	0.1	0.1	2.8	1.3	0.4
* TOTAL STATIONARY SOURCES	266.6	44.0	11.6	9.6	2.2	6.8	5.0	4.0
AREAWIDE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
SOLVENT EVAPORATION	10.5	9.6	-	-	-	-	-	-
MISCELLANEOUS PROCESSES	89.6	12.2	8.9	1.5	0.0	70.5	35.0	6.5
* TOTAL AREAWIDE SOURCES	100.1	21.8	8.9	1.5	0.0	70.5	35.0	6.5
MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES	10.4	9.4	81.9	48.6	0.2	2.7	2.7	1.8
OTHER MOBILE SOURCES	5.5	5.1	49.6	12.6	0.1	0.6	0.7	0.7
* TOTAL MOBILE SOURCES	15.9	14.5	131.5	61.2	0.3	3.4	3.4	2.5
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES	21.5	18.4	7.1	0.1	0.1	0.8	0.7	0.6
* TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	21.5	18.4	7.1	0.1	0.1	0.8	0.7	0.6
TOTAL KERN COUNTY IN SAN JOAQUIN VALLEY	404.1	98.7	159.2	72.4	2.6	81.4	44.1	13.6
GRAND TOTAL FOR KERN COUNTY	462.9	140.1	336.0	108.4	5.9	119.5	70.8	29.5

[Start a new query.](#)





**ALMANAC EMISSION PROJECTION DATA (PUBLISHED IN 2013)**  
**2020 Estimated Annual Average Emissions**  
**SAN JOAQUIN VALLEY AIR BASIN**

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

[See detailed information.](#)  
[Start a new query.](#)

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION	16.7	3.0	22.9	22.5	3.4	5.6	5.2	4.9
WASTE DISPOSAL	511.8	23.6	0.6	0.3	0.1	0.6	0.2	0.1
CLEANING AND SURFACE COATINGS	27.0	23.4	0.0	0.0	-	0.1	0.1	0.1
PETROLEUM PRODUCTION AND MARKETING	134.3	30.6	0.6	0.2	0.1	0.2	0.2	0.1
INDUSTRIAL PROCESSES	19.2	18.0	1.0	5.1	3.6	19.3	9.4	3.7
* TOTAL STATIONARY SOURCES	709.0	98.7	25.0	28.2	7.3	25.9	15.0	9.1
AREAWIDE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
SOLVENT EVAPORATION	54.9	49.2	-	-	-	-	-	-
MISCELLANEOUS PROCESSES	1095.3	138.5	184.7	13.3	1.3	483.5	248.2	53.8
* TOTAL AREAWIDE SOURCES	1150.2	187.7	184.7	13.3	1.3	483.5	248.2	53.8
MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES	28.8	26.2	241.5	91.4	0.8	8.9	8.9	4.3
OTHER MOBILE SOURCES	33.1	32.5	267.8	79.2	0.6	4.5	5.6	5.3
* TOTAL MOBILE SOURCES	61.9	58.7	509.2	170.6	1.4	13.4	14.5	9.6
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES	282.0	242.0	442.7	1.7	2.0	42.2	40.5	34.3
* TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	282.0	242.0	442.7	1.7	2.0	42.2	40.5	34.3
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	2203.1	587.1	1161.6	213.8	12.0	565.0	318.3	106.8

[Start a new query.](#)





**ALMANAC EMISSION PROJECTION DATA (PUBLISHED IN 2013)**

**2020 Estimated Annual Average Emissions**

**KERN COUNTY**

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

[See detailed information.](#)

[Start a new query.](#)

**KERN COUNTY COUNTY - MOJAVE DESERT AIR BASIN**

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION	0.6	0.1	0.6	2.6	0.2	0.4	0.4	0.4
WASTE DISPOSAL	8.1	0.1	-	-	0.0	0.0	0.0	0.0
CLEANING AND SURFACE COATINGS	0.9	0.8	-	-	-	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING	0.2	0.2	-	-	-	-	-	-
INDUSTRIAL PROCESSES	0.1	0.1	8.1	18.4	2.7	6.8	4.4	1.9
* TOTAL STATIONARY SOURCES	9.9	1.3	8.7	21.0	2.9	7.2	4.8	2.2
AREAWIDE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
SOLVENT EVAPORATION	1.5	1.3	-	-	-	-	-	-
MISCELLANEOUS PROCESSES	1.9	0.3	1.4	0.3	0.0	16.2	7.9	1.3
* TOTAL AREAWIDE SOURCES	3.4	1.6	1.4	0.3	0.0	16.2	7.9	1.3
MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES	1.6	1.5	13.2	5.1	0.0	0.4	0.4	0.2
OTHER MOBILE SOURCES	5.3	5.2	25.8	8.0	0.3	3.1	3.0	3.0
* TOTAL MOBILE SOURCES	6.9	6.6	38.9	13.0	0.4	3.5	3.4	3.2
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES	38.3	30.9	119.6	0.3	0.5	11.3	10.8	9.2
* TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	38.3	30.9	119.6	0.3	0.5	11.3	10.8	9.2
TOTAL KERN COUNTY IN MOJAVE DESERT	58.5	40.4	168.7	34.6	3.7	38.2	26.9	15.9

**KERN COUNTY COUNTY - SAN JOAQUIN VALLEY AIR BASIN**

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
FUEL COMBUSTION	11.4	1.6	9.9	7.3	1.2	3.3	3.1	3.0
WASTE DISPOSAL	210.7	12.7	0.1	0.1	0.0	0.0	0.0	0.0
CLEANING AND SURFACE COATINGS	2.9	2.7	0.0	-	-	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING	59.3	22.8	0.5	0.2	0.1	0.2	0.2	0.1
INDUSTRIAL PROCESSES	2.7	2.6	0.1	0.1	0.1	3.4	1.5	0.5
* TOTAL STATIONARY SOURCES	287.0	42.4	10.6	7.7	1.4	6.9	4.8	3.7
AREAWIDE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
SOLVENT EVAPORATION	10.8	9.8	-	-	-	-	-	-
MISCELLANEOUS PROCESSES	101.0	13.1	8.5	1.5	0.0	67.8	33.8	6.4
* TOTAL AREAWIDE SOURCES	111.8	22.9	8.5	1.5	0.0	67.8	33.8	6.4
MOBILE SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
ON-ROAD MOTOR VEHICLES	6.1	5.5	47.5	24.9	0.2	2.0	2.0	1.0
OTHER MOBILE SOURCES	4.2	4.0	50.8	10.2	0.1	0.4	0.5	0.4
* TOTAL MOBILE SOURCES	10.3	9.5	98.3	35.1	0.3	2.4	2.5	1.5
NATURAL (NON-ANTHROPOGENIC) SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5
NATURAL SOURCES	21.5	18.4	7.1	0.1	0.1	0.8	0.7	0.6
* TOTAL NATURAL (NON-ANTHROPOGENIC) SOURCES	21.5	18.4	7.1	0.1	0.1	0.8	0.7	0.6
TOTAL KERN COUNTY IN SAN JOAQUIN VALLEY	430.5	93.2	124.6	44.4	1.8	77.9	41.9	12.2
GRAND TOTAL FOR KERN COUNTY	489.0	133.6	293.3	79.0	5.6	116.2	68.8	28.1

[Start a new query.](#)



## ATTACHMENT E: HEALTH RISK ASSESSMENT MODELING FILES

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(Electronic Files)



## ATTACHMENT F: AMBIENT AIR QUALITY ASSESSMENT MODELING FILES

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(Electronic Files)



**APPENDIX B**  
**CULTURAL RESOURCES MEMO**





December 9, 2017

**RE: Cultural resources records search for SW High School Construction Project, located at Wible Road and Engle Road, unincorporated Kern Co., CA**

### **Background**

The purpose of the search was to determine whether any known cultural resources or previously conducted cultural resource surveys were located on or near the subject property, and whether construction of the Project would impact any known or potential cultural resources under the California Environmental Quality Act (CEQA).

### **Project Description**

The high school campus will occupy approximately 60-acres of the 80-acre Project site. The additional acreage may be kept by KHSD or sold as surplus land. The enrollment capacity will be 2,000 students with the ability to expand to 2,500 students. There will be multiple buildings, with an approximate area totaling 200,000 to 250,000 square feet (sq. ft.). These buildings will include classrooms, administrative and multi-purpose rooms, athletic and play fields. A portion of the site could be Career Technical classroom area, athletic facilities, or any other education function or expansion to the campus. School facilities typically include single- and multi-story, permanent building structures and some portable units on temporary or permanent foundations with room for future expansion capabilities. The Project site would be primarily accessed from Wible Road and Engel Road.

### **Location**

The subject property includes APNs 184-150-38, -39, -40 and -41. The property is located at the southeast corner of the intersection of Wible and Engle roads, in the northwest ¼ of the northwest ¼ of Section 12, T.31S, R.27E, MDBM.

A cultural resources records search (RS# 17-545) was conducted at the Southern San Joaquin Valley Information Center, CSU Bakersfield for the SW High School Site Project. The Project is located south of Bakersfield in Kern County, California.

The records search covered an area within a one-half mile radius of the subject property and included a review of the National Register of Historic Places, California Points of Historical Interest, California Registry of Historic Resources, California Historical Landmarks, California State Historic Resources Inventory, and a review of cultural resource reports on file.

The search indicated that the subject property had never been surveyed for cultural resources. Four cultural resource surveys have been conducted within a half mile of the property. No cultural resource sites had been recorded on the property and it is not known if any exist there. One



archaeological site (P-15-012209 [CA-KER-6913/H]) has been recorded within a half mile. This is an extensive site containing both historic and prehistoric components.

Although unlikely, construction of the Project has the potential to impact unknown cultural resources. To reduce potential impacts, the following mitigation measures are recommended.

Recommended mitigation measures:

**MM CUL-1:** If prehistoric or historic-era cultural materials are encountered during construction activities, all work in the immediate vicinity of the find shall halt until a qualified archaeologist can evaluate the find and make recommendations. Cultural resource materials may include prehistoric resources such as flaked and ground stone tools and debris, shell, bone, ceramics, and fire-affected rock as well as historic resources such as glass, metal, wood, brick, or structural remnants. If the qualified archaeologist determines that the discovery represents a potentially significant cultural resource, additional investigations may be required to mitigate adverse impacts from project implementation. These additional studies may include avoidance, testing, and evaluation or data recovery excavation.

**MM CUL-2:** If human remains are discovered during construction or operational activities, further excavation or disturbance shall be prohibited pursuant to Section 7050.5 of the California Health and Safety Code. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Section 7050.5 of the Health and Safety Code, Section 5097.98 of the Public Resources Code (Chapter 1492, Statutes of 1982, Senate Bill 297), and Senate Bill 447 (Chapter 44, Statutes of 1987), shall be followed. Section 7050.5(c) shall guide the potential Native American involvement, in the event of discovery of human remains, at the direction of the county coroner

With implementation of Mitigation Measures MM CUL-1 and MM CUL-2, impacts to cultural resources would be less than significant.

*Robert E. Parr*

Robert E. Parr, MS, RPA  
Senior Archaeologist



**NATIVE AMERICAN HERITAGE COMMISSION**  
Cultural and Environmental Department  
1550 Harbor Blvd., Suite 100  
West Sacramento, CA 95691 Phone: (916) 373-3710  
Email: [nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
Website: <http://www.nahc.ca.gov>



December 26, 2019

Christopher Mynk  
Kern High School District

VIA Email to: [christopher.mynk@qkinc.com](mailto:christopher.mynk@qkinc.com)

RE: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, New Comprehensive High School - Southeast Bakersfield, California Project, Kern County

Dear Mr. Mynk:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:



- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

- Any report that may contain site forms, site significance, and suggested mitigation measures.

All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.
4. Any ethnographic studies conducted for any area including all or part of the APE; and
5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions or need additional information, please contact me at my email address: [Andrew.Green@nahc.ca.gov](mailto:Andrew.Green@nahc.ca.gov).

Sincerely,



Andrew Green  
Staff Services Analyst

Attachment



**Native American Heritage Commission  
Native American Contacts List  
December 26, 2019**

Big Pine Paiute Tribe of the Owens Valley  
James Rambeau, Sr., Chairperson  
P.O. Box 700  
Big Pine CA 93513  
j.rambeau@bigpinepaiute.org  
(760) 938-2003  
(976) 938-2942 Fax

Paiute - Shoshone

Kern Valley Indian Community  
Robert Robinson, Chairperson  
P.O. Box 1010  
Lake Isabella CA 93240  
bbutterbredt@gmail.com  
(760) 378-2915 Cell

Tubatulabal  
Kawaiisu

Big Pine Paiute Tribe of Owens Valley  
Sally Manning, Environmental Director  
P.O. Box 700  
Big Pine CA 93513  
s.manning@bigpinepaiute.org  
(760) 938-2003  
(760) 938-2942 Fax

Paiute

Kern Valley Indian Community  
Brandy Kendricks  
30741 Foxridge Court  
Tehachapi CA 93561  
krazykendricks@hotmail.com  
(661) 821-1733  
(661) 972-0445

Kawaiisu  
Tubatulabal

Big Pine Paiute Tribe of the Owens Valley  
Danelle Gutierrez THPO  
P.O. Box 700  
Big Pine CA 93513  
d.gutierrez@bigpinepaiute.org  
(760) 938-2003, ext. 228  
(760) 938-2942 Fax

Paiute

Kitanemuk & Yowlumne Tejon Indians  
Delia Dominguez, Chairperson  
115 Radio Street  
Bakersfield CA 93305  
2deedominguez@gmail.com  
(626) 339-6785

Yowlumne  
Kitanemuk

Chumash Council of Bakersfield  
Julio Quair, Chairperson  
729 Texas Street  
Bakersfield CA 93307  
chumashtribe@sbcglobal.net  
(661) 322-0121

Chumash

San Manuel Band of Mission Indians  
Lee Clauss, Director-CRM Dept.  
26569 Community Center Drive  
Highland CA 92346  
lclauss@sanmanuel-nsn.gov  
(909) 864-8933  
(909) 864-3370 Fax

Serrano

Kern Valley Indian Community  
Julie Turner, Secretary  
P.O. Box 1010  
Lake Isabella CA 93240  
(661) 340-0032 Cell

Kawaiisu  
Tubatulabal

San Manuel Band of Mission Indians  
Lynn Valbuena, Chairwoman  
26569 Community Center Dr.  
Highland CA 92346  
(909) 864-8933

Serrano

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:  
New Comprehensive High School - Southeast Bakersfield, California Project, Kern County.



**Native American Heritage Commission  
Native American Contacts List  
December 26, 2019**

Santa Rosa Rancheria Tachi Yokut Tribe  
Leo Sisco, Chairperson  
P.O. Box 8  
Lemoore ,CA 93245  
(559) 924-1278  
(559) 924-3583 Fax

Tache  
Tachi  
Yokut

Wuksache Indian Tribe/Eshom Valley Band  
Kenneth Woodrow, Chairperson  
1179 Rock Haven Ct.  
Salinas ,CA 93906  
kwood8934@aol.com  
(831) 443-9702

Foothill Yokuts  
Mono  
Wuksache

Tejon Indian Tribe  
Octavio Escobedo, Chairperson  
1731 Hasti-acres Drive, Suite 108 Kitanemuk  
Bakersfield ,CA 93309  
oescobedo@tejonindiantribe-nsn.gov  
(661) 834-8566  
(661) 834-8564 Fax

Tejon Indian Tribe  
Colin Rambo, Cultural Resources Management  
1731 Hasti-Acres Drive, Suite 108 Kitanemuk  
Bakersfield ,CA 93309  
colin.rambo@tejonindiantribe-nsn.go  
(661) 834-8566  
(484) 515-4790 Cell

Tubatulabals of Kern Valley  
Robert L. Gomez, Jr., Tribal Chairperson  
P.O. Box 226 Tubatulabal  
Lake Isabella ,CA 93240  
(760) 379-4590  
(760) 379-4592 Fax

Tule River Indian Tribe  
Neil Peyron, Chairperson  
P.O. Box 589 Yokuts  
Porterville ,CA 93258  
neil.peyron@tulerivertribe-nsn.gov  
(559) 781-4271  
(559) 781-4610 Fax

**This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.**

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**This list is only applicable for contacting local Native Americans Tribes for the proposed:  
New Comprehensive High School - Southeast Bakersfield, California Project, Kern County.**



## **APPENDIX C**

### **GEOTECHNICAL INVESTIGATION**



**SOILS ENGINEERING, INC.**



**PRELIMINARY ENVIRONMENTAL  
ASSESSMENT EQUIVALENT REPORT**

**PROPOSED HIGH SCHOOL SITE  
SOUTHEAST OF WIBLE ROAD & ENGLE ROAD  
BAKERSFIELD, CALIFORNIA**

**Prepared For:**

**Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA. 93309-2924  
Attn: Jenny Hannah**

**File No. 17-16195**

**Prepared By:**

**Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA. 93313**

**April 2018**



SOILS ENGINEERING, INC.



## PRELIMINARY ENVIRONMENTAL ASSESSMENT EQUIVALENT REPORT

For

**PROPOSED SOUTHWEST HIGH SCHOOL SITE  
SOUTHEAST OF WIBLE ROAD & ENGLE ROAD  
BAKERSFIELD, CALIFORNIA**

This Preliminary Environmental Assessment Equivalent Report (PEA Equivalent Report) for a Proposed High School site in Bakersfield, California was prepared by SOILS ENGINEERING INC. on behalf of the Kern High School District (KHSD) in a manner consistent with the level of care and skill ordinarily exercised by professional geologists and environmental scientists. This PEA Equivalent Report was prepared under the technical direction of the undersigned, who is a California Professional Geologist.

**SOILS ENGINEERING INC.**

A handwritten signature in blue ink, appearing to read 'Robert J. Becker', is written over a horizontal line.

Robert J. Becker, P.G., CEG

Date: April 24, 2018





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Appendix D, Historical Aerial Photos, QA/QC Summary





## **Preliminary Environmental Assessment Equivalent Report**

**For**

**PROPOSED HIGH SCHOOL SITE**

**Kern High School District**

**SE of Wible Road & Engle Road**

**Bakersfield, California**

**APN#s: 184-150-35, -38, -39, -40, -41, -42**

**April 2018**

### **1.0 EXECUTIVE SUMMARY**

Soils Engineering, Inc. (SEI) has completed a Preliminary Environmental Assessment (PEA) Equivalent investigation of a proposed High School area located Southeast of Wible Road and Engle Road in Bakersfield, CA (site). The project site covers approximately 120 acres as shown on the attached Location Map (Plate 1), Plot Plan (Plate 2) and Trucking Yard Area Plot Plan (Plate 2A) and includes Assessor's Parcel Numbers 184-150-35, -38, -39, -40, -41, -42. The Kern High School District (KHSD) intends to build a Comprehensive High School on this site. The site has been utilized as agricultural property from at least the 1930's to the present and the northwestern portion was a dairy from the 1940's to the 1990's and has been a milk trucking business for the last 14 years. Two (2) water wells, a truck repair area, a diesel fuel area and storage areas are present on the northwestern portion of the property utilized by Oldenkamp Trucking.

To assess near surface soil conditions within the agricultural field areas and a pistachio orchard, SEI collected a total of 177 on-site soil samples in general accordance DTSC's PEA Guidance Manual and the DTSC's Interim Guidance for Sampling Agricultural Properties (3<sup>rd</sup> Revision). The soil samples were collected at depth intervals of 0" to 6" and 2' to 2.5' below ground surface (bgs) at the on-site sampling locations shown on Plates 2B and 2C.

The analytical results of the 0" to 6" composite samples (C1A,B,C-3" to C24A,B,C-3", NW1A,B,C,D-3" to NW4A,B,C,D-3") and the 0 to 6" (-3") and 2' to 2.5' (-2") discrete soil samples analyzed for organo-chlorine pesticides (OCPs) within the agricultural field and pistachio orchard areas during this investigation indicate that only minor concentrations of 4,4'-DDD (up to 14.2 ug/kg) and 4,4'-DDE (up to 59 ug/kg) were reported all well below the EPA Regional Screening Levels (RSLs).

The results of on-site arsenic concentrations in the field and orchard areas ranged from 3.43 mg/kg to 9.55 mg/kg in the soil samples analyzed well below the normal DTSC level of concern (12 mg/kg).



Within the agricultural field areas soil samples were also collected within 2 tailwater sumps (S1 & S3) and beneath three (3) pole-mounted electrical transformers (P1, P2 and P3) at depths of 0 to 6" and 2' to 2.5'. Elevated concentrations (151,030 mg/kg) of Total Petroleum Hydrocarbons (TPH) and some semi-volatile organic compounds (SVOCs), including phenol (56.6 mg/kg), were reported in soil sample S1-3" collected in the eastern portion of the southwestern tailwater sump. TP11 and phenol concentrations decreased in the two (2) deeper soil samples (S1-2' and S1-4') collected at this location. An aquatic bioassay conducted on sample S1-3" indicates that the near surface material (~15' x ~20' x ~1') is at a California hazardous concentration. The PCB aroclor-1260 was reported in soil sample P1-3' (63.9 ug/kg), but not in sample P1-2' or in step-out sample P1-E-3". See Table 1 and Table 2 for the agricultural field and orchard area soil sample analytical results.

Ten (10) hand-auger borings (NW-S1 to NW-S10) were conducted within areas of potential environmental concern within the northwestern most parcel that is utilized by Oldenkamp Trucking. Soil samples were collected at depths of 0 to 6" (-3"), and 2' to 2.5' (-2') at these locations with most of the -3" samples analyzed for TPH, OCPs, and CAM 17 Metals. Additional chemical analyses (organochlorine herbicides (OCHs)) were added for locations adjacent to the irrigation water well (NW-S2 and NW-S3) and storage barn area (NW-S1). Analytical results of these soil samples indicated elevated OCPs (4,4-DDT and dieldrin mainly) to a depth of approximately 5' at sample location NW-S1. Step-out borings 10' to the west (NW-S1-W), 4' to the south (NW-S1-S), 5' to the north (NW-S1-N) and 11' to the east (NW-S1-E) also had elevated 4,4'-DDT in the -3" sample, but not in the -2' samples. The 4,4'-DDT concentrations in the soil in this area (~25' x ~30' and 1' to 5' deep) are at California hazardous concentrations. TPH was reported at elevated concentrations in soil samples NW-S1-S-3" (1,155 mg/kg), NW-S1-E-3" (4,650 mg/kg), NW-S5-3" (18,060 mg/kg), NW-S6-3" (3,071 mg/kg) and NW-S7-3" (1,021 mg/kg). A step-out boring 5' west of NW-S5, had moderate TPH (717.5 mg/kg) reported in the -3" sample (NW-S5-W-3") indicating a lateral extent of <10' with an average depth of 1' impacted with TPH in the oil stained area NW-S5. Lead was reported at 101 mg/kg in sample S1-3", but is not at a California hazardous concentration for lead. This concentration does exceed the DTSC screening level of 80 mg/kg for lead.

Two (2) hand-auger borings (NW-P1 and NW-P2) were conducted beneath pole-mounted electrical transformers and analyzed for polychlorinated biphenyls (PCBs) within the Oldenkamp trucking yard. Soil samples were collected at depths of 0 to 6" (-3"), and 2' to 2.5' (-2') at these locations with the -3" samples analyzed for PCBs. Analytical results of these soil samples indicated minor PCBs (aroclor-1260 at 111 ug/kg) to a depth of approximately 1' at sample location NW-P2. Step-out soil sample (NW-P2-W-3") conducted approximately 5' west of location NW-P2 indicated no PCBs were present.

Four (4) hand-auger borings (H1 to H4) were conducted adjacent to the existing house within the Oldenkamp Trucking yard. Soil samples were collected at depths of 0 to 6" (-3"), and 2' to 2.5' (-2') at these locations with the -3" and -2' samples analyzed for OCPs and lead. Analytical



results of these soil samples indicated elevated OCPs (Dieldrin mainly) to a depth of approximately 1' at sample locations H1, H2 and H3. Step-out soil samples conducted at locations H1, H2, H3 and H4 indicated no elevated OCPs were present ~3' from the edge of the house. California hazardous concentrations were reported in soil samples H2-3" (lead and 4,4'-DDE,4,4'-DDE combination) and H4-3" (lead only). See Table 1 and Table 2 for these analytical results.

To evaluate the former dairy area in the northwestern parcels selected soil samples from the shallow composites (NW1-3", NW-2-3", NW-3-3" and NW-4-3") and the 5' soil samples from the soil gas borings were analyzed for total organic carbon (TOC) with the analytical results indicating a normal range of organic content present (0.02% to 0.66%). See Table 1 and Table 3A for these results.

Water samples were collected from the irrigation sump (NW-Sump), a rinse water collection area (NW-RW) and from a domestic water well (NW-DW) in the Oldenkamp Trucking yard area. The water samples were analyzed for general minerals and nitrogen compounds. Additional analyses were conducted for the sample NW-DW including TPH as gasoline and volatile organic compounds since the water well is within 85 feet of a former leaking underground storage tank area that has been remediated by vapor extraction. The sample NW-RS was also analyzed for total coliform and e-coli. The analytical results are presented on Table 4 and indicate that the rinse water ponding southeast of the washout area contains water with elevated electrical conductivity, total kjeldahl nitrogen (TKN), ammonia, coliform and e-coli bacteria. A Report of Waste Discharge (ROWD) prepared by WZI indicated that the waste water applied to the surface of the site would not impact the groundwater beneath the site and set limits on how much could be applied per month for dust control. The domestic water well and the irrigation sump water samples appear to be in the normal range for the constituent's analyzed for.

See Plates 2B and 2C for the sample locations and Tables 1, 2, 3A and 4 for the sample results.

A soil gas survey was conducted by Interphase Environmental to evaluate potential subsurface gases from a former gasoline underground storage tank (UST) release and former dairy activities that were present in the northwestern portion of the site. Soil gas probes were installed at depths of 5' and 15' below ground surface at 8 locations (SG1 to SG8) as shown on Plate 2C. The soil gas samples were analyzed for methane, and volatile organic compounds (VOCs). A few samples (SG1, SG2 and SG7 samples) were also analyzed for hydrogen sulfide (H<sub>2</sub>S). Only minor methane concentrations were reported in a few of the soil gas samples with the highest methane reported at 25 ppmV at location SG1-5' and SG1-15'. The DTSC screening level for methane is 1000 ppmV, so none of the 8 locations exceeded this level. No H<sub>2</sub>S was reported in any of the soil gas samples analyzed for H<sub>2</sub>S. Chloroform was reported in 6 of the soil gas samples at concentrations of 0.05 (SG7-5') to 2.4 ug/l (SG5-5'). See Table 3 for the soil gas survey results.



The highest concentrations of chemicals of potential concern reported in this investigation were included in the human health screening evaluation. The total cumulative risk is  $7.7 \times 10^{-4}$  and the cumulative hazard is 20.72. These values are above the level of potential concern of risk ( $1 \times 10^{-6}$ ) and the hazard level of concern (1.0) due to the elevated TPH, DDT, and Dieldrin in some of the soil samples. This indicates that there is an elevated risk and hazard to future occupants at the site from the on-site soil in this area and some mitigation will be required prior to the school being approved.

The PEA equivalent investigation indicates:

- 1) That the historical agricultural activities at this site have not significantly impacted the near surface soil within the agricultural field and pistachio orchard areas. Based on the fate and transport properties of OCPs and metals it is highly unlikely that concentrations of potential concern of these constituents would migrate to depths below 2.5' in the soil (silty sand) encountered at this site. No additional sampling and analysis below a depth of 2.5' is warranted in the agricultural field areas to achieve unrestricted Site closure.
- 2) California hazardous concentrations were reported in soil sample S1-3" in the southwestern tailwater sump; in the northwestern parcel storage barn area (NW-S1-3", NW-S1-2', NW-S1-4', NW-S1-N-3", NW-S1-E-3") and in soil samples H2-3" (lead and 4,4'-DDE, 4,4'-DDT combination) and H4-3" (lead only) adjacent to the house. The cost estimate for the removal and disposal of this California hazardous material range from \$30,000 to \$40,000. Some of this would need to be conducted after the demolition or removal of the house.
- 3) Elevated TPH concentrations were reported in the Oldenkamp Trucking yard adjacent to the diesel AST, adjacent to the oil storage drums (NW-S6) and adjacent to the battery storage area (NW-S7). The cost estimate for the removal and disposal of this non-hazardous material range from \$7,500 to \$15,000.
- 4) The analytical testing of water samples from the Oldenkamp Trucking yard indicates that the rinsate water ponding on the site contains elevated levels of electrical conductivity, total kjeldahl nitrogen (TKN), ammonia, coliform and e-coli bacteria. A Report of Waste Discharge Report (ROWD) prepared by WZI indicated that this waste water applied to the surface of the site would not impact the groundwater beneath the site. The domestic water well and the irrigation sump water samples appear to be in the normal range for the constituent's analyzed for.
- 5) The soil gas survey indicated no elevated methane or VOCs in the former leaking UST area and within the former dairy area within the northwestern parcel. Total organic carbon (TOC) levels were within the normal range within the northwestern parcel where analyzed for TOC.



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SEI recommends that the removal activities stated above be conducted prior to the KHSD purchasing the property. If the removal action takes place after purchase it will need to be overseen by the DTSC as part of a Removal Action Workplan (RAW).

Once this Report is complete it should be submitted to the DTSC as a PEA Equivalent Report for review and comment if the KHSD wants to proceed with the acquisition of this site.

Any off-site fill material necessary for the site will be sampled and analyzed for potential constituents of concern in accordance with the DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.

If during field investigation activities or construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC will be notified. SEI will discuss these areas with the DTSC to determine the appropriate actions to be taken to assess and/or remediate these new potential areas of concern.



## 2.0 INTRODUCTION

Soils Engineering, Inc. (SEI) has prepared this Preliminary Environmental Assessment Equivalent Report (PEA Equivalent Report) following the completion of fieldwork and the receipt of analytical testing results. The fieldwork was completed in general accordance with the "Final DTSC PEA Guidance Manual dated October 2015" and the "DTSC Interim Guidance for Sampling Agricultural Land (Third Revision) dated August 7, 2008". This PEA Equivalent Report describes the soil sampling procedures, analytical testing procedures, analytical results, a health risk assessment of the cumulative contaminate concentrations reported, with conclusions and recommendations for the site.

The overall objectives of the PEA include:

- Evaluating historical information for indications of the past use, storage, disposal, or release of hazardous wastes/substances at the site.
- Establishing through a field sampling and analysis program the nature of hazardous wastes/substances that may be present in the shallow soil and soil gas at the site, their concentration and general extent.
- Estimating the potential threat to public health and/or the environment posed by hazardous constituents at the site using a residential land-use scenario.

Based on information developed during the PEA and the human risk evaluation using the DTSC's Final DTSC PEA Guidance Manual dated October 2015, the DTSC will then make an informed decision regarding potential risks posed by the site.

Possible outcomes of the PEA decision include the requirement for further investigation through the Remedial Investigation/Feasibility Study (RI/FS) process if the site is found to be significantly impacted by hazardous substances release(s); the need to perform a Removal Action if localized impacts by hazardous substances release(s) are found; and issuance of a "No Further Action" finding if the site is found not to be significantly impacted and risks to human health and the environment are found to be within acceptable levels based on the conservative screening level risk assessment.



### 3.0 SITE DESCRIPTION

The proposed KHSO High School (site) is located southeast of the intersection of Engle Road and Wible Road, within the northwestern  $\frac{1}{4}$  of Section 12, Township 31 South, and Range 27 East, in Bakersfield, CA (see attached Location Map, Plate 1 and Assessors Map, Plate 4). The project site covers approximately 120 acres as shown on the attached Location Map (Plate 1), Plot Plan (Plate 2) and Oldenkamp Truck Yard Plot Plan (Plate 2A). Adjacent off-site properties are mainly agricultural properties. The property is bordered by Engle Road on the north, by Wible Road on the west, and by dirt roads on the south and east. The nearest active high school site is Ridgeview High School located approximately 2.1 miles northwest of the site.

The site currently consists of a plowed agricultural field in the southern 80 acres, a small pistachio orchard and the Oldenkamp Trucking yard in the northwestern 40 acres. Irrigation vents are present along some of the borders of the agricultural field areas. Two (2) tailwater sumps are present along the southern border of the site with transfer pumps and some vegetation. The southwestern tailwater sump has some unknown material present in the eastern portion that covers an area approximately 15' x 20' that has strong putrid odor and is approximately 6" to 1' thick. A power pole with pole-mounted electrical transformers are present adjacent to each of the tailwater sumps that appear to be in good condition. Another pole-mounted transformer is present between the 2 tail-water sumps across from an off-site water well. Dirt roads surround the agricultural field areas.

The two (2) northwestern parcels consist of approximately 32 acres of pistachio trees and the Oldenkamp Trucking yard is approximately 8 acres. The pistachio trees are drip irrigated with no environmental concerns observed within this orchard. The Oldenkamp Trucking area consists of a main shop building with a truck washout area, a storage barn, a house, a chicken coop, a domestic water well, an irrigation water well, an aboveground diesel tank within secondary containment, an irrigation water retention sump, a wash-water collection area and dirt parking areas. Surface staining was observed within the storage barn at multiple locations, adjacent to the western end of the diesel AST containment, adjacent to the drum storage area by the shop building, adjacent to the irrigation water well and by the water filtration unit. Miscellaneous equipment and old tires are stored in the central portion of the trucking yard. The waste water from the truck washing operation is pumped into a small above-ground tank and the over-flow goes into a wash water collection area southeast of the shop. The waste water has a moderate to strong spoiled milk odor. The stored wash water is pumped into a tanker truck and is then used for dust control in the truck parking area creating numerous puddles across the yard area.

See Plate 2 for the Plot Plan, Plate 2A for the Trucking Yard Area Plot Plan and attached photos showing the areas discussed above.



### **3.1 SITE IDENTIFICATION**

The following information describes the site for the proposed High School.

#### **3.1.1 Site Name**

The site is referred to as the Proposed Southwest High School.

#### **3.1.2 Contact Person**

Ms. Jenny Hannah, the Director of Facilities Planning Department for the Kern High School District (KHSD) is the contact person designated by the KHSD for this project.

#### **3.1.3 Site Address**

The proposed KHSD SW High School is located Southeast of Wible Road and Engle Road in Bakersfield, California. The address for the Oldenkamp Trucking yard portion is 11314 Wible Road and the rest of the site has no physical address.

#### **3.1.4 Mailing Address**

The mailing address for the project designated by the KHSD is:

Ms. Jenny Hannah  
Director of Facilities Planning Department  
Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA. 93309-2924

#### **3.1.5 Telephone Number**

The telephone number for Ms. Hannah is (661) 827-3422.

#### **3.1.6 Other Site Names**

This site is part of the Oldenkamp Family Trust and the Pinheiro Family LP property. The northwestern parcels were part of the former BS Baldwin Dairy.

#### **3.1.7 U.S. Environmental Protection Agency (USEPA) Identification Number**

Based on a review of the regulatory database search report and contacts with regulatory agencies, discussed further below, the site has not been issued a USEPA Identification Number.



### **3.1.8 EnviroStor Database Number and DTSC Site Code**

Based on a review of the regulatory database search report (see Appendix C) and contacts with regulatory agencies, discussed further below, the subject site has the following CalSites and DTSC numbers:

- None

### **3.1.9 Assessor's Parcel Number(s) and Maps**

Information regarding Assessor's Parcel Numbers (APN's) relating to the site and maps depicting parcel boundaries were obtained from the Kern County Tax Assessor's Office. The site comprises part of the following parcels:

<u>Parcel Number</u>	<u>Owners:</u>
APN: 184-150-38, -39, -40, -41:	Pinheiro Family LP (80 acres)
APN: 184-150-42:	Wible Ave. LLC (20 acres)
APN: 184-150-35:	Oldenkamp Family Trust (20 acres)

See Plate 4 for a copy of the Assessors Map.

### **3.1.10 Township, Range, Section and Meridian**

Based on the USGS 7½-Minute Topographic Series, Corner Quadrangle Map, the site is located in the northwestern ¼ of Section 12, Township 31 South, and Range 27 East. The central geographic coordinates of the site are approximately Latitude 35.248186° North, Longitude -119.034691° West.

See Plate 5 for the site on the EDR Physical Setting Source Map.

### **3.1.11 Site Zoning**

Information available on the Kern County Zone Maps reveals the majority of the site is zoned for Agricultural use (A1) and the northwestern parcel for a trucking business. This will be modified prior to construction activities.

## **3.2 SITE MAPS**

The following site maps are attached showing the Location of the site (Plate 1), the Plot Plan (Plate 2), a Plot Plan for the Trucking Yard Area (Plate 2A), the Sample Maps (Plates 2B, 2C), the Parcel Map (Plate 4), the EDR Physical Source Setting Map (Plate 5), the EDR Overview Map (Plate 6), the EDR Detail Map (Plate 7), Depth to Water Map (Plate 8) and the DOGGR Map (Plate 9).



## **4.0 BACKGROUND**

### **4.1 SITE STATUS & HISTORY**

Based on historical documents reviewed, the majority of the site has been agricultural since at least 1937. A dairy was present in the northwestern portion from at least 1942 to the 1990's. The Oldenkamp Trucking business began in 2004 or 2005. The pistachio orchard was planted in 2013. The agricultural fields have been planted mainly in carrots, potatoes, wheat, corn and cotton for the last 24 years. Prior to 1994 it appears that the site had similar use throughout the years of occupancy (growing mainly cotton and other crops).

The scope of SEI's preliminary assessment included a site inspection, survey of surrounding land use and regulatory agency and historic records review. SEI's preliminary assessment indicated that there was a low to moderate potential that hazardous materials have contaminated the site. Since the site has been used for agricultural, dairy and trucking purposes SEI concluded that it is possible that residual concentrations of OCPs and arsenic may be present in the shallow soil within the field areas. Oil impacted soil could also be present in the area of the truck repair shop, diesel AST and storage areas.

#### ***Current Site Description***

Recent site reconnaissance's were conducted in January to March 2018 consisting of walking the property and taking photographs.

The property is bordered by Engle Road on the north, by Wible Road on the west, by dirt roads on the south and east.

The site currently consists of a plowed agricultural field in the southern 80 acres, a small pistachio orchard and the Oldenkamp Trucking yard in the northwestern 40 acres. Irrigation vents are present along some of the borders of the agricultural field areas. Two (2) tailwater sumps are present along the southern border of the site with transfer pumps and some vegetation. The southwestern tailwater sump has some unknown material present in the eastern portion that covers an area approximately 15' x 20' that has strong putrid odor and is approximately 6" to 1' deep. A power pole with pole-mounted electrical transformers are present adjacent to each of the tailwater sumps that appear to be in good condition. Another pole-mounted transformer is located along the southern border across from an off-site water well. Dirt roads surround the agricultural field areas.

The two (2) northwestern parcels consist of approximately 32 acres of pistachio trees and the Oldenkamp Trucking yard is approximately 8 acres. The pistachio trees are drip irrigated with no environmental concerns observed within this orchard. The Oldenkamp Trucking area consists of a main shop building with a truck washout area, a storage shed, a house, a chicken coop, a domestic water well, an irrigation water well, an aboveground diesel tank within secondary



containment, an irrigation water retention sump, a wash-water collection area and dirt parking areas. Surface staining was observed within the storage shed at multiple locations, adjacent to the western end of the diesel AST containment, adjacent to the drum storage area by the shop building, adjacent to the irrigation water well and by the water filtration unit. Miscellaneous equipment and old tires are stored in the central portion of the trucking yard. The waste water from the trucking washing operation is pumped into a small above-ground tank and the over-flow goes into a wash water collection area southeast of the shop. The waste water has a moderate to strong spoiled milk odor. The stored wash water is pumped into a tanker truck and is then used for dust control in the truck parking area creating numerous puddles across the yard area.

See Plates 2 and 2A for Site Plans showing the areas discussed above.

No naturally occurring asbestos (NOA) is known within 10 miles of the site area.

No high-pressure pipelines appear to be present within 1500' of the site borders.

The site is not located within an Oil Field and the nearest oil wells are over 3/4 of a mile away as shown on the DOGGR Map (Plate 9).

The depth to groundwater beneath the site as shown on maps and data prepared by the Kern Water Agency is approximately 130' (Spring 2012) below the ground surface. Two (2) water wells (1 domestic and 1 irrigation) are present in the northwestern portion of the site. 14 Federal and/or State water wells were indicated within one (1) mile of the site by GEOCHECK (see Appendix C). The general groundwater gradient in the area of the site is to the north or generally flat (Kern County Water Agency Maps, 2012). No shallow ground water beneath the site is shown on groundwater maps dated Summer 2011. Maps prepared by the Kern County Water Agency, dated July 1997 indicate total dissolved solids (TDS) in the range of 200 ppm (confined aquifer) to 500 ppm (unconfined aquifer) for specific well sites within 1 mile of the site.

The source of the potable and non-potable water for the proposed school site will likely be from a local water company or from the on-site water wells if shown to be economical and of good drinking water quality.

#### ***Historical Property Use***

Based on a review of historical documents and interviews, the land was utilized for agricultural purposes from at least the 1930's to the present. A dairy was present in the northwestern portion from at least 1942 to the 1990's. The Oldenkamp Trucking business began in 2004 or 2005. The pistachio orchard was planted in 2013.

A summary of the historical aerial photo review is presented below:



1937 – The majority of the site appears to be agricultural land. Trees present in the southeastern corner. Appears to an irrigation ditch in the northwestern and western portion of the site. Agricultural fields are present to the north, south, east and west. Wible Road present to the west and Engle Road is a dirt road to the north.

1942 – The northwestern parcel now has some structures and possible dairy present. Majority of site area is active agricultural land. Surrounding area is also mainly agricultural land.

1952 – The dairy in the northwest has expanded some to the south and a larger structure now present in the northwest. Some smaller structures possible in the NE corner of the site. Surrounding land is similar to 1942.

1956 – The majority of the site is similar to the 1952 aerial. Mainly agricultural fields surround site. Possible small dairy to the north.

1968 – A new large building now present just East-SE of the other large building in the NW area. Multiple smaller structures also present in the NW. NW remains active dairy and the rest of site active agricultural land. Tailwater sump in the SE corner. Surrounding land is mainly agricultural with a small dairy to the north.

1973 – Similar to 1968 aerial.

1984 – Poor quality aerial. Appears to be similar to 1973 aerial.

1994 – Some of the small structures in the NW corner are now gone. 2 Large buildings in the NW with some grain silos. Two (2) tail water sumps now visible along the southern border. Surrounding land is mainly agricultural with small dairy to the north.

2003 – The small structures in the northeastern corner are now removed. Dairy area does not look active anymore. Rest of on-site are is active agricultural land. Surrounding land is mainly agricultural. Small dairy to the north.

2008 - The site now has a trucking business in the northwest area. Original large building is now gone in the NW. Surrounding land is mainly agricultural with small dairy to the north.

2011 – Similar to the 2008 aerial.

2017 - The site is similar to current configuration. Large irrigation sump now present in the N-NE area. Diesel AST now visible in the NW area. Rest of site is active agricultural land with 2 tailwater sumps visible along the southern border. Surrounding land is mainly agricultural with small dairy to the north..



See Appendix D for the historical aerial photos.

### ***Preliminary Conclusions***

Based on the above information the most likely residual chemicals in the soil at the site were narrowed down to the following:

- Chlorinated pesticides and arsenic within the agricultural field areas.
- Former dairy in the northwestern area could have methane in the subsurface soil.
- Former leaking UST area could have gasoline and VOCs in the subsurface soil.
- Repair shop area and diesel AST area could have petroleum hydrocarbons and waste oil impacting near surface soil.
- Storage areas and water well areas could have pesticide and herbicides of concern in near surface soil from spills.

### ***Current Status***

Soils Engineering Inc. (SEI) has prepared this Preliminary Environmental Assessment (PEA) Equivalent Report for submittal to the Department of Toxic Substance Control (DTSC) for their review and comment.

#### **4.1.1 Business Type**

This land has been used for agricultural purposes since at least the 1930's, former dairy in the northwest from the 1940's to the 1990's and trucking business since 2004. Crops suspected to have been grown since 1994 are: alfalfa, cotton, wheat, beans, and carrots. Prior to 1994 cotton and other row crops are the most likely crops grown on this land.

#### **4.1.2 Years of Operation**

Based on a review of historical documents, the land has been farmed since at least 1930's up to present. Former Baldwin Dairy from the 1940's to the 1990's. Oldenkamp Trucking from 2004 to the present.

#### **4.1.3 Prior Land Use**

No other land use is suspected at this site.

#### **4.1.4 Facility Ownership/Operators**

According to Kern County Department of Agriculture the site was has been farmed by various entities from at least 1994 to 2018. The last crop was cotton.

No other contacts knowledgeable regarding prior onsite operations were available for interview.

#### **4.1.5 Property Owners**

Information provided by the KHSD and the Kern County Assessor's Office indicates that the current owners of the site are as shown below:



**Parcel Number**

APN: 184-150-38,-39,-40,-41:  
APN: 184-150-42:  
APN: 184-150-35:

**Owners:**

Pinheiro Family LP (80 acres)  
Wible Ave. LLC (20 acres)  
Oldenkamp Family Trust (20 acres)

See Appendix B for a USER Questionnaire completed by the current owner/operator of the site.

**4.1.6 Surrounding Land Use**

At the time of the most recent site inspection by SEI in March 2018 surrounding land use was observed to be mainly agricultural land. In general, prominent adjoining land uses are as follows:

North: Engle Road (dirt road) along north border. Small dairy and agricultural land north of Engle Road.

East: Dirt road along east border. Agricultural properties to the east of dirt road.

West: Wible Road and agricultural properties west of Wible Road.

South: Dirt Road along the southern border. South of dirt road is agricultural land.

Surrounding land use within 200 feet of the site is shown on Plate 2.

**4.2 HAZARDOUS SUBSTANCE/WASTE MANAGEMENT INFORMATION****4.2.1 Business/Manufacturing Activities**

Based on a review of historical documents, agricultural activities and oil field activities have been conducted on the site.

No records of any hazardous waste/substance storage, treatment, or disposal activities at the proposed site were obtained from the local or State regulatory agencies, except for pesticide permits and use reports from the Kern County Department of Agriculture. Pesticide permits and pesticide use reports summaries are shown below for the years 1994 to 2016:

The following is a summary of the crops grown and chemicals used since 1994 reviewed at a minimum of 5 year intervals within Township 31S, R27E, Section 12 that may include the site area.

**Agricultural Crops & Operators:**

Year 1994: 1502041 - FREITAS FARMS- Wheat, Beans Dried  
1500666 - CERRO FARMS- Wheat, Cotton, Corn  
1500925 - JSA COMPANY- Carrots



Year 1999: 1500666 - CERRO FARMS- Cotton  
1502803 - MIKE WOOD ADVENTURES- Watermelon  
1500925 - JSA COMPANY- Beans Dried, Corn

Year 2004: 1500666 - CERRO FARMS- Cotton  
1500925 - JSA COMPANY- Wheat, Corn

Year 2009: 1500915 - MCKITTRICK RANCHES- Wheat, Carrots, Sorghum  
1504321 - HAAGSMA FARMS- Corn, Alfalfa

Year 2014: 1500915 - MCKITTRICK RANCHES- Carrots, Sorghum  
1504321 - HAAGSMA FARMS- Corn, Wheat  
1505342 - WIBLE AVE. LLC - Pistachio

Year 2017: 1500915 - MCKITTRICK RANCHES- Potatoes, Carrots  
1504321 - PONCETTA FARMS- Cotton  
1505342 - WIBLE AVE. LLC - Pistachio

**Pesticide & Herbicide Use Records:**

The pesticides and herbicides listed for Township 31S, R27E, Section 12 appear to be within the normal range of applications for the crops grown within the Bakersfield area.

**Chemicals Actually Listed in the Use Reports and Years Include:**

Buctril (1994,  
Drift Retardant (1994)  
Weedar (1994)  
Banvel Herb (1994)  
Caparol (1994, 1999)  
Zephyr (1994, 1999, 2004)  
Capture (1994)  
Penox (1994)  
Danitol (1994)  
Leaf Act Herb (1994)  
Rally (1999)  
Ginstar (1999,  
MCPA Herb (2004, 2009, 2014)  
Dupont Staple (2004,  
Mad Dog (2009)  
Warhawk (2009)



Trifluralin (1999, 2004)  
Lorsban (2009)  
Monitor (1999, )  
Miller Nu-film (2009, 2017)  
Dual Magnum (2017)  
Prowl (1994, 1999, 2004, 2009, 2013, 2016)  
Exit (2009)  
Lorox (2009)  
Dimethoate (1994, 2009)  
Warrior Insecticide (1999)  
Roundup (2004, 2016)  
Assail (2004, 2013)  
Clarity (2009, 2014 )  
Shark (2009, 2014, 2017)  
Mepiquat (2017)  
Poast Herb (2014, 2017)  
Sniper (2017)  
Ginstar Cotton Defoliant (2004, 2013)  
Yukon (2009, 2014)  
Kocide (2009)  
Vapam (2009, 2014)  
Nordox (2009)  
Arrow (2009)  
Parallel (2014)  
Makaze (2014, 2017)  
Dupont Express Herb (2014,)  
Parazone (2014,)  
Goal (2014)  
Gramaxone (2014)  
Liberate (2014, 2017)  
Eptam (2017)  
Matrix Herb (2017)

Oily soil and spilled chemicals are possible around the water wells, diesel AST area, and truck repair areas along with subsurface gases (methane, and VOCs) in the former UST area and the former dairy area.

#### DOGGR Records

The DOGGR files indicate that no oil wells have been drilled on the site or directly adjacent to the site area.



#### **4.2.2 On-Site Storage, Treatment and Disposal**

Aerial photos and regulatory files indicate the historical presence of a dairy, above-ground and underground fuel storage tanks on the property. These areas could have stored hazardous substances.

#### **4.2.3 Location of Solid Waste Landfills**

The nearest landfill is located well over 1 mile from the site.

Section 17213 of the California Education Code and Section 21151.8 of the California Public Resources Code prohibit construction of a school upon a current or former hazardous waste disposal site or solid waste disposal site. Based on information reviewed for preparation of this PEA Report, the proposed KHSD High School site is not situated upon a current or former disposal site.

#### **4.2.4 High Pressure Gas Lines & Oil Pipelines & High Voltage Power Transmission Lines**

SEI contacted The Gas Company & PG&E to determine the nearest high-pressure natural gas transmission lines near the site. Representatives for PG&E and the Gas Company indicate that the nearest high-pressure transmission line are located over 1500' from of the site. No high-pressure petroleum pipelines appear to be within 1500' of the site borders.

No high-voltage power transmission lines were observed within 500' of the site borders.

#### **4.2.5 Hazardous Air Emissions and Facilities Within ¼ Mile**

A regulatory database search conducted by EDR, Inc. dated March 22, 2018, indicated a few facilities with historical hazardous waste activities are present within ¼ mile of the site. These facilities do not have any current environmental issues which could impact the site area (see Plates 6 and 7 and Appendix C for more detail). In addition, SEI is not aware of any facilities within ¼ mile of the site, which might reasonably be anticipated to emit hazardous air emissions or handle hazardous materials, substances, or wastes that might significantly affect the proposed school site.

#### **4.2.6 Regulatory Status**

A portion of the site was included in the EDR database search as the former Baldwin Dairy. The site was also included in the agricultural records which are summarized in Section 4.2.1 above. The following summarizes the listing for the site:

- BS Baldwin Dairy, 3151 Engle Rd. – Located in the northwestern portion of the site. Listed on the LUST and HIST Cortese databases. This is a former dairy that had a leaking UST. Assessment and remedial activities took place in the area of the former UST after removal. The gasoline impacted soils proceeded to a depth of approximately 80'. Vapor extraction was conducted to reduce the amount of gasoline constituents in the



soil. Confirmation soil borings indicated some very minor gasoline concentrations remain at a depth between 75' and 80', but the shallower soil has been cleaned up. Kern County Environmental Health issued a closure letter for this case dated January 24, 1997. Some of the records from the KCEHSD are included in Appendix B.

Oldenkamp Trucking has a Conditional Use Permit to operate the business dated December 15, 2016 issued by the County of Kern. A copy of this CUP is attached in Appendix B.

Oldenkamp Trucking discharges waste water from the milk truck cleaning process onto the 10.41 acre area in the northwest portion of the site for dust control. A Notice of Violation dated September 8, 2016 was issued by the Regional Water Quality Control Board (RWQCB) following an inspection and sampling of soil and water at the site on June 8, 2016. The wastewater being discharged onto the property exceeded the Tulare Lake Basin Limits for electrical conductivity, chlorides and boron. The RWQCB therefore required a Report of Waste Discharge be prepared characterizing the waste water and what impacts it may have on the land and the groundwater beneath the site. WZI prepared the Report of Waste Discharge (ROWD) dated December 4, 2016 with portions of this ROWD attached in Appendix B. WZI concluded that the amount of wastewater being discharged for dust control will not impact the groundwater beneath the site and set monthly limits of the amount of waste water that can be discharged based on average monthly temperatures, evaporation rates, etc.

#### **4.2.7 Inspection Results**

No records of previous inspections of Federal, State, or local agencies were available, besides the inspection by the RWQCB mentioned in section 4.2.6. No other violations beyond the closed LUST case were on file on any of the databases searched.

The property is bordered by Engle Road on the north, by Wible Road on the west, by dirt roads on the south and east.

The site currently consists of a plowed agricultural field in the southern 80 acres, a small pistachio orchard and the Oldenkamp Trucking yard in the northwestern 40 acres. Irrigation vents are present along some of the borders of the agricultural field areas. Two (2) tailwater sumps are present along the southern border of the site with transfer pumps and some vegetation. The southwestern tailwater sump has some unknown material present in the eastern portion that covers an area approximately 15' x 20' that has strong putrid odor and is approximately 6" to 1' deep. A power pole with pole-mounted electrical transformers are present adjacent to each of the tailwater sumps that appear to be in good condition. Dirt roads surround the agricultural field areas.

The two (2) northwestern parcels consist of approximately 32 acres of pistachio trees and the Oldenkamp Trucking yard is approximately 8 acres. The pistachio trees are drip irrigated with no environmental concerns observed within this orchard. The Oldenkamp Trucking area consists



of a main shop building with a truck washout area, a storage shed, a house, a chicken coop, a domestic water well, an irrigation water well, an aboveground diesel tank within secondary containment, an irrigation water retention sump, a wash-water collection area and dirt truck parking areas. Surface staining was observed within the storage shed at multiple locations, adjacent to the western end of the diesel AST containment, adjacent to the drum storage area by the shop building, adjacent to the irrigation water well and by the water filtration unit. Miscellaneous equipment and old tires are stored in the central portion of the trucking yard. The waste water from the trucking washing operation is pumped into a small above-ground tank and the over-flow goes into a wash water collection area southeast of the shop. The waste water has a moderate to strong spoiled milk odor. The stored wash water is pumped into a tanker truck and is then used for dust control in the truck parking area creating numerous puddles across the yard area.

#### **4.2.8 Prior Assessments/Remediation**

As stated in section 4.2.6 the northwestern portion of the site was a former dairy which had a gasoline UST that leaked. Multiple assessment and then remedial action took place at the LUST area to reduce the gasoline contaminants in the soil to acceptable levels.

No other assessment or remedial activities are known for this site.



## **5.0 APPARENT PROBLEM**

An estimated 80+ years of agricultural activity has taken place at this site. During this period of time pesticides and herbicides have been utilized in the agricultural fields. In addition, dairy activities were conducted in the northwestern portion of the site from the 1940's to the 1990's. Dairy activities can produce methane gases in the subsurface soil from manure composting. The Oldenkamp Trucking activities includes truck repair, truck fueling, and washing out milk trucks. Petroleum impacted soil could be present in the truck repair and fueling areas. The residuals from some of these chemicals used at the site may be present in the soil. These residual chemicals in the soil may come in contact with construction workers, school children and teachers who will be present at the site. The most likely pathway for these residual chemicals in the soil to come in contact with biological receptors is from skin contact in exposed soil areas. The next likely contact would be inhalation of air-borne dust during construction activities or on windy days. Incidental ingestion of soil is also a potential pathway at this site.

No reported spills or releases have been reported for this site besides the former leaking underground storage tank which has been appropriately remediated and received case closure.



## **6.0 ENVIRONMENTAL SETTING**

The site area is approximately 120 acres and consists of 80 acres of agricultural fields, 32 acres of pistachio trees and 8 acres of the Oldenkamp Trucking yard. Surrounding properties consist of mainly agricultural land or a small dairy. The main pathways that potential contaminants could take would include soil and air pathways. Groundwater is not a likely pathway for contaminants at this location to affect biological receptors. In addition, the source for water (potable and non-potable) at the school site will likely be from public water company sources.

### **6.1 FACTORS RELATED TO SOIL PATHWAYS**

Potential soil pathways would include ingestion of soil, and absorption through skin contact.

#### **6.1.1 Topography**

The site has a gentle slope to the southwest with property boundaries matching surface elevations of adjoining roads and properties. See Plate 5 for a Topographic Map.

#### **6.1.2 Surface Evidence of Environmental Impact**

The surfaces observed had no signs of stressed vegetation or ill effects on bio-receptors.

#### **6.1.3 Site Lithology**

Earth materials identified in eighteen (18) soil borings (up to 51' deep) and eight (8) soil gas borings to 15' conducted in February and March 2018 at the site consisted generally of intervals of Silty Sand (SM), Clay (CL), and Sandy Silt (ML), and Poorly-Graded Sand (SP) in the top 51 feet below ground surface (bgs). These soils are classified as SM, CL, ML and SP respectively, in the Unified Soils Classification System. No groundwater was encountered in the soil borings conducted to depths as great as 51'.

##### **6.1.3.1 Naturally Occurring Asbestos**

No known areas with naturally occurring asbestos are present within 10 miles of the site.

#### **6.1.4 Surface Slope & Surface Water Bodies**

Local topographic slope is to the southwest. The nearest active surface water is located <1/8 of a mile to the southeast (water storage pond).

#### **6.1.5 Site Access**

Site access is off of Engle Road on the north, from Wible Road on the west and from dirt roads along the southern and eastern borders.

#### **6.1.6 Preventative Measures**

No preventative measures are present to limit direct contact with the soil at the site.



### **6.1.7 Location of Nearest Residence**

Residential properties (farmhouse) are located approximately 100' to the west. The nearest emergency care facility (Mercy Southwest) is approximately 8 miles to the northwest at the intersection of Old River Road and Mercy Way in Bakersfield.

## **6.2 FACTORS RELATED TO WATER PATHWAYS**

Water pathways are not being evaluated for this site. The source for water (potable and non-potable) at the school site will likely be from public water company sources.

## **6.3 FACTORS RELATED TO AIR PATHWAYS**

Potential air pathways at the site would include inhalation of dust particles during grading activities or other disturbances of the soil at the site. The release of dust particles at the site would most likely be intermittent and related directly to heavy equipment operations at the site during the development of the school site. Residences to the southeast and south may be impacted by a portion of the dust generated by the proposed development of the site on windy days. Common practices of wetting soil and roadways to keep dust down to a minimum should be enforced during grading and construction activities at the site.

### **6.3.1 Potential Sources of Release**

Potential sources or the mechanism of the release of contaminants into the air pathway would include; grading activities during construction of the school, tilling the surface as part of any weed control, and any general disturbance of the surface soil combined with heavy winds.

### **6.3.2 Daily Wind Direction**

Based on available climate data as reported by the National Weather Service the estimated prevailing wind direction for this area of Kern County is approximately 277 degrees or from the West-Southwest with an average velocity of 5.53 mph. See Table below for the 1999 data utilized.

<b>Month</b>	<b>Avg. Wind Speed</b>	<b>Wind Direction (360 Scale)</b>
January	4.9	100
February	2	350
March	3.1	350
April	7.2	260
May	7.4	310
June	7.3	310
July	7.4	310
August	7.1	300
September	6	310
October	5	140
November	4.8	300
December	4.2	290
<b>Average - 1999</b>	<b>5.53</b>	<b>277.50</b>



### **6.3.3 Local Climatic Factors**

The average seasonal temperature ranges from 50° F in the winter to 96° F in the summer. Temperature inversions are common during the fall and winter months. Prevailing wind patterns are predominately west-Southwesterly.

### **6.3.4 Timing of Potential Releases**

The release of potential contaminants are most likely to occur during the grading of the site which will last approximately 1 to 2 months once the school site is approved.

### **6.3.5 Possible Dispersion Routes**

The most likely dispersion routes for this site would be with the prevailing wind direction (westerly) so that properties south-southeast of the site may be affected.

### **6.3.6 Population of Nearby Residences**

Since the site is in an area that is not densely populated, the population that a release may affect is small and would only involve the properties directly adjacent to the school site.

### **6.3.7 Surrounding Area**

Residential properties are located approximately 100 feet to the west and 200 feet to the north. Adjoining properties are mainly agricultural land. Taft Hwy. (State Route 119) is located approximately 1 mile to the north. The nearest hospital is approximately 8 miles to the northwest.



## 7.0 SAMPLING ACTIVITIES AND RESULTS

### 7.1 SUMMARY OF ACTIVITIES

#### 7.1.1 Soil Sampling Activities

##### Field and Orchard Areas

Between February 15 and 19, 2018, SEI collected discrete soil samples at 87 locations within the agricultural field area and pistachio orchard area of the site in general accordance with the the "DTSC Interim Guidance for Sampling Agricultural Land (Third Revision) dated August 7, 2008". The on-site soil samples (177 total) were collected at depth intervals of 0" to 6" (-3"), and 2' to 2.5'(-2') below ground surface (bgs) at evenly spaced intervals within 28 gridded areas (C1 to C24, and NW1 to NW4). Three (3) locations (A,B,C) were sampled within grid areas C1 to C24 and NW2 and 4 locations(A,B,C,D) within grid areas NW1, NW3 and NW4 with portions of the -3" soil samples composited by the analytical laboratory. Duplicate soil samples were collected at five (5) locations for Quality Assurance/Quality Control (QA/QC) purposes.

Within the agricultural field areas soil samples were also collected within 2 tailwater sumps (S1 & S3) and beneath three (3) pole-mounted electrical transformers (P1, P2 and P3) at depths of 0 to 6" and 2' to 2.5'. A 4' sample (S1-4') and a step-out boring (S1-W) with samples collected at 0 to 6" and 2' to 2.5' was conducted at boring S1 to further evaluate this location. A step-out boring P1-E was conducted approximately 3' east of location P1 with samples collected at 0 to 6" and 2' to 2.5'.

The majority of the soil samples were collected by hand auguring to the proposed sampling depth and then advancing the next 6" by utilizing a clean hand-auger. The samples were collected in stainless-steel sleeves and were sealed with Teflon-lined caps, labeled and placed into an iced cooler at 4° C. The soil samples were over-nighted to Positive Lab Services for chemical analysis along with multiple Chain-of Custody documents in sealed coolers with blue ice (see Appendix A for documents).

The hand auger samplers were decontaminated between each sampling event, utilizing water with Alconox (or equivalent) and a clean water rinse.

The shallow sampling holes were filled and compacted with soil cuttings up to match the surface.

See Plate 2B and 2C for all of the soil sample locations in the field and pistachio orchard areas.



#### Trucking Yard Area

On February 19 and 20, 2018, SEI advanced (10) hand-auger borings (NW-S1 to NW-S10) within areas of potential environmental concern within the northwestern most parcel that is utilized by Oldenkamp Trucking. Soil samples were collected at depths of 0 to 6" (-3"), and 2' to 2.5' (-2'). Soil samples were also collected at a depth of 4' at boring NW-S5 and 5' to the west (NW-S5-W) at 0 to 6" and 2' to 2.5' to further evaluate oil staining at this location. Deeper samples (4', 6' and 8') and 4 step-out borings 10' to the west (NW-S1-W), 4' to the south (NW-S1-S), 5' to the north (NW-S1-N) and 11' to the east (NW-S1-E) were conducted in the area of boring NW-S1 to further evaluate this location.

Two (2) hand-auger borings (NW-P1 and NW-P2) were conducted beneath pole-mounted electrical transformers with soil samples collected at depths of 0 to 6" (-3"), and 2' to 2.5' (-2') at these locations. A step-out boring (NW-P1-W) was conducted approximately 5' west of location P1 with samples collected at 0 to 6" and 2' to 2.5'.

Four (4) hand-auger borings (H1 to H4) were conducted adjacent to the existing house within the Oldenkamp Trucking yard. Soil samples were collected at depths of 0 to 6" (-3") and 2' to 2.5' (-2') at these locations. Deeper samples (4' at H1 & H3) and step-out borings ~3' further out from the house were conducted at locations H1, H2, H3 and H4 with samples collected at 0 to 6" and 2' to 2.5'.

The soil samples were over-nighted to Positive Lab Services for chemical analysis under chain of custody documents in sealed coolers with blue ice. See Plate 2C for the samples locations in this area of the site.

#### **7.1.2 Evaluation of Subsurface Lithology**

The subsurface lithology encountered in the 8 soil gas borings (SG-1 to SG-8) and the 18 geotechnical borings (B-1 to B-18) on-site were observed down to a maximum depth of 51' by a Professional Geologist (PG) or a technician overseen by a PG. In addition, staining and odor were evaluated in the soil cuttings evolved from the borings as well as the soil samples. See Appendix B for the soil gas and geotechnical boring logs.

#### **7.1.3 Analytical Testing of Soil Samples**

##### Field & Orchard Areas

The field and orchard soil samples were delivered with a completed chain of title document to Positive Lab Services in Los Angeles, CA, a State certified analytical laboratory. The 0 to 6" soil samples collected within each section (C#A-3" to C#C-3" and NW#A-3" to NW#D-3") were composited by the laboratory and analyzed for organochlorine pesticides (OCPs) by EPA Method 8081. The discrete C#B-3" and NW#B-3" samples were all analyzed for arsenic by EPA Method 6010 along with duplicate samples C4D-3", C7D-3", C18D-2', C21D-3", and NW3E-3" collected at the same location and depth as samples C4B-3", C7B-3", C18B-2', C21B-3" and



NW3B-3", respectively. The individual discrete soil samples (-3" and -2') from the four (4) composites with the highest OCPs reported (C4, C18, C24, and NW2) were also analyzed for OCPs. The C#B-3" and NW#B-3" samples with the highest arsenic results also had the -2' sample analyzed for arsenic. This included samples C7B-2', C10B-2', C13B-2', C15A-3", C18B-2', and NW3B-2'.

Soil samples S1-3" and S3-3" collected in the bottom of the two (2) tail water sumps, were analyzed for OCPs by EPA Method 8081, for Total Petroleum Hydrocarbons (TPH) by EPA Method 8015, for volatile organics by EPA Method 8021B, for CAM 17 Metals by EPA Methods 6010/7471 and for pH. Soil samples S1-2', S1-4' and S3-2' were analyzed for TPH and samples S1-2' and S1-4' for volatile organics. Samples S1-3" and S1-2' were also analyzed for semi-volatile organics by EPA Method 8270 to evaluate the unknown highly odorous material in the top 6" to 1' of soil at location S1. Sample S1-3" was also tested for aquatic bioassay to determine if it was a hazardous material. Sample S1-3" was also broken down into aliphatic and aromatic TPH carbon chain ranges.

Soil samples P1-3", P1-2', P1-W-3", P2-3" and P3-3" collected beneath or adjacent to the pole-mounted electrical transformers along the southern border of the site were analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082.

To evaluate the former dairy area in the northwestern parcels selected soil samples from the shallow composites (NW1-3", NW-2-3", NW-3-3" and NW-4-3") and the 5' soil samples from the soil gas borings (SG1-5' to SG8-5') were analyzed for total organic carbon (TOC) by the Walkley-Black Method.

#### Trucking Yard Area

Soil samples NW-P1-3", NW-P2-3", NW-P2-2' and NW-P2-W-3" collected beneath or adjacent to pole-mounted electrical transformers were analyzed for polychlorinated biphenyls (PCBs) by EPA Method 8082.

At borings NW-S1 to NW-S10 most of the -3" samples were analyzed for TPH, volatile organics, OCPs, and CAM 17 Metals. Organochlorine herbicides (OCHs) were added for locations adjacent to the irrigation water well (NW-S2 and NW-S3) and storage barn area (NW-S1). Samples NW-S1-2', -4, -6' and -8 were analyzed for OCPs as were the step-out boring samples NW-S1-S-3", NW-S1-S-2', NW-S1-N-3", NW-S1-N-2', NW-S1-W-3", NW-S1-W-2', NW-S1-E-3", and NW-S1-E-2'. TPH and volatile organics were added to all of -3" samples and some of the -2' samples at these NW-S1 step-out locations. Sample NW-S1-3" was also tested by STLC lead to determine if it had a hazardous lead content. Samples NW-S5-2', NW-S5-4', NW-S5-W-3" and NW-S5-W-2' were all analyzed for TPH and samples NW-S5-2' and NW-S5-4' for volatile organic compounds (VOCs) by EPA Method 8260. Sample NW-S5-3" was also tested for aquatic bioassay to determine if it was a hazardous material. Sample NW-S5-3" was also broken down into aliphatic and aromatic TPH carbon chain ranges. Samples NW-S6-2', NW-



S7-2', and NW-S10-2' were analyzed for TPH and sample NW-S6-2' was also analyzed for VOCs.

Four (4) hand-auger borings (H1 to H4) were conducted adjacent to the existing house within the Oldenkamp Trucking yard. All of the soil samples were analyzed for OCPs and lead. Deeper samples (4' at H1 & H3) and step-out borings ~3' further out from the house were analyzed for OCPs and lead (if warranted) in this area.

#### **7.1.4 Water Sampling & Analytical Testing**

Water samples were collected from the irrigation sump (NW-Sump), a rinse water collection area (NW-RW) and from a domestic water well (NW-DW) within the Oldenkamp Trucking yard area. The water samples were collected from the discharge port of the water well (NW-DW) or from an extended submerged water bottle after 3 rinses. Appropriate bottles were filled and labeled and placed into a cooler with blue ice and taken to BC Laboratories in Bakersfield, CA.

The water samples were all analyzed for general minerals and nitrogen compounds by appropriate EPA Methods. Additional analyses were conducted for the sample NW-DW including: TPH as gasoline and volatile organic compounds, since it was within 85 feet of the former leaking underground storage tank. The sample NW-RS was also analyzed for total coliform and e-coli. See Plate 2C for the water sample locations

#### **7.1.5 Soil Gas Evaluation**

A soil gas survey was conducted by Interphase Environmental to evaluate potential subsurface gases from a former gasoline underground storage tank (UST) release and former dairy activities that were present in the northwestern portion of the site. Soil gas probes were installed at depths of 5' and 15' below ground surface at 8 locations (SG1 to SG8) as shown on Plate 2C. The soil gas survey was conducted by advancing eight (8) on-site borings (SG-1 to SG-8) with a Geoprobe to depths of 15' bgs. Vapor samples were collected at depths of 5' and 15' at each location. The depth of placement of the probes was based on the lithology encountered by continuous coring or discrete soil sampling. If a potentially non-permeable layer was encountered at the proposed installation depths of 5' or 15' the probe was installed within a more permeable layer. The soil gas probes were installed by advancing a sealed steel probe with a Geoprobe unit to the proposed sampling depths (5' and 15' bgs), then installing semi-permanent soil gas probes within a minimum of 1-foot of sand pack. At least one-foot of dry granular bentonite was placed over each sand pack interval to preclude the infiltration of hydrated bentonite. The borehole was grouted with hydrated bentonite between the sampling intervals and at the surface to prevent any leaks. The tubing for the soil gas probes in each borehole were marked on the surface for depth and sample number and sealed for a minimum of 120 minutes before purging and vapor sampling. A default purge volume of 3 was utilized for all of the soil vapor samples. After purging three (3) volumes of vapors from the tubing, a vapor sample was collected in a summa canister and tested for volatile organic compounds and methane at an on-site mobile laboratory by A & R Laboratories (A & R) utilizing EPA Method 8260B and 8015B. A hand-held Jerome Analyzer 631-X meter was utilized to record hydrogen sulfide (H<sub>2</sub>S)



readings by the A & R on-site chemist at selected locations (SG1, SG2 and SG7 samples). The hand-held meter was calibrated for the constituents to be tested for prior to analyses per manufactures specifications.

## **7.2 PRESENTATION OF DATA**

### **7.2.1 Soil Sample Analytical Results**

The analytical results of the field and orchard area soil sampling conducted in February 2018 are presented on Table 1 and Table 2. The analytical results of the 0" to 6" composite samples (C1A,B,C-3" to C24A,B,C-3", NW1A,B,C,D-3" to NW4A,B,C,D-3") and the 0 to 6" (-3") and 2' to 2.5' (-2') discrete soil samples analyzed for organo-chlorine pesticides (OCPs) within the agricultural field and pistachio orchard areas during this investigation indicate that only minor concentrations of 4,4'-DDD (up to 14.2 ug/kg) and 4,4'-DDE (up to 59 ug/kg) were reported all well below the DTSC Recommended Screening Levels (SLs) and EPA Regional Screening Levels (RSLs).

The results of on-site arsenic concentrations in the field and orchard areas ranged from 3.43 mg/kg to 9.55 mg/kg in the soil samples analyzed which is below the normal DTSC level of concern (12 mg/kg).

Within the agricultural field areas soil samples were also collected within 2 tailwater sumps (S1 & S3) and beneath three (3) pole-mounted electrical transformers (P1, P2 and P3) at depths of 0 to 6" and 2' to 2.5'. Elevated concentrations (151,030 mg/kg) of Total Petroleum Hydrocarbons (TPH) and some semi-volatile organic compounds (SVOCs), including phenol (56.6 mg/kg), were reported in the soil sample S1-3" collected in the southwestern tailwater sump. TPH and phenol concentrations decreased in the two (2) deeper soil samples (S1-2' and S1-4') collected at this location. An aquatic bioassay conducted on sample S1-3" indicates that the near surface material (~15' x ~20' x ~1') is at a California hazardous concentration. The PCB aroclor-1260 was reported in soil sample P1-3' (63.9 ug/kg), but not in sample P1-2' or in step-out boring sample P1-E-3".

Ten (10) hand-auger borings (NW-S1 to NW-S10) were conducted within areas of potential environmental concern within the northwestern most parcel that is utilized by Oldenkamp Trucking. Analytical results of these soil samples indicated elevated OCPs (4,4-DDT and dieldrin mainly) to a depth of approximately 5' at sample location NW-S1. Step-out borings 10' to the west (NW-S1-W), 4' to the south (NW-S1-S), 5' to the north (NW-S1-N) and 11' to the east (NW-S1-E) also had elevated 4,4'-DDT in the -3" sample, but not in the -2' sample. The 4,4'-DDT concentrations in this area (~25' x ~30' and 1' to 5' deep) are at California hazardous concentrations. TPH was reported at elevated concentrations in soil samples NW-S1-S-3" (1,155 mg/kg), NW-S1-E-3" (4,650 mg/kg), NW-S5-3" (18,060 mg/kg), NW-S6-3" (3,071 mg/kg) and NW-S7-3" (1,021 mg/kg). A step-out boring 5' west of NW-S5 had moderate TPH (717.5 mg/kg) reported in the -3" sample (NW-S5-W-3") indicating a lateral extent of <10' with an



average depth of 1' impacted with TPH in the oil stained area NW-S5. Lead was reported at 101 mg/kg in sample NW-S1-3", but was not at a California hazardous concentration for lead. This concentration does exceed the DTSC screening level of 80 mg/kg for lead.

Two (2) hand-auger borings (NW-P1 and NW-P2) were conducted beneath pole-mounted electrical transformers and analyzed for polychlorinated biphenyls (PCBs) within the Oldenkamp trucking yard. Analytical results of these soil samples indicated minor PCBs (aroclor-1260 at 111 ug/kg) to a depth of approximately 1' at sample location NW-P2. Step-out soil sample (NW-P2-W-3") conducted approximately 5' west of location NW-P2 indicated no PCBs were present.

Four (4) hand-auger borings (H1 to H4) were conducted adjacent to the existing house within the Oldenkamp Trucking yard. Analytical results of these soil samples indicated elevated OCPs (Dieldrin mainly) to a depth of approximately 1' at sample locations H1, H2 and H3. Step-out soil samples conducted at locations H1, H2, H3 and H4 indicated no elevated OCPs were present ~3' from the edge of the house. California hazardous concentrations were reported in soil samples H2-3" (lead and 4,4'-DDE,4,4'-DDT combination) and H4-3" (lead only). See Table 1 and Table 2 for these analytical results.

To evaluate the former dairy area in the northwestern parcels selected soil samples from the shallow composites (NW1-3", NW-2-3", NW-3-3" and NW-4-3") and the 5' soil samples from the soil gas borings were analyzed for organic carbon with the analytical results indicating a normal range of organic content present (0.02% to 0.66%). See Table 1 and Table 3A for these results.

The soil samples were analyzed at Positive Lab Services, a State certified analytical laboratory. The analytical laboratories used low detection limits for each constituent analyzed and provided Level II or III QA/QC with their laboratory reports (See Appendix A). These chemical analyses cover the past chemical usage at the site and the likely residual chemicals remaining.

### **7.2.2 Water Sampling Results**

The water sample analytical results are presented on Table 4 and indicate that the rinse water ponding southeast of the washout area contains water with elevated electrical conductivity, total kjeldahl nitrogen (TKN), ammonia, coliform and e-coli bacteria. A Report of Waste Discharge (ROWD) prepared by WZI indicated that the waste water applied to the surface of the site would not impact the groundwater beneath the site and set limits on how much could be applied per month. The domestic water well and the irrigation sump water sample results appear to be in the normal range for the constituent's analyzed for. See Appendix A for the complete analytical report.



### **7.2.3 Soil Gas Evaluation Results**

A soil gas survey was conducted by Interphase Environmental to evaluate potential subsurface gases from a former gasoline underground storage tank (UST) release and former dairy activities that were present in the northwestern portion of the site. Only minor methane concentrations were reported in a few of the soil gas samples with the highest methane reported at 25 ppmV at location SG1-5' and SG1-15'. The DTSC screening level for methane is 1000 ppmV, so none of the 8 locations exceeded this level. No H<sub>2</sub>S was reported in any of the soil gas samples analyzed for H<sub>2</sub>S. Chloroform was reported in 6 of the soil gas samples at a low concentrations of 0.05 (SG7-5') to 2.4 ug/l (SG5-5'). See Table 3 for the results of the soil gas survey and Appendix A for the analytical report.

### **7.2.4 Description of Subsurface Lithology**

Soil gas boring SG-1 was continuously cored to determine the subsurface lithologic profile to a depth of 15' bgs. The other 7 soil gas borings (SG-2 to SG-8) were sampled at 5' intervals to a depth of 15' bgs. 18 soil borings were drilled by SEI with a hollow-stem auger drilling rig during a recent geotechnical investigation at the site to depths of 15' to 51'. Soil samples were collected at 2.5' or 5' intervals with an SPT or California modified sampler. The collected soil samples were described by an SEI geologist or technician supervised by a State of California registered geologist in accordance with the Uniform Soil Classification System. Earth materials encountered beneath the site consisted generally of intervals of Silty Sand (SM), Sandy and Clayey Silt (ML), Silty Sandy Clay (CL), and Poorly Graded Sand (SP) in the top 51 feet below ground surface (bgs). These soils are classified as SM, CL, ML and SP respectively, in the Unified Soils Classification System. No shallow groundwater was encountered in any of the soil borings to a depth as great as 51' bgs. Blowcounts were recorded for each 6" interval during geotechnical soil sample collection to determine the relative density of the material sampling. The top 51' had SPT blowcounts indicating loose to very dense material. This information is presented on the deepest geotechnical boring logs B-1 to B-5 and the soil gas boring log SG-1 to SG-8 attached in Appendix B.

## **7.3 DISCUSSION OF RESULTS**

The analytical results of the on-site soil samples within the field and orchard areas indicate only minor concentrations of the OCP constituents 4,4'-DDD and 4,4'-DDE were present in the shallow composite and discrete soil samples analyzed. None of the OCP constituents have concentrations above the EPA Regional Screening Levels (RSLs) or the DTSC recommended screening levels (SLs) for these constituents.

The arsenic analytical results indicate that the mean (average) on-site concentration is below the local background concentrations and well below the DTSC concentration of concern (12 mg/kg) within the soil samples analyzed. The highest arsenic concentration reported was 9.55 mg/kg in soil sample C15B-2'. See Table 1 and 2 for the on-site arsenic concentrations and the DTSC-SLs and the EPA RSLs.



The eastern end of the southwestern tail-water sump has approximately 7 cubic yards of hazardous material at sample location S1 to a depth of approximately 6" to 1'. This will need to be removed and properly disposed of as a hazardous waste.

In the Oldenkamp Trucking yard area hazardous concentrations of OCPs (4,4'-DDD, 4,4'-DDE, 4,4'-DDT) were reported within the storage barn at sample location NW-S1 to a depth of approximately 5' and at step-out borings NW-S1-W and NW-S1-E to an approximate depth of 1'. Elevated TPH was also reported in this area to an approximate depth of 1'. The estimated extent of this hazardous material is 30' x 25' (~32 cubic yards). The highest OCP concentrations reported will be included in the human health screening risk and hazard evaluation.

Hazardous concentrations of the OCP dieldrin was reported in soil sample H3-3", 4,4'-DDT, DDD, 4,4'-DDE combination at H2-3" and NW-S2-3", and hazardous concentrations of lead were reported in samples H2-3" and H4-3" in the house and water well area to a depth of approximately 1'. The highest OCP and lead concentrations reported will be included in the human health screening risk and hazard evaluation.

Elevated TPH concentrations were reported in soil samples NW-S5-3" (18,060 mg/kg), NW-S6-3" (3,071 mg/kg) and NW-S7-3" (1,021 mg/kg). A step-out boring 5' west of NW-S5 had moderate TPH (717.5 mg/kg) reported in the -3" sample (NW-S5-W-3") indicating a lateral extent of <10' with an average depth of 1' impacted with TPH in the oil stained area NW-S5. The highest TPH concentrations reported will be included in the human health screening risk and hazard evaluation.

The water sample analytical results indicate that the rinse water ponding southeast of the washout area contains water with elevated electrical conductivity, total kjeldahl nitrogen (TKN), ammonia, coliform and e-coli bacteria. The domestic water well and the irrigation sump water sample results appear to be in the normal range for the constituent's analyzed for.

The results of the soil gas survey in the northwestern portion of the site indicates that no concentrations of methane, VOCs or H2S were is present that would be an environmental concern.

#### **7.4 DEVIATIONS**

The following describes any deviations from the DTSC PEA Guidance Manual or DTSC's Interim Guidance for Sampling Agricultural Properties (3<sup>rd</sup> Revision):

- Discrete soil sampling to evaluate water well areas, oil storage areas, storage barn area, and truck shop areas was conducted which is beyond the usual scope of work of a PEA for an agricultural property.



## **7.5 QUALITY ASSURANCE/QUALITY CONTROL/DATA VALIDATION**

The following describes the Quality Assurance/Quality Control (QA/QC) and Data Validation protocol that was conducted during this PEA investigation.

SEI followed the EPA Guidance for Data Validation during this investigation.

This included:

- 1) Reviewing the laboratory data to ensure that it contains all of the required documents and forms.
- 2) Assessing the results of all quality control checks and procedures performed by the analytical laboratory.
- 3) Examination of laboratory data in detail to verify the accuracy of all information presented by the laboratory.

### Summary of Cursory Data Validation Review

Data was reviewed for QA/QC issues by a qualified environmental professional in accordance with EPA's National Functional Guidelines. Worksheets documenting the data validation are attached in Appendix A.

A total of 42 soil samples were analyzed for arsenic by EPA Method 6010. 28 composites and 63 discrete soil samples were tested for OCPs by EPA Method 8081. A total of 21 discrete soil samples were analyzed for TPH by EPA Method 8015, 15 for CAM 17 Metals by EPA Methods 6010/7471, 18 for VOCs by EPA Method 8021 or 8260, 3 for OCHs by EPA Method 8151, 4 for SVOCs by EPA Method 8270 or 8310, and 10 for TOC by the Walkley-Black Method. The California State certified laboratories utilized, reported no abnormal QA/QC issues in the data summary package that was provided. No qualifications were required and no data was rejected. The data met all project-specific QA/QC goals and can be used for risk assessment purposes.

The results of the Data Validation conclude that the soil samples appear to have been analyzed and reported appropriately. The QC checks and analytical procedures conducted by the analytical laboratories appear to be in conformance with the QA/QC Plan for this project. These QC checks included method blanks, matrix spikes, duplicates, surrogate spike recoveries and internal standard calibrations. Unused portions of the soil samples were kept in a frozen state pending additional analysis, if requested.

The laboratory data presented by the analytical laboratories appears to be accurate and verifiable as submitted. A minimum of 10% of the analytical data was validated for this project. Copies of the data packages by the analytical laboratories are attached in Appendix A.



### **7.5.1 Precision**

Duplicate results were assessed using the relative percent difference (RPD) between duplicate measurements. If the RPD for laboratory quality control samples exceeded 30 percent, the data will be qualified. If the RPD between primary and duplicate field samples exceeds 100 percent for soil or soil gas, data will be qualified. The RPD was calculated as follows:

$$\%RPD = 200 \times \frac{X_2 - X_1}{X_2 + X_1}$$

where  $X_1$  is the larger of the two observed values, and  $X_2$  is the smaller of the two observed values. The RPD's for the 5 field duplicate samples C4D-3", C7D-3", C18D-2', C21D-3" and NW3E-3" were within acceptable values (<100%).

### **7.5.2 Accuracy**

Accuracy of laboratory analyses was assessed by laboratory control samples, surrogate standards, matrix spikes, and initial and continuing calibrations of instruments. Laboratory accuracy is expressed as the percent recovery (%R). Accuracy limits are statistically generated by the laboratory or required by specified EPA methods. If the percent recovery is determined to be outside of acceptance criteria, the data was qualified. The calculation of percent recovery is provided below:

$$\% R = 100 \times \frac{X_S - X}{T}$$

where  $X_S$  is the measured value of the spiked sample,  $X$  is the measured value of the unspiked sample, and  $T$  is the true value of the spike solution added. The accuracy of the laboratory data was all within QC limits.

### **7.5.3 Representativeness**

Representativeness is the degree to which data accurately and precisely represent selected characteristics of the media sampled. Representativeness of data collection is addressed by careful preparation of sampling and analysis programs. This PEA Investigation had sufficient and proper numbers and locations of samples; incorporated appropriate sampling methodologies; utilized proper sample collection techniques and decontamination procedures; utilized appropriate laboratory methods to prepare and analyze soil; and conducted proper field and laboratory QA/QC procedures.



#### **7.5.4 Completeness**

Completeness is the amount of valid data obtained compared to the amount that was expected under ideal conditions. The number of valid results divided by the number of possible results, expressed as a percentage, determines the completeness of the data set. The objective for completeness is to recover at least 90 percent of the planned data to support field efforts. Specifically for background samples, no less than 100 percent completeness of the planned data set will be acceptable. The formula for calculation of completeness is presented, as follows:

$$\% \text{ Completeness} = 100 \times \frac{\text{number of valid results}}{\text{number of expected results}}$$

This investigation had 100% completeness.

#### **7.5.5 Comparability**

Comparability is an expression of confidence with which one data set can be compared to another. The objective of comparability is to ensure that data developed during the investigation are comparable to site knowledge and adequately address applicable criteria or standards established by the DTSC or the USEPA. The laboratory methods that were utilized during this PEA investigation are consistent with the current standards of practice as approved by the DTSC and the USEPA.

#### **7.5.6 Equipment Decontamination**

Non-dedicated equipment (hand augers and slide hammer samplers) were decontaminated before and after each sample was collected. The equipment was washed in a non-phosphate detergent and potable water and rinsed in potable water.

#### **7.5.7 Standards**

Standards used for calibration or to prepare samples were certified by NIST, USEPA, or other equivalent source. The standards used were current.

#### **7.5.8 Supplies**

All supplies were inspected prior to their use in the field or laboratory. The descriptions for sample collection and analysis contained in the methods were used as a guideline for establishing the acceptance criteria for supplies. Efficiency and purity of supplies was monitored through the use of standards and blank samples.

#### **7.5.9 Holding Time Compliance**

Sample preparation and analysis was completed within the required method holding time, except for those soil samples held in a frozen state and analyzed after typical holding times. Holding time begins at the time of sample collection. If holding times were exceeded, and the analyses



are performed, the associated results were qualified as described in the applicable validation procedure.

#### **7.5.10 Preventive Maintenance**

The Field Manager for SEI was responsible for documenting the maintenance of all field equipment prescribed in the manufacturer's specifications. Any maintenance performed was by trained personnel. The analytical laboratories utilized were responsible for all analytical equipment calibration and maintenance as described in their laboratory QA Plan.



## 8.0 HUMAN HEALTH SCREENING EVALUATION

Based on the analytical results reported in the soil samples collected at the site a human health screening evaluation was conducted by comparing the highest concentrations of all chemicals of potential concern (COPC) to the DTSC Recommended Screening levels (SLs) and if not available, then the EPA Regional Screening Levels (RSLs). If all of the COPC identified at the site, have an DTSC-SL or EPA RSL to compare to and do not exceed these screening levels, then a more detailed quantitative risk assessment may not be necessary for the site. This comparison is shown in the table below.

Chemical of Potential Concern (COPC)	DTSC SLs or EPA RSLs Residential Soils (mg/kg)	Maximum On-Site Concentration (mg/kg)
OCPs	4,4'-DDD = 2.3 4,4'-DDE = 2.0 4,4'-DDT = 1.9 Dieldrin = 0.034	4,4'-DDD = 14.5 4,4'-DDE = 7.63 4,4'-DDT = 154 Dieldrin = 21.4
Arsenic	Compare to Background and DTSC level of concern (12)	Median Concentration = 6.8, highest was in 9.55
Lead	80 (DTSC)	352
VOCs	Chemical Specific	Benzene = 0.00843 Toluene = 7.540 Ethylbenzene = 0.012 Xylene = 0.0138 Other VOCs < RSLs
SVOCs	Chemical Specific	Phenol = 56.6
TPH	Varies 3.5 to 23000	153,060

ND = None Detected

Based on this comparison it appears that a more detailed risk and hazard analysis utilizing the formulas in the Preliminary Endangerment Assessment Guidance Manual is warranted for 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, lead and TPH at this site.

### 8.1 Exposure Pathways and Media of Concern

As stated in Section 6.0 the exposure pathways of concern are soil pathways (ingestion and absorption through skin contact) and air pathways (dust particles inhaled during soil disturbances). The media in both of these potential pathways are soil particles, which may have



residual concentrations of pesticides and metals. The release of these soil particles would be intermittent and should be considered as a threatened release not as an actual release at this site. SEI has prepared a Conceptual Site Model to show the potential exposure pathways at this site, which is included as Plate 10. The terrestrial receptor pathway is incomplete with no significant on-site animal population at risk. Since there is no surface water or groundwater that will be present on the surface during regular school activities at this site, and the depth to groundwater is greater than 100 feet below ground surface, the groundwater pathway has been eliminated from consideration.

## **8.2 Calculation of Risk and Hazard**

Utilizing TPH concentrations of: 7.75 mg/kg C6 to C8 Aromatic HC, 7.15 mg/kg C9 to C16 Aromatic HC, 652 mg/kg C17-C32 Aromatic HC, 12.7 mg/kg C5-C8 Aliphatic HC and 21700 mg/kg C19-C35 Aliphatic HC in soil samples NW-S5-3" or S1-3", the highest lead concentration (352 mg/kg) and the highest OCP concentrations (4,4'-DDI, 4,4'-DDE, 4,4'-DDT, dieldrin), a risk and hazard evaluation was conducted for both soil and air pathways and is presented on Tables 5 to 7. This gives a very conservative approach for the calculation of risk and hazard for the site.

The results are a total cumulative risk of  $7.7 \times 10^{-4}$  and a total cumulative hazard of 20.72 for all pathways. These results are more than a cumulative risk of  $1 \times 10^{-6}$  and more than a cumulative hazard of 1.0 to humans or other biota at the site by potential pathways.

These results indicate:

1) The OCP and lead concentrations in the top 1 foot of soil adjacent to the house edge, the top 1' to 5' of soil with elevated TPH and OCPs within the storage barn area (NW-S1) are an elevated risk and hazard to future potential occupants and will need to be mitigated in order for this site to be acceptable to the DTSC as a school site.

## **8.3 Lead Risk Assessment**

The highest reported lead concentration on-site (352 mg/kg) is above the DTSC SL of 80 mg/kg indicating that lead is a significant risk in the area surrounding the house.

## **8.4 Risk Characterization Summary**

Based on the comparison of the on-site concentrations of arsenic and other metals with background data and the evaluation of risk and hazard for on-site OCP and TPH concentrations in soil and air exposure routes, the following is concluded:

- Based on this comparison and calculations the risk and hazard for all pathways (air and soil) at the site appears to be more than the risk and hazard levels that would indicate a threat to humans or other biota at the site by the potential pathways.



- Mitigation of the elevated petroleum hydrocarbons, lead and OCPs within the Oldenkamp Trucking yard of the site appears to be warranted to reduce the risk and hazard levels at this site.
- The soil with elevated TPH and putrid odor at the east end of the southwestern tailwater sump should also be removed and disposed of properly since it has been characterized as a California hazardous waste.

### **8.5 Uncertainty Analysis**

This uncertainty analysis looks at areas of the human health screening evaluation, which may produce minor levels of uncertainty in the results of the evaluation.

This human health screening evaluation looks mainly at the transfer of contaminants from soil particles to school occupants through ingestion, absorption and dust inhalation. Some pathways that are not included in this evaluation include; transport of soil contaminants to groundwater, potential crops grown on-site and/or contaminated groundwater used to irrigate on-site crops eaten by students; contact and inhalation of chemicals in water while showering; and the drinking water pathway. At this site it is highly unlikely that crops will be grown on-site for human consumption and local water companies regulated by local authorities will supply the water to the site.

Results of the human health screening evaluation using the maximum detected concentration values indicate that chemical concentrations detected at the site do not represent a threat to human health. The frequency and duration of soil contact activities would be a significant factor affecting the potential for adverse human health impacts from the site.

This health risk evaluation was based on the application of conservative methods and assumptions in all phases of the assessment. Because exposure point concentrations were derived from fate and transport modeling, conservative assumptions and methodology were necessarily employed to eliminate the possibility of underestimating risks. This practice, although commonly used in the risk assessment process to eliminate the possibility of underestimating risk, necessarily introduces a significant level of conservatism in the conclusions derived from the assessment. Examples of some of the conservatism in this assessment include:

- It was assumed that potential receptors at the future School site will be exposed to chemicals in soil and dust 100 percent of the time while at the site. In reality, receptors at the site are not likely to be there for more than 8 hours a day, 5 days a week.
- It was assumed that chemicals of concern in the soil were all at maximum detected concentrations across the whole site. In reality, the concentrations of chemicals of concern (if present) vary throughout the site at lower concentrations.



- It was assumed that future occupants of the site will have contact with soil. However, it is known that most, if not all, of the site surface area will be occupied by buildings, asphalt or landscaped. Thus, future contact with soil will be minimal.
- Carcinogenic risks for all pathways were based on a residential exposure of 350 days per year for 26 years. A more realistic exposure scenario for a school site would be to assume an exposure frequency of 180 days per year for a duration of 4 years, representing a typical school exposure scenario.

A risk assessment that relies upon conservative input values can be used as a valuable tool when risks are shown to be de minimus, as reported in this risk assessment. The reader of this risk assessment can confidently interpret the reported risk as a conservative overestimate of any site-related risks.



## **9.0 ECOLOGICAL SCREENING EVALUATION**

The following is a brief ecological screening evaluation of the site.

### **9.1 Site Characterization**

The majority of the site is currently agricultural land with a dirt surface. The northwestern parcels consist of a pistachio orchard and a trucking yard.

### **9.2 Biological Characterization**

No wildlife beyond a few non-special status species of birds and small rodents have been observed at the site during SET's visits. No nearby wildlife preserves or habitats are located within 1 mile of the site.

### **9.3 Pathway Assessment**

Similar to the pathways discussed earlier, the most likely pathways for exposure at this site are by soil (ingestion and skin contact) and air (inhalation). The conceptual site model Plate 10 shows the most likely pathways for exposure for humans and other bio-receptors. No known or reported hazardous exposures to wildlife or humans have been identified at this site. No remedial measures beyond using water to limit dust generation at this site is recommended during construction activities. An Exposure Pathway Analysis for the Ecological Screening Evaluation is attached as Table 8.

### **9.4 Qualitative Summary**

The site does not appear to pose a threat to the surrounding environment based on the limited amount of soil with elevated concentrations of pesticides, petroleum hydrocarbons and lead in the soil and the lack of existing wildlife habitat that would be disturbed at the site during this project.



## 10.0 COMMUNITY PROFILE

### 10.1 Community Background/Profile Information

The City of Bakersfield is an incorporated community located approximately 100 miles north of Los Angeles and 100 miles south of Fresno, within the southern portion of the San Joaquin Valley. Bakersfield was founded in 1850's by early American settlers and was incorporated in 1890's. Bakersfield encompasses approximately 113 square miles and is at a mean elevation of 408 feet. The city's latitude is approximately 35.35°N and longitude is approximately 119°W. Bakersfield has a council/manager form of government.

Bakersfield started as a rural farming community by Colonel Thomas Baker with a small community of settlers. In 1889 most of Bakersfield was burned down and the town was soon rebuilt with modern conveniences. Oil was discovered in 1899 in the nearby Kern River field, which fueled the economy of Bakersfield. The oil industry is still one of the largest employers in the area, with agricultural activities the largest. The main agricultural products are grapes, cotton and carrots. The largest employers in the area include the City of Bakersfield, Kern County, Target Distribution, Bolthouse Farms, Grimmway Farms, Chevron-Texaco, and Aera Energy.

The community demographic profile is as follows (City of Bakersfield 2010, U.S. Census Bureau):

Population:

2016 Estimate	376,380
2010 Census	347,483
Estimated Growth 2010-2016	8.3%

Households: 2009-2013

109,932

Housing Units (2010 Census):

120,725

Estimated population by race (2010 Census):

White	56.8%
Hispanic Origin*	45.5 %
Black	8.2%
Asian	6.2%

\* Includes white, black, and Asian persons who identify themselves as being of Hispanic origin.



Age (2010 Census):

Age 0-18	31.5%
Age 18-64	60.1%
Age 65 and older	8.4%

Language spoken at home (2010 Census-persons 5 years and older):

English	62.1%
Spanish & Other Non-English Languages	37.9%

Education level (2010 Census-persons 25 years and over):

High School diploma	78.5%
Associates degree or higher	20%

<u>Median Household Income: 2010 Census</u>	\$56,204
<u>Per Capita Income: 2010 Census</u>	\$23,316

**10.2 Community Concerns**

To date, the proposed high school project has not generated any public interest of concern.

**10.3 Public Participation Plan Implementation**

A public notice for the 30-day public review and comment period and the public hearing for the Draft PEA Equivalent Report, pursuant to CEC Section 17213.1(a)(6)(A), will be prepared. A notice will be placed in the local paper and a flyer will be prepared and posted by the KHSID stating the date, location and time of the Public Hearing and the start date of the 30-day comment period and the location of the Draft PEA Equivalent Report for public review. The public comment period will be scheduled to run for 30-days and the public hearing for the Draft PEA Report will be scheduled near the end or just after the 30-day comment period. The PEA Equivalent Report hearing and public comment review will be done separately from the CEQA negative declaration hearing. Once the dates for the 30-day review and comment period and the public hearing are determined the DTSC will be notified.

A public information repository has been established by the Kern High School District. As shown below:

Kern High School District office  
5801 Sundale Avenue  
Bakersfield, CA 93309

Copies of this Draft PEA Equivalent Report will be placed in this repository for access by local community members.



## **11.0 CONCLUSIONS & RECOMMENDATIONS**

### **11.1 Conclusions**

Based on the collection and analysis of soil and air samples, historical review, risk and hazard analysis, and visual observations by field personnel the following is concluded;

- 1) The site has been utilized for agricultural purposes for 80+ years with the application of pesticides and herbicides during this time period. The northwestern parcels were part of a former dairy for ~50 years. The northwestern parcel is now utilized as a trucking yard with oil storage, a storage barn, a house and water wells. The northwestern parcel also formerly had a leaking underground storage tank that was remediated properly and received case closure.
- 2) Based on the fate and transport properties of OCPs and metals it is highly unlikely that concentrations of potential concern of these constituents would migrate to depths below 2.5' in the soil (silty sand) encountered at this site. No additional sampling and analysis below a depth of 2.5' is warranted in the agricultural field and pistachio orchard areas to achieve unrestricted Site closure.
- 3) Soil and air are the likely potential pathways for any contaminants at the site. Groundwater is not considered a potential pathway because of the depth to groundwater below the ground surface (100'+). In addition, all water utilized at the site will likely be from public water sources.
- 4) Numerous soil samples (discrete and sub samples for composites) were collected at the site for chemical analysis of OCPs and arsenic and some soil samples for TPH, VOCs, pH, SVOCs, OCHs and for CAM 17 metals by appropriate EPA Methods. The results of this chemical analysis indicate that only minor concentrations of the OCPs 4,4'-DDD, 4,4'-DDE, 4,4'-DDT and dieldrin are present in the shallow soil within the agricultural field and orchard areas well below the EPA RSLs for these constituents. The results of on-site arsenic concentrations ranged from 3.43 mg/kg to 9.55 mg/kg in the soil samples analyzed which is below the normal DTSC level of concern (12 mg/kg).
- 5) Elevated TPH was reported in soil sample S1-3" and this sample did not pass the aquatic bioassay test indicating a California hazardous material at this location. It is estimated that ~7 cubic yards of this unknown material is present at the eastern end of the southwestern tail-water sump.
- 6) Elevated TPH and hazardous concentrations of OCPs were reported in multiple soil samples in the area of the storage barn (sample location NW-S1 and step-outs) in the Oldenkamp Trucking yard. The deepest OCP impact is approximately 5' at sample location NW-S1 and was approximately 1' in the 4 step-out locations in the NW-S1 area.



- 7) Hazardous concentrations of OCPs and lead were reported adjacent to the edge of the house. This indicates that termiticides and lead-based paint is present in the area of the house that will need to be mitigated to an estimated depth of 1'.
- 8) Elevated TPH concentrations were reported in soil samples NW-S5-3" (18,060 mg/kg), NW-S6-3" (3,071 mg/kg) and NW-S7-3" (1,021 mg/kg) within the Oldenkamp trucking yard. A step-out boring 5' west of NW-S5 had moderate TPH (717.5 mg/kg) reported in the -3" sample (NW-S5-W-3") indicating a lateral extent of <10' with an average depth of 1' impacted with TPH in the oil stained area NW-S5.
- 9) The water sample analytical results indicate that the rinse water ponding southeast of the washout area in the Oldenkamp Trucking yard contains water with elevated electrical conductivity, total kjeldahl nitrogen (TKN), ammonia, coliform and e-coli bacteria. The domestic water well and the irrigation sump water sample results appear to be in the normal range for the constituent's analyzed for.
- 10) The results of the soil gas survey in the northwestern portion of the site indicates that no concentrations of methane, VOCs or H<sub>2</sub>S is present that would be an environmental concern.
- 11) Total organic carbon (TOC) was within the normal range of near surface soil at the 10 locations tested for TOC within the northwestern parcels and former dairy area.
- 12) The highest OCPs, TPH, VOCs, and lead reported in the soil samples were included in the human health screening evaluation. The results were a total cumulative risk of  $7.7 \times 10^{-4}$  and a total cumulative hazard of 20.72 for all pathways. These results are more than a cumulative risk of  $1 \times 10^{-6}$  and more than a cumulative hazard of 1.0 to humans or other biota at the site by potential pathways. This indicates that there is an apparent elevated risk and hazard to future occupants at the site from the OCPs, petroleum hydrocarbon and lead impacted soil mainly in the Oldenkamp Trucking yard.

## **11.2 Recommendations**

SEI recommends that the elevated concentrations of TPH, OCPs and lead reported in the soil samples from the Oldenkamp Trucking yard (house area (H1, H2, H3, H4), storage barn (NW-S1 and NW-S1 step-outs), oil storage areas (NW-S5, NW-S6, NW-S7) and the southwestern tail-water sump (S1) be properly removed and disposed of per State and federal regulations. This soil has been characterized as a California hazardous waste (OCPs, lead and bioassay failure) or as a non-hazardous waste (TPH only areas). We recommend that this removal be done prior to becoming Kern High School District property. If this removal occurs after KHSD purchase, then it will need to be overseen by the DTSC as a Removal Action.



*Preliminary Environmental Assessment Report  
Kern High School District, Proposed High School Site  
SE of Wible Rd. & Engle Rd., Bakersfield, CA*

*File No. 17-16195  
April 2018  
Page 45*

Any proposed fill material for the site will be sampled and analyzed for potential constituents of concern in accordance with the DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.

If during field investigation activities or construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC will be notified. SEI will discuss these areas with the DTSC to determine the appropriate actions to be taken to assess and/or remediate these new potential areas of concern.



## 12.0 LIMITATIONS

This report was prepared for the exclusive use of the Kern High School District as it relates to the property described. The discussion and conclusions presented in this report are based on:

- The test borings performed at this site.
- The observations of field personnel.
- The results of laboratory tests performed by BC Laboratories of Bakersfield, CA and Positive Lab Service of Los Angeles, California.
- Our understanding of the regulations of the California Regional Water Quality Control Board, the DTSC and the EPA.

Possible variations in the soil or groundwater conditions which may exist beyond the points explored in this investigation might affect the validity of this report unless those variations or conditions come to our attention and are reviewed and assimilated into the conclusions and recommendations of this report. Also, changes in the hydrologic conditions found could occur with time due to variations in rainfall, temperature, regional water usage, or other factors, any of which could affect this report.

The services performed by SEI have been conducted in a manner consistent with the levels of care and skill ordinarily exercised by professionals currently practicing under similar conditions in California. The absence of contamination on or beneath the property cannot be guaranteed by this report. SEI is not responsible for any contamination or hazardous material found on the property. No other warranty expressed or implied is made.



### 13.0 REFERENCES

1. Wilson, S.A. et al, "Analysis of Soil Samples from the San Joaquin Valley of California", United States Geological Survey (USGS), Open File Report 90-214, undated.
2. Assembly Bill No. 2644, Chapter 443, State of California, September 14, 2000.
3. DTSC, Final DTSC PEA Guidance Manual dated October 2015.
4. DTSC Interim Guidance for Sampling Agricultural Land (Third Revision) dated August 7, 2008.
5. DTSC, Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from termiticides and Polychlorinated Biphenyls from Electrical Transformers (revised June 9, 2006).
6. DTSC, Arsenic Strategies, Determination of Arsenic Remediation Development of Arsenic Cleanup Goals for Proposed and Existing School Sites, March 21, 2007.
7. DTSC, CA EPA, LA & SF RWQCB, Final Advisory Active Soil Gas Investigations dated July 2015.
8. DTSC, HUMAN AND ECOLOGICAL RISK OFFICE (HERO), HHRA Note Number 3, August 2017.
9. DTSC, HUMAN AND ECOLOGICAL RISK OFFICE (HERO), HHRA Note Number 2, May 2009.
10. Office of Emergency and Remedial Response (OERR) Directive 9345.3-02 dated May 1991.
11. USGS, Reported Historic Asbestos Mines, Historic Asbestos Prospects, and other Natural Occurrences of Asbestos in California, Map Sheet 59.
12. EPA, Regional Screening Level (RSL) Resident Soil Table (TR=1E-6, HQ=1) November 2017.





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DATE: 4/18  
PROJECT: #16195

**Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
Bakersfield, CA**

**LOCATION MAP**

**PLATE**

**1**





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PLOT PLAN

PLATE

2





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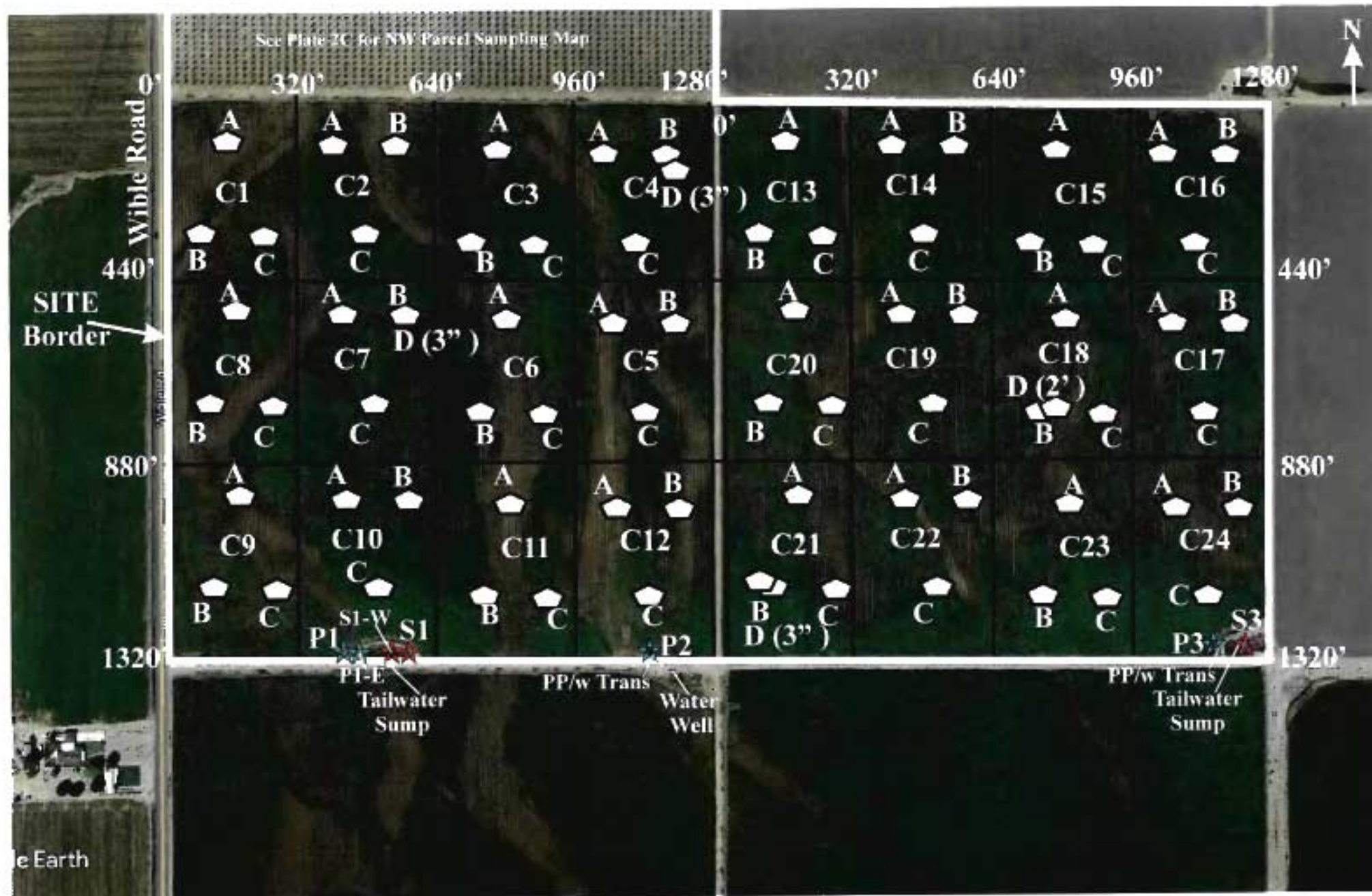
Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
Bakersfield, CA

Trucking Yard Area Plot Plan

PLATE

2A





⬠ Comp for OCPs & As (0 to 6", 2'-2.5')

☆ Soil Sample for PCBs (0 to 6", 2'-2.5')

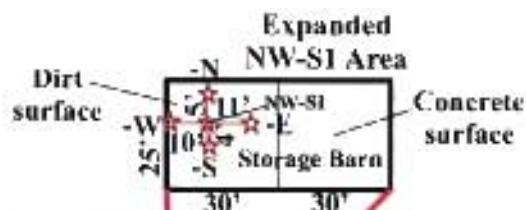
★ Soil Sample for TPH, VOCs, Metals, OCPs (0 to 6", 2'-2.5')

## Agricultural Field Soil Sampling Map

Proposed High School Site  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA

# Plate 2B





- ⬠ Comp for OCPs & As (0 to 6", 2'-2.5')
- Soil Gas Survey Pt. For Methane, VOCs (5' & 15')
- ☆ Soil Sample for PCBs (0 to 6", 2'-2.5')
- ☆ Soil Sample for TPH, VOCs, Metals, OCPs (0 to 6", 2'-2.5')
- ☆ Comp for OCPs & Lead (0 to 6", 2'-2.5')
- Water Sample (General Minerals, Nitrogen Compounds & others)

**NW Parcels**  
**Sampling Map**  
**Proposed High School Site**  
**SE of Wible Rd. & Engle Rd.**  
**Bakersfield, CA Plate 2C**



○ → Photo # & Direction



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**Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
Bakersfield, CA**

**PHOTO MAP**

**PLATE**

**3**



○ → Photo # & Direction



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**Proposed High School Site**  
**SE of Wible Rd. and Engle Rd.**  
**Bakersfield, CA**

**Trucking Yard Area Photo Map**

PLATE

**3A**





Picture 1. Looking north from the West-central border of the site



Picture 2. Looking East from the West-Central border of the property.





Picture 3. Looking South from the West-central border of the property.



Picture 4. Looking SE from the West-Central border of the site





Picture 5. Looking West from the SE corner of the pistachio orchard



Picture 6. Looking North from the SE corner of the pistachio orchard





Picture 7. Looking SW from the Central portion of the site.



Picture 8. Looking S-SE from the Central portion of the site





Picture 9. Looking SE from the Central Portion of the site



Picture 10. Looking SW from the NE Corner of the eastern parcel





Picture 11. Looking NW from the East-Central border of the site



Picture 12. Looking West at the Tailwater sump in the SE corner of the site





Picture 13. Looking NE from the South-central border of the site



Picture 14. Looking NW from the South-Central Border of the site





Picture 15. Looking West at the SW Tailwater sump along S border



Picture 16. Looking at powerpole with Trans by SW tail-water sump





Picture 17. Looking NE from the SW Corner of the site

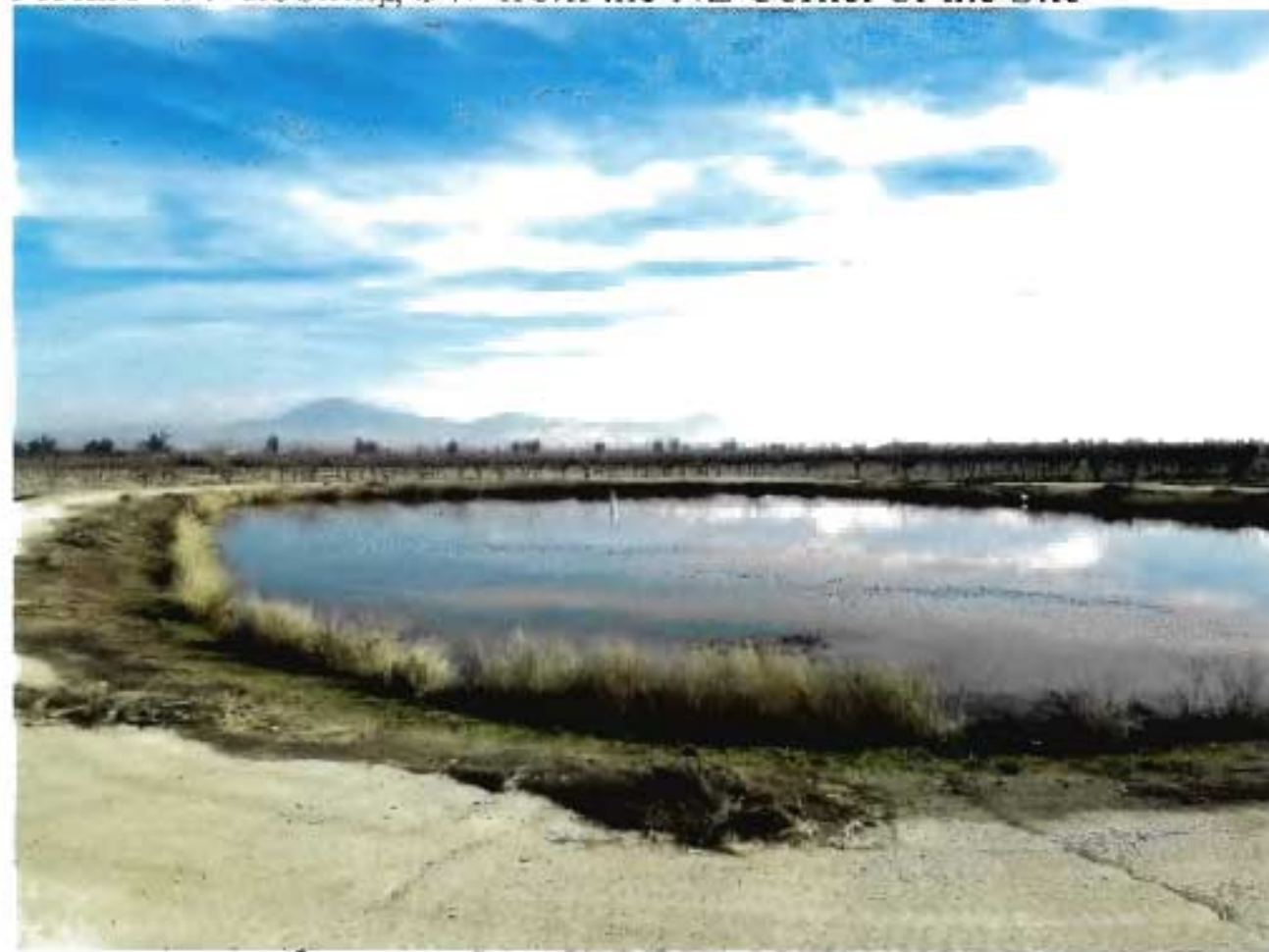


Picture 18. Looking West from the NE Corner of the site





Picture 19. Looking SW from the NE Corner of the Site



Picture 20. Looking E. at irrigation sump in the N. portion of the site.





Picture 21. Looking East at Irrigation Water Well in NW portion of site



Picture 22. Looking South at water filtration system W. Of Irr. Sump





Picture 23. Looking E. At Storage Barn w/staining within western portion



Picture 24. Looking SW at out of service Diesel AST in Trucking yard





Picture 25. Looking at Diesel AST within secondary containment in Trucking yard



Picture 26. Looking at waste oil storage @ w. End of AST





Picture 27. Looking East at the stained area (NW-S5) west of AST



Picture 28. Looking SW at overflow pond SE of washout area





Picture 29. Looking East at the stained area (NW-S5) west of AST



Picture 30. Looking at drum storage area in SE portion of Truck Shop





Picture 31. Looking at oil change area within truck shop building



Picture 32. Looking at the domestic water well north of the shop building





Picture 33. Looking East at the office/house in trucking yard



Picture 34. Looking East from the NW corner of the site





Picture 35. Looking South from the NE Corner of the site

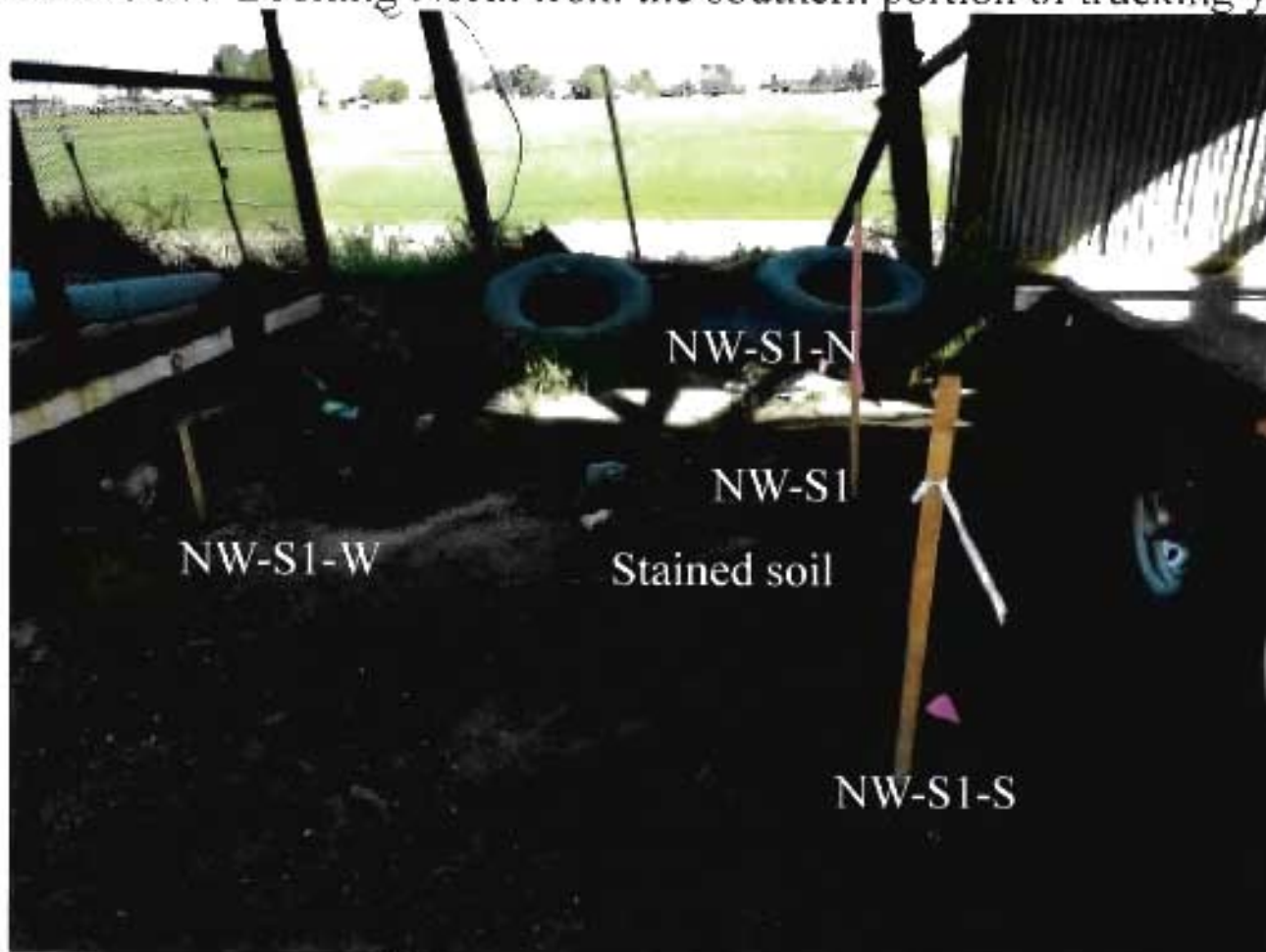


Picture 36. Looking at rinse water storage tanker in S. Trucking yard





Picture 37. Looking North from the southern portion of trucking yard



Picture 38. Looking North at the NW-S1 sampling area



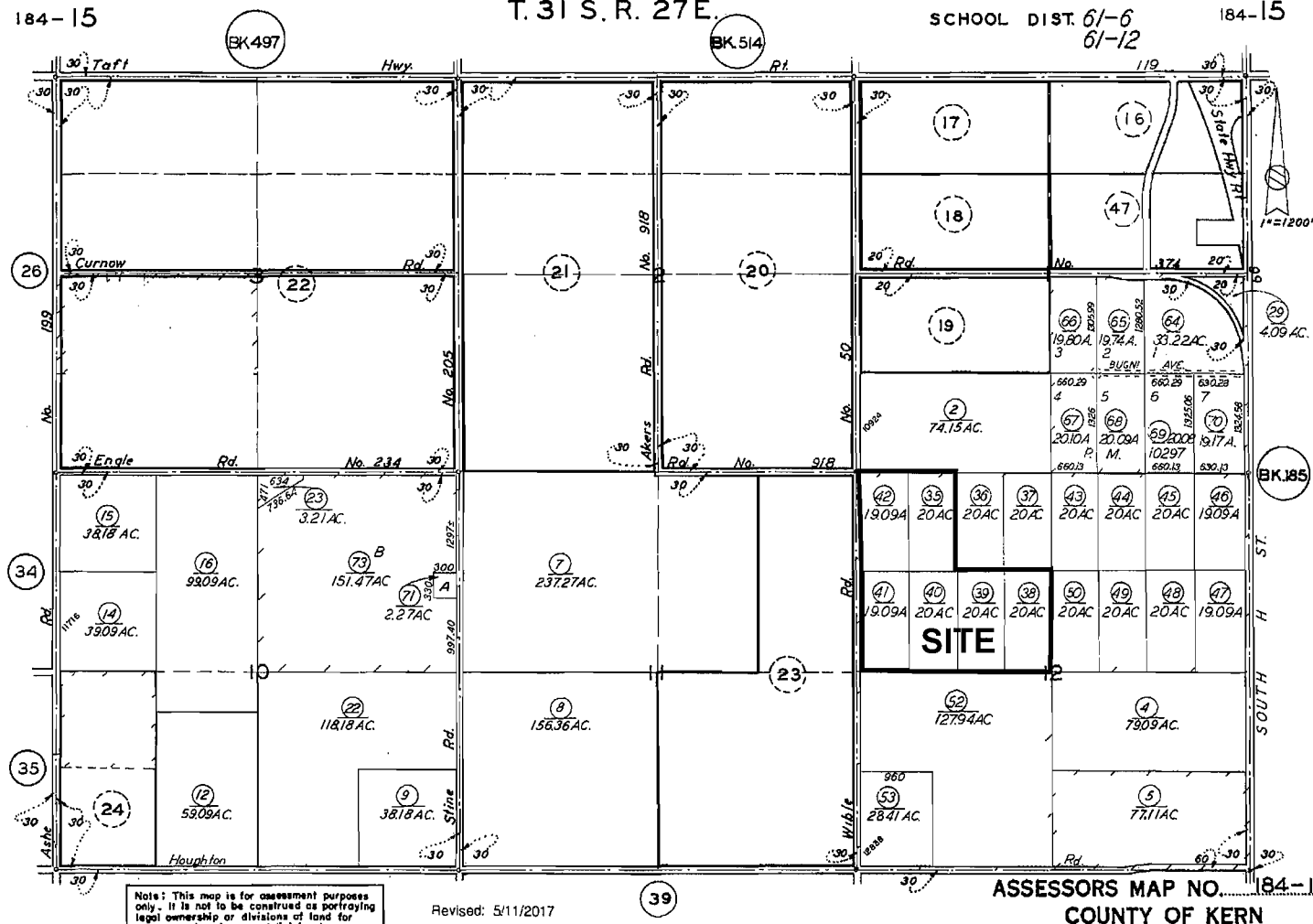


184-15

T. 31 S. R. 27 E.

SCHOOL DIST. 6/-6  
6/-12

184-15



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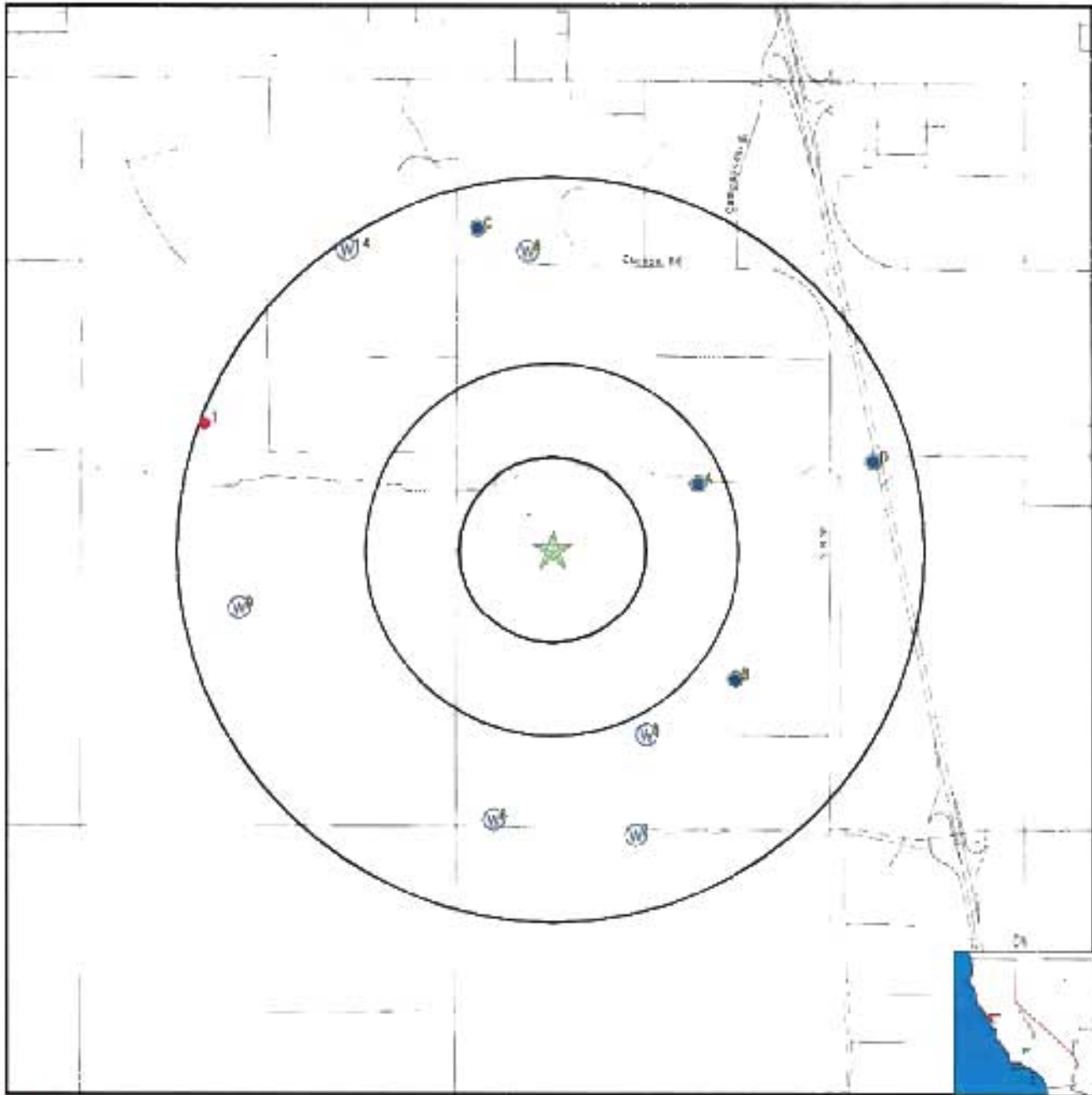
ASSESSORS MAP

PLATE

4



PHYSICAL SETTING SOURCE MAP - 4963452.2s



- County Boundary
- Major Road
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

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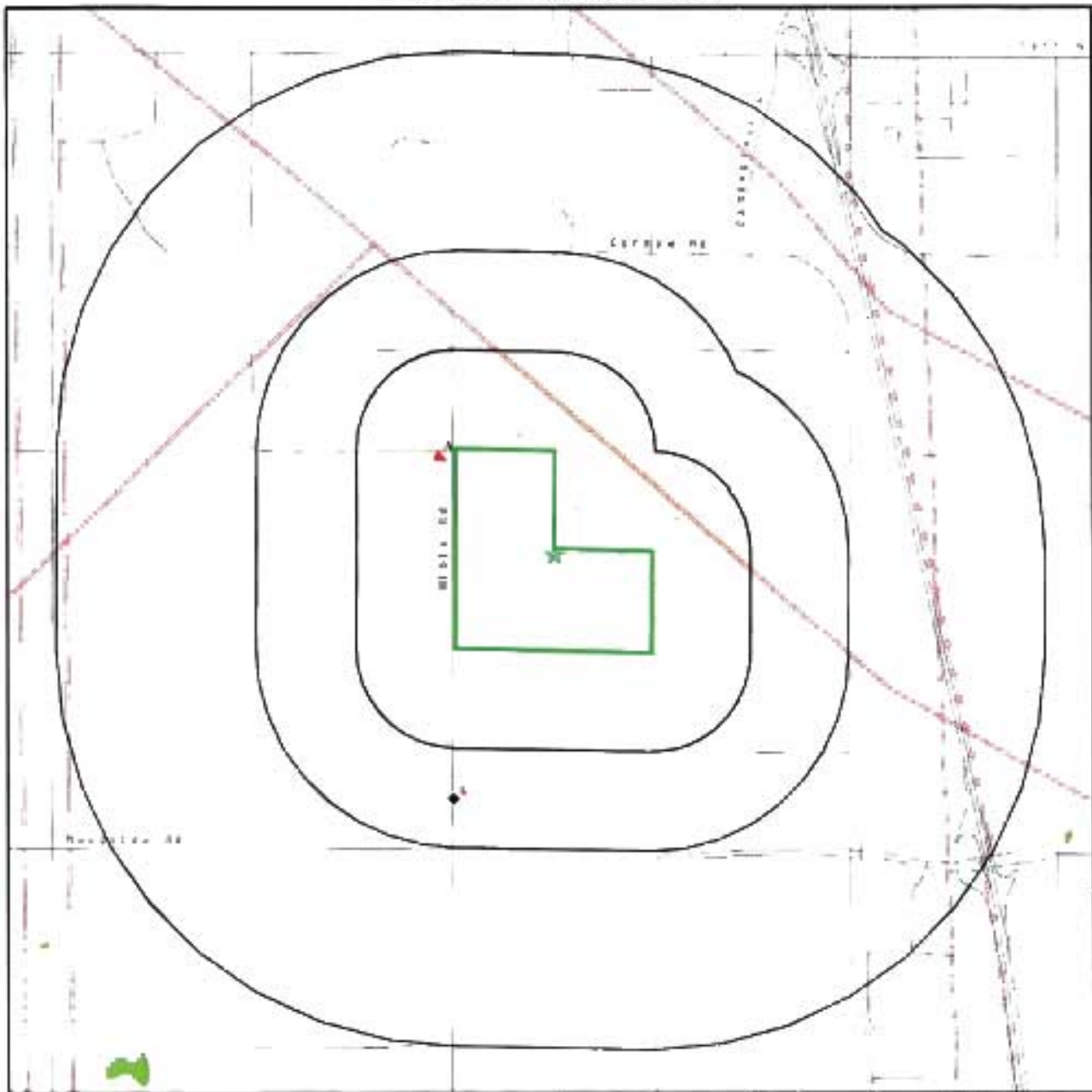
**Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
Bakersfield, CA  
Physical Setting Source Map**

PLATE

**5**



# OVERVIEW MAP - 4963452.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

- Indian Reservations BIA
- Power transmission lines
- Pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetlands Inventory
- State Wetlands

Areas of Concern

This report includes interactive map layers display and/or hide map information. The

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**SE of Wible Rd. and Engle Rd.**  
**Bakersfield, CA**

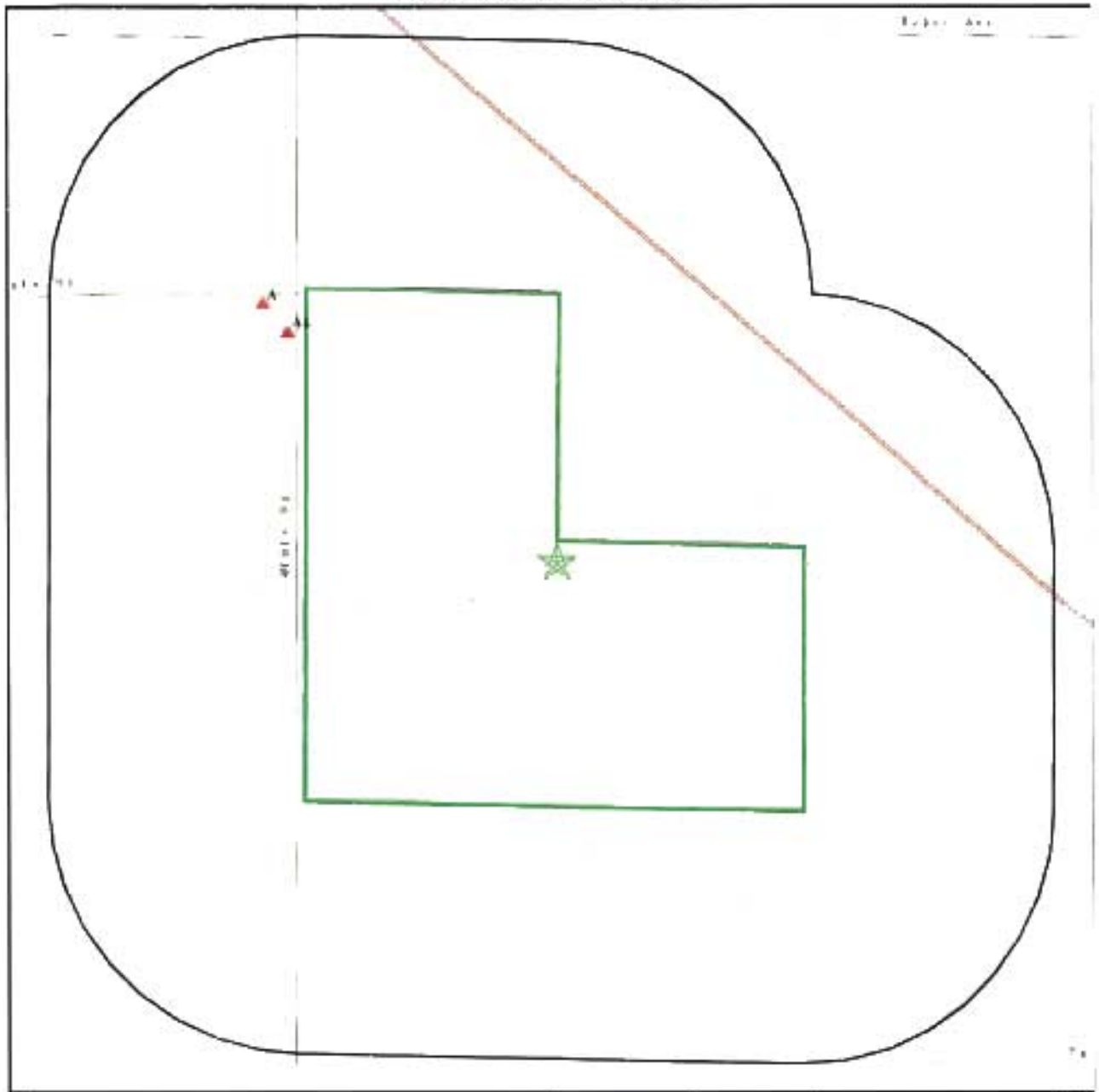
**Overview Map**

**PLATE**

**6**



# DETAIL MAP - 4963452,2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority Jet Sites
- Dept. Defense Sites

- Indian Reservations BIA
- Pipeline
- 100-year flood zone
- 500-year flood zone

Areas of Concern

This report includes Interactive Map .lyre

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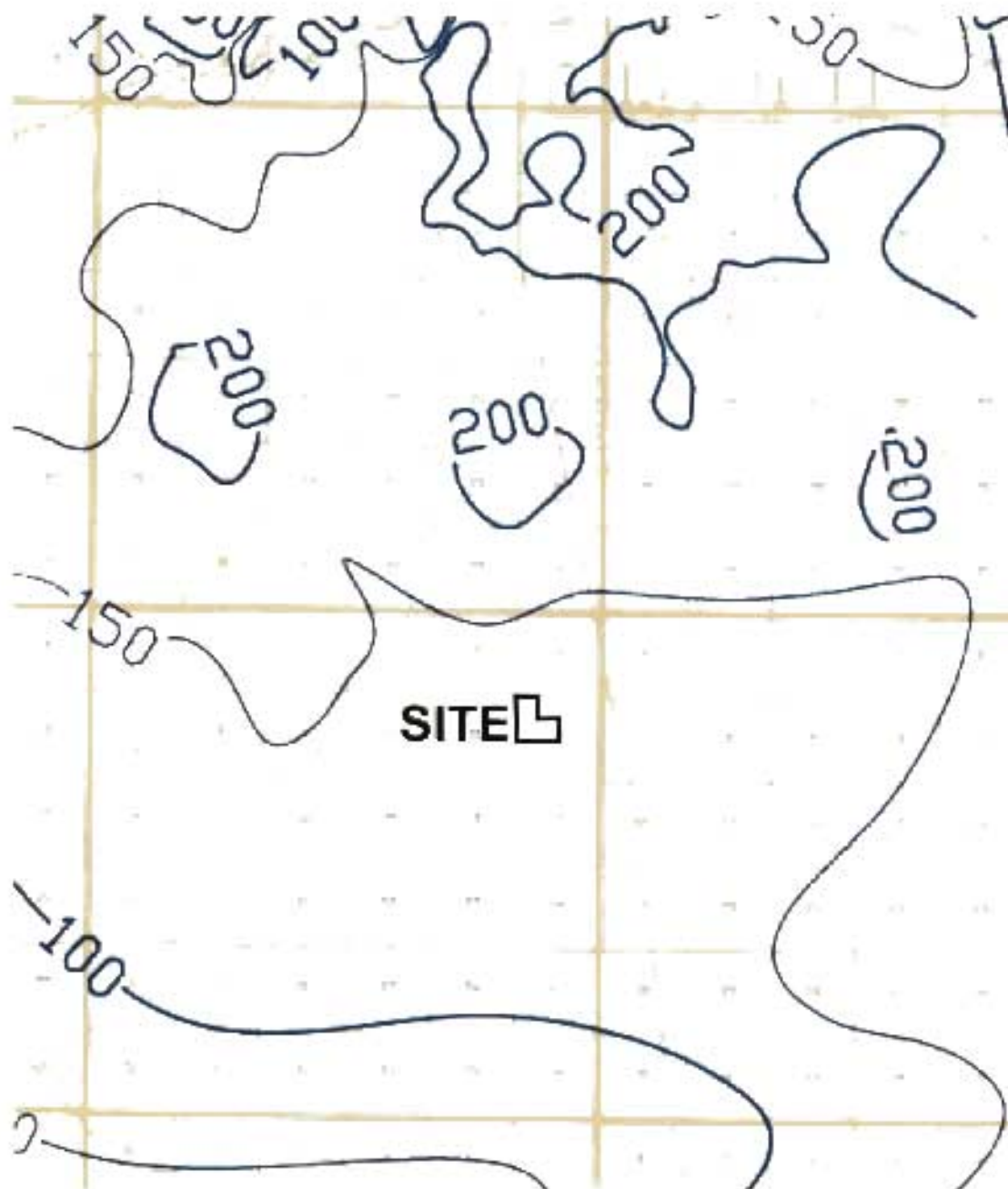
**Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
Bakersfield, CA**

**Detail Map**

**PLATE**

**7**





KCWA, Depth To Water Map, Spring 2012

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**Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
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**Depth to Water Map**

**PLATE**

**8**





Department of  
Conservation



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Proposed High School Site  
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**DOGGR Map**

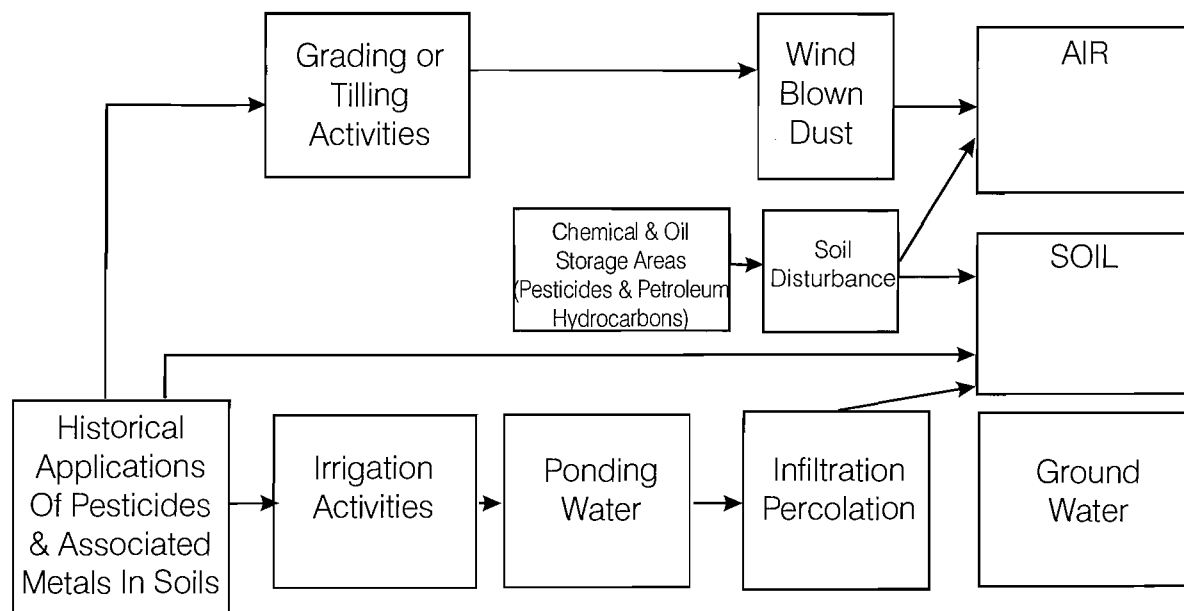
PLATE

**9**



Primary Sources	Potential Release Mechanism	Potential Secondary Sources	Potential Release Mechanism	Pathway
-----------------	-----------------------------	-----------------------------	-----------------------------	---------

Exposure Route	RECEPTOR			
	Human		Biota	
	Area Residents	Site Visitors	Terrestrial	Aquatic



Ingestion				
Inhalation	●	●	○	
Dermal Contact				

Ingestion	●	●	○	
Inhalation				
Dermal Contact	●	●	○	

Ingestion				
Inhalation				
Dermal Contact				

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File No. 17-16195  
April 2018

**Conceptual Site Model Diagram**  
Proposed High School Site  
SE of Wible Rd. & Engle Road  
Bakersfield, CA.

**PLATE**  
**10**



**TABLE 1**  
**Soil Sample Analytical Results For Organo-Chlorine Pesticides (OCPs), Metals & TPH in Field Areas & Northwest Parcels**  
**Proposed High School Site - Kern High School District**  
**SE of Engle Road & Wible Road, Bakersfield, CA**

[illegible]

Note: Results in ppb unless otherwise noted, ppb = parts per billion (ug/kg), ppm= parts per million (mg/kg), ND= None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit For Reporting Purposes. Bold = concentration > RSLs, RSLs = EPA Regional Screening Levels November 2017, \* = compare arsenic concentrations to ambient background, \*\* = HHRA Note #3 August 2017 with DTSC Recommended Screening Levels (SLs). TPH = Total Petroleum Hydrocarbons, BTEX = Benzene, Toluene, Ethylbenzene & Xylenes, VOCs = Volatile Organic Compounds







**TABLE 2**  
**Soil Sample Analytical Results for Tail Water Sump Areas and Northwest Parcel Areas of Potential Concern**  
**Proposed High School Site**  
**SE of Engle Road & Wible Road, Bakersfield, CA**

CONSTITUENTS			ON-SITE DISCRETE SOIL SAMPLES																																	
	PQL (mg/kg)	DTSC SLs or EPA RSLs (mg/kg)	Northwest Parcel Discrete Samples																				Tail Water Sump Areas													
			NW-P1-3"	NW-P2-3"	NW-P2-2'	NW-P2-W-3"	NW-S1-3'	NW-S1-2'	NW-S2-3"	NW-S3-3"	NW-S4-3"	NW-S5-3"	NW-S5-2'	NW-S5-4'	NW-S5-W-3"	NW-S5-W-2'	NW-S6-3"	NW-S6-2'	NW-S7-3"	NW-S7-2'	NW-S8-3"	NW-S9-3"	NW-S10-3"	NW-S10-2'	P1-3"	P1-2'	P1-E-3"	P2-3"	P3-3"	S1-3"	S1-2'	S1-4'	S1-W-3"	S1-W-2'	S3-3"	S3-2'
Metals (EPA 6010)	mg/kg	mg/kg	NA	NA	NA	NA	2.73	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	ND	NA
Antimony	2	31	NA	NA	NA	NA	2.73	NA	ND	ND	ND	4.02	NA	NA	NA	NA	5.01	NA	3.31	NA	6.98	2.05	2.47	NA	NA	NA	NA	NA	ND	ND	2.08	5.09	NA	NA	6.58	NA
Arsenic	2	0.11*	NA	NA	NA	NA	5.85	NA	6.97	5.88	4.89	144	NA	NA	NA	NA	242	NA	218	NA	89.6	36.3	169	NA	NA	NA	NA	NA	4.18	62.5	151	NA	NA	178	NA	
Barium	1	15000	NA	NA	NA	NA	139	NA	142	156	120	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	NA	NA	ND	NA	
Beryllium	1	15	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	ND	NA		
Cadmium	1	2100	NA	NA	NA	NA	1.05	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	ND	NA		
Chromium	1	36000	NA	NA	NA	NA	12.8	NA	15	14.8	12.8	16.1	NA	NA	NA	NA	39.5	NA	38.4	NA	9.22	4.47	17.3	NA	NA	NA	NA	NA	ND	8.17	16.6	NA	NA	23	NA	
Cobalt	1	2.3	NA	NA	NA	NA	6.59	NA	9.54	8.64	8.39	7.95	NA	NA	NA	NA	9.40	NA	8.08	NA	5.82	3.12	8.51	NA	NA	NA	NA	NA	ND	4.90	10.5	NA	NA	13	NA	
Copper	1	3100	NA	NA	NA	NA	30.7	NA	18.1	70.1	15.7	13.9	NA	NA	NA	NA	19.4	NA	33.5	NA	13.1	4.85	14.3	NA	NA	NA	NA	NA	1.94	9.43	15.5	NA	NA	28.3	NA	
Lead	1	80**	NA	NA	NA	NA	101	9.34	20.9	12.7	19.7	8.68	NA	NA	NA	14	NA	9.95	NA	7.44	NA	8.68	1.86	6.42	NA	NA	NA	NA	ND	7.18	5.82	NA	NA	21	NA	
Molybdenum	1	39	NA	NA	NA	NA	1.15	NA	1.01	ND	ND	1.11	NA	NA	NA	NA	2.68	NA	3.36	NA	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	ND	NA	
Nickel	1	490	NA	NA	NA	NA	10.1	NA	10.1	9.77	7.47	10.9	NA	NA	NA	NA	22.9	NA	21.5	NA	7.11	3.11	10.2	NA	NA	NA	NA	NA	1.53	4.89	10.2	NA	NA	13.7	NA	
Selenium	2	39	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	ND	NA	NA	NA	NA	NA	2.56	ND	ND	NA	NA	ND	NA	
Silver	1	39	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	ND	NA	
Thallium	2	0.078	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	ND	NA	
Vanadium	1	39	NA	NA	NA	NA	28	NA	43.6	39.2	30.4	35.7	NA	NA	NA	NA	44.7	NA	34	NA	24.1	11.3	36.8	NA	NA	NA	NA	NA	1.08	21.5	42.1	NA	NA	60.5	NA	
Zinc	5	2300	NA	NA	NA	NA	212	NA	93.5	81.6	229	72.4	NA	NA	NA	NA	74.5	NA	92.3	NA	562	30.1	65.5	NA	NA	NA	NA	NA	57.1	37.1	60.2	NA	NA	115	NA	
Mercury (7471A)	0.1	11	NA	NA	NA	NA	0.320	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	NA	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	NA	NA	ND	NA	
Ph (EPA 9045C)	0 to 14	<2.5 or >12	NA	NA	NA	NA	7.2	NA	7.3	6.9	7.9	8.9	8.9	9.3	NA	NA	7.8	NA	8.1	NA	7.2	6.6	6.4	NA	NA	NA	NA	NA	6.3	8.9	8.7	NA	NA	5.6	NA	
TPH (EPA 8015B)	mg/kg																																			
C9-C22	2.5	varies	NA	NA	NA	NA	141	2.50	7.64	7.74	15.5	890	8.53	12.8	80.5	ND	281	4.93	378	12.4	26.8	158	46.9	5.33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
C23-C32	100	varies	NA	NA	NA	NA	576	ND	ND	ND	ND	16500	233	272	509	ND	2790	ND	643	ND	227	ND	457	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
C33-C36	100	varies	NA	NA	NA	NA	ND	ND	ND	ND	ND	670	ND	ND	128	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TPH Aliphatic & Aromatic Breakdown		varies	NA	NA	NA	NA	NA	NA	NA	NA	NA	C5-C8 Aliphatic = ND, C6-C8 Aromatic = ND, C9-C16 Aromatic = ND, C17-C32 Aromatic = 652, C9-C18 Aliphatic = 120, C19-C35 Aliphatic = 21700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
VOCs (8021B or 8260B)	Varies	ug/kg										Bioassay-Passed																								
BTEX only or all VOCs	1 or 2	Chemical Specific	NA	NA	NA	NA	B = ND, T = ND, E = ND, X = ND	NA	B = ND, T = ND, E = ND, X = 2.14	All ND (8260)	All ND (8260)	Toluene = 3.05 Rest All ND (8260)	All ND (8260)	All ND (8260)	NA	NA	All ND (8260)	All ND (8260)	All ND (8260)	NA	All ND (8260)	B = ND, T = 13.2, E = ND, X = ND	B = ND, T = ND, E = ND, X = ND													
SVOCs (8270)	varies	Chemical Specific (ug/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	PAHs = B(a)p = 0.0789, B(b)f = 0.0635, B(k)f = 0.0238, acenaphthene = 0.0228, fluoranthene = 0.115, Phenanthrene = 0.0712, Pyrene = 0.110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Phenol = 56600, 4-Methylphenol = 179000, Di-n-butyl phthalate= 50500 Rest All ND	All ND	NA	All ND	NA	NA	NA	NA		
OCHs (8151A)	varies	Chemical Specific (ug/kg)	NA	NA	NA	NA	All ND	All ND	All ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCBs (8082)	50 ug/kg	170 to 35000	All ND	Aroclor-1260 - 110 Rest All ND	All ND	All ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Aroclor-1260 = 63.9 Rest All ND	All ND	All ND	All ND	All ND	NA	NA	NA	NA	NA	NA	NA	
Note : Results in ppm unless otherwise noted, ppb = parts per billion (ug/kg), ppm= parts per million (mg/kg), ND = None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit For Reporting Purposes. <b>Bold</b> = concentration > RSLs, RSLs = EPA Regional Screening Levels (11/2017), * = compare arsenic concentrations to ambient background. ** = HHRA Note #3 (8/2017) with DTSC Recommended Screening Levels (SLs). TPH = Total Petroleum Hydrocarbons, BTEX = Benzene, Toluene, Ethylbenzene & Xylenes, VOCs - Volatile Organic Compounds, SVOCs = Organochlorine Herbicides, PCBs = Polychlorinated Bi-phenyls																																				



**TABLE 3**  
**Soil Gas Survey Analytical Results for Methane, VOCs & H<sub>2</sub>S**  
**Kern High School District - Potential High School - SE of Wible Rd. & Engle Rd., Bakersfield, CA**  
**Soil Gas Samples (5' & 15' )**

CONSTITUENTS (EPA Method)	DTSC Screening Levels or EPA RSLs	RL (ppmv)	SG1-5' (3 PV)	SG1-15' (3 PV)	SG2-5' (3 PV)	SG2-15' (3 PV)	SG3-5' (3 PV)	SG3-15' (3 PV)	SG4-5' (3 PV)	SG4-15' (3 PV)	SG5-5' (3 PV)	SG5-15' (3 PV)	SG6-5' (3 PV)	SG6-15' (3 PV)	SG7-5' (3 PV)	SG7-15' (3 PV)	SG8-5' (3 PV)	SG8-15' (3 PV)	SG8-15' (Dup) (3 PV)
Methane (8015B)	1000 ppmV	15	25	25	19	16	<10	<10	20	17	<10	<10	19	<10	<10	<10	<10	22	22
H <sub>2</sub> S (Jerome Analyzer 631-X)		0.5	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	NA	NA	NA
Volatile Organic Compounds (VOCs) by 8260	(ug/l)	(ug/l)																	
Benzene	0.0362	0.036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	135	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.42	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes	315	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IPA (LCC)		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Other VOCs	Chemical Specific	Varies	All ND	All ND	All ND	All ND	All ND	All ND	All ND	All ND	Chloroform = 2.4, Rest All ND	Chloroform = 0.51, Rest All ND	Chloroform = 0.08, Rest All ND	Chloroform = 0.08, Rest All ND	Chloroform = 0.05, Rest All ND	Chloroform = 0.09, Rest All ND	All ND	All ND	All ND

ND= None Detected, NA = Not Analyzed, ppmV = parts per million per volume, H<sub>2</sub>S = Hydrogen Sulfide, PV = Purge Volume, RL = Reporting Limit, LCC = Leak Check Compound, Bold = Concentration of Potential Concern, RSLs = EPA Regional Screening levels (Nov. 2017)

**TABLE 3A**  
**Soil Samples from Soil Gas Survey Analytical Results for TPHg, BTEX and Total Organic Carbon**  
**Kern High School District - Potential High School - SE of Wible Rd. & Engle Rd., Bakersfield, CA**

CONSTITUENTS (EPA Method)	DTSC SL or EPA RSL	PQL	SG1-10'	SG1-15'	SG2-10'	SG3-5'	SG4-5'	SG5-5'	SG6-5'	SG7-5'	SG8-5'
TPH as gasoline (8015)	82 mg/kg	0.5	ND	ND	ND	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds (VOCs) by 8021	(ug/kg)	(ug/kg)									
Benzene	330	1	ND	ND	ND	NA	NA	NA	NA	NA	NA
Toluene	1100000	1	ND	ND	ND	NA	NA	NA	NA	NA	NA
Ethylbenzene	5800	1	ND	ND	ND	NA	NA	NA	NA	NA	NA
Xylenes	580000	2	ND	ND	ND	NA	NA	NA	NA	NA	NA
Total Organic Carbon (Walkley-Black)		0.02%	NA	NA	NA	0.04	0.06	0.02	0.03	0.05	0.07

ND= None Detected, NA = Not Analyzed, mg/kg = parts per million (ppm), TPH = Total Petroleum Hydrocarbons, PQL = Practical Reporting Limit, Bold = Concentration of Potential Concern, RSLs = EPA Regional Screening levels (Nov. 2017)



**Analytical Results (mg/l unless shown)**

**Note:** mg/l = parts per million (ppm), NA = Not Analyzed, **Bold** = Concentration Greater than Tulare Lake Basin Limit. TKN = Total Kjeldahl Nitrogen, N = Nitrogen, TPHg = Total Petroleum Hydrocarbons as gasoline.

**Note:** mg/l = parts per million (ppm), NA = Not Analyzed, **Bold** = Concentration Greater than Tulare Lake Basin Limit. TKN = Total Kjeldahl Nitrogen, N = Nitrogen, TPHg = Total Petroleum Hydrocarbons as gasoline.



TABLE 5

Risk<sub>soil</sub> and Hazard<sub>soil</sub> Calculations

Potential High School, NE of Nord Rd. &amp; Hageman Rd., in Bakersfield, CA

Chemical of Concern (COC)	EPA RSLs Residential Soils (mg/kg) or DTSC Mod. RSLs	HHRA Note #3 Residential Soils (mg/kg)	SF <sub>o</sub>	C <sub>s</sub>	CONSTANT 0.00000144	CONSTANT 0.00000462	ABS	Risk <sub>soil</sub>	RfDo	CONSTANT 0.0000128	CONSTANT 0.000037	Hazard <sub>soil</sub>
Arsenic	0.11	Use DTSC SL	1.50	9.55	0.00000144	0.00000462	0.03	NA	3.0E-04	0.0000128	3.7E-05	NA
Lead	80*	Use DTSC SL	NA	<b>352</b>	0.00000144	0.00000462		NA	3.0E-04	0.0000128	3.7E-05	NA
4,4'-DDD	2.3	Use EPA	0.34	<b>14.5</b>	0.00000144	0.00000462	0.1	9.4E-06	5.0E-04	0.0000128	3.7E-05	0.74240
4,4'-DDE	2	Use EPA	0.34	<b>7.63</b>	0.00000144	0.00000462	0.1	4.9E-06	5.0E-04	0.0000128	3.7E-05	0.39066
4,4'-DDT	1.9	Use EPA	0.34	<b>154</b>	0.00000144	0.00000462	0.1	1.0E-04	5.0E-04	0.0000128	3.7E-05	<b>7.88480</b>
Dieldrin	0.034	Use EPA	16.00	<b>21.4</b>	0.00000144	0.00000462	0.1	6.512E-04	5.00E-05	0.0000128	3.70E-05	<b>10.95680</b>
TPH C5-C8 Aliphatic HC	520	Use EPA	NA	12.7	0.00000144	0.00000462	0.1	NA	1.0E-02	0.0000128	3.7E-05	0.03251
TPH C6-C8 Aromatic HC	82	Use EPA	NA	7.75	0.00000144	0.00000462	0.1	NA	4.0E-03	0.0000128	3.7E-05	0.04960
TPH C9-C16 Aromatic HC	110	Use EPA	NA	7.15	0.00000144	0.00000462	0.1	NA	4.0E-03	0.0000128	3.7E-05	0.0
TPH C17-C32 Aromatic HC	2500	Use EPA	NA	652	0.00000144	0.00000462	0.1	NA	4.0E-02	0.0000128	3.7E-05	0.4
TPH C19-C35 Aliphatic HC	23000	Use EPA	NA	21700	0.00000144	0.00000462	0.1	NA	3.0E+00	0.0000128	3.7E-05	0.18517
Benzene	0.333	Use DTSC SL	0.055	0.00843	0.00000144	0.00000462		6.677E-10	4.0E-03	0.0000128	3.7E-05	0.00003
Ethylbenzene	5.8	Use EPA	0.01	0.012	0.00000144	0.00000462		1.901E-10	1.0E-01	0.0000128	3.7E-05	0.00000
Toluene	1100	Use EPA	NA	7.54	0.00000144	0.00000462		NA	8.0E-02	0.0000128	3.7E-05	0.00121
Xylenes	580	Use EPA	NA	0.0138	0.00000144	0.00000462		NA	2.0E-02	0.0000128	3.7E-05	0.00001
Aroclor - 1260	0.24	Use EPA	2.00	0.11	0.00000144	0.00000462	0.14	4.591E-07	NA	0.0000128	3.7E-05	NA
Phenol	19000	Use EPA	NA	56.6	0.00000144	0.00000462	0.1	NA	3.0E-01	0.0000128	3.7E-05	0.00483
<b>TOTALS</b>								<b>7.7E-04</b>				<b>20.7</b>

Notes: C<sub>s</sub> = Concentration in soil in ppm, ppm = parts per million (mg/kg), SF<sub>o</sub> = Oral Cancer Slope Factor (mg/kg-day)<sup>-1</sup>, ABS = Absorption Fraction,RfDo = Oral Reference Dose (mg/kg-day), NA = Data Not Available, Risk<sub>soil</sub> = (SF<sub>o</sub> x C<sub>s</sub> x (1.44 x 10<sup>-6</sup>)) + (SF<sub>o</sub> x C<sub>s</sub> x (4.62 x 10<sup>-6</sup>) x ABS), **Bold** = Elevated ResultHazard<sub>soil</sub> = ((C<sub>s</sub>/RfDo) x (1.28 x 10<sup>-5</sup>)) + ((C<sub>s</sub>/RfDo) x (3.7 x 10<sup>-5</sup>) x ABS), Note utilizing ABS for Xylenes for Benzene. HHRA = Human Health Risk Assessment, RSL = EPA Regional Screening Levels 11-2017 Summary



**TABLE 6**  
**Risk<sub>air</sub> and Hazard<sub>air</sub> Calculations**  
**Potential High School, NE of Nord Rd. & Hageman Rd., in Bakersfield, CA**

Constituent	EPA RSL's (ug/m3)	HHRA Indoor Air Residential (ug/m3)	IUR	C <sub>s</sub>	CONSTANT 0.356	C <sub>a</sub>	CONSTANT 1.36E6	Risk <sub>a</sub>	RfC	CONSTANT 0.000959	Hazard <sub>a</sub>
4,4'-DDE	0.029	Use EPA	9.70E-05	0.0071	0.356	5.2E-09	1.36E+06	1.8E-13	NA	0.000959	NA
4,4'-DDT	0.029	Use EPA	9.70E-05	0.0019	0.356	1.4E-09	1.36E+06	4.8E-14	NA	0.000959	NA
Dieldrin	0.00061	Use EPA	0.0046	0.00026	0.356	1.9E-10	1.36E+06	3.1E-13	NA	0.000959	NA
TPH C5-C8 Aliphatic HC	630	Use EPA	NA	14.6	0.356	1.1E-05	1.36E+06	NA	6.00E-01	0.000959	1.7E-08
TPH C6-C8 Aromatic HC	31	Use EPA	NA	7.7	0.356	5.7E-06	1.36E+06	NA	3.00E-02	0.000959	1.8E-07
TPH C9-C16 Aromatic HC	3.1	Use EPA	NA	19600	0.356	1.4E-02	1.36E+06	NA	3.00E-03	0.000959	4.6E-03
TPH C17-C32 Aromatic HC	NA	Use EPA	NA	159000	0.356	1.2E-01	1.36E+06	NA	NA	0.000959	NA
TPH C19-C35 Aliphatic HC	NA	Use EPA	NA	14300	0.356	1.1E-02	1.36E+06	NA	NA	0.000959	NA
Benzene	36.2	Use EPA	7.80E-06	0.00843	0.356	6.2E-09	1.36E+06	1.7E-14	3.00E-02	0.000959	2.0E-10
Ethylbenzene	1.1	Use EPA	2.50E-06	0.012	0.356	8.8E-09	1.36E+06	7.9E-15	1.00E+00	0.000959	8.5E-12
Toluene	5200	Use EPA	NA	7.54	0.356	5.5E-06	1.36E+06	NA	5.00E+00	0.000959	1.1E-09
Xylenes	100	Use EPA	NA	0.0138	0.356	1.0E-08	1.36E+06	NA	1.00E-01	0.000959	9.7E-11
Aroclor - 1260	0.0049	Use EPA	5.70E-04	0.11	0.356	8.1E-08	1.36E+06	1.6E-11	NA	0.000959	NA
Phenol	210	Use EPA	NA	56.6	0.356	4.2E-05	1.36E+06	NA	2.00E-01	0.000959	2.0E-07

Totals

1.7E-11

4.6E-03

Notes: C<sub>s</sub> = Maximum concentration in soil in ppm, ppm = parts per million (mg/kg), C<sub>a</sub> = Concentration in Air ug/m<sup>3</sup> = (C<sub>s</sub>/1.36E9 (default PEF) x 1000 ug/mg), IUR = Inhalation Unit Risk Factor (ug/m3)<sup>-1</sup>,  
RfC = Reference Concentration (mg/m3), Risk<sub>a</sub> = IUR x C<sub>a</sub> x 0.356, Hazard<sub>a</sub> = 1/(RfC) x C<sub>a</sub> x 0.000959, NA = Not Applicable. Equations are from Figures 2-8, 2-9 and 2-10 of PEA Guidance Manual January 1994 (Revised October 2015).



**TABLE 7**  
**Cumulative Risk and Hazard Calculations**  
**Potential High School, NE of Nord Rd. & Hageman Rd., in Bakersfield, CA**

<b>Cumulative Risk Calculation</b>		
Total Risk Soil Pathway (From Table 5)		7.7E-04
Total Risk Air Pathway (From Table 6)	+	1.7E-11
<b>Total Cumulative Risk All Pathways</b>		<b>7.7E-04</b>
<b>Cumulative Hazard Calculation</b>		
Total Hazard Soil Pathway (From Table 5)		20.71
Total Hazard Air Pathway (From Table 6)	+	0.0046
<b>Total Cumulative Hazard All Pathways</b>		<b>20.72</b>



**TABLE 8**  
**EXPOSURE PATHWAY ANALYSIS FOR ECOLOGICAL SCREENING EVALUATION**  
**Kern High School District - Proposed High School Site**  
**SE of Wible Rd. & Engle Rd., Bakersfield, CA.**

<b>Habitat Type</b>	<b>Potential Classes of Contaminants</b>	<b>Potentially Contaminated Media</b>	<b>Food Web Exposure</b>	<b>Potential Exposure Pathway</b>	<b>Complete Exposure Pathway</b>
Agricultural Land (mainly dirt surface), Trucking Yard	Pesticides, Herbicides, Heavy Metals, Petroleum Hydrocarbons (tailwater sumps, trucking yard)	Soil		Direct Ingestion	No
	Pesticides, Herbicides, Heavy Metals, Petroleum Hydrocarbons (tailwater sumps, trucking yard)	Soil	Invertebrates to Mouse	Ingestion of prey	No
	Pesticides, Herbicides, Heavy Metals, Petroleum Hydrocarbons (tailwater sumps, trucking yard)	Soil		Inhalation of Dust	No



**APPENDIX A**

**Analytical Reports  
and Chain of Custody Documents**





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February 23, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1802159  
Project Name: 16195 UHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on February 16, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

A handwritten signature in blue ink, reading "D. Sanchez", is written over a horizontal line. Below the line, the words "Project Manager" are printed in a small, black, sans-serif font.





781 East Washington Blvd., Los Angeles, CA 90021  
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## Certificate of Analysis

Page 2 of 30

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C1A-3", C1B-3", C1C-3" Composite Soil (1802159-01) Sampled: 02/15/18 09:23 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
<hr/>											
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	78.8 %			55-126		EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: Decachlorobiphenyl	88.8 %			49-133		EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	

Sample ID: C2A-3", C2B-3", C2C-3" Composite Soil (1802159-02) Sampled: 02/15/18 09:46 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	





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## Certificate of Analysis

Page 3 of 30

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

PLS Report No.: 1802159

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C2A-3", C2B-3", C2C-3" Composite Soil (1802159-02) Sampled: 02/15/18 09:46 Received: 02/16/18 10:45										
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	78.0 %		55-126		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	76.4 %		49-133		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C3A-3", C3B-3", C3C-3" Composite Soil (1802159-03) Sampled: 02/15/18 10:07 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	79.6 %			55-126		EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	72.9 %			49-133		EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C4A-3", C4B-3", C4C-3" Composite Soil (1802159-04) Sampled: 02/15/18 10:28 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	23.4		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C4A-3", C4B-3", C4C-3" Composite Soil (1802159-04) Sampled: 02/15/18 10:28 Received: 02/16/18 10:45											
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	76.7 %		55-126		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: Decachlorobiphenyl	71.3 %		49-133		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	

Sample ID: C5A-3", C5B-3", C5C-3" Composite Soil (1802159-05) Sampled: 02/15/18 10:58 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
<b>4,4'-DDE</b>	<b>21.6</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	71.6 %		55-126		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: Decachlorobiphenyl	82.3 %		49-133		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	

Sample ID: C6A-3", C6B-3", C6C-3" Composite Soil (1802159-06) Sampled: 02/15/18 11:23 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
<b>4,4'-DDE</b>	<b>18.6</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C6A-3", C6B-3", C6C-3" Composite Soil (1802159-06) Sampled: 02/15/18 11:23 Received: 02/16/18 10:45											
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	76.3 %			55-126	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: Decachlorobiphenyl	70.5 %			49-133	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	

Sample ID: C7A-3", C7B-3", C7C-3" Composite Soil (1802159-07) Sampled: 02/15/18 11:53 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
<b>4,4'-DDE</b>	<b>18.8</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	74.4 %			55-126	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: Decachlorobiphenyl	86.2 %			49-133	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	

Sample ID: C8A-3", C8B-3", C8C-3" Composite Soil (1802159-08) Sampled: 02/15/18 12:45 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249	





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C8A-3", C8B-3", C8C-3" Composite Soil (1802159-08) Sampled: 02/15/18 12:45 Received: 02/16/18 10:45										
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	77.2 %		55-126		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	77.6 %		49-133		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C9A-3", C9B-3", C9C-3" Composite Soil (1802159-09) Sampled: 02/15/18 13:09 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	76.6 %		55-126		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	103 %		49-133		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C10A-3", C10B-3", C10C-3" Composite Soil (1802159-10) Sampled: 02/15/18 13:33 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

PLS Report No.: 1802159

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C10A-3", C10B-3", C10C-3" Composite Soil (1802159-10) Sampled: 02/15/18 13:33 Received: 02/16/18 10:45										
alpha-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	16.5	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
-----										
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	89.4 %			55-126	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	92.5 %			49-133	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C11A-3", C11B-3", C11C-3" Composite Soil (1802159-11) Sampled: 02/15/18 13:58 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai BB82249
-----										
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	78.5 %			55-126	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C11A-3", C11B-3", C11C-3" Composite Soil (1802159-11) Sampled: 02/15/18 13:58 Received: 02/16/18 10:45									
Surrogate: Decachlorobiphenyl	95.6 %	49-133	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	

Sample ID: C12A-3", C12B-3", C12C-3" Composite Soil (1802159-12) Sampled: 02/15/18 14:36 Received: 02/16/18 10:45									
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
<b>4,4'-DDE</b>	<b>19.8</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	74.5 %	55-126	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	
Surrogate: Decachlorobiphenyl	109 %	49-133	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249	

Sample ID: C1B-3" Soil (1802159-13) Sampled: 02/15/18 09:17 Received: 02/16/18 10:45									
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By Batch
Arsenic	5.65		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG BB82237

Sample ID: C2B-3" Soil (1802159-14) Sampled: 02/15/18 09:46 Received: 02/16/18 10:45									
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By Batch
Arsenic	6.55		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG BB82237

Sample ID: C3B-3" Soil (1802159-15) Sampled: 02/15/18 10:00 Received: 02/16/18 10:45									
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By Batch
Arsenic	7.24		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG BB82237

Sample ID: P1-3" Soil (1802159-16) Sampled: 02/15/18 15:00 Received: 02/16/18 10:45									
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai BB82044
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai BB82044
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai BB82044
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai BB82044
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai BB82044
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai BB82044
<b>Aroclor-1260</b>	<b>63.9</b>		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai BB82044





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

**Sample ID: P1-3" Soil (1802159-16) Sampled: 02/15/18 15:00 Received: 02/16/18 10:45**

Surrogate: 2,4,5,6 Tetrachloro-m-xylar.	97.4 %	54-131	EPA 3550C	EPA 8082	02/19/18	02/20/18	ai	BB82044
Surrogate: Decachlorobiphenyl	106 %	53-131	EPA 3550C	EPA 8082	02/19/18	02/20/18	ai	BB82044

**Sample ID: S1-3" Soil (1802159-17) Sampled: 02/15/18 00:00 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>TPH C9 - C22</b>	<b>97400</b>		20	mg/kg	500	EPA 3550C EPA 8015B	02/20/18	02/23/18	lk	BB82136
<b>TPH C23 - C32</b>	<b>51600</b>		20	mg/kg	20000	EPA 3550C EPA 8015B	02/20/18	02/23/18	lk	BB82136
<b>TPH C33 - C36</b>	<b>2030</b>		1	mg/kg	1000	EPA 3550C EPA 8015B	02/20/18	02/23/18	lk	BB82136
Surrogate: n-Tetracosane	3580 %	DO		68-133		EPA 3550C EPA 8015B	02/20/18	02/23/18	lk	BB82136
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>Benzene</b>	<b>8.43</b>		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
<b>Toluene</b>	<b>7540</b>		100	ug/kg	100	EPA 5030B EPA 8021B	02/20/18	02/21/18	lk	BB82050
<b>Ethylbenzene</b>	<b>12.0</b>		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
<b>Xylenes (total)</b>	<b>13.8</b>		1	ug/kg	2.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Surrogate: a,a,a-Trifluorotoluene	130 %			46-132		EPA 5030B EPA 8021B	02/20/18	02/21/18	lk	BB82050
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
N-Nitrosodimethylamine (NDMA)	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Pyridine	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Aniline	ND		1	ug/kg	30000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Bis(2-chloroethyl)ether	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
<b>Phenol</b>	<b>56600</b>		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2-Chlorophenol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
1,3-Dichlorobenzene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
1,4-Dichlorobenzene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
1,2-Dichlorobenzene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzyl alcohol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Bis(2-chloroisopropyl)ether	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2-Methylphenol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Hexachloroethane	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
N-Nitrosodi-n-propylamine	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
<b>4-Methylphenol</b>	<b>179000</b>		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Nitrobenzene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Isophorone	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2-Nitrophenol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,4-Dimethylphenol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Bis(2-chloroethoxy)methane	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzoic acid	ND		1	ug/kg	120000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
1,2,4-Trichlorobenzene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Naphthalene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
4-Chloroaniline	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Hexachlorobutadiene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2-Methylnaphthalene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,6-Dichlorophenol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
Hexachlorocyclopentadiene	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,4,6-Trichlorophenol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,4,5-Trichlorophenol	ND		1	ug/kg	12000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82311





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: S1-3" Soil (1802159-17) Sampled: 02/15/18 00:00 Received: 02/16/18 10:45										
2-Chloronaphthalene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
2-Nitroaniline	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Acenaphthylene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Dimethyl phthalate	ND	1	ug/kg	6000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,6-Dinitrotoluene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Acenaphthene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
3-Nitroaniline	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Dibenzofuran	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,4-Dichlorophenol	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,4-Dinitrophenol	ND	1	ug/kg	60000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
2,4-Dinitrotoluene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
4-Nitrophenol	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Fluorene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
4-Chlorophenyl phenyl ether	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Diethyl phthalate	ND	1	ug/kg	6000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
4-Nitroaniline	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	1	ug/kg	30000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
N-Nitrosodiphenylamine	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
1,2-Diphenylhydrazine as Azobenzene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
4-Bromophenyl phenyl ether	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Hexachlorobenzene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Pentachlorophenol	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Phenanthrene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Anthracene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
<b>Di-n-butyl phthalate</b>	<b>50500</b>	1	ug/kg	6000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Fluoranthene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzidine	ND	1	ug/kg	60000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Pyrene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Butyl benzyl phthalate	ND	1	ug/kg	6000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
3,3'-Dichlorobenzidine	ND	1	ug/kg	60000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzo(a)anthracene (1,2-Benzanthracene)	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Chrysene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Bis(2-ethylhexyl)phthalate	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Di-n-octyl phthalate	ND	1	ug/kg	6000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzo(k)fluoranthene (11,12-Benzofluoranthene)	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzo(a)pyrene (3,4-Benzopyrene)	ND	1	ug/kg	6000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Indeno(1,2,3-cd)pyrene	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Dibenzo(a,h)anthracene (1,2,5,6-Dibenzanthracene)	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Benzo(ghi)perylene (1,12-Benzoperylene)	ND	1	ug/kg	12000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Surrogate: 2-Fluorophenol	92.4 %	48-117			EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Surrogate: Phenol-d5	129 %	46-129			EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Surrogate: Nitrobenzene-d5	103 %	46-110			EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Surrogate: 2-Fluorobiphenyl	105 %	49-108			EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311





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 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

PLS Report No.: 1802159

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: S1-3" Soil (1802159-17) Sampled: 02/15/18 00:00 Received: 02/16/18 10:45											
Surrogate: 2,4,6-Tribromophenol	135 %	DO		55-129		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Surrogate: Terphenyl-d14	115 %			58-135		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82311
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
beta-BHC	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
delta-BHC	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
4,4'-DDE	ND		1	ug/kg	34.3	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	34.3	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
Dieldrin	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	34.3	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
Endosulfan II	ND	E-02	1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND	E-02	1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	85.7	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND	E-02	1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND	E-02	1	ug/kg	51.4	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND		1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
Heptachlor epoxide	ND	E-02	1	ug/kg	17.1	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND	E-02	1	ug/kg	85.7	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND		1	ug/kg	257	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	125 %			55-126		EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
Surrogate: Decachlorobiphenyl	127 %			49-133		EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Arsenic	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Barium	4.18		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Chromium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Cobalt	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Copper	1.94		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Lead	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Nickel	1.53		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Selenium	2.56		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Vanadium	1.08		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Zinc	57.1		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/21/18	02/21/18	cg	BB82240
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test	Method	Prepared	Analyzed	By	Batch
pH	6.3		1	pH Units	0.1	-	EPA 9045C	02/20/18	02/20/18	pj	BB82257





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 02/23/18  
Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: S1-2' Soil (1802159-18) Sampled: 02/15/18 00:00 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>TPH C9 - C22</b>	<b>9.65</b>		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
<i>Surrogate: n-Tetracosane</i>	<i>106 %</i>			<i>68-133</i>		<i>EPA 3550C EPA 8015B</i>	<i>02/20/18</i>	<i>02/22/18</i>	<i>lk</i>	<i>BB82136</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
<b>Toluene</b>	<b>12.9</b>		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>107 %</i>			<i>46-132</i>		<i>EPA 5030B EPA 8021B</i>	<i>02/20/18</i>	<i>02/20/18</i>	<i>lk</i>	<i>BB82050</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
N-Nitrosodimethylamine (NDMA)	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Pyridine	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Aniline	ND		1	ug/kg	500	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Bis(2-chloroethyl)ether	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Phenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2-Chlorophenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
1,3-Dichlorobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
1,4-Dichlorobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
1,2-Dichlorobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Benzyl alcohol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Bis(2-chloroisopropyl)ether	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2-Methylphenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Hexachloroethane	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
N-Nitrosodi-n-propylamine	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
4-Methylphenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Nitrobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Isophorone	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2-Nitrophenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2,4-Dimethylphenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Bis(2-chloroethoxy)methane	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Benzoic acid	ND		1	ug/kg	2000	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
1,2,4-Trichlorobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Naphthalene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
4-Chloroaniline	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Hexachlorobutadiene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2-Methylnaphthalene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2,6-Dichlorophenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Hexachlorocyclopentadiene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2,4,6-Trichlorophenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2,4,5-Trichlorophenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2-Chloronaphthalene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
2-Nitroaniline	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Acenaphthylene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312
Dimethyl phthalate	ND		1	ug/kg	100	EPA 3550C EPA 8270C	02/22/18	02/23/18	ai	BB82312





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: S1-2' Soil (1802159-18) Sampled: 02/15/18 00:00 Received: 02/16/18 10:45											
2,6-Dinitrotoluene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Acenaphthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
3-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Dibenzofuran	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
2,4-Dichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
2,4-Dinitrophenol	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
2,4-Dinitrotoluene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
4-Nitrophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Fluorene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
4-Chlorophenyl phenyl ether	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Diethyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
4-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	1	ug/kg	500	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
N-Nitrosodiphenylamine	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
1,2-Diphenylhydrazine as Azobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
4-Bromophenyl phenyl ether	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Hexachlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Pentachlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Phenanthrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Anthracene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Di-n-butyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Fluoranthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Benzidine	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Pyrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Butyl benzyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
3,3'-Dichlorobenzidine	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Benzo(a)anthracene (1,2-Benzanthracene)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Chrysene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Bis(2-ethylhexyl)phthalate	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Di-n-octyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Benzo(k)fluoranthene (11,12-Benzofluoranthene)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Benzo(a)pyrene (3,4-Benzopyrene)	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Indeno(1,2,3-cd)pyrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Dibenzo(a,h)anthracene (1,2,5,6-Dibenzanthracene)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Benzo(ghi)perylene (1,12-Benzoperylene)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Surrogate: 2-Fluorophenol	85.2 %		48-117		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Surrogate: Phenol-d5	84.7 %		46-129		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Surrogate: Nitrobenzene-d5	75.3 %		46-110		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Surrogate: 2-Fluorobiphenyl	87.0 %		49-108		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Surrogate: 2,4,6-Tribromophenol	106 %		55-129		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Surrogate: Terphenyl-d14	110 %		58-135		EPA 3550C	EPA 8270C	02/22/18	02/23/18	ai	BB82312	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Antimony	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237	





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: S1-2' Soil (1802159-18) Sampled: 02/15/18 00:00 Received: 02/16/18 10:45											
Arsenic	2.08		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Barium	62.5		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Chromium	8.17		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Cobalt	4.90		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Copper	9.43		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Lead	7.18		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Nickel	4.89		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Vanadium	21.5		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Zinc	37.1		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/21/18	02/21/18	cg	BB82240
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
pH	8.9		1	pH Units	0.1	-	EPA 9045C	02/20/18	02/20/18	pj	BB82257
Sample ID: C4B-3" Soil (1802159-19) Sampled: 02/15/18 10:28 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	6.71		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Sample ID: C5B-3" Soil (1802159-20) Sampled: 02/15/18 10:39 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	6.10		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Sample ID: C6B-3" Soil (1802159-21) Sampled: 02/15/18 11:13 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	5.45		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Sample ID: C7B-3" Soil (1802159-22) Sampled: 02/15/18 10:30 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	7.14		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Sample ID: C7D-3" Soil (1802159-23) Sampled: 02/15/18 11:55 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	7.49		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Sample ID: C8B-3" Soil (1802159-24) Sampled: 02/15/18 12:13 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	5.16		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Sample ID: C9B-3" Soil (1802159-25) Sampled: 02/15/18 13:01 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	4.92		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Sample ID: C10B-3" Soil (1802159-26) Sampled: 02/15/18 13:33 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/23/18

Submitted: 02/16/18

PLS Report No.: 1802159

**Project:** 16195 UHSD SW / P.O. # 16195-POS

**Sample ID: C10B-3" Soil (1802159-26) Sampled: 02/15/18 13:33 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	7.80		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237

**Sample ID: C11B-3" Soil (1802159-27) Sampled: 02/15/18 13:52 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	5.48		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237

**Sample ID: C12B-3" Soil (1802159-28) Sampled: 02/15/18 14:29 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	6.41		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237

**Sample ID: C4D-3" Soil (1802159-29) Sampled: 02/15/18 10:30 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	6.34		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237

**Sample ID: P2-3" Soil (1802159-30) Sampled: 02/15/18 14:12 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	85.7 %			54-131		EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044
Surrogate: Decachlorobiphenyl	104 %			53-131		EPA 3550C EPA 8082	02/19/18	02/20/18	ai	BB82044

**Sample ID: S2-3" Soil (1802159-31) Sampled: 02/15/18 14:17 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	1730		10	mg/kg	25.0	EPA 3550C EPA 8015B	02/20/18	02/23/18	lk	BB82136
TPH C23 - C32	4600		10	mg/kg	1000	EPA 3550C EPA 8015B	02/20/18	02/23/18	lk	BB82136
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
Surrogate: n-Tetracosane	92.3 %			68-133		EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 02/23/18  
Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: S2-3" Soil (1802159-31) Sampled: 02/15/18 14:17 Received: 02/16/18 10:45											
4,4'-DDT	30.1		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/23/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	62.2 %			55-126		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	73.8 %			49-133		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Arsenic	10.8		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Barium	99.1		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Chromium	13.3		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Cobalt	8.01		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Copper	15.7		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Lead	9.98		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Nickel	8.72		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Vanadium	31.9		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Zinc	63.2		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/21/18	02/21/18	CG	BB82237
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/21/18	02/21/18	cg	BB82240
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
pH	6.0		1	pH Units	0.1	-	EPA 9045C	02/20/18	02/20/18	pj	BB82257
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
EPA 8151A Herbicides	See Attachment										

Sample ID: S2-2' Soil (1802159-32) Sampled: 02/15/18 14:19 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C9 - C22	326		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C23 - C32	801		1	mg/kg	100	EPA 3550C	EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/20/18	02/22/18	lk	BB82136
Surrogate: n-Tetracosane	89.9 %			68-133		EPA 3550C	EPA 8015B	02/20/18	02/22/18	lk	BB82136
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050





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Soils Engineering Inc.  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

Sample ID: S2-2' Soil (1802159-32) Sampled: 02/15/18 14:19 Received: 02/16/18 10:45										
Toluene	ND	1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND	1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND	1	ug/kg	2.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Surrogate: a,a,a-Trifluorotoluene	93.0 %		46-132		EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050

Sample ID: S2-4' Soil (1802159-33) Sampled: 02/15/18 14:21 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>TPH C9 - C22</b>	<b>12.1</b>		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
Surrogate: n-Tetracosane	87.2 %			68-133		EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Toluene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Surrogate: a,a,a-Trifluorotoluene	85.1 %			46-132		EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050

Sample ID: S1-4' Soil (1802159-34) Sampled: 02/15/18 14:49 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>TPH C9 - C22</b>	<b>3.18</b>		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
Surrogate: n-Tetracosane	93.9 %			68-133		EPA 3550C EPA 8015B	02/20/18	02/22/18	lk	BB82136
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
<b>Toluene</b>	<b>1.39</b>		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Surrogate: a,a,a-Trifluorotoluene	77.4 %			46-132		EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Arsenic</b>	<b>5.09</b>		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Barium</b>	<b>151</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
Beryllium	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
Cadmium	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Chromium</b>	<b>16.6</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Cobalt</b>	<b>10.5</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Copper</b>	<b>15.5</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Lead</b>	<b>5.82</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Nickel</b>	<b>10.2</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
Selenium	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
Silver	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
Thallium	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Vanadium</b>	<b>42.1</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237
<b>Zinc</b>	<b>60.2</b>		1	mg/kg	5.00	EPA 3050B EPA 6010B	02/21/18	02/21/18	CG	BB82237





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Soils Engineering Inc.  
4400 Yeager Way  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

**Sample ID: S1-4' Soil (1802159-34) Sampled: 02/15/18 14:49 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A EPA 7471A	02/21/18	02/21/18	cg	BB82240
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
pH	8.7		1	pH Units	0.1	- EPA 9045C	02/20/18	02/20/18	pj	BB82257





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File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82136 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/20/18 Analyzed: 02/21/18</b>									
TPH C9 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: n-Tetracosane	20.5		mg/kg	20.83		98.2	68-133			
<b>LCS</b>	<b>Prepared: 02/20/18 Analyzed: 02/21/18</b>									
Diesel	696	6.25	mg/kg	554.7		125	69-137			
Surrogate: n-Tetracosane	24.4		mg/kg	20.83		117	64-140			
<b>Matrix Spike</b>	<b>Source: 1802153-05</b>	<b>Prepared: 02/20/18 Analyzed: 02/21/18</b>								
Diesel	107	2.50	mg/kg	110.9	ND	96.8	53-138			
Surrogate: n-Tetracosane	21.8		mg/kg	20.83		105	68-133			
<b>Matrix Spike Dup</b>	<b>Source: 1802153-05</b>	<b>Prepared: 02/20/18 Analyzed: 02/21/18</b>								
Diesel	114	2.50	mg/kg	110.9	ND	103	53-138	5.87	30	
Surrogate: n-Tetracosane	23.0		mg/kg	20.83		111	68-133			
<b>Batch BB82050 - EPA 5030B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>									
Benzene	ND	1.00	ug/kg							
Toluene	ND	1.00	ug/kg							
Ethylbenzene	ND	1.00	ug/kg							
Xylenes (total)	ND	2.00	ug/kg							
Surrogate: a,a,a-Trifluorotoluene	14.9		ug/kg	15.00		99.2	46-132			
<b>LCS</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>									
Benzene	98.0	1.00	ug/kg	100.0		98.0	76-117			
Toluene	94.6	1.00	ug/kg	100.0		94.6	74-113			
Ethylbenzene	96.1	1.00	ug/kg	100.0		96.1	75-122			
Xylenes (total)	275	2.00	ug/kg	300.0		91.8	68-121			
Methyl-tert-butyl ether (MTBE)	97.4	2.00	ug/kg	100.0		97.4	64-132			
Surrogate: a,a,a-Trifluorotoluene	17.0		ug/kg	15.00		113	67-130			
<b>Matrix Spike</b>	<b>Source: 1802159-33</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>								
Benzene	43.0	1.00	ug/kg	40.00	ND	107	51-129			
Toluene	42.1	1.00	ug/kg	40.00	ND	105	37-129			
Ethylbenzene	42.8	1.00	ug/kg	40.00	ND	107	45-129			
Xylenes (total)	125	2.00	ug/kg	120.0	ND	104	52-113			
Methyl-tert-butyl ether (MTBE)	44.2	2.00	ug/kg	40.00	ND	110	68-168			
Surrogate: a,a,a-Trifluorotoluene	16.3		ug/kg	15.00		109	46-132			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-33</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>								
Benzene	41.8	1.00	ug/kg	40.00	ND	104	51-129	2.79	30	
Toluene	41.4	1.00	ug/kg	40.00	ND	103	37-129	1.60	30	





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82050 - EPA 5030B</b>										
Ethylbenzene	41.2	1.00	ug/kg	40.00	ND	103	45-129	3.69	30	
Xylenes (total)	123	2.00	ug/kg	120.0	ND	102	52-113	1.58	30	
Methyl-tert-butyl ether (MTBE)	42.5	2.00	ug/kg	40.00	ND	106	68-168	3.80	30	
Surrogate: <i>a,a,a</i> -Trifluorotoluene	13.9		ug/kg	15.00		92.4	46-132			
<b>Batch BB82311 - EPA 3550C</b>										
<b>Blank</b>										
<b>Prepared: 02/22/18 Analyzed: 02/23/18</b>										
N-Nitrosodimethylamine (NDMA)	ND	200	ug/kg							
Pyridine	ND	200	ug/kg							
Aniline	ND	500	ug/kg							
Bis(2-chloroethyl)ether	ND	200	ug/kg							
Phenol	ND	200	ug/kg							
2-Chlorophenol	ND	200	ug/kg							
1,3-Dichlorobenzene	ND	200	ug/kg							
1,4-Dichlorobenzene	ND	200	ug/kg							
1,2-Dichlorobenzene	ND	200	ug/kg							
Benzyl alcohol	ND	200	ug/kg							
Bis(2-chloroisopropyl)ether	ND	200	ug/kg							
2-Methylphenol	ND	200	ug/kg							
Hexachloroethane	ND	200	ug/kg							
N-Nitrosodi-n-propylamine	ND	200	ug/kg							
4-Methylphenol	ND	200	ug/kg							
Nitrobenzene	ND	200	ug/kg							
Isophorone	ND	200	ug/kg							
2-Nitrophenol	ND	200	ug/kg							
2,4-Dimethylphenol	ND	200	ug/kg							
Bis(2-chloroethoxy)methane	ND	200	ug/kg							
Benzoic acid	ND	2000	ug/kg							
1,2,4-Trichlorobenzene	ND	200	ug/kg							
Naphthalene	ND	200	ug/kg							
4-Chloroaniline	ND	200	ug/kg							
Hexachlorobutadiene	ND	200	ug/kg							
4-Chloro-3-methylphenol	ND	200	ug/kg							
(p-Chloro-m-cresol)										
2-Methylnaphthalene	ND	200	ug/kg							
2,6-Dichlorophenol	ND	200	ug/kg							
Hexachlorocyclopentadiene	ND	200	ug/kg							
2,4,6-Trichlorophenol	ND	200	ug/kg							
2,4,5-Trichlorophenol	ND	200	ug/kg							
2-Chloronaphthalene	ND	200	ug/kg							
2-Nitroaniline	ND	200	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82311 - EPA 3550C</b>										
Acenaphthylene	ND	200	ug/kg							
Dimethyl phthalate	ND	100	ug/kg							
2,6-Dinitrotoluene	ND	200	ug/kg							
Acenaphthene	ND	200	ug/kg							
3-Nitroaniline	ND	200	ug/kg							
2,4-Dichlorophenol	ND	200	ug/kg							
Dibenzofuran	ND	200	ug/kg							
2,4-Dinitrophenol	ND	1000	ug/kg							
2,4-Dinitrotoluene	ND	200	ug/kg							
4-Nitrophenol	ND	200	ug/kg							
Fluorene	ND	200	ug/kg							
4-Chlorophenyl phenyl ether	ND	200	ug/kg							
Diethyl phthalate	ND	100	ug/kg							
4-Nitroaniline	ND	200	ug/kg							
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	500	ug/kg							
N-Nitrosodiphenylamine	ND	200	ug/kg							
1,2-Diphenylhydrazine as Azobenzene	ND	200	ug/kg							
4-Bromophenyl phenyl ether	ND	200	ug/kg							
Hexachlorobenzene	ND	200	ug/kg							
Pentachlorophenol	ND	200	ug/kg							
Phenanthrene	ND	200	ug/kg							
Anthracene	ND	200	ug/kg							
Di-n-butyl phthalate	ND	100	ug/kg							
Fluoranthene	ND	200	ug/kg							
Benzidine	ND	1000	ug/kg							
Pyrene	ND	200	ug/kg							
Butyl benzyl phthalate	ND	100	ug/kg							
3,3'-Dichlorobenzidine	ND	1000	ug/kg							
Benzo(a)anthracene (1,2-Benzanthracene)	ND	200	ug/kg							
Chrysene	ND	200	ug/kg							
Bis(2-ethylhexyl)phthalate	ND	200	ug/kg							
Di-n-octyl phthalate	ND	100	ug/kg							
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	ND	200	ug/kg							
Benzo(k)fluoranthene (11,12-Benzofluoranthene)	ND	200	ug/kg							
Benzo(a)pyrene (3,4-Benzopyrene)	ND	100	ug/kg							
Indeno(1,2,3-cd)pyrene	ND	200	ug/kg							
Dibenzo(a,h)anthracene (1,2,5,6-Dibenzanthracene)	ND	200	ug/kg							
Benzo(ghi)perylene (1,12-Benzoperylene)	ND	200	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82311 - EPA 3550C</b>										
Surrogate: 2-Fluorophenol	13400		ug/kg	13330		100	48-117			
Surrogate: Phenol-d5	12900		ug/kg	13330		96.9	46-129			
Surrogate: Nitrobenzene-d5	6640		ug/kg	6667		99.7	46-110			
Surrogate: 2-Fluorobiphenyl	6920		ug/kg	6667		104	49-108			
Surrogate: 2,4,6-Tribromophenol	15100		ug/kg	13330		113	55-129			
Surrogate: Terphenyl-d14	8240		ug/kg	6667		124	58-135			
<b>LCS Prepared: 02/22/18 Analyzed: 02/23/18</b>										
Phenol	2700	200	ug/kg	3333		81.1	52-101			
1,4-Dichlorobenzene	2780	200	ug/kg	3333		83.5	58-97			
1,2,4-Trichlorobenzene	2630	200	ug/kg	3333		78.9	53-99			
Acenaphthene	3490	200	ug/kg	3333		105	57-113			
Di-n-butyl phthalate	3960	100	ug/kg	3333		119	62-128			
Pyrene	3840	200	ug/kg	3333		115	57-124			
Surrogate: 2-Fluorophenol	12100		ug/kg	13330		90.8	56-113			
Surrogate: Phenol-d5	12400		ug/kg	13330		92.6	54-119			
Surrogate: Nitrobenzene-d5	5710		ug/kg	6667		85.7	46-119			
Surrogate: 2-Fluorobiphenyl	6910		ug/kg	6667		104	54-108			
Surrogate: 2,4,6-Tribromophenol	15700		ug/kg	13330		118	62-119			
Surrogate: Terphenyl-d14	7540		ug/kg	6667		113	70-127			
<b>LCS Dup Prepared: 02/22/18 Analyzed: 02/23/18</b>										
Phenol	2950	200	ug/kg	3333		88.5	52-101	8.81	30	
1,4-Dichlorobenzene	3100	200	ug/kg	3333		92.9	58-97	10.7	30	
1,2,4-Trichlorobenzene	2960	200	ug/kg	3333		88.7	53-99	11.7	30	
Acenaphthene	3660	200	ug/kg	3333		110	57-113	4.62	30	
Di-n-butyl phthalate	4190	100	ug/kg	3333		126	62-128	5.77	30	
Pyrene	3990	200	ug/kg	3333		120	57-124	3.71	30	
Surrogate: 2-Fluorophenol	12900		ug/kg	13330		97.1	56-113			
Surrogate: Phenol-d5	13200		ug/kg	13330		98.7	54-119			
Surrogate: Nitrobenzene-d5	6210		ug/kg	6667		93.2	46-119			
Surrogate: 2-Fluorobiphenyl	7370		ug/kg	6667		110	54-108			
Surrogate: 2,4,6-Tribromophenol	16300		ug/kg	13330		122	62-119			
Surrogate: Terphenyl-d14	8060		ug/kg	6667		121	70-127			
<b>Batch BB82312 - EPA 3550C</b>										
<b>Blank Prepared: 02/22/18 Analyzed: 02/23/18</b>										
N-Nitrosodimethylamine (NDMA)	ND	200	ug/kg							
Pyridine	ND	200	ug/kg							
Aniline	ND	500	ug/kg							
Bis(2-chloroethyl)ether	ND	200	ug/kg							
Phenol	ND	200	ug/kg							
2-Chlorophenol	ND	200	ug/kg							





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Soils Engineering Inc.  
 4400 Yeager Way  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82312 - EPA 3550C</b>										
1,3-Dichlorobenzene	ND	200	ug/kg							
1,4-Dichlorobenzene	ND	200	ug/kg							
1,2-Dichlorobenzene	ND	200	ug/kg							
Benzyl alcohol	ND	200	ug/kg							
Bis(2-chloroisopropyl)ether	ND	200	ug/kg							
2-Methylphenol	ND	200	ug/kg							
Hexachloroethane	ND	200	ug/kg							
N-Nitrosodi-n-propylamine	ND	200	ug/kg							
4-Methylphenol	ND	200	ug/kg							
Nitrobenzene	ND	200	ug/kg							
Isophorone	ND	200	ug/kg							
2-Nitrophenol	ND	200	ug/kg							
2,4-Dimethylphenol	ND	200	ug/kg							
Bis(2-chloroethoxy)methane	ND	200	ug/kg							
Benzoic acid	ND	2000	ug/kg							
1,2,4-Trichlorobenzene	ND	200	ug/kg							
Naphthalene	ND	200	ug/kg							
4-Chloroaniline	ND	200	ug/kg							
Hexachlorobutadiene	ND	200	ug/kg							
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	ND	200	ug/kg							
2-Methylnaphthalene	ND	200	ug/kg							
2,6-Dichlorophenol	ND	200	ug/kg							
Hexachlorocyclopentadiene	ND	200	ug/kg							
2,4,6-Trichlorophenol	ND	200	ug/kg							
2,4,5-Trichlorophenol	ND	200	ug/kg							
2-Chloronaphthalene	ND	200	ug/kg							
2-Nitroaniline	ND	200	ug/kg							
Acenaphthylene	ND	200	ug/kg							
Dimethyl phthalate	ND	100	ug/kg							
2,6-Dinitrotoluene	ND	200	ug/kg							
Acenaphthene	ND	200	ug/kg							
3-Nitroaniline	ND	200	ug/kg							
Dibenzofuran	ND	200	ug/kg							
2,4-Dichlorophenol	ND	200	ug/kg							
2,4-Dinitrophenol	ND	1000	ug/kg							
2,4-Dinitrotoluene	ND	200	ug/kg							
4-Nitrophenol	ND	200	ug/kg							
Fluorene	ND	200	ug/kg							
4-Chlorophenyl phenyl ether	ND	200	ug/kg							
Diethyl phthalate	ND	100	ug/kg							





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 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

PLS Report No.: 1802159

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82312 - EPA 3550C</b>										
4-Nitroaniline	ND	200	ug/kg							
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	500	ug/kg							
N-Nitrosodiphenylamine	ND	200	ug/kg							
1,2-Diphenylhydrazine as Azobenzene	ND	200	ug/kg							
4-Bromophenyl phenyl ether	ND	200	ug/kg							
Hexachlorobenzene	ND	200	ug/kg							
Pentachlorophenol	ND	200	ug/kg							
Phenanthrene	ND	200	ug/kg							
Anthracene	ND	200	ug/kg							
Di-n-butyl phthalate	ND	100	ug/kg							
Fluoranthene	ND	200	ug/kg							
Benzidine	ND	1000	ug/kg							
Pyrene	ND	200	ug/kg							
Butyl benzyl phthalate	ND	100	ug/kg							
3,3'-Dichlorobenzidine	ND	1000	ug/kg							
Benzo(a)anthracene (1,2-Benzanthracene)	ND	200	ug/kg							
Chrysene	ND	200	ug/kg							
Bis(2-ethylhexyl)phthalate	ND	200	ug/kg							
Di-n-octyl phthalate	ND	100	ug/kg							
Benzo(b)fluoranthene (3,4-Benzofluoranthene)	ND	200	ug/kg							
Benzo(k)fluoranthene (11,12-Benzofluoranthene)	ND	200	ug/kg							
Benzo(a)pyrene (3,4-Benzopyrene)	ND	100	ug/kg							
Indeno(1,2,3-cd)pyrene	ND	200	ug/kg							
Dibenzo(a,h)anthracene (1,2,5,6-Dibenzanthracene)	ND	200	ug/kg							
Benzo(ghi)perylene (1,12-Benzoperylene)	ND	200	ug/kg							
Surrogate: 2-Fluorophenol	13300		ug/kg	13330		99.6	48-117			
Surrogate: Phenol-d5	12800		ug/kg	13330		95.8	46-129			
Surrogate: Nitrobenzene-d5	6170		ug/kg	6667		92.6	46-110			
Surrogate: 2-Fluorobiphenyl	7000		ug/kg	6667		105	49-108			
Surrogate: 2,4,6-Tribromophenol	13800		ug/kg	13330		104	55-129			
Surrogate: Terphenyl-d14	8410		ug/kg	6667		126	58-135			
<b>LCS Prepared: 02/22/18 Analyzed: 02/23/18</b>										
Phenol	3170	200	ug/kg	3333		95.2	52-101			
1,4-Dichlorobenzene	3250	200	ug/kg	3333		97.4	58-97			
1,2,4-Trichlorobenzene	2930	200	ug/kg	3333		87.8	53-99			
Acenaphthene	3620	200	ug/kg	3333		109	57-113			
Di-n-butyl phthalate	4310	100	ug/kg	3333		129	62-128			
Pyrene	4050	200	ug/kg	3333		122	57-124			





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82312 - EPA 3550C</b>										
Surrogate: 2-Fluorophenol	13900		ug/kg	13330		104	56-113			
Surrogate: Phenol-d5	14000		ug/kg	13330		105	54-119			
Surrogate: Nitrobenzene-d5	5970		ug/kg	6667		89.5	46-119			
Surrogate: 2-Fluorobiphenyl	7020		ug/kg	6667		105	54-108			
Surrogate: 2,4,6-Tribromophenol	15300		ug/kg	13330		114	62-119			
Surrogate: Terphenyl-d14	8170		ug/kg	6667		123	70-127			
<b>Matrix Spike</b>	<b>Source: 1802200-01</b>	<b>Prepared: 02/22/18 Analyzed: 02/23/18</b>								
Phenol	5930	200	ug/kg	6667	ND	88.9	47-107			
1,4-Dichlorobenzene	2820	200	ug/kg	3333	ND	84.6	53-100			
1,2,4-Trichlorobenzene	3120	200	ug/kg	3333	ND	93.5	54-108			
Acenaphthene	2900	200	ug/kg	3333	ND	87.1	64-112			
Di-n-butyl phthalate	4450	100	ug/kg	3333	ND	133	67-133			
Pyrene	3990	200	ug/kg	3333	ND	120	55-132			
Surrogate: 2-Fluorophenol	12800		ug/kg	13330		95.9	55-104			
Surrogate: Phenol-d5	12500		ug/kg	13330		94.1	51-121			
Surrogate: Nitrobenzene-d5	5580		ug/kg	6667		83.7	56-105			
Surrogate: 2-Fluorobiphenyl	6340		ug/kg	6667		95.2	54-109			
Surrogate: 2,4,6-Tribromophenol	13800		ug/kg	13330		103	52-125			
Surrogate: Terphenyl-d14	8080		ug/kg	6667		121	62-141			
<b>Matrix Spike Dup</b>	<b>Source: 1802200-01</b>	<b>Prepared: 02/22/18 Analyzed: 02/23/18</b>								
Phenol	5900	200	ug/kg	6667	ND	88.5	47-107	0.490	30	
1,4-Dichlorobenzene	2840	200	ug/kg	3333	ND	85.1	53-100	0.530	30	
1,2,4-Trichlorobenzene	3110	200	ug/kg	3333	ND	93.2	54-108	0.257	30	
Acenaphthene	3040	200	ug/kg	3333	ND	91.2	64-112	4.61	30	
Di-n-butyl phthalate	4620	100	ug/kg	3333	ND	139	67-133	3.90	30	
Pyrene	4110	200	ug/kg	3333	ND	123	55-132	2.94	30	
Surrogate: 2-Fluorophenol	12000		ug/kg	13330		90.0	55-104			
Surrogate: Phenol-d5	12100		ug/kg	13330		91.0	51-121			
Surrogate: Nitrobenzene-d5	5740		ug/kg	6667		86.1	56-105			
Surrogate: 2-Fluorobiphenyl	6360		ug/kg	6667		95.4	54-109			
Surrogate: 2,4,6-Tribromophenol	14000		ug/kg	13330		105	52-125			
Surrogate: Terphenyl-d14	8130		ug/kg	6667		122	62-141			
<b>Batch BB82249 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/21/18 Analyzed: 02/22/18</b>									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
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Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82249 - EPA 3550C</b>										
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.1		ug/kg	16.67		72.6	55-126			
Surrogate: Decachlorobiphenyl	9.80		ug/kg	16.67		58.8	49-133			
<b>LCS</b>										
<b>Prepared: 02/21/18 Analyzed: 02/22/18</b>										
Aldrin	8.86	2.00	ug/kg	13.33		66.4	56-130			
gamma-BHC (Lindane)	9.40	2.00	ug/kg	13.33		70.5	56-133			
4,4'-DDT	8.03	4.00	ug/kg	13.33		60.2	56-133			
Dieldrin	9.25	2.00	ug/kg	13.33		69.3	62-119			
Endrin	10.0	2.00	ug/kg	13.33		75.3	59-127			
Heptachlor	12.8	2.00	ug/kg	13.33		95.8	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.9		ug/kg	16.67		77.5	54-108			
Surrogate: Decachlorobiphenyl	10.7		ug/kg	16.67		64.3	54-127			
<b>Matrix Spike Source: 1802159-07 Prepared: 02/21/18 Analyzed: 02/22/18</b>										
Aldrin	7.58	2.00	ug/kg	13.33	ND	56.8	39-124			
gamma-BHC (Lindane)	7.14	2.00	ug/kg	13.33	ND	53.6	44-120			
4,4'-DDT	18.1	4.00	ug/kg	33.33	ND	54.2	48-150			
Dieldrin	22.7	2.00	ug/kg	33.33	ND	68.1	48-144			
Endrin	25.1	2.00	ug/kg	33.33	ND	75.2	54-149			
Heptachlor	9.18	2.00	ug/kg	13.33	ND	68.8	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.5		ug/kg	16.67		81.1	57-126			
Surrogate: Decachlorobiphenyl	16.8		ug/kg	16.67		101	43-136			
<b>Matrix Spike Dup Source: 1802159-07 Prepared: 02/21/18 Analyzed: 02/22/18</b>										
Aldrin	8.15	2.00	ug/kg	13.33	ND	61.1	39-124	7.26	30	
gamma-BHC (Lindane)	7.17	2.00	ug/kg	13.33	ND	53.8	44-120	0.405	30	
4,4'-DDT	16.4	4.00	ug/kg	33.33	ND	49.3	48-150	9.45	30	





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443  
 Report Date: 02/23/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82249 - EPA 3550C</b>										
Dieldrin	22.5	2.00	ug/kg	33.33	ND	67.4	48-144	0.979	30	
Endrin	25.3	2.00	ug/kg	33.33	ND	76.0	54-149	0.988	30	
Heptachlor	9.12	2.00	ug/kg	13.33	ND	68.4	46-135	0.678	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.1		ug/kg	16.67		84.4	57-126			
Surrogate: Decachlorobiphenyl	15.8		ug/kg	16.67		94.7	43-136			
<b>Batch BB82044 - EPA 3550C</b>										
<b>Blank Prepared: 02/19/18 Analyzed: 02/20/18</b>										
Aroclor-1016	ND	37.5	ug/kg							
Aroclor-1221	ND	37.5	ug/kg							
Aroclor-1232	ND	37.5	ug/kg							
Aroclor-1242	ND	37.5	ug/kg							
Aroclor-1248	ND	37.5	ug/kg							
Aroclor-1254	ND	37.5	ug/kg							
Aroclor-1260	ND	37.5	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.5		ug/kg	12.50		91.9	54-131			
Surrogate: Decachlorobiphenyl	11.1		ug/kg	12.50		88.6	53-131			
<b>LCS Prepared: 02/19/18 Analyzed: 02/20/18</b>										
Aroclor-1260	389	50.0	ug/kg	416.7		93.3	60-129			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	15.1		ug/kg	16.67		90.5	58-122			
Surrogate: Decachlorobiphenyl	18.5		ug/kg	16.67		111	53-141			
<b>Matrix Spike Source: 1802163-01 Prepared: 02/19/18 Analyzed: 02/20/18</b>										
Aroclor-1260	334	50.0	ug/kg	333.3	ND	100	53-120			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.8		ug/kg	16.67		83.0	57-129			
Surrogate: Decachlorobiphenyl	17.3		ug/kg	16.67		104	57-129			
<b>Matrix Spike Dup Source: 1802163-01 Prepared: 02/19/18 Analyzed: 02/20/18</b>										
Aroclor-1260	382	50.0	ug/kg	333.3	ND	115	53-120	13.4	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	15.2		ug/kg	16.67		91.0	57-129			
Surrogate: Decachlorobiphenyl	20.3		ug/kg	16.67		122	57-129			
<b>Batch BB82237 - EPA 3050B</b>										
<b>Blank Prepared &amp; Analyzed: 02/21/18</b>										
Arsenic	ND	2.00	mg/kg							
<b>LCS Prepared &amp; Analyzed: 02/21/18</b>										
Arsenic	46.4	2.00	mg/kg	50.00		92.9	80-120			
<b>Matrix Spike Source: 1802159-23 Prepared &amp; Analyzed: 02/21/18</b>										
Arsenic	51.6	2.00	mg/kg	50.00	7.49	88.2	75-125			
<b>Matrix Spike Dup Source: 1802159-23 Prepared &amp; Analyzed: 02/21/18</b>										
Arsenic	50.1	2.00	mg/kg	50.00	7.49	85.2	75-125	3.53	30	





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82237 - EPA 3050B</b>										
<b>Blank</b>										
<b>Prepared &amp; Analyzed: 02/21/18</b>										
Antimony	ND	2.00	mg/kg							
Arsenic	ND	2.00	mg/kg							
Barium	ND	1.00	mg/kg							
Beryllium	ND	1.00	mg/kg							
Cadmium	ND	1.00	mg/kg							
Chromium	ND	1.00	mg/kg							
Cobalt	ND	1.00	mg/kg							
Copper	ND	1.00	mg/kg							
Lead	ND	1.00	mg/kg							
Molybdenum	ND	1.00	mg/kg							
Nickel	ND	1.00	mg/kg							
Selenium	ND	2.00	mg/kg							
Silver	ND	1.00	mg/kg							
Thallium	ND	2.00	mg/kg							
Vanadium	ND	1.00	mg/kg							
Zinc	ND	5.00	mg/kg							
<b>LCS</b>										
<b>Prepared &amp; Analyzed: 02/21/18</b>										
Antimony	44.3	2.00	mg/kg	49.80		89.0	60-140			
Arsenic	46.4	2.00	mg/kg	50.00		92.9	80-120			
Barium	204	1.00	mg/kg	199.3		102	80-120			
Beryllium	4.65	1.00	mg/kg	4.940		94.2	80-120			
Cadmium	5.25	1.00	mg/kg	4.990		105	80-120			
Chromium	20.3	1.00	mg/kg	19.86		102	80-120			
Cobalt	53.0	1.00	mg/kg	49.57		107	80-120			
Copper	26.4	1.00	mg/kg	25.04		105	80-120			
Lead	51.4	1.00	mg/kg	50.20		102	80-120			
Molybdenum	45.5	1.00	mg/kg	50.10		90.9	80-120			
Nickel	54.7	1.00	mg/kg	49.73		110	80-120			
Selenium	44.2	2.00	mg/kg	50.00		88.5	80-120			
Silver	5.20	1.00	mg/kg	4.970		105	80-120			
Thallium	49.4	2.00	mg/kg	49.37		100	80-120			
Vanadium	47.1	1.00	mg/kg	50.10		94.1	80-120			
Zinc	52.8	5.00	mg/kg	49.98		106	80-120			
<b>Matrix Spike</b>										
<b>Source: 1802159-23</b>										
<b>Prepared &amp; Analyzed: 02/21/18</b>										
Antimony	40.1	2.00	mg/kg	49.80	ND	80.6	60-140			
Arsenic	51.6	2.00	mg/kg	50.00	7.49	88.2	75-125			
Barium	342	1.00	mg/kg	199.3	156	93.4	75-125			
Beryllium	5.13	1.00	mg/kg	4.940	0.613	91.5	75-125			
Cadmium	5.11	1.00	mg/kg	4.990	0.361	95.1	75-125			









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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 02/23/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch 8882257 -										
Duplicate Source: 1802159-18 Prepared & Analyzed: 02/20/18										
pH	8.9	0.1	pH Units		8.9			0.337	5	

### Notes and Definitions

E-02 Use with caution: %D in CCV failed below acceptance level  
CO Coeluting Peaks  
NA Not Applicable  
ND Analyte NOT DETECTED at or above the detection limit  
NR Not Reported  
MDL Method Detection Limit  
PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)



**Enviro - Chem, Inc.**

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: February 23, 2018

Mr. John Schmidt  
Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

Project: 1802159 / P.O. #16289  
Lab I.D.: 180216-66


Dear Mr. Schmidt:

The **analytical results** for the soil sample, received by our lab on February 16, 2018, are attached. The sample was received chilled, intact and accompanying chain of custody record.

**The samples were received at six degree Celsius**

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

  
Curtis Desilets  
Vice President/Program Manager

  
Andy Wang  
Laboratory Manager



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

# LABORATORY REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802159 / P.O. #16289

MATRIX: SOIL

DATE SAMPLED: 02/15/18

REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 02/16/18

DATE EXTRACTED: 02/16&19/18

DATE ANALYZED: 02/20/18

DATE REPORTED: 02/23/18

SAMPLE I.D.: S2-3"

LAB I.D.: 180216-66

## Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	100*
2,4,5-TP (Silvex)	ND	0.020	100*
2,4-D	ND	0.200	100*
2,4-DB	ND	0.200	100*
Dalapon (Dichloroacetic Acid)	ND	0.500	100*
Dicamba	ND	0.020	100*
Dichloroprop	ND	0.200	100*
Dinoseb (DNBP)	ND	0.100	100*
MCPA	ND	20.0	100*
MCPP	ND	20.0	100*

### COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

\* = ACTUAL DETECTION LIMIT RAISED DUE TO MATRIX INTERFERENCE

DATA REVIEWED AND APPROVED BY: lt  
CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802159 / P.O. #16289

MATRIX: SOIL  
DATE SAMPLED: 02/15/18  
REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 02/16/18

DATE EXTRACTED: 02/16&19/18

DATE ANALYZED: 02/19/18

DATE REPORTED: 02/23/18

METHOD BLANK FOR LAB I.D.: 180216-66

Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:   
CAL-DHS ELAP CERTIFICATE No.: 1555

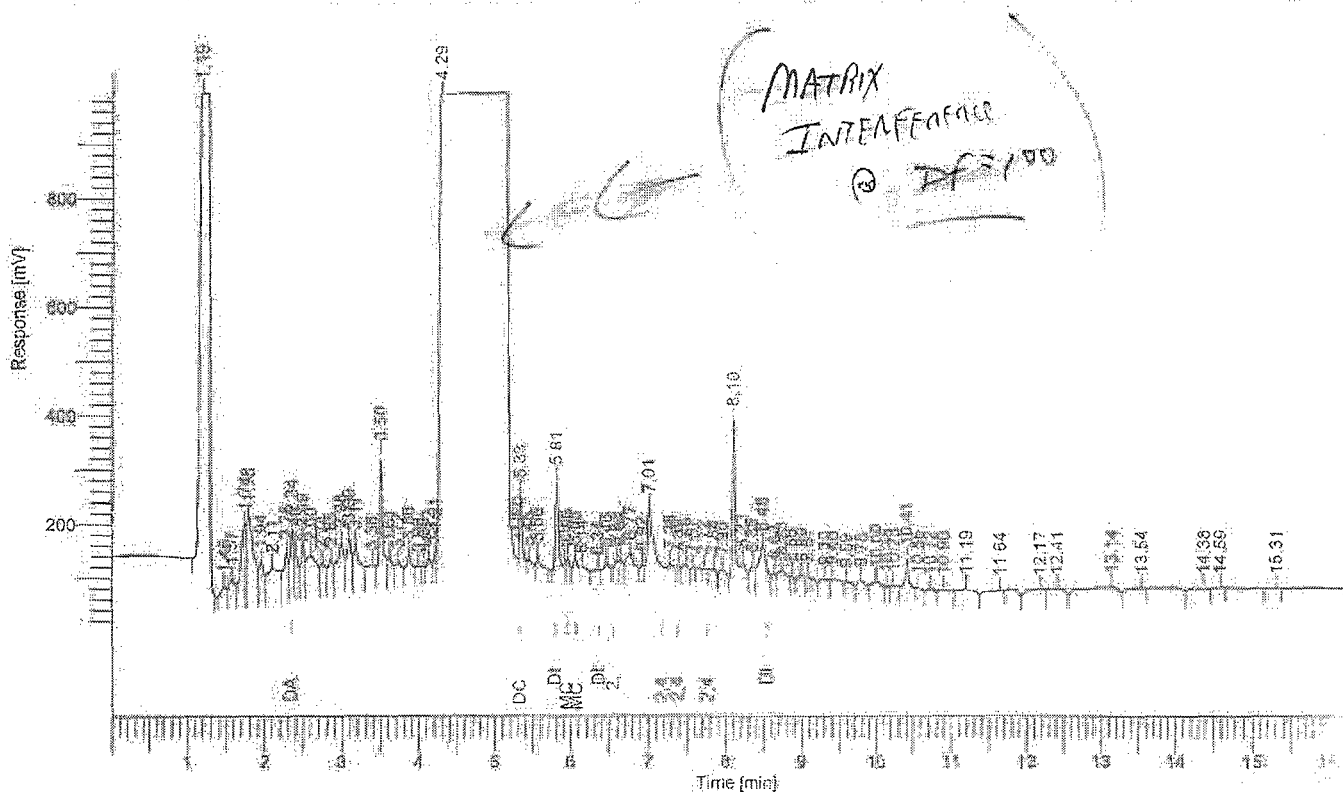


Software Version : 6.3.2.0646  
 Sample Name : 180216-66 5/500 RE  
 Instrument Name : GC-F  
 Rack/Vial : 0/44  
 Sample Amount : 1.000000  
 Cycle : 7

Date : 2/20/2018 1:48:01 PM  
 Data Acquisition Time : 2/20/2018 1:01:26 PM  
 Channel : A  
 Operator : Administrator  
 Dilution Factor : 1.000000

Result File : E:\GC DATA\GC-F\F02018\F1802\F180219\A030.rst

Sequence File : E:\GC DATA\GC-F\F02018\F1802\F180219\F180219.seq





2/20/2018 1:48:01 PM Result: E:\GC DATA\GC-F\F02018\F1802\F180219\A030.rst

Component Name	Time [min]	Area [uV*sec]	Height [uV]	Adjusted Amount
2,4,5-TP	7.28	62580	10731	0.0118
2,4,5-T	7.39	11863	4534	-0.0018
2,4-DB	7.72	9130	2130	-0.0368
Dinoseb	8.48	391185	62608	0.1643
		1601943	495129	349.1903



Enviro-Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

## QA/QC Report

### Analysis: EPA 8151A

Matrix: **Soil/Solid/Liquid**  
Unit: **mg/Kg (PPM)**

Date Analyzed: **2/19-20/2018**

#### Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **180219-LCS1/2**

Analyte	S.R.	spk conc	MS	% REC	MSD	% REC	%RPD	ACP %RPD	ACP %REC
2,4,5-T	0	0.0500	0.0563	113%	0.0595	119%	6%	0-20%	50-150

#### Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
2,4,5-T	0.0500	0.0543	109%	70-130
2,4,5-TP	0.0500	0.0509	102%	70-130
DINOSEB	0.250	0.262	105%	70-130

#### Surrogate Recovery:

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:		M-BLK	180213-25	180213-26	180213-27	180213-28	180213-29	180216-66	
DCAA	50-150	65%	132%	120%	121%	102%	120%	131%	

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

S.R. = Sample Result

spk conc = Spike Concentration

%REC = Percent Recovery

ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

\* = Surrogate fail due to matrix interference (If Marked)

Note: LCS, MS, MSD are in control therefore results are in control.

Analyzed and Reviewed By: 

Final Reviewer: 









781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

February 27, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1802197  
Project Name: 16195 UHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on February 21, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

  
Project Manager



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781 East Washington Blvd., Los Angeles, CA 90021  
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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

Project: 16195 UHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 02/27/18

Submitted: 02/21/18

PLS Report No.: 1802197

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82730 - EPA 5030B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 02/27/18</b>									
TPH-Gasoline	ND	0.500	mg/kg							
Surrogate: <i>a,a,a-Trifluorotoluene</i>	0.0164		mg/kg	0.01500		109	70-141			
<b>LCS</b>	<b>Prepared &amp; Analyzed: 02/27/18</b>									
Gasoline	0.684	0.500	mg/kg	0.9096		75.2	69-120			
<b>Matrix Spike</b>	<b>Source: 1802197-01</b>	<b>Prepared &amp; Analyzed: 02/27/18</b>								
Gasoline		1.15	0.500	mg/kg	1.819	ND	63.3	60-132		
<b>Matrix Spike Dup</b>	<b>Source: 1802197-01</b>	<b>Prepared &amp; Analyzed: 02/27/18</b>								
Gasoline		1.12	0.500	mg/kg	1.819	ND	61.5	60-132	2.85	30
<b>Batch BB82731 - EPA 5030B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 02/26/18</b>									
Benzene	ND	1.00	ug/kg							
Toluene	ND	1.00	ug/kg							
Ethylbenzene	ND	1.00	ug/kg							
Xylenes (total)	ND	2.00	ug/kg							
Surrogate: <i>a,a,a-Trifluorotoluene</i>	15.9		ug/kg	15.00		106	46-132			
<b>LCS</b>	<b>Prepared &amp; Analyzed: 02/26/18</b>									
Benzene	96.8	1.00	ug/kg	100.0		96.8	76-117			
Toluene	94.4	1.00	ug/kg	100.0		94.4	74-113			
Ethylbenzene	97.0	1.00	ug/kg	100.0		97.0	75-122			
Xylenes (total)	276	2.00	ug/kg	300.0		91.9	68-121			
Surrogate: <i>a,a,a-Trifluorotoluene</i>	17.8		ug/kg	15.00		118	67-130			
<b>Matrix Spike</b>	<b>Source: 1802197-03</b>	<b>Prepared &amp; Analyzed: 02/26/18</b>								
Benzene		39.0	1.00	ug/kg	40.00	ND	97.5	51-129		
Toluene		38.3	1.00	ug/kg	40.00	ND	95.7	37-129		
Ethylbenzene		38.4	1.00	ug/kg	40.00	ND	96.1	45-129		
Xylenes (total)		111	2.00	ug/kg	120.0	ND	92.8	52-113		
Surrogate: <i>a,a,a-Trifluorotoluene</i>		11.5		ug/kg	15.00		76.7	46-132		
<b>Matrix Spike Dup</b>	<b>Source: 1802197-03</b>	<b>Prepared &amp; Analyzed: 02/26/18</b>								
Benzene		37.9	1.00	ug/kg	40.00	ND	94.6	51-129	3.02	30
Toluene		37.4	1.00	ug/kg	40.00	ND	93.6	37-129	2.24	30
Ethylbenzene		38.1	1.00	ug/kg	40.00	ND	95.3	45-129	0.745	30
Xylenes (total)		110	2.00	ug/kg	120.0	ND	91.9	52-113	0.976	30
Surrogate: <i>a,a,a-Trifluorotoluene</i>		11.5		ug/kg	15.00		76.9	46-132		





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 02/27/18  
Submitted: 02/21/18  
**PLS Report No.: 1802197**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Notes and Definitions

NA Not Applicable  
ND Analyte NOT DETECTED at or above the detection limit  
NR Not Reported  
MDL Method Detection Limit  
PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

A handwritten signature in black ink, appearing to read "John H. Harnett", is written over a horizontal line.

Authorized Signature(s)




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/20/18 PAGE 1 OF 3

 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802197

 CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

 P.O. NO. 16195-Pes

 AIRBILL NO: 6750  
539529538  
 COOLER TEMP: 3.2 °C

 ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313
**ANALYSES REQUESTED:**

 PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

 SAMPLER NAME: R. Becker (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

 UST Project: Y ☒ - Global ID# \_\_\_\_\_

**REMARKS:**

 ⓧ Methane  
 Cancelled per  
 Bob via email  
 2/21/18 @ 1:31 pm

**SAMPLE CONDITION/  
CONTAINER /COMMENTS:**

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		TPHg	8021 (BTEx)	Methane	TOC						
				WATER	SOIL	SLUDGE	OTHER		#	TYPE										
1	2/20/18	8:15	SG1-5"		X			N	1	P										Hold
2		8:20	SG1-10"								X	X								
3		8:25	SG1-15"								X	X								
4		8:40	SG2-5"																	Hold
5		8:45	SG2-10"								X	X								
6		8:50	SG2-15"																	Hold
7		9:10	SG3-5"										X	X						
8		9:15	SG3-10"																	Hold
9		9:20	SG3-15"																	↓
10	✓	9:45	SG4-5"		✓			✓	✓	✓			X	X						

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

 Date: 2/20/18 Time: 1:10

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

 Date: 2/21/18 Time: 1:10

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE DISPOSITION:**

1. Samples returned to client? YES ☒ NO ☐
  2. Samples will not be stored over 30 days, unless additional storage time is requested.
  3. Storage time requested: \_\_\_\_\_ days
- By \_\_\_\_\_ Date \_\_\_\_\_

SPECIAL INSTRUCTIONS:





## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/20/18 PAGE 2 OF 3

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_ 1903497

CLIENT NAME: SEI Project Name/No. 16195/14HSD-SW

P.O. NO. 16195-Pos

AIRBILL NO: 6750  
539529535  
COOLER TEMP: \_\_\_\_\_

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

**ANALYSES REQUESTED:**

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-7111

SAMPLER NAME: R. Roche (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

**CONTAINER TYPES:** B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
	2/20/18	9:50	SG4-10-		X			N	1	P
	↓	9:55	SG4-15-		↓			↓	↓	↓
		10:40	SG5-5-		↓			↓	↓	↓
		10:45	SG5-10-		↓			↓	↓	↓
		10:50	SG5-15-		↓			↓	↓	↓
		12:10	SG6-5-		↓			↓	↓	↓
		12:15	SG6-10-		↓			↓	↓	↓
		12:20	SG6-15-		↓			↓	↓	↓
		12:45	SG7-5-		↓			↓	↓	↓
		↓	12:50	SG7-10-		↓			↓	↓

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 2/20/18 Time: 1:10

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 2/24/18 Time: 1:40

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE DISPOSITION:**

1. Samples returned to client? YES ☒ NO ☐

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: \_\_\_\_\_ days

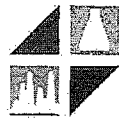
By \_\_\_\_\_ Date \_\_\_\_\_

**SPECIAL INSTRUCTIONS:**

LAB COPY



78614


**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/20/18 PAGE 3 OF 3  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1002197

 CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

 P.O. NO. 16195-Pos AIRBILL NO: 539524538  
 COOLER TEMP: 3.2

 ADDRESS: 4400 Yeager way, Bakersfield, CA 93313
**ANALYSES REQUESTED:**

 PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

 SAMPLER NAME: R. Becker (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

 UST Project: Y ☒ - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/20/18	12:55	SG7-15-		X			N	1	P	Hold
2	↓	1:10	SG8-5-		↓			↓	↓	↓	Hold
3	↓	1:15	SG8-10-		↓			↓	↓	↓	Hold
4	↓	1:20	SG8-15-		↓			↓	↓	↓	↓
5											
6											
7											
8											
9											
10											

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

 Date: 2/21/18 Time: 1:10

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

 Date: 2/21/18 Time: 1:10

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE DISPOSITION:**

 1. Samples returned to client? YES ☐ NO ☒

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: \_\_\_\_\_ days

By \_\_\_\_\_ Date \_\_\_\_\_

SPECIAL INSTRUCTIONS:

LAB COPY





## Enthalpy Analytical, LLC

931 W. Barkley Ave - Orange, CA 92868

Tel: (714)771-6900 Fax: (714)538-1209

www.enthalpy.com

info-sc@enthalpy.com



**MONTROSE**  
ENVIRONMENTAL

Client: Positive Lab Service  
Address: 781 E. Washington Blvd.  
Los Angeles, CA 90021

Attn: John Schmidt

Comments: Project #: 1802197  
P.O. #: 16295

Lab Request: 399724  
Report Date: 03/05/2018  
Date Received: 02/22/2018  
Client ID: 2513

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAP are indicated on the report. This cover letter is an integral part of the final report.

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<u>Sample #</u>	<u>Client Sample ID</u>
-----------------	-------------------------

399724-001	SG3-5'
399724-002	SG4-5'
399724-003	SG5-5'
399724-004	SG6-5'
399724-005	SG7-5'
399724-006	SG8-5'

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Chris Myrter, Project Specialist

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

The reports of the Enthalpy Analytical, Inc. are confidential property of our clients and may not be reproduced or used for publication in part or in full without our written permission. This is for the mutual protection of the public, our clients, and ourselves.

80785-01

Lab Request 399724, Page 1 of 3

NELAP:04232CA | ELAP:1338





Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 09:10	Site:	
Sample #: <b>399724-001</b>	Client Sample #: SG3-5'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 09:45	Site:	
Sample #: <b>399724-002</b>	Client Sample #: SG4-5'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 10:40	Site:	
Sample #: <b>399724-003</b>	Client Sample #: SG5-5'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 12:10	Site:	
Sample #: <b>399724-004</b>	Client Sample #: SG6-5'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 12:45	Site:	
Sample #: <b>399724-005</b>	Client Sample #: SG7-5'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 13:10	Site:	
Sample #: <b>399724-006</b>	Client Sample #: SG8-5'	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					



## Data Qualifiers and Definitions

### Qualifiers

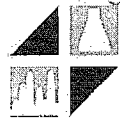
A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

### Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds



101705



# POSITIVE

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## LAB SERVICE

## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 519 769

CLIENT NAME: Positive Lab Service Project Name/No. 1802197

P.O. NO. 16295

AIRBILL NO:

ADDRESS: 781 E. Washington Blvd., LA CA 90021

**ANALYSES REQUESTED:**

COOLER TEMP: 1.0/18

PROJECT MANAGER: John Schmidt PHONE NO: 213.745.5312 FAX NO:

SAMPLER NAME: Client (Printed) (Signature)

TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE

**SAMPLE CONDITION/  
CONTAINER /COMMENTS:**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

2.20.18	910	SG3-5'						N	I	G	✓	✓
	945	SG4-5'						↓	↓	↓	✓	✓
	1040	SG5-5'						↓	↓	↓	✓	✓
	1210	SG6-5'						↓	↓	↓	✓	✓
	1245	SG7-5'						↓	↓	↓	✓	✓
✓	1:10	SG8-5'						↓	↓	↓	✓	✓

Relinquished By: (Signature and Printed Name)

Received ~~By~~ (Signature and Printed Name)

Date: 22218 Time: 1449

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: Time:

**SPECIAL INSTRUCTIONS:**

SAMPLE DISPOSITION:	
1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24
25	26
27	28
29	30
31	32
33	34
35	36
37	38
39	40
41	42
43	44
45	46
47	48
49	50
51	52
53	54
55	56
57	58
59	60
61	62
63	64
65	66
67	68
69	70
71	72
73	74
75	76
77	78
79	80
81	82
83	84
85	86
87	88
89	90
91	92
93	94
95	96
97	98
99	100

SAMPLE DISPOSITION:		
1. Samples returned to client?	YES	NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: \_\_\_\_\_ days

By \_\_\_\_\_ Date \_\_\_\_\_

PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY





# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

### Section 1

Client: Positive Labs

Project: 1802197

Date Received: 2/22/15

Sampler's Name Present: ☒ Yes ☐ No

### Section 2

Sample(s) received in a cooler? ☒ Yes, How many? 1 ☐ No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_

Sample Temp (°C), One from each cooler: #1: 1.0 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

*(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)*

Shipping Information: \_\_\_\_\_

### Section 3

Was the cooler packed with: ☒ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam  
☐ Paper ☐ None ☐ Other \_\_\_\_\_

Cooler Temp (°C): #1: 1.8 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

### Section 4

	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	✓		
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

### Section 5 Explanations/Comments

### Section 6

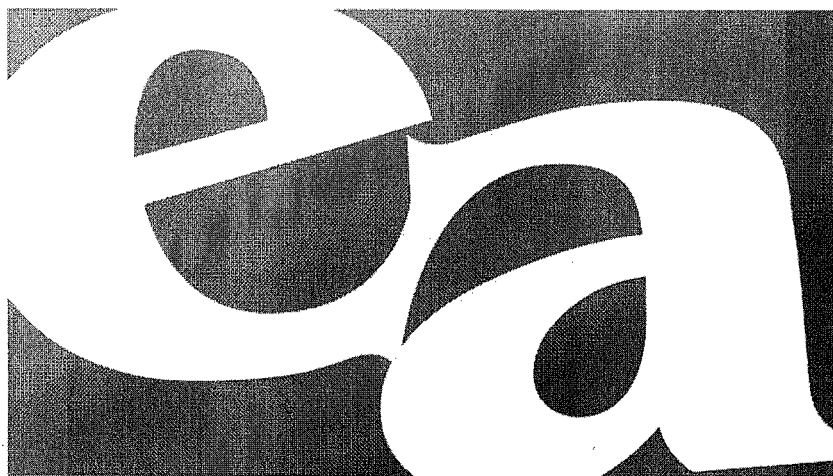
For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_

☐ Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_

Project Manager's response: \_\_\_\_\_

Completed By: Cayla Date: 2/24/18





ENTHALPY

ANALYTICAL





# Enthalpy Analytical

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

## Laboratory Job Number 297401 ANALYTICAL REPORT

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868

Project : STANDARD  
Location : 399724  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
SG3-5' (399724-001)	297401-001
SG4-5' (399724-002)	297401-002
SG5-5' (399724-003)	297401-003
SG6-5' (399724-004)	297401-004
SG7-5' (399724-005)	297401-005
SG8-5' (399724-006)	297401-006

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Date: 03/02/2018

Will Rice  
Project Manager  
will.rice@enthalpy.com  
(510) 204-2221 Ext 13102

CA ELAP# 2896, NELAP# 4044-001



# CASE NARRATIVE

Laboratory number: 297401  
Client: Enthalpy Analytical, Inc.  
Location: 399724  
Request Date: 02/23/18  
Samples Received: 02/23/18

This data package contains sample and QC results for six soil samples, requested for the above referenced project on 02/23/18. The samples were received cold and intact.

Total Organic Carbon (TOC) (WALKLEY-BLACK):

No analytical problems were encountered.





## Enthalpy Analytical

Formerly Associated Labs

1 Park Plaza, Suite 1000

Irvine, CA 92614

Tel: 714.771.6900 Fax: 714.538.1209

info-sc@enthalpy.com

297401



### Subcontract Laboratory:

Enthalpy - Berkeley - Sub  
2323 5th St.  
Berkeley, CA 94710

ATTN: Will Rice  
PO#

Project: 399724 Due:

PM: Chris Myrter

Email: christopher.myrter@enthalpy.com

CC: incomingreports@enthalpy.com

Require: ☐ EDD ☐ EDF ☐ EDT

Report To: ☐ MDL

Note: Standard TAT

Matrix	Sampled	Sample ID	Analysis	Comment
Solid	02/20/18 09:10	SG3-5' (399724-001)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 09:45	SG4-5' (399724-002)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 10:40	SG5-5' (399724-003)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 12:10	SG6-5' (399724-004)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 12:45	SG7-5' (399724-005)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 13:10	SG8-5' (399724-006)	TOC Solid_OUT	Walkley-Black

Note:

Relinquished By

Received By:

*Caughy*

*[Signature]*

Date/Time 2/22/18 1800

Date/Time 2/23/18 13:30

Date/Time

Date/Time



# **SAMPLE RECEIPT CHECKLIST**



Section 1: Login # 297401  
Date Received: 02/23/18

Client: Enthalpy  
Project: 20 399724 2/23/18 102

Section 2: Samples received in a cooler? ☒ Yes, how many? 1 ☐ No (skip Section 3 below)

If no cooler Sample Temp (°C): \_\_\_\_\_ using IR Gun # ☐ A, or ☐ B

☐ Samples received on ice directly from the field. Cooling process had begun

If in cooler: Date Opened 02/23/18 By (print) 245 (sign) [Signature]

Shipping info (if applicable) GSO 539568047

Are custody seals present? ☐ No, or ☐ Yes. If yes, where? ☐ on cooler, ☐ on samples, ☐ on package

☐ Date: \_\_\_\_\_ How many \_\_\_\_\_ ☐ Signature, ☐ Initials, ☐ None

Were custody seals intact upon arrival? ☐ Yes ☐ No ☐ N/A

Section 3: **Important: Notify PM if temperature exceeds 6°C or arrive frozen.**

Packing in cooler: (if other, describe) \_\_\_\_\_

☐ Bubble Wrap, ☐ Foam blocks, ☐ Bags, ☐ None, ☐ Cloth material, ☐ Cardboard, ☐ Styrofoam, ☐ Paper towels

☐ Samples received on ice directly from the field. Cooling process had begun

Type of ice used: ☒ Wet, ☐ Blue/Gel, ☐ None Temperature blank(s) included? ☐ Yes, ☐ No

Temperature measured using ☐ Thermometer ID: \_\_\_\_\_, or IR Gun # ☐ A ☒ B

Cooler Temp (°C): #1: 0.8, #2: \_\_\_\_\_, #3: \_\_\_\_\_, #4: \_\_\_\_\_, #5: \_\_\_\_\_, #6: \_\_\_\_\_, #7: \_\_\_\_\_

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	<input checked="" type="checkbox"/>		
Were Method 5035 sampling containers present?		<input checked="" type="checkbox"/>	
If YES, what time were they transferred to freezer?			
Did all bottles arrive unbroken/unopened?	<input checked="" type="checkbox"/>		
Are there any missing / extra samples?		<input checked="" type="checkbox"/>	
Are samples in the appropriate containers for indicated tests?	<input checked="" type="checkbox"/>		
Are sample labels present, in good condition and complete?	<input checked="" type="checkbox"/>		
Does the container count match the COC?			<input checked="" type="checkbox"/>
Do the sample labels agree with custody papers?	<input checked="" type="checkbox"/>		
Was sufficient amount of sample sent for tests requested?	<input checked="" type="checkbox"/>		
Did you change the hold time in LIMS for unpreserved VOAs?			<input checked="" type="checkbox"/>
Did you change the hold time in LIMS for preserved terracores?			<input checked="" type="checkbox"/>
Are bubbles > 6mm absent in VOA samples?			<input checked="" type="checkbox"/>
Was the client contacted concerning this sample delivery?		<input checked="" type="checkbox"/>	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (If N/A, skip the rest of section 5)			<input checked="" type="checkbox"/>
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check?			

pH strip lot# \_\_\_\_\_, pH strip lot# \_\_\_\_\_, pH strip lot# \_\_\_\_\_

Preservative added:

☐ H2SO4 lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

☐ HCL lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

☐ HNO3 lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

☐ NaOH lot# \_\_\_\_\_ added to samples \_\_\_\_\_ on/at \_\_\_\_\_

Section 6:

Explanations/Comments: \_\_\_\_\_

Date Logged in 2/24/18

By (print) [Signature] (sign) [Signature]

Date Labeled [Signature]

By (print) [Signature] (sign) [Signature]



### Detections Summary for 297401

Results for any subcontracted analyses are not included in this summary.

Client : Enthalpy Analytical, Inc.  
Project : STANDARD  
Location : 399724

Client Sample ID : SG3-5' (399724-001)      Laboratory Sample ID : 297401-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.04		0.02	%	As Recd	2.000	WALKLEY-BLACK	METHOD

Client Sample ID : SG4-5' (399724-002)      Laboratory Sample ID : 297401-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.06		0.01	%	As Recd	1.381	WALKLEY-BLACK	METHOD

Client Sample ID : SG5-5' (399724-003)      Laboratory Sample ID : 297401-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.02		0.01	%	As Recd	1.383	WALKLEY-BLACK	METHOD

Client Sample ID : SG6-5' (399724-004)      Laboratory Sample ID : 297401-004

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.03		0.01	%	As Recd	1.359	WALKLEY-BLACK	METHOD

Client Sample ID : SG7-5' (399724-005)      Laboratory Sample ID : 297401-005

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.05		0.01	%	As Recd	1.374	WALKLEY-BLACK	METHOD

Client Sample ID : SG8-5' (399724-006)      Laboratory Sample ID : 297401-006

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.07		0.01	%	As Recd	1.350	WALKLEY-BLACK	METHOD



### Total Organic Carbon (TOC)

Lab #:	297401	Location:	399724
Client:	Enthalpy Analytical, Inc.	Prep:	METHOD
Project#:	STANDARD	Analysis:	WALKLEY-BLACK
Analyte:	Total Organic Carbon	Batch#:	256786
Matrix:	Soil	Sampled:	02/20/18
Units:	%	Received:	02/23/18
Basis:	as received	Analyzed:	02/26/18

Field ID	Type	Lab ID	Result	RL	Diln Fac
SG3-5' (399724-001)	SAMPLE	297401-001	0.04	0.02	2.000
SG4-5' (399724-002)	SAMPLE	297401-002	0.06	0.01	1.381
SG5-5' (399724-003)	SAMPLE	297401-003	0.02	0.01	1.383
SG6-5' (399724-004)	SAMPLE	297401-004	0.03	0.01	1.359
SG7-5' (399724-005)	SAMPLE	297401-005	0.05	0.01	1.374
SG8-5' (399724-006)	SAMPLE	297401-006	0.07	0.01	1.350
	BLANK	QC921253	ND	0.01	1.000



Batch QC Report

**Total Organic Carbon (TOC)**

Lab #:	297401	Location:	399724
Client:	Enthalpy Analytical, Inc.	Prep:	METHOD
Project#:	STANDARD	Analysis:	WALKLEY-BLACK
Analyte:	Total Organic Carbon	Basis:	as received
Field ID:	'J'LOT53/TRACT-18065(399622-2)	Batch#:	256786
MSS Lab ID:	297350-002	Sampled:	02/20/18
Matrix:	Soil	Received:	02/22/18
Units:	%	Analyzed:	02/26/18

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln	Fac
LCS	QC921254		0.1300	0.1300	100	80-120			1.000	
MS	QC921255	0.3431	0.2600	0.5566	82	54-127			2.000	
MSD	QC921256		0.2590	0.5653	86	54-127	2	20	1.992	

RPD= Relative Percent Difference





## Enthalpy Analytical, LLC

931 W. Barkley Ave - Orange, CA 92868

Tel: (714)771-6900 Fax: (714)538-1209

www.enthalpy.com

info-sc@enthalpy.com

Client: Positive Lab Service  
Address: 781 E. Washington Blvd.  
Los Angeles, CA 90021

Attn: John Schmidt

Comments: Project #: 1802182  
P.O. #: 16295



Lab Request: 399725  
Report Date: 03/05/2018  
Date Received: 02/22/2018  
Client ID: 2513

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAP are indicated on the report. This cover letter is an integral part of the final report.

---

<u>Sample #</u>	<u>Client Sample ID</u>
-----------------	-------------------------

399725-001	NW1A,B,C,D-3"
------------	---------------

399725-002	NW2A,B,C-3"
------------	-------------

399725-003	NW3A,B,C,D-3"
------------	---------------

399725-004	NW4A,B,C,D-3"
------------	---------------

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Chris Myrter, Project Specialist

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

The reports of the Enthalpy Analytical, Inc. are confidential property of our clients and may not be reproduced or used for publication in part or in full without our written permission. This is for the mutual protection of the public, our clients, and ourselves.





Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/19/2018 15:12	Site:	
Sample #: <u>399725-001</u>	Client Sample #: NW1A,B,C,D-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 09:33	Site:	
Sample #: <u>399725-002</u>	Client Sample #: NW2A,B,C-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 10:10	Site:	
Sample #: <u>399725-003</u>	Client Sample #: NW3A,B,C,D-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 10:34	Site:	
Sample #: <u>399725-004</u>	Client Sample #: NW4A,B,C,D-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					



## Data Qualifiers and Definitions

### Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

### Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds



Entralpy

101710


**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2.22.18 PAGE 1 OF 1

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

CLIENT NAME: Positive Lab Service		Project Name/No. <u>1802182</u>		P.O. NO. <u>16295</u>		AIRBILL NO: _____						
ADDRESS: 781 E. Washignton Blvd., LA CA 90021				ANALYSES REQUESTED:		COOLER TEMP: <u>10/18</u>						
PROJECT MANAGER: John Schmidt		PHONE NO: <u>213.745.5312</u>		FAX NO: _____		PRESERVATIVE: _____						
SAMPLER NAME: Client		(Printed)		(Signature)		REMARKS:						
TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; <u>N</u> = Normal (5-7 Working Days)												
CONTAINER TYPES: B = Brass, E = Encore, <u>G</u> = Glass, P = Plastic, V = VOA Vial, O = Other:												
UST Project: Y N - Global ID# _____												
SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER/COMMENTS:	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE		
1	2.19.18	312	NW1A,B,C,D-3"		✓			N	1	G	✓	-2
2	2.20.18	933	NW2A,B,C-3"		✓			↓	↓	↓	✓	-3
3	2.20.18	10:10	NW3A,B,C,D-3"		✓			↓	↓	↓	✓	-4
4	2.20.18	1034	NW4A,B,C,D-3"		✓			↓	↓	↓	✓	-5
5												
6												
7												
8												
9												
10												

Relinquished By: (Signature and Printed Name)  
 \_\_\_\_\_  
 Relinquished By: (Signature and Printed Name)  
 \_\_\_\_\_  
 Relinquished By: (Signature and Printed Name)  
 \_\_\_\_\_

Received By: (Signature and Printed Name)  
 \_\_\_\_\_  
 Received By: (Signature and Printed Name)  
 \_\_\_\_\_  
 Received By: (Signature and Printed Name)  
 \_\_\_\_\_

Date: 2/22/18 Time: 1449  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE DISPOSITION:**  
 1. Samples returned to client? YES NO  
 2. Samples will not be stored over 30 days, unless additional storage time is requested.  
 3. Storage time requested: \_\_\_\_\_ days  
 By \_\_\_\_\_ Date \_\_\_\_\_

SPECIAL INSTRUCTIONS: \_\_\_\_\_

 PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY





# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

### Section 1

Client: Positive LabsProject: 1802182Date Received: 2/22/15Sampler's Name Present: ☒ Yes ☐ No

### Section 2

Sample(s) received in a cooler? ☒ Yes, How many? 1 ☐ No (skip section 2) Sample Temp (°C) (No Cooler) : \_\_\_\_\_Sample Temp (°C), One from each cooler: #1: 1.0 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: \_\_\_\_\_

### Section 3

Was the cooler packed with: ☒ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam  
☐ Paper ☐ None ☐ Other \_\_\_\_\_Cooler Temp (°C): #1: 1.8 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

### Section 4

	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	✓		
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

### Section 5 Explanations/Comments

### Section 6

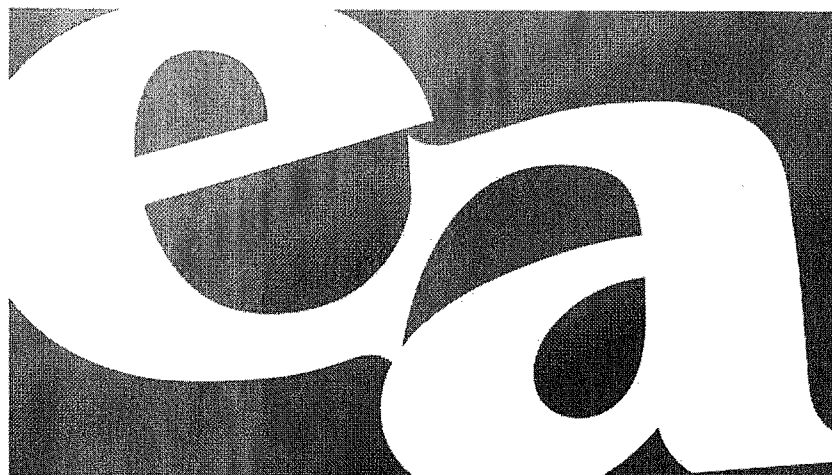
For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_  
☐ Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_

Project Manager's response: \_\_\_\_\_

Completed By: \_\_\_\_\_

Date: 2/22/18





ENTHALPY  
ANALYTICAL





# Enthalpy Analytical

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

## Laboratory Job Number 297399 ANALYTICAL REPORT

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868

Project : STANDARD  
Location : 399725  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
NW1A,B,C,D-3" (399725-001)	297399-001
NW2A,B,C,D-3" (399725-002)	297399-002
NW3A,B,C,D-3" (399725-003)	297399-003
NW4A,B,C,D-3" (399725-004)	297399-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_

Date: 03/02/2018

Will Rice  
Project Manager  
will.rice@enthalpy.com  
(510) 204-2221 Ext 13102

CA ELAP# 2896, NELAP# 4044-001



## CASE NARRATIVE

Laboratory number: 297399  
Client: Enthalpy Analytical, Inc.  
Location: 399725  
Request Date: 02/23/18  
Samples Received: 02/23/18

This data package contains sample and QC results for four soil samples, requested for the above referenced project on 02/23/18. The samples were received cold and intact.

Total Organic Carbon (TOC) (WALKLEY-BLACK):

No analytical problems were encountered.





## Enthalpy Analytical

Formerly Associated Labs

1 Park Plaza, Suite 1000

Irvine, CA 92614

Tel: 714.771.6900 Fax: 714.538.1209

info-sc@enthalpy.com



### Subcontract Laboratory:

Enthalpy - Berkeley - Sub

2323 5th St.

Berkeley, CA 94710

ATTN: Will Rice

PO#

Project: 399725 Due:

PM: Chris Myrter

Email: christopher.myrter@enthalpy.com

CC: incomingreports@enthalpy.com

Require: ☐ EDD ☐ EDF ☐ EDT

Report To: ☐ MDL

Note: Standard TAT

Matrix	Sampled	Sample ID	Analysis	Comment
Solid	02/19/18 15:12	NW1A,B,C,D-3" (399725-001)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 09:33	NW2A,B,C-3" (399725-002)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 10:10	NW3A,B,C,D-3" (399725-003)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 10:34	NW4A,B,C,D-3" (399725-004)	TOC Solid_OUT	Walkley-Black

Note:

Relinquished By

*Guay*

Date/Time 2/22/18 8:00

Received By:

*h*

Date/Time 02/23/18 13:30

Date/Time

Date/Time



# **SAMPLE RECEIPT CHECKLIST**



Section 1: Login # 297399

Client: Enthalpy

Date Received: 02/23/18

Project: 399925

Section 2: Samples received in a cooler? ☒ Yes, how many? 1 ☐ No (skip Section 3 below)

If no cooler Sample Temp (°C): \_\_\_\_\_ using IR Gun # ☐ A, or ☐ B

☐ Samples received on ice directly from the field. Cooling process had begun

If in cooler: Date Opened 02/23/18 By (print) RLB (sign) [Signature]

Shipping info (if applicable) 680 539568047

Are custody seals present? ☐ No, or ☐ Yes. If yes, where? ☐ on cooler, ☐ on samples, ☐ on package

☐ Date: \_\_\_\_\_ How many \_\_\_\_\_ ☐ Signature, ☐ Initials, ☐ None

Were custody seals intact upon arrival? ☐ Yes ☐ No ☐ N/A

Section 3: **Important: Notify PM if temperature exceeds 6°C or arrive frozen.**

Packing in cooler: (if other, describe) \_\_\_\_\_

☐ Bubble Wrap, ☐ Foam blocks, ☐ Bags, ☐ None, ☐ Cloth material, ☐ Cardboard, ☐ Styrofoam, ☐ Paper towels

☐ Samples received on ice directly from the field. Cooling process had begun

Type of ice used: ☒ Wet, ☐ Blue/Gel, ☐ None Temperature blank(s) included? ☐ Yes, ☐ No

Temperature measured using ☐ Thermometer ID: \_\_\_\_\_ or IR Gun # ☐ A ☒ B

Cooler Temp (°C): #1: 0.8, #2: \_\_\_\_\_, #3: \_\_\_\_\_, #4: \_\_\_\_\_, #5: \_\_\_\_\_, #6: \_\_\_\_\_, #7: \_\_\_\_\_

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	<input checked="" type="checkbox"/>		
Were Method 5035 sampling containers present?		<input checked="" type="checkbox"/>	
If YES, what time were they transferred to freezer? _____			
Did all bottles arrive unbroken/unopened?	<input checked="" type="checkbox"/>		
Are there any missing / extra samples?		<input checked="" type="checkbox"/>	
Are samples in the appropriate containers for indicated tests?	<input checked="" type="checkbox"/>		
Are sample labels present, in good condition and complete?	<input checked="" type="checkbox"/>		
Does the container count match the COC?			<input checked="" type="checkbox"/>
Do the sample labels agree with custody papers?	<input checked="" type="checkbox"/>		
Was sufficient amount of sample sent for tests requested?	<input checked="" type="checkbox"/>		
Did you change the hold time in LIMS for unpreserved VOAs?			<input checked="" type="checkbox"/>
Did you change the hold time in LIMS for preserved terracores?			<input checked="" type="checkbox"/>
Are bubbles > 6mm absent in VOA samples?			<input checked="" type="checkbox"/>
Was the client contacted concerning this sample delivery?		<input checked="" type="checkbox"/>	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)			<input checked="" type="checkbox"/>
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check?			
pH strip lot# _____, pH strip lot# _____, pH strip lot# _____			

Preservative added:

<input type="checkbox"/> H2SO4 lot# _____	added to samples _____	on/at _____
<input type="checkbox"/> HCL lot# _____	added to samples _____	on/at _____
<input type="checkbox"/> HNO3 lot# _____	added to samples _____	on/at _____
<input type="checkbox"/> NaOH lot# _____	added to samples _____	on/at _____

Section 6:

Explanations/Comments: -001 arrived w/ liquid in bag and bubble wrap bag and in sample container.

Date Logged in 2/23/18

By (print) RLB (sign) [Signature]

Date Labeled 2/23/18

By (print) RLB (sign) [Signature]



### Detections Summary for 297399

Results for any subcontracted analyses are not included in this summary.

Client : Enthalpy Analytical, Inc.  
 Project : STANDARD  
 Location : 399725

Client Sample ID : NW1A,B,C,D-3" (399725-001) Laboratory Sample ID : 297399-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.66		0.02	%	As Recd	2.278	WALKLEY-BLACK	METHOD

Client Sample ID : NW2A,B,C,D-3" (399725-002) Laboratory Sample ID : 297399-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.60		0.02	%	As Recd	2.336	WALKLEY-BLACK	METHOD

Client Sample ID : NW3A,B,C,D-3" (399725-003) Laboratory Sample ID : 297399-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.60		0.02	%	As Recd	2.288	WALKLEY-BLACK	METHOD

Client Sample ID : NW4A,B,C,D-3" (399725-004) Laboratory Sample ID : 297399-004

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.69		0.02	%	As Recd	2.326	WALKLEY-BLACK	METHOD



### Total Organic Carbon (TOC)

Lab #:	297399	Location:	399725
Client:	Enthalpy Analytical, Inc.	Prep:	METHOD
Project#:	STANDARD	Analysis:	WALKLEY-BLACK
Analyte:	Total Organic Carbon	Batch#:	256786
Matrix:	Soil	Received:	02/23/18
Units:	%	Analyzed:	02/26/18
Basis:	as received		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled
NW1A,B,C,D-3" (399725-001)	SAMPLE	297399-001	0.66	0.02	2.278	02/19/18
NW2A,B,C,D-3" (399725-002)	SAMPLE	297399-002	0.60	0.02	2.336	02/20/18
NW3A,B,C,D-3" (399725-003)	SAMPLE	297399-003	0.60	0.02	2.288	02/20/18
NW4A,B,C,D-3" (399725-004)	SAMPLE	297399-004	0.69	0.02	2.326	02/20/18
	BLANK	QC921253	ND	0.01	1.000	



# Batch QC Report

## Total Organic Carbon (TOC)

Lab #:	297399	Location:	399725
Client:	Enthalpy Analytical, Inc.	Prep:	METHOD
Project#:	STANDARD	Analysis:	WALKLEY-BLACK
Analyte:	Total Organic Carbon	Basis:	as received
Field ID:	'J'LOT53/TRACT-18065(399622-2)	Batch#:	256786
MSS Lab ID:	297350-002	Sampled:	02/20/18
Matrix:	Soil	Received:	02/22/18
Units:	%	Analyzed:	02/26/18

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln	Fac
LCS	QC921254		0.1300	0.1300	100	80-120			1.000	
MS	QC921255	0.3431	0.2600	0.5566	82	54-127			2.000	
MSD	QC921256		0.2590	0.5653	86	54-127	2	20	1.992	

RPD= Relative Percent Difference





701 East Washington Blvd., Los Angeles, CA 90021  
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February 27, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1802180  
Project Name: 16195 UHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on February 20, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

A handwritten signature in blue ink, appearing to read "T. Sanchez", is written over a horizontal line. Below the line, the text "Project Manager" is printed in a small, black, sans-serif font.





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C13A-3", C13B-3", C13C-3" Composite Soil (1802180-01) Sampled: 02/16/18 08:50 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xyl.	66.5 %				55-126	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	70.1 %				49-133	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C14A-3", C14B-3", C14C-3" Composite Soil (1802180-02) Sampled: 02/16/18 09:21 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C14A-3", C14B-3", C14C-3" Composite Soil (1802180-02) Sampled: 02/16/18 09:21 Received: 02/20/18 12:45										
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	74.4 %	55-126			EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	87.6 %	49-133			EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C15A-3", C15B-3", C15C-3" Composite Soil (1802180-03) Sampled: 02/16/18 09:53 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	78.8 %	55-126			EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	78.9 %	49-133			EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C16A-3", C16B-3", C16C-3" Composite Soil (1802180-04) Sampled: 02/16/18 10:23 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249





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## Certificate of Analysis

Page 4 of 19

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C16A-3", C16B-3", C16C-3" Composite Soil (1802180-04) Sampled: 02/16/18 10:23 Received: 02/20/18 12:45										
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	72.5 %		55-126		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	73.4 %		49-133		EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C17A-3", C17B-3", C17C-3" Composite Soil (1802180-05) Sampled: 02/16/18 10:58 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: 2,4,5,6 Tetrachloro-m-xyler.	74.6 %			55-126		EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	90.7 %			49-133		EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C18A-3", C18B-3", C18C-3" Composite Soil (1802180-06) Sampled: 02/16/18 11:21 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
<b>4,4'-DDE</b>	<b>19.1</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/21/18	02/22/18	ai	BB82249





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C18A-3", C18B-3", C18C-3" Composite Soil (1802180-06) Sampled: 02/16/18 11:21 Received: 02/20/18 12:45										
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	75.8 %			55-126	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249
Surrogate: Decachlorobiphenyl	88.1 %			49-133	EPA 3550C	EPA 8081A	02/21/18	02/22/18	ai	BB82249

Sample ID: C19A-3", C19B-3", C19C-3" Composite Soil (1802180-07) Sampled: 02/16/18 11:59 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	91.9 %			55-126	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Surrogate: Decachlorobiphenyl	100 %			49-133	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314

Sample ID: C20A-3", C20B-3", C20C-3" Composite Soil (1802180-08) Sampled: 02/16/18 12:21 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 02/27/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802180**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C20A-3", C20B-3", C20C-3" Composite Soil (1802180-08) Sampled: 02/16/18 12:21 Received: 02/20/18 12:45											
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/26/18	ai	BB82314	
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	105 %			55-126	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Surrogate: Decachlorobiphenyl	113 %			49-133	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	

Sample ID: C21A-3", C21B-3", C21C-3" Composite Soil (1802180-09) Sampled: 02/16/18 13:27 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/22/18	02/26/18	ai	BB82314	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	97.9 %			55-126	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	
Surrogate: Decachlorobiphenyl	110 %			49-133	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	

Sample ID: C22A-3", C22B-3", C22C-3" Composite Soil (1802180-10) Sampled: 02/16/18 14:00 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/22/18	02/23/18	ai	BB82314	





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 02/27/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802180**

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C22A-3", C22B-3", C22C-3" Composite Soil (1802180-10) Sampled: 02/16/18 14:00 Received: 02/20/18 12:45										
alpha-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
beta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	95.5 %			55-126	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Surrogate: Decachlorobiphenyl	112 %			49-133	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314

Sample ID: C23A-3", C23B-3", C23C-3" Composite Soil (1802180-11) Sampled: 02/16/18 14:26 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai BB82314
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	98.0 %			55-126	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 02/27/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802180**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: C23A-3", C23B-3", C23C-3" Composite Soil (1802180-11) Sampled: 02/16/18 14:26 Received: 02/20/18 12:45									
Surrogate: Decachlorobiphenyl	111 %	49-133	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314	

Sample ID: C24A-3", C24B-3", C24C-3" Composite Soil (1802180-12) Sampled: 02/16/18 14:50 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
<b>4,4'-DDE</b>	<b>22.3</b>		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/26/18	ai	BB82314
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	96.2 %			55-126		EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Surrogate: Decachlorobiphenyl	105 %			49-133		EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314

Sample ID: C13B-3" Soil (1802180-13) Sampled: 02/16/18 08:35 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	8.97		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304

Sample ID: C14B-3" Soil (1802180-14) Sampled: 02/16/18 09:21 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	7.22		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304

Sample ID: C15B-3" Soil (1802180-15) Sampled: 02/16/18 09:37 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	8.53		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304

Sample ID: P3-3" Soil (1802180-16) Sampled: 02/16/18 13:20 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: P3-3" Soil (1802180-16) Sampled: 02/16/18 13:20 Received: 02/20/18 12:45										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	77.2 %			54-131		EPA 3550C	EPA 8082	02/23/18	02/26/18	ai BB82622
Surrogate: Decachlorobiphenyl	92.7 %			53-131		EPA 3550C	EPA 8082	02/23/18	02/26/18	ai BB82622
Sample ID: C16B-3" Soil (1802180-17) Sampled: 02/16/18 10:23 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	6.09		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C17B-3" Soil (1802180-18) Sampled: 02/16/18 10:35 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	6.69		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C18B-3" Soil (1802180-19) Sampled: 02/16/18 11:14 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	9.07		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C18B-2' Soil (1802180-20) Sampled: 02/16/18 11:16 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	6.98		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C18D-2' Soil (1802180-21) Sampled: 02/16/18 11:19 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	7.26		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C19B-3" Soil (1802180-22) Sampled: 02/16/18 11:31 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	7.29		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C20B-3" Soil (1802180-23) Sampled: 02/16/18 12:14 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	8.43		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C21B-3" Soil (1802180-24) Sampled: 02/16/18 13:17 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	7.48		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C22B-3" Soil (1802180-25) Sampled: 02/16/18 14:00 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	7.16		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C23B-3" Soil (1802180-26) Sampled: 02/16/18 14:17 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	5.94		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C24B-3" Soil (1802180-27) Sampled: 02/16/18 14:50 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	7.38		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304
Sample ID: C21D-3" Soil (1802180-28) Sampled: 02/16/18 13:19 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Arsenic	7.76		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG BB82304





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

Sample ID: S3-3" Soil (1802180-29) Sampled: 02/16/18 13:10 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C9 - C22	8.88		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk	BB82628
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk	BB82628
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk	BB82628
Surrogate: n-Tetracosane	103 %			68-133		EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk	BB82628
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Toluene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Surrogate: a,a,a-Trifluorotoluene	89.8 %			46-132		EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/24/18	ai	BB82314
4,4'-DDT	33.2		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/26/18	ai	BB82314
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Surrogate: 2,4,5,6 Tetrachloro-m-xylen.	90.5 %			55-126		EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Surrogate: Decachlorobiphenyl	142 %			49-133		EPA 3550C	EPA 8081A	02/22/18	02/23/18	ai	BB82314
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Arsenic	6.58		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Barium	178		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Chromium	23.0		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Cobalt	13.0		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Copper	28.3		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Lead	21.0		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304





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## Certificate of Analysis

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Soils Engineering Inc.  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100

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**Project:** 16195 UHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

Sample ID: S3-3" Soil (1802180-29) Sampled: 02/16/18 13:10 Received: 02/20/18 12:45											
Nickel	13.7		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Vanadium	60.5		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Zinc	115		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/22/18	02/22/18	CG	BB82304
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/22/18	02/22/18	cg	BB82302
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
pH	5.6		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj	BB82626





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## Certificate of Analysis

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Soils Engineering Inc.  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82628 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/23/18 Analyzed: 02/27/18</b>									
TPH C9 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: n-Tetracosane	20.6		mg/kg	20.83		99.0	68-133			
<b>LCS</b>	<b>Prepared: 02/23/18 Analyzed: 02/27/18</b>									
Diesel	644	6.25	mg/kg	554.7		116	69-137			
Surrogate: n-Tetracosane	26.1		mg/kg	20.83		125	64-140			
<b>Matrix Spike</b>	<b>Source: 1802216-03</b>	<b>Prepared: 02/23/18 Analyzed: 02/27/18</b>								
Diesel	3620	2.50	mg/kg	110.9	3340	255	53-138			V-3
Surrogate: n-Tetracosane	26.3		mg/kg	20.83		126	68-133			
<b>Matrix Spike Dup</b>	<b>Source: 1802216-03</b>	<b>Prepared: 02/23/18 Analyzed: 02/27/18</b>								
Diesel	3290	2.50	mg/kg	110.9	3340	NR	53-138	NR	30	V-3
Surrogate: n-Tetracosane	24.3		mg/kg	20.83		117	68-133			
<b>Batch BB82050 - EPA 5030B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>									
Benzene	ND	1.00	ug/kg							
Toluene	ND	1.00	ug/kg							
Ethylbenzene	ND	1.00	ug/kg							
Xylenes (total)	ND	2.00	ug/kg							
Surrogate: a,a,a-Trifluorotoluene	14.9		ug/kg	15.00		99.2	46-132			
<b>LCS</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>									
Benzene	98.0	1.00	ug/kg	100.0		98.0	76-117			
Toluene	94.6	1.00	ug/kg	100.0		94.6	74-113			
Ethylbenzene	96.1	1.00	ug/kg	100.0		96.1	75-122			
Xylenes (total)	275	2.00	ug/kg	300.0		91.8	68-121			
Methyl-tert-butyl ether (MTBE)	97.4	2.00	ug/kg	100.0		97.4	64-132			
Surrogate: a,a,a-Trifluorotoluene	17.0		ug/kg	15.00		113	67-130			
<b>Matrix Spike</b>	<b>Source: 1802159-33</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>								
Benzene	43.0	1.00	ug/kg	40.00	ND	107	51-129			
Toluene	42.1	1.00	ug/kg	40.00	ND	105	37-129			
Ethylbenzene	42.8	1.00	ug/kg	40.00	ND	107	45-129			
Xylenes (total)	125	2.00	ug/kg	120.0	ND	104	52-113			
Methyl-tert-butyl ether (MTBE)	44.2	2.00	ug/kg	40.00	ND	110	68-168			
Surrogate: a,a,a-Trifluorotoluene	16.3		ug/kg	15.00		109	46-132			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-33</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>								
Benzene	41.8	1.00	ug/kg	40.00	ND	104	51-129	2.79	30	
Toluene	41.4	1.00	ug/kg	40.00	ND	103	37-129	1.60	30	





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## Certificate of Analysis

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Soils Engineering Inc.  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82050 - EPA 5030B</b>										
Ethylbenzene	41.2	1.00	ug/kg	40.00	ND	103	45-129	3.69	30	
Xylenes (total)	123	2.00	ug/kg	120.0	ND	102	52-113	1.58	30	
Methyl-tert-butyl ether (MTBE)	42.5	2.00	ug/kg	40.00	ND	106	68-168	3.80	30	
Surrogate: <i>a,a,a</i> -Trifluorotoluene	13.9		ug/kg	15.00		92.4	46-132			
<b>Batch BB82249 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/21/18 Analyzed: 02/22/18</b>									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro- <i>m</i> -xylene	12.1		ug/kg	16.67		72.6	55-126			
Surrogate: Decachlorobiphenyl	9.80		ug/kg	16.67		58.8	49-133			
<b>LCS</b>	<b>Prepared: 02/21/18 Analyzed: 02/22/18</b>									
Aldrin	8.86	2.00	ug/kg	13.33		66.4	56-130			
gamma-BHC (Lindane)	9.40	2.00	ug/kg	13.33		70.5	56-133			
4,4'-DDT	8.03	4.00	ug/kg	13.33		60.2	56-133			
Dieldrin	9.25	2.00	ug/kg	13.33		69.3	62-119			
Endrin	10.0	2.00	ug/kg	13.33		75.3	59-127			
Heptachlor	12.8	2.00	ug/kg	13.33		95.8	55-110			
Surrogate: 2,4,5,6 Tetrachloro- <i>m</i> -xylene	12.9		ug/kg	16.67		77.5	54-108			
Surrogate: Decachlorobiphenyl	10.7		ug/kg	16.67		64.3	54-127			





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Soils Engineering Inc.  
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**Project:** 16195 UHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

## Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82249 - EPA 3550C</b>										
<b>Matrix Spike</b>	<b>Source: 1802159-07</b>		<b>Prepared: 02/21/18 Analyzed: 02/22/18</b>							
Aldrin	7.58	2.00	ug/kg	13.33	ND	56.8	39-124			
gamma-BHC (Lindane)	7.14	2.00	ug/kg	13.33	ND	53.6	44-120			
4,4'-DDT	18.1	4.00	ug/kg	33.33	ND	54.2	48-150			
Dieldrin	22.7	2.00	ug/kg	33.33	ND	68.1	48-144			
Endrin	25.1	2.00	ug/kg	33.33	ND	75.2	54-149			
Heptachlor	9.18	2.00	ug/kg	13.33	ND	68.8	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.5		ug/kg	16.67		81.1	57-126			
Surrogate: Decachlorobiphenyl	16.8		ug/kg	16.67		101	43-136			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-07</b>		<b>Prepared: 02/21/18 Analyzed: 02/22/18</b>							
Aldrin	8.15	2.00	ug/kg	13.33	ND	61.1	39-124	7.26	30	
gamma-BHC (Lindane)	7.17	2.00	ug/kg	13.33	ND	53.8	44-120	0.405	30	
4,4'-DDT	16.4	4.00	ug/kg	33.33	ND	49.3	48-150	9.45	30	
Dieldrin	22.5	2.00	ug/kg	33.33	ND	67.4	48-144	0.979	30	
Endrin	25.3	2.00	ug/kg	33.33	ND	76.0	54-149	0.988	30	
Heptachlor	9.12	2.00	ug/kg	13.33	ND	68.4	46-135	0.678	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.1		ug/kg	16.67		84.4	57-126			
Surrogate: Decachlorobiphenyl	15.8		ug/kg	16.67		94.7	43-136			
<b>Batch BB82314 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/22/18 Analyzed: 02/23/18</b>									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							





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Soils Engineering Inc.  
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File #: 73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82314 - EPA 3550C</b>										
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	15.8		ug/kg	16.67		94.9	55-126			
Surrogate: Decachlorobiphenyl	14.2		ug/kg	16.67		85.2	49-133			
<b>LCS Prepared: 02/22/18 Analyzed: 02/26/18</b>										
Aldrin	9.74	2.00	ug/kg	13.33		73.1	56-130			
gamma-BHC (Lindane)	11.6	2.00	ug/kg	13.33		86.7	56-133			
4,4'-DDT	10.9	4.00	ug/kg	13.33		81.7	56-133			
Dieldrin	12.1	2.00	ug/kg	13.33		90.6	62-119			
Endrin	12.2	2.00	ug/kg	13.33		91.2	59-127			
Heptachlor	15.2	2.00	ug/kg	13.33		114	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.8		ug/kg	16.67		82.7	54-108			
Surrogate: Decachlorobiphenyl	15.2		ug/kg	16.67		91.1	54-127			
<b>Matrix Spike Source: 1802180-10 Prepared: 02/22/18 Analyzed: 02/26/18</b>										
Aldrin	7.93	2.00	ug/kg	13.33	ND	59.5	39-124			
gamma-BHC (Lindane)	8.45	2.00	ug/kg	13.33	ND	63.4	44-120			
4,4'-DDT	23.0	4.00	ug/kg	33.33	ND	68.9	48-150			
Dieldrin	25.9	2.00	ug/kg	33.33	ND	77.6	48-144			
Endrin	29.5	2.00	ug/kg	33.33	ND	88.4	54-149			
Heptachlor	11.6	2.00	ug/kg	13.33	ND	86.9	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.3		ug/kg	16.67		85.7	57-126			
Surrogate: Decachlorobiphenyl	19.6		ug/kg	16.67		118	43-136			
<b>Matrix Spike Dup Source: 1802180-10 Prepared: 02/22/18 Analyzed: 02/26/18</b>										
Aldrin	8.22	2.00	ug/kg	13.33	ND	61.7	39-124	3.60	30	
gamma-BHC (Lindane)	8.35	2.00	ug/kg	13.33	ND	62.6	44-120	1.21	30	
4,4'-DDT	19.8	4.00	ug/kg	33.33	ND	59.3	48-150	14.9	30	
Dieldrin	26.3	2.00	ug/kg	33.33	ND	78.8	48-144	1.52	30	
Endrin	27.7	2.00	ug/kg	33.33	ND	83.2	54-149	6.15	30	
Heptachlor	10.0	2.00	ug/kg	13.33	ND	75.2	46-135	14.4	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.5		ug/kg	16.67		87.2	57-126			
Surrogate: Decachlorobiphenyl	22.8		ug/kg	16.67		137	43-136			
<b>Batch BB82622 - EPA 3550C</b>										
<b>Blank Prepared &amp; Analyzed: 02/23/18</b>										
Aroclor-1016	ND	50.0	ug/kg							
Aroclor-1221	ND	50.0	ug/kg							
Aroclor-1232	ND	50.0	ug/kg							
Aroclor-1242	ND	50.0	ug/kg							
Aroclor-1248	ND	50.0	ug/kg							
Aroclor-1254	ND	50.0	ug/kg							





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**Project:** 16195 UHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82622 - EPA 3550C</b>										
Aroclor-1260	ND	50.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.5		ug/kg	16.67		68.8	54-131			
Surrogate: Decachlorobiphenyl	14.2		ug/kg	16.67		84.9	53-131			
<b>LCS Prepared &amp; Analyzed: 02/23/18</b>										
Aroclor-1260	408	50.0	ug/kg	416.7		98.0	60-129			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	17.2		ug/kg	16.67		103	58-122			
Surrogate: Decachlorobiphenyl	18.0		ug/kg	16.67		108	53-141			
<b>Matrix Spike Source: 1802200-01 Prepared &amp; Analyzed: 02/23/18</b>										
Aroclor-1260	388	50.0	ug/kg	333.3	ND	116	53-120			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.8		ug/kg	16.67		88.6	57-129			
Surrogate: Decachlorobiphenyl	20.9		ug/kg	16.67		125	57-129			
<b>Matrix Spike Dup Source: 1802200-01 Prepared &amp; Analyzed: 02/23/18</b>										
Aroclor-1260	380	50.0	ug/kg	333.3	ND	114	53-120	1.87	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.1		ug/kg	16.67		84.9	57-129			
Surrogate: Decachlorobiphenyl	20.4		ug/kg	16.67		122	57-129			
<b>Batch BB82304 - EPA 3050B</b>										
<b>Blank Prepared &amp; Analyzed: 02/22/18</b>										
Arsenic	ND	2.00	mg/kg							
<b>LCS Prepared &amp; Analyzed: 02/22/18</b>										
Arsenic	46.6	2.00	mg/kg	50.00		93.2	80-120			
<b>Matrix Spike Source: 1802180-17 Prepared &amp; Analyzed: 02/22/18</b>										
Arsenic	51.4	2.00	mg/kg	50.00	6.09	90.6	75-125			
<b>Matrix Spike Dup Source: 1802180-17 Prepared &amp; Analyzed: 02/22/18</b>										
Arsenic	51.0	2.00	mg/kg	50.00	6.09	89.9	75-125	0.742	30	
<b>Batch BB82304 - EPA 3050B</b>										
<b>Blank Prepared &amp; Analyzed: 02/22/18</b>										
Antimony	ND	2.00	mg/kg							
Arsenic	ND	2.00	mg/kg							
Barium	ND	1.00	mg/kg							
Beryllium	ND	1.00	mg/kg							
Cadmium	ND	1.00	mg/kg							
Chromium	ND	1.00	mg/kg							
Cobalt	ND	1.00	mg/kg							
Copper	ND	1.00	mg/kg							
Lead	ND	1.00	mg/kg							
Molybdenum	ND	1.00	mg/kg							
Nickel	ND	1.00	mg/kg							



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File #: 73443

Report Date: 02/27/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82304 - EPA 3050B</b>										
Antimony	41.7	2.00	mg/kg	49.80	ND	83.8	60-140	1.37	30	
Arsenic	51.0	2.00	mg/kg	50.00	6.09	89.9	75-125	0.742	30	
Barium	327	1.00	mg/kg	199.3	138	94.8	75-125	5.29	30	
Beryllium	5.22	1.00	mg/kg	4.940	0.545	94.7	75-125	2.16	30	
Cadmium	4.83	1.00	mg/kg	4.990	0.244	91.9	75-125	1.56	30	
Chromium	32.7	1.00	mg/kg	19.86	14.1	93.5	75-125	0.508	30	
Cobalt	56.0	1.00	mg/kg	49.57	9.06	94.7	75-125	0.463	30	
Copper	40.3	1.00	mg/kg	25.04	15.6	98.6	75-125	1.28	30	
Lead	51.6	1.00	mg/kg	50.20	5.88	91.1	75-125	1.12	30	
Molybdenum	43.2	1.00	mg/kg	50.10	0.383	85.5	75-125	1.96	30	
Nickel	55.8	1.00	mg/kg	49.73	9.21	93.6	75-125	1.22	30	
Selenium	43.6	2.00	mg/kg	50.00	ND	87.1	75-125	1.63	30	
Silver	4.64	1.00	mg/kg	4.970	ND	93.3	75-125	0.0955	30	
Thallium	43.0	2.00	mg/kg	49.37	ND	87.2	75-125	2.51	30	
Vanadium	87.4	1.00	mg/kg	50.10	40.8	92.9	75-125	4.30	30	
Zinc	116	5.00	mg/kg	49.98	67.3	97.6	75-125	7.44	30	
<b>Batch BB82302 - EPA 7471A</b>										
<b>Blank</b>		<b>Prepared &amp; Analyzed: 02/22/18</b>								
Mercury	ND	0.100	mg/kg							
<b>LCS</b>		<b>Prepared &amp; Analyzed: 02/22/18</b>								
Mercury	0.790	0.100	mg/kg	0.8358		94.5	80-120			
<b>Matrix Spike</b>		<b>Source: 1802180-29 Prepared &amp; Analyzed: 02/22/18</b>								
Mercury	0.893	0.100	mg/kg	0.8358	0.0830	96.9	75-125			
<b>Matrix Spike Dup</b>		<b>Source: 1802180-29 Prepared &amp; Analyzed: 02/22/18</b>								
Mercury	0.897	0.100	mg/kg	0.8358	0.0830	97.4	75-125	0.493	30	
<b>Batch BB82626 - -</b>										
<b>Duplicate</b>		<b>Source: 1802181-42 Prepared &amp; Analyzed: 02/23/18</b>								
pH	5.7	0.1	pH Units		5.7			0.527	5	
<b>Duplicate</b>		<b>Source: 1802182-20 Prepared &amp; Analyzed: 02/23/18</b>								
pH	7.8	0.1	pH Units		7.9			0.762	5	





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 02/27/18

Submitted: 02/20/18


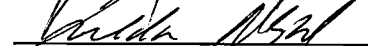
**PLS Report No.: 1802180**

**Project:** 16195 UHSD SW / P.O. # 16195-POS

### Notes and Definitions

V-3	Amount spiked was less than 1/4 of concentration in the sample.
NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)





781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

March 01, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1802182  
Project Name: 16195 KHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on February 20, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

A handwritten signature in blue ink, appearing to read "D. Sanchez", is written over a horizontal line. Below the line, the words "Project Manager" are printed in a small, black, sans-serif font.





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## Certificate of Analysis

Page 2 of 40

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H1-3", H2-3", H3-3", H4-3" Composite Soil (1802182-01) Sampled: 02/20/18 09:06 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDD	49.8		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDE	490		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDT	51.1		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Dieldrin	5110		10	ug/kg	80.0	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	90.3 %			55-126		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: Decachlorobiphenyl	100 %			49-133		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852

Sample ID: NW1A-3", NW1B-3", NW1C-3", NW1D-3" Composite Soil (1802182-02) Sampled: 02/19/18 15:12 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
4,4'-DDD	14.2		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: NW1A-3", NW1B-3", NW1C-3", NW1D-3" Composite Soil (1802182-02) Sampled: 02/19/18 15:12 Received: 02/20/18 13:00**

Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	82.0 %		55-126		EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Surrogate: Decachlorobiphenyl	65.1 %		49-133		EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai	BB82852
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Total Organic Carbon	See Attachment									

**Sample ID: NW2A-3", NW2B-3", NW2C-3" Composite Soil (1802182-03) Sampled: 02/20/18 09:33 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
<b>4,4'-DDE</b>	<b>32.3</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	90.7 %		55-126		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: Decachlorobiphenyl	132 %		49-133		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Total Organic Carbon	See Attachment									

**Sample ID: NW3A-3", NW3B-3", NW3C-3", NW3D-3" Composite Soil (1802182-04) Sampled: 02/20/18 10:10 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW3A-3", NW3B-3", NW3C-3", NW3D-3" Composite					Soil (1802182-04) Sampled: 02/20/18 10:10			Received: 02/20/18		
13:00										
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
<b>4,4'-DDE</b>	<b>17.5</b>	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: 2,4,5,6 Tetrachloro-m-xylol		93.7 %	55-126		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: Decachlorobiphenyl		105 %	49-133		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Total Organic Carbon		See Attachment								

Sample ID: NW4A-3", NW4B-3", NW4C-3", NW4D-3" Composite						Soil (1802182-05) Sampled: 02/20/18 10:34		Received: 02/20/18			
13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
<b>4,4'-DDE</b>	<b>23.4</b>		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: 2,4,5,6 Tetrachloro-m-xylol		87.5 %		55-126		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: Decachlorobiphenyl		94.3 %		49-133		EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai	BB82852





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: NW4A-3", NW4B-3", NW4C-3", NW4D-3" Composite Soil (1802182-05) Sampled: 02/20/18 10:34 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Total Organic Carbon	See Attachment									

**Sample ID: NW-P1-3" Soil (1802182-06) Sampled: 02/19/18 13:25 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	74.8 %			54-131		EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Surrogate: Decachlorobiphenyl	89.1 %			53-131		EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622

**Sample ID: NW-P2-3" Soil (1802182-07) Sampled: 02/19/18 13:30 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
<b>Aroclor-1260</b>	<b>110</b>		1	ug/kg	50.0	EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	76.2 %			54-131		EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622
Surrogate: Decachlorobiphenyl	104 %			53-131		EPA 3550C EPA 8082	02/23/18	02/26/18	ai	BB82622

**Sample ID: H1-3" Soil (1802182-08) Sampled: 02/20/18 08:40 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>Lead</b>	<b>14.4</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82620

**Sample ID: H2-3" Soil (1802182-09) Sampled: 02/20/18 09:06 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>Lead</b>	<b>352</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82620

**Sample ID: H3-3" Soil (1802182-10) Sampled: 02/20/18 09:02 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>Lead</b>	<b>23.3</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621

**Sample ID: H4-3" Soil (1802182-11) Sampled: 02/20/18 08:50 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>Lead</b>	<b>130</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621

**Sample ID: NW1B-3" Soil (1802182-12) Sampled: 02/19/18 14:58 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>Arsenic</b>	<b>3.43</b>		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621

**Sample ID: NW2B-3" Soil (1802182-13) Sampled: 02/20/18 09:26 Received: 02/20/18 13:00**





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW2B-3" Soil (1802182-13) Sampled: 02/20/18 09:26 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	6.60		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Sample ID: NW3B-3" Soil (1802182-14) Sampled: 02/20/18 10:10 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	7.31		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Sample ID: NW3E-3" Soil (1802182-15) Sampled: 02/20/18 10:10 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	7.41		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Sample ID: NW-S1-3" Soil (1802182-16) Sampled: 02/19/18 13:40 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	141		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/23/18	02/26/18	lk	BB82628
TPH C23 - C32	576		1	mg/kg	100	EPA 3550C EPA 8015B	02/23/18	02/26/18	lk	BB82628
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/23/18	02/26/18	lk	BB82628
Surrogate: n-Tetracosane	89.7 %			68-133		EPA 3550C EPA 8015B	02/23/18	02/26/18	lk	BB82628
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Toluene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Surrogate: a,a,a-Trifluorotoluene	95.1 %			46-132		EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BB82050
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
4,4'-DDD	14500		50	ug/kg	400	EPA 3550C EPA 8081A	02/23/18	02/28/18	ai	BB82852
4,4'-DDE	7630		50	ug/kg	800	EPA 3550C EPA 8081A	02/23/18	02/28/18	ai	BB82852
4,4'-DDT	154000		1000	ug/kg	16000	EPA 3550C EPA 8081A	02/23/18	02/28/18	ai	BB82852
Dieldrin	1280		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	99.2 %			55-126		EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852
Surrogate: Decachlorobiphenyl	66.7 %			49-133		EPA 3550C EPA 8081A	02/23/18	02/26/18	ai	BB82852





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## Certificate of Analysis

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Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-3" Soil (1802182-16) Sampled: 02/19/18 13:40 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
<b>Antimony</b>	<b>2.73</b>		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Arsenic</b>	<b>5.85</b>		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Barium</b>	<b>139</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Cadmium</b>	<b>1.05</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Chromium</b>	<b>12.8</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Cobalt</b>	<b>6.59</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Copper</b>	<b>30.7</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Lead</b>	<b>101</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Molybdenum</b>	<b>1.15</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Nickel</b>	<b>10.1</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Vanadium</b>	<b>28.0</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Zinc</b>	<b>212</b>		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
<b>Mercury</b>	<b>0.320</b>		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
<b>pH</b>	<b>7.2</b>		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj BB82626

Sample ID: NW-S2-3" Soil (1802182-17) Sampled: 02/19/18 13:45 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
<b>TPH C9 - C22</b>	<b>7.64</b>		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk BB82628
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk BB82628
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk BB82628
<i>Surrogate: n-Tetracosane</i>	<i>96.9 %</i>			<i>68-133</i>		<i>EPA 3550C</i>	<i>EPA 8015B</i>	<i>02/23/18</i>	<i>02/26/18</i>	<i>lk BB82628</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk BB82050
Toluene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk BB82050
<b>Xylenes (total)</b>	<b>2.14</b>		1	ug/kg	2.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk BB82050
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>88.1 %</i>			<i>46-132</i>		<i>EPA 5030B</i>	<i>EPA 8021B</i>	<i>02/20/18</i>	<i>02/20/18</i>	<i>lk BB82050</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
<b>4,4'-DDD</b>	<b>107</b>		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
<b>4,4'-DDE</b>	<b>329</b>		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
<b>4,4'-DDT</b>	<b>916</b>		10	ug/kg	160	EPA 3550C	EPA 8081A	02/23/18	02/28/18	ai BB82852
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852





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File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S2-3" Soil (1802182-17) Sampled: 02/19/18 13:45 Received: 02/20/18 13:00										
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	91.6 %				55-126	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Surrogate: Decachlorobiphenyl	83.5 %				49-133	EPA 3550C	EPA 8081A	02/23/18	02/26/18	ai BB82852
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Arsenic</b>	<b>6.97</b>		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Barium</b>	<b>142</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Chromium</b>	<b>15.0</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Cobalt</b>	<b>9.54</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Copper</b>	<b>18.1</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Lead</b>	<b>20.9</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Molybdenum</b>	<b>1.01</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Nickel</b>	<b>10.1</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Vanadium</b>	<b>43.6</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
<b>Zinc</b>	<b>93.5</b>		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>pH</b>	<b>7.3</b>		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj BB82626
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
EPA 8151A Herbicides	See Attachment									

Sample ID: NW4B-3" Soil (1802182-18) Sampled: 02/20/18 10:23 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>Arsenic</b>	<b>5.00</b>		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Sample ID: NW-S3-3" Soil (1802182-19) Sampled: 02/19/18 13:55 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>TPH C9 - C22</b>	<b>7.74</b>		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk BB82628
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk BB82628
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk BB82628
Surrogate: n-Tetracosane	122 %				68-133	EPA 3550C	EPA 8015B	02/23/18	02/26/18	lk BB82628
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S3-3" Soil (1802182-19) Sampled: 02/19/18 13:55 Received: 02/20/18 13:00										
Dichlorodifluoromethane (FC-12)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Chloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Vinyl chloride (Chloroethylene)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Bromomethane (Methyl bromide)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Chloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Trichlorofluoromethane (FC-11)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Acetone	ND	1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Carbon disulfide	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,1-Dichloroethene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Methylene chloride (Dichloromethane)	ND	1	ug/kg	20.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
trans-1,2-Dichloroethene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Methyl tert-butyl ether (MTBE)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,1-Dichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Vinyl acetate	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
2,2-Dichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
cis-1,2-Dichloroethene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
2-Butanone (MEK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Bromochloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Chloroform	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,1,1-Trichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Carbon tetrachloride	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,1-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Benzene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2-Dichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Trichloroethene (TCE)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2-Dichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Dibromomethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,4-Dioxane	ND	1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Bromodichloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
2-Chloroethyl vinyl ether	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
cis-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
4-Methyl-2-pentanone (MIBK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Toluene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
trans-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,1,2-Trichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Tetrachloroethene (PCE)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,3-Dichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
2-Hexanone (MBK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Dibromochloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
o-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Styrene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Bromobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261





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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 03/01/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S3-3" Soil (1802182-19) Sampled: 02/19/18 13:55 Received: 02/20/18 13:00											
1,2,3-Trichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
n-Propylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
2-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
4-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,3,5-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
tert-Butylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2,4-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
sec-Butylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,3-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
4-Isopropyltoluene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,4-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
n-Butylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2,4-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Hexachlorobutadiene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Naphthalene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
1,2,3-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Surrogate: Dibromofluoromethane	115 %			81-134		EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Surrogate: Toluene-d8	101 %			80-120		EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Surrogate: 4-Bromofluorobenzene	97.1 %			78-122		EPA 5030B	EPA 8260B	02/22/18	02/22/18	mb	BB82261
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
4,4'-DDD	54.7		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
4,4'-DDE	236		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
4,4'-DDT	633		5	ug/kg	80.0	EPA 3550C EPA 8081A	02/23/18	02/28/18	lk	BB82855	
Dieldrin	16.3		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855	
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	72.6 %			55-126		EPA 3550C	EPA 8081A	02/23/18	02/27/18	lk	BB82855
Surrogate: Decachlorobiphenyl	66.9 %			49-133		EPA 3550C	EPA 8081A	02/23/18	02/27/18	lk	BB82855
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Antimony	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621	





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S3-3" Soil (1802182-19) Sampled: 02/19/18 13:55 Received: 02/20/18 13:00											
Arsenic	5.88	1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Barium	156	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Beryllium	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Cadmium	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Chromium	14.8	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Cobalt	8.64	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Copper	70.1	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Lead	12.7	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Molybdenum	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Nickel	9.77	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Selenium	ND	1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Silver	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Thallium	ND	1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Vanadium	39.2	1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Zinc	81.6	1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg	BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
pH	6.9		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj	BB82626
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
EPA 8151A Herbicides	See Attachment										

Sample ID: NW-S4-3" Soil (1802182-20) Sampled: 02/19/18 14:18 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C9 - C22	15.5		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Surrogate: n-Tetracosane	111 %			68-133		EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Acetone	ND		1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S4-3" Soil (1802182-20) Sampled: 02/19/18 14:18 Received: 02/20/18 13:00										
Chloroform	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1-Trichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon tetrachloride	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Benzene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichloroethene (TCE)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromomethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,4-Dioxane	ND	1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromodichloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Chloroethyl vinyl ether	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Methyl-2-pentanone (MIBK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Toluene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,2-Trichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Tetrachloroethene (PCE)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3-Dichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Hexanone (MBK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromochloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
o-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Styrene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Naphthalene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S4-3" Soil (1802182-20) Sampled: 02/19/18 14:18 Received: 02/20/18 13:00										
Surrogate: Dibromofluoromethane	112 %			81-134		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Surrogate: Toluene-d8	102 %			80-120		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Surrogate: 4-Bromofluorobenzene	89.9 %			78-122		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
4,4'-DDE	69.4		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
4,4'-DDT	63.5		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Surrogate: 2,4,5,6 Tetrachloro-m-xylol.	66.0 %			55-126		EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Surrogate: Decachlorobiphenyl	67.8 %			49-133		EPA 3550C EPA 8081A	02/23/18	02/27/18	lk	BB82855
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Arsenic	4.89		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Barium	120		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cadmium	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Chromium	12.8		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cobalt	8.39		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Copper	15.7		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Lead	19.7		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Nickel	7.47		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Vanadium	30.4		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Zinc	229		1	mg/kg	5.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A EPA 7471A	02/26/18	02/26/18	cg	BB82636





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 03/01/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S4-3" Soil (1802182-20) Sampled: 02/19/18 14:18 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
pH	7.9		1	pH Units	0.1	- EPA 9045C	02/23/18	02/23/18	pj	BB82626
Sample ID: NW-S5-3" Soil (1802182-21) Sampled: 02/19/18 14:25 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	890		1	mg/kg	5.00	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C23 - C32	16500		20	mg/kg	4000	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C33 - C36	670		1	mg/kg	200	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737
Surrogate: n-Tetracosane	147 %	DO		68-133		EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Chloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Chloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Acetone	ND		1	ug/kg	80.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Chloroform	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Benzene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Dibromomethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,4-Dioxane	ND		1	ug/kg	80.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Bromodichloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
2-Chloroethyl vinyl ether	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
cis-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
4-Methyl-2-pentanone (MIBK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Toluene	3.05		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
trans-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,1,2-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Tetrachloroethene (PCE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
1,3-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
2-Hexanone (MBK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261
Dibromochloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/23/18	02/23/18	mb	BB82261





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/01/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S5-3" Soil (1802182-21) Sampled: 02/19/18 14:25 Received: 02/20/18 13:00											
1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
o-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Styrene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Bromobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Naphthalene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Surrogate: Dibromofluoromethane	111 %		81-134		EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Surrogate: Toluene-d8	101 %		80-120		EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Surrogate: 4-Bromofluorobenzene	93.0 %		78-122		EPA 5030B	EPA 8260B	02/23/18	02/23/18	mb	BB82261	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Arsenic	4.02		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Barium	144		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Chromium	16.1		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cobalt	7.95		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Copper	13.9		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Lead	8.68		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Molybdenum	1.11		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Nickel	10.9		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Vanadium	35.7		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Zinc	72.4		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/01/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: NW-S5-3" Soil (1802182-21) Sampled: 02/19/18 14:25 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A EPA 7471A	02/26/18	02/26/18	cg	BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
pH	8.9		1	pH Units	0.1	- EPA 9045C	02/23/18	02/23/18	pj	BB82626
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
8310 PAH	See Attachment									

**Sample ID: NW-S6-3" Soil (1802182-22) Sampled: 02/19/18 14:38 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>TPH C9 - C22</b>	<b>281</b>		10	mg/kg	50.0	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737
<b>TPH C23 - C32</b>	<b>2790</b>		10	mg/kg	2000	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737
<b>TPH C33 - C36</b>	<b>ND</b>		10	mg/kg	2000	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737
<i>Surrogate: n-Tetracosane</i>	<i>125 %</i>			<i>68-133</i>		<i>EPA 3550C EPA 8015B</i>	<i>02/26/18</i>	<i>02/27/18</i>	<i>lk</i>	<i>BB82737</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Acetone	ND		1	ug/kg	80.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroform	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Benzene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromomethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,4-Dioxane	ND		1	ug/kg	80.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromodichloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Chloroethyl vinyl ether	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Methyl-2-pentanone (MIBK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Toluene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243





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# Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S6-3" Soil (1802182-22) Sampled: 02/19/18 14:38 Received: 02/20/18 13:00											
trans-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,1,2-Trichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Tetrachloroethene (PCE)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3-Dichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
2-Hexanone (MBK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Dibromochloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
o-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Styrene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Bromobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Naphthalene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: Dibromofluoromethane	115 %			81-134	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: Toluene-d8	101 %			80-120	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: 4-Bromofluorobenzene	89.5 %			78-122	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Arsenic	5.01		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Barium	242		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Chromium	39.5		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cobalt	9.40		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Copper	19.4		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Lead	9.95		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Molybdenum	2.68		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S6-3" Soil (1802182-22) Sampled: 02/19/18 14:38 Received: 02/20/18 13:00										
Nickel	22.9		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Vanadium	44.7		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Zinc	74.5		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
pH	7.8		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj BB82626

Sample ID: NW-S7-3" Soil (1802182-23) Sampled: 02/19/18 14:53 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
TPH C9 - C22	378		1	mg/kg	5.00	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk BB82737
TPH C23 - C32	643		1	mg/kg	200	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk BB82737
TPH C33 - C36	ND		1	mg/kg	200	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk BB82737
Surrogate: n-Tetracosane	122 %			68-133		EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk BB82737
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Chloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Chloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Acetone	ND		1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Chloroform	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Benzene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Dibromomethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
1,4-Dioxane	ND		1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
Bromodichloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243
2-Chloroethyl vinyl ether	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb BB82243





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

PLS Report No.: 1802182

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S7-3" Soil (1802182-23) Sampled: 02/19/18 14:53 Received: 02/20/18 13:00											
cis-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Methyl-2-pentanone (MIBK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Toluene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,2-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Tetrachloroethene (PCE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Hexanone (MBK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromochloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dibromoethane (EDB)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1,2-Tetrachloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Ethylbenzene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
m,p-Xylene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
o-Xylene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Styrene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromoform (Tribromomethane)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Isopropylbenzene (Cumene)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,2,2-Tetrachloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,3-Trichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
n-Propylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Chlorotoluene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3,5-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
tert-Butylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,4-Trimethylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
sec-Butylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Isopropyltoluene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,4-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
n-Butylbenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,4-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Hexachlorobutadiene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Naphthalene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,3-Trichlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Surrogate: Dibromofluoromethane	115 %			81-134		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Surrogate: Toluene-d8	102 %			80-120		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Surrogate: 4-Bromofluorobenzene	91.7 %			78-122		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Arsenic	3.31		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Barium	218		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Chromium	38.4		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cobalt	8.08		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 03/01/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S7-3" Soil (1802182-23) Sampled: 02/19/18 14:53 Received: 02/20/18 13:00											
Copper	33.5		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Lead	7.44		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Molybdenum	3.36		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Nickel	21.5		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Vanadium	34.0		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Zinc	92.3		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg	BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
pH	8.1		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj	BB82626

Sample ID: NW-S8-3" Soil (1802182-24) Sampled: 02/19/18 15:04 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
TPH C9 - C22	26.8		1	mg/kg	5.00	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C23 - C32	227		1	mg/kg	200	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C33 - C36	ND		1	mg/kg	200	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Surrogate: n-Tetracosane	108 %			68-133		EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Acetone	ND		1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroform	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Benzene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromomethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 03/01/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S8-3" Soil (1802182-24) Sampled: 02/19/18 15:04 Received: 02/20/18 13:00											
1,4-Dioxane	ND	1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Bromodichloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
2-Chloroethyl vinyl ether	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
cis-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
4-Methyl-2-pentanone (MIBK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Toluene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
trans-1,3-Dichloropropene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,1,2-Trichloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Tetrachloroethene (PCE)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3-Dichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
2-Hexanone (MBK)	ND	1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Dibromochloromethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dibromoethane (EDB)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Chlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,1,1,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Ethylbenzene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
m,p-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
o-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Styrene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Bromobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Naphthalene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: Dibromofluoromethane	114 %			81-134	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: Toluene-d8	102 %			80-120	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: 4-Bromofluorobenzene	91.3 %			78-122	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Antimony	ND		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Arsenic	6.98		1	mg/kg	2.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Barium	89.6		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Beryllium	ND		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621	





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S8-3" Soil (1802182-24) Sampled: 02/19/18 15:04 Received: 02/20/18 13:00											
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Chromium</b>	<b>9.22</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Cobalt</b>	<b>5.82</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Copper</b>	<b>13.1</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Lead</b>	<b>8.68</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Nickel</b>	<b>7.11</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Vanadium</b>	<b>24.1</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Zinc</b>	<b>562</b>		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg	BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
<b>pH</b>	<b>7.2</b>		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj	BB82626
Sample ID: NW-S9-3" Soil (1802182-25) Sampled: 02/20/18 08:19 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
<b>TPH C9 - C22</b>	<b>158</b>		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
<i>Surrogate: n-Tetracosane</i>	<i>106 %</i>			<i>68-133</i>		<i>EPA 3550C</i>	<i>EPA 8015B</i>	<i>02/26/18</i>	<i>02/27/18</i>	<i>lk</i>	<i>BB82737</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
<b>Toluene</b>	<b>13.2</b>		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>121 %</i>			<i>46-132</i>		<i>EPA 5030B</i>	<i>EPA 8021B</i>	<i>02/20/18</i>	<i>02/20/18</i>	<i>lk</i>	<i>BB82050</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Arsenic</b>	<b>2.05</b>		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Barium</b>	<b>36.3</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Chromium</b>	<b>4.47</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Cobalt</b>	<b>3.12</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Copper</b>	<b>4.85</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Lead</b>	<b>1.86</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Nickel</b>	<b>3.11</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Vanadium</b>	<b>11.3</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
<b>Zinc</b>	<b>30.1</b>		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/01/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S9-3" Soil (1802182-25) Sampled: 02/20/18 08:19 Received: 02/20/18 13:00											
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg	BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
pH	6.6		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj	BB82626
Sample ID: NW-S10-3" Soil (1802182-26) Sampled: 02/20/18 08:30 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C9 - C22	46.9		1	mg/kg	5.00	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C23 - C32	457		1	mg/kg	200	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C33 - C36	ND		1	mg/kg	200	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Surrogate: n-Tetracosane	123 %			68-133		EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Toluene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Surrogate: a,a,a-Trifluorotoluene	94.6 %			46-132		EPA 5030B	EPA 8021B	02/20/18	02/20/18	lk	BB82050
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Arsenic	2.47		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Barium	169		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cadmium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Chromium	17.3		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Cobalt	8.51		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Copper	14.3		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Lead	6.42		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Molybdenum	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Nickel	10.2		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Selenium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Silver	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Thallium	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Vanadium	36.8		1	mg/kg	1.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Zinc	65.5		1	mg/kg	5.00	EPA 3050B	EPA 6010B	02/23/18	02/23/18	CG	BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Mercury	ND		1	mg/kg	0.100	EPA 7471A	EPA 7471A	02/26/18	02/26/18	cg	BB82636
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
pH	6.4		1	pH Units	0.1	-	EPA 9045C	02/23/18	02/23/18	pj	BB82626
Sample ID: NW-S1-2' Soil (1802182-27) Sampled: 02/19/18 13:42 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C9 - C22	2.50		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Surrogate: n-Tetracosane	111 %			68-133		EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Sample ID: NW-S5-2' Soil (1802182-28) Sampled: 02/19/18 14:27 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/01/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S5-2' Soil (1802182-28) Sampled: 02/19/18 14:27 Received: 02/20/18 13:00											
TPH C9 - C22	8.53		1	mg/kg	2.50	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C23 - C32	233		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Surrogate: n-Tetracosane	99.3 %			68-133		EPA 3550C	EPA 8015B	02/26/18	02/27/18	lk	BB82737
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Acetone	ND		1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroform	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Benzene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromomethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,4-Dioxane	ND		1	ug/kg	80.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromodichloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Chloroethyl vinyl ether	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Methyl-2-pentanone (MIBK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Toluene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,2-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Tetrachloroethene (PCE)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Hexanone (MBK)	ND		1	ug/kg	40.0	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromochloromethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dibromoethane (EDB)	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chlorobenzene	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1,2-Tetrachloroethane	ND		1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Ethylbenzene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
m,p-Xylene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 03/01/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S5-2' Soil (1802182-28) Sampled: 02/19/18 14:27 Received: 02/20/18 13:00											
o-Xylene	ND	1	ug/kg	2.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Styrene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Bromoform (Tribromomethane)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Isopropylbenzene (Cumene)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Bromobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Naphthalene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: Dibromofluoromethane	113 %			81-134	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: Toluene-d8	102 %			80-120	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Surrogate: 4-Bromofluorobenzene	93.3 %			78-122	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Lead	5.28		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
pH	8.9		1	pH Units	0.1	- EPA 9045C	02/23/18	02/23/18	pj	BB82626	
Sample ID: NW-S6-2' Soil (1802182-29) Sampled: 02/19/18 14:40 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
TPH C9 - C22	4.93		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	
Surrogate: n-Tetracosane	103 %			68-133		EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Lead	3.49		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621	
Sample ID: NW-S5-4' Soil (1802182-30) Sampled: 02/19/18 14:29 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
TPH C9 - C22	12.8		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	
TPH C23 - C32	272		1	mg/kg	100	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	
Surrogate: n-Tetracosane	110 %			68-133		EPA 3550C EPA 8015B	02/26/18	02/27/18	lk	BB82737	





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID:** NW-S5-4' **Soil (1802182-30)** **Sampled:** 02/19/18 14:29 **Received:** 02/20/18 13:00

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Dichlorodifluoromethane (FC-12)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl chloride (Chloroethylene)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromomethane (Methyl bromide)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichlorofluoromethane (FC-11)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Acetone	ND		1	ug/kg	80.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon disulfide	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methylene chloride (Dichloromethane)	ND		1	ug/kg	20.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Methyl tert-butyl ether (MTBE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Vinyl acetate	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
2,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,2-Dichloroethene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Butanone (MEK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromochloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chloroform	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Carbon tetrachloride	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Benzene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Trichloroethene (TCE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromomethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,4-Dioxane	ND		1	ug/kg	80.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromodichloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Chloroethyl vinyl ether	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
cis-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Methyl-2-pentanone (MIBK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Toluene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
trans-1,3-Dichloropropene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,2-Trichloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Tetrachloroethene (PCE)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3-Dichloropropane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Hexanone (MBK)	ND		1	ug/kg	40.0	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Dibromochloromethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dibromoethane (EDB)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Chlorobenzene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,1,2-Tetrachloroethane	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Ethylbenzene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
m,p-Xylene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
o-Xylene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Styrene	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Bromoform (Tribromomethane)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243
Isopropylbenzene (Cumene)	ND		1	ug/kg	4.00	EPA 5030B EPA 8260B	02/21/18	02/21/18	mb	BB82243





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S5-4' Soil (1802182-30) Sampled: 02/19/18 14:29 Received: 02/20/18 13:00										
Bromobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,1,2,2-Tetrachloroethane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,3-Trichloropropane	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
n-Propylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
2-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Chlorotoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3,5-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
tert-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,4-Trimethylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
sec-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,3-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
4-Isopropyltoluene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,4-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
n-Butylbenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2-Dibromo-3-chloropropane (DBCP)	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,4-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Hexachlorobutadiene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Naphthalene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
1,2,3-Trichlorobenzene	ND	1	ug/kg	4.00	EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Surrogate: Dibromofluoromethane	114 %		81-134		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Surrogate: Toluene-d8	101 %		80-120		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Surrogate: 4-Bromofluorobenzene	91.4 %		78-122		EPA 5030B	EPA 8260B	02/21/18	02/21/18	mb	BB82243
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	3.49		1	mg/kg	1.00	EPA 3050B EPA 6010B	02/23/18	02/23/18	CG	BB82621
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
pH	9.3		1	pH Units	0.1	- EPA 9045C	02/23/18	02/23/18	pj	BB82626









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Soils Engineering Inc.  
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Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

PLS Report No.: 1802182

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82050 - EPA 5030B</b>										
Benzene	98.0	1.00	ug/kg	100.0		98.0	76-117			
Toluene	94.6	1.00	ug/kg	100.0		94.6	74-113			
Ethylbenzene	96.1	1.00	ug/kg	100.0		96.1	75-122			
Xylenes (total)	275	2.00	ug/kg	300.0		91.8	68-121			
Surrogate: a,a,a-Trifluorotoluene	17.0		ug/kg	15.00		113	67-130			
<b>Matrix Spike</b>	<b>Source: 1802159-33</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>								
Benzene	43.0	1.00	ug/kg	40.00	ND	107	51-129			
Toluene	42.1	1.00	ug/kg	40.00	ND	105	37-129			
Ethylbenzene	42.8	1.00	ug/kg	40.00	ND	107	45-129			
Xylenes (total)	125	2.00	ug/kg	120.0	ND	104	52-113			
Surrogate: a,a,a-Trifluorotoluene	16.3		ug/kg	15.00		109	46-132			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-33</b>	<b>Prepared &amp; Analyzed: 02/20/18</b>								
Benzene	41.8	1.00	ug/kg	40.00	ND	104	51-129	2.79	30	
Toluene	41.4	1.00	ug/kg	40.00	ND	103	37-129	1.60	30	
Ethylbenzene	41.2	1.00	ug/kg	40.00	ND	103	45-129	3.69	30	
Xylenes (total)	123	2.00	ug/kg	120.0	ND	102	52-113	1.58	30	
Surrogate: a,a,a-Trifluorotoluene	13.9		ug/kg	15.00		92.4	46-132			
<b>Batch BB82243 - EPA 5030B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 02/21/18</b>									
Dichlorodifluoromethane (FC-12)	ND	4.00	ug/kg							
Chloromethane	ND	4.00	ug/kg							
Vinyl chloride (Chloroethylene)	ND	4.00	ug/kg							
Bromomethane (Methyl bromide)	ND	4.00	ug/kg							
Chloroethane	ND	4.00	ug/kg							
Trichlorofluoromethane (FC-11)	ND	4.00	ug/kg							
Acetone	ND	80.0	ug/kg							
Carbon disulfide	ND	40.0	ug/kg							
1,1-Dichloroethene	ND	4.00	ug/kg							
Methylene chloride (Dichloromethane)	ND	20.0	ug/kg							
trans-1,2-Dichloroethene	ND	4.00	ug/kg							
Methyl tert-butyl ether (MTBE)	ND	4.00	ug/kg							
1,1-Dichloroethane	ND	4.00	ug/kg							
Vinyl acetate	ND	40.0	ug/kg							
2,2-Dichloropropane	ND	4.00	ug/kg							
cis-1,2-Dichloroethene	ND	4.00	ug/kg							
2-Butanone (MEK)	ND	40.0	ug/kg							
Bromochloromethane	ND	4.00	ug/kg							
Chloroform	ND	4.00	ug/kg							
1,1,1-Trichloroethane	ND	4.00	ug/kg							





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File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82243 - EPA 5030B</b>										
Carbon tetrachloride	ND	4.00	ug/kg							
1,1-Dichloropropene	ND	4.00	ug/kg							
Benzene	ND	2.00	ug/kg							
1,2-Dichloroethane	ND	4.00	ug/kg							
Trichloroethene (TCE)	ND	4.00	ug/kg							
1,2-Dichloropropane	ND	4.00	ug/kg							
Dibromomethane	ND	4.00	ug/kg							
1,4-Dioxane	ND	80.0	ug/kg							
Bromodichloromethane	ND	4.00	ug/kg							
2-Chloroethyl vinyl ether	ND	40.0	ug/kg							
cis-1,3-Dichloropropene	ND	4.00	ug/kg							
4-Methyl-2-pentanone (MIBK)	ND	40.0	ug/kg							
Toluene	ND	2.00	ug/kg							
trans-1,3-Dichloropropene	ND	4.00	ug/kg							
1,1,2-Trichloroethane	ND	4.00	ug/kg							
Tetrachloroethene (PCE)	ND	4.00	ug/kg							
1,3-Dichloropropane	ND	4.00	ug/kg							
2-Hexanone (MBK)	ND	40.0	ug/kg							
Dibromochloromethane	ND	4.00	ug/kg							
1,2-Dibromoethane (EDB)	ND	4.00	ug/kg							
Chlorobenzene	ND	4.00	ug/kg							
1,1,1,2-Tetrachloroethane	ND	4.00	ug/kg							
Ethylbenzene	ND	2.00	ug/kg							
m,p-Xylene	ND	2.00	ug/kg							
o-Xylene	ND	2.00	ug/kg							
Styrene	ND	4.00	ug/kg							
Bromoform (Tribromomethane)	ND	4.00	ug/kg							
Isopropylbenzene (Cumene)	ND	4.00	ug/kg							
Bromobenzene	ND	4.00	ug/kg							
1,1,2,2-Tetrachloroethane	ND	4.00	ug/kg							
1,2,3-Trichloropropane	ND	4.00	ug/kg							
n-Propylbenzene	ND	4.00	ug/kg							
2-Chlorotoluene	ND	4.00	ug/kg							
4-Chlorotoluene	ND	4.00	ug/kg							
1,3,5-Trimethylbenzene	ND	4.00	ug/kg							
tert-Butylbenzene	ND	4.00	ug/kg							
1,2,4-Trimethylbenzene	ND	4.00	ug/kg							
sec-Butylbenzene	ND	4.00	ug/kg							
1,3-Dichlorobenzene	ND	4.00	ug/kg							
4-Isopropyltoluene	ND	4.00	ug/kg							
1,4-Dichlorobenzene	ND	4.00	ug/kg							



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Soils Engineering Inc.  
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File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82261 - EPA 5030B</b>									
<b>Blank</b>	<b>Prepared &amp; Analyzed: 02/22/18</b>								
Dichlorodifluoromethane (FC-12)	ND	4.00	ug/kg						
Chloromethane	ND	4.00	ug/kg						
Vinyl chloride (Chloroethylene)	ND	4.00	ug/kg						
Bromomethane (Methyl bromide)	ND	4.00	ug/kg						
Chloroethane	ND	4.00	ug/kg						
Trichlorofluoromethane (FC-11)	ND	4.00	ug/kg						
Acetone	ND	80.0	ug/kg						
Carbon disulfide	ND	40.0	ug/kg						
1,1-Dichloroethene	ND	4.00	ug/kg						
Methylene chloride (Dichloromethane)	ND	20.0	ug/kg						
trans-1,2-Dichloroethene	ND	4.00	ug/kg						
Methyl tert-butyl ether (MTBE)	ND	4.00	ug/kg						
1,1-Dichloroethane	ND	4.00	ug/kg						
Vinyl acetate	ND	40.0	ug/kg						
2,2-Dichloropropane	ND	4.00	ug/kg						
cis-1,2-Dichloroethene	ND	4.00	ug/kg						
2-Butanone (MEK)	ND	40.0	ug/kg						
Bromochloromethane	ND	4.00	ug/kg						
Chloroform	ND	4.00	ug/kg						
1,1,1-Trichloroethane	ND	4.00	ug/kg						
Carbon tetrachloride	ND	4.00	ug/kg						
1,1-Dichloropropene	ND	4.00	ug/kg						
Benzene	ND	2.00	ug/kg						
1,2-Dichloroethane	ND	4.00	ug/kg						
Trichloroethene (TCE)	ND	4.00	ug/kg						
1,2-Dichloropropane	ND	4.00	ug/kg						
Dibromomethane	ND	4.00	ug/kg						
1,4-Dioxane	ND	80.0	ug/kg						
Bromodichloromethane	ND	4.00	ug/kg						
2-Chloroethyl vinyl ether	ND	40.0	ug/kg						
cis-1,3-Dichloropropene	ND	4.00	ug/kg						
4-Methyl-2-pentanone (MIBK)	ND	40.0	ug/kg						
Toluene	ND	2.00	ug/kg						
trans-1,3-Dichloropropene	ND	4.00	ug/kg						
1,1,2-Trichloroethane	ND	4.00	ug/kg						
Tetrachloroethene (PCE)	ND	4.00	ug/kg						
1,3-Dichloropropane	ND	4.00	ug/kg						
2-Hexanone (MBK)	ND	40.0	ug/kg						
Dibromochloromethane	ND	4.00	ug/kg						
1,2-Dibromoethane (EDB)	ND	4.00	ug/kg						





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File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82261 - EPA 5030B</b>									
Chlorobenzene	ND	4.00	ug/kg						
1,1,1,2-Tetrachloroethane	ND	4.00	ug/kg						
Ethylbenzene	ND	2.00	ug/kg						
m,p-Xylene	ND	2.00	ug/kg						
o-Xylene	ND	2.00	ug/kg						
Styrene	ND	4.00	ug/kg						
Bromoform (Tribromomethane)	ND	4.00	ug/kg						
Isopropylbenzene (Cumene)	ND	4.00	ug/kg						
Bromobenzene	ND	4.00	ug/kg						
1,1,2,2-Tetrachloroethane	ND	4.00	ug/kg						
1,2,3-Trichloropropane	ND	4.00	ug/kg						
n-Propylbenzene	ND	4.00	ug/kg						
2-Chlorotoluene	ND	4.00	ug/kg						
4-Chlorotoluene	ND	4.00	ug/kg						
1,3,5-Trimethylbenzene	ND	4.00	ug/kg						
tert-Butylbenzene	ND	4.00	ug/kg						
1,2,4-Trimethylbenzene	ND	4.00	ug/kg						
sec-Butylbenzene	ND	4.00	ug/kg						
1,3-Dichlorobenzene	ND	4.00	ug/kg						
4-Isopropyltoluene	ND	4.00	ug/kg						
1,4-Dichlorobenzene	ND	4.00	ug/kg						
1,2-Dichlorobenzene	ND	4.00	ug/kg						
n-Butylbenzene	ND	4.00	ug/kg						
1,2-Dibromo-3-chloropropane (DBCP)	ND	4.00	ug/kg						
1,2,4-Trichlorobenzene	ND	4.00	ug/kg						
Hexachlorobutadiene	ND	4.00	ug/kg						
Naphthalene	ND	4.00	ug/kg						
1,2,3-Trichlorobenzene	ND	4.00	ug/kg						
Surrogate: Dibromofluoromethane	16.9		ug/kg	15.00		113		81-134	
Surrogate: Toluene-d8	15.1		ug/kg	15.00		101		80-120	
Surrogate: 4-Bromofluorobenzene	13.9		ug/kg	15.00		92.6		78-122	
<b>LCS</b>									
<b>Prepared &amp; Analyzed: 02/22/18</b>									
1,1-Dichloroethene	18.4	4.00	ug/kg	20.00		92.2		64-131	
Methyl tert-butyl ether (MTBE)	21.0	4.00	ug/kg	20.00		105		70-127	
Benzene	19.4	2.00	ug/kg	20.00		97.1		70-132	
Trichloroethene (TCE)	18.6	4.00	ug/kg	20.00		93.2		74-131	
Toluene	17.6	2.00	ug/kg	20.00		88.2		67-124	
Chlorobenzene	17.5	4.00	ug/kg	20.00		87.5		65-127	
Surrogate: Dibromofluoromethane	16.2		ug/kg	15.00		108		80-120	
Surrogate: Toluene-d8	15.0		ug/kg	15.00		100		80-120	
Surrogate: 4-Bromofluorobenzene	14.9		ug/kg	15.00		99.6		80-120	





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File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Qualifier
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#### Batch BB82261 - EPA 5030B

**Matrix Spike Source: 1802200-01 Prepared & Analyzed: 02/22/18**

1,1-Dichloroethene	17.7	4.00	ug/kg	20.00	ND	88.3	59-132		
Benzene	19.6	2.00	ug/kg	20.00	ND	97.8	66-125		
Trichloroethene (TCE)	18.0	4.00	ug/kg	20.00	ND	90.0	57-117		
Toluene	17.4	2.00	ug/kg	20.00	ND	86.8	59-111		
Chlorobenzene	17.1	4.00	ug/kg	20.00	ND	85.6	60-111		
Surrogate: Dibromofluoromethane	17.1		ug/kg	15.00		114	81-134		
Surrogate: Toluene-d8	15.2		ug/kg	15.00		101	80-120		
Surrogate: 4-Bromofluorobenzene	15.2		ug/kg	15.00		102	78-122		

**Matrix Spike Dup Source: 1802200-01 Prepared & Analyzed: 02/22/18**

1,1-Dichloroethene	18.0	4.00	ug/kg	20.00	ND	90.2	59-132	2.18	30
Benzene	20.1	2.00	ug/kg	20.00	ND	101	66-125	2.77	30
Trichloroethene (TCE)	19.0	4.00	ug/kg	20.00	ND	94.9	57-117	5.30	30
Toluene	18.2	2.00	ug/kg	20.00	ND	90.8	59-111	4.45	30
Chlorobenzene	18.0	4.00	ug/kg	20.00	ND	90.2	60-111	5.29	30
Surrogate: Dibromofluoromethane	16.9		ug/kg	15.00		113	81-134		
Surrogate: Toluene-d8	15.4		ug/kg	15.00		103	80-120		
Surrogate: 4-Bromofluorobenzene	15.5		ug/kg	15.00		103	78-122		

#### Batch BB82852 - EPA 3550C

**Blank Prepared: 02/23/18 Analyzed: 02/27/18**

Aldrin	ND	2.00	ug/kg						
alpha-BHC	ND	2.00	ug/kg						
beta-BHC	ND	2.00	ug/kg						
delta-BHC	ND	2.00	ug/kg						
gamma-BHC (Lindane)	ND	2.00	ug/kg						
alpha-Chlordane	ND	2.00	ug/kg						
gamma-Chlordane	ND	2.00	ug/kg						
4,4'-DDD	ND	2.00	ug/kg						
4,4'-DDE	ND	4.00	ug/kg						
4,4'-DDT	ND	4.00	ug/kg						
Dieldrin	ND	2.00	ug/kg						
Endosulfan I	ND	4.00	ug/kg						
Endosulfan II	ND	2.00	ug/kg						
Endosulfan sulfate	ND	2.00	ug/kg						
Endrin	ND	2.00	ug/kg						
Technical Chlordane	ND	10.0	ug/kg						
Endrin aldehyde	ND	2.00	ug/kg						
Endrin ketone	ND	6.00	ug/kg						
Heptachlor	ND	2.00	ug/kg						





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 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82852 - EPA 3550C</b>										
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	19.0		ug/kg	16.67		114	55-126			
Surrogate: Decachlorobiphenyl	22.5		ug/kg	16.67		135	49-133			
<b>LCS Prepared: 02/23/18 Analyzed: 02/26/18</b>										
Aldrin	10.3	2.00	ug/kg	13.33		77.2	56-130			
gamma-BHC (Lindane)	11.5	2.00	ug/kg	13.33		86.6	56-133			
4,4'-DDT	11.4	4.00	ug/kg	13.33		85.7	56-133			
Dieldrin	12.2	2.00	ug/kg	13.33		91.4	62-119			
Endrin	13.3	2.00	ug/kg	13.33		99.7	59-127			
Heptachlor	15.6	2.00	ug/kg	13.33		117	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.9		ug/kg	16.67		89.3	54-108			
Surrogate: Decachlorobiphenyl	16.0		ug/kg	16.67		96.2	54-127			
<b>Matrix Spike Source: 1802181-50 Prepared: 02/23/18 Analyzed: 02/26/18</b>										
Aldrin	8.04	2.00	ug/kg	13.33	ND	60.3	39-124			
gamma-BHC (Lindane)	8.25	2.00	ug/kg	13.33	ND	61.9	44-120			
4,4'-DDT	19.4	4.00	ug/kg	33.33	ND	58.2	48-150			
Dieldrin	23.9	2.00	ug/kg	33.33	ND	71.7	48-144			
Endrin	25.3	2.00	ug/kg	33.33	ND	76.0	54-149			
Heptachlor	9.65	2.00	ug/kg	13.33	ND	72.4	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.3		ug/kg	16.67		79.8	57-126			
Surrogate: Decachlorobiphenyl	14.7		ug/kg	16.67		88.3	43-136			
<b>Matrix Spike Dup Source: 1802181-50 Prepared: 02/23/18 Analyzed: 02/26/18</b>										
Aldrin	8.36	2.00	ug/kg	13.33	ND	62.7	39-124	3.87	30	
gamma-BHC (Lindane)	8.61	2.00	ug/kg	13.33	ND	64.6	44-120	4.26	30	
4,4'-DDT	20.0	4.00	ug/kg	33.33	ND	60.0	48-150	3.00	30	
Dieldrin	25.5	2.00	ug/kg	33.33	ND	76.6	48-144	6.61	30	
Endrin	27.6	2.00	ug/kg	33.33	ND	82.7	54-149	8.42	30	
Heptachlor	10.5	2.00	ug/kg	13.33	ND	78.4	46-135	8.02	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.7		ug/kg	16.67		88.4	57-126			
Surrogate: Decachlorobiphenyl	15.7		ug/kg	16.67		94.1	43-136			
<b>Batch BB82855 - EPA 3550C</b>										
<b>Blank Prepared: 02/23/18 Analyzed: 02/27/18</b>										
Aldrin	ND	0.750	ug/kg							
alpha-BHC	ND	0.750	ug/kg							
beta-BHC	ND	0.750	ug/kg							
delta-BHC	ND	0.750	ug/kg							
gamma-BHC (Lindane)	ND	0.750	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

## Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82855 - EPA 3550C</b>										
alpha-Chlordane	ND	0.750	ug/kg							
gamma-Chlordane	ND	0.750	ug/kg							
4,4'-DDD	ND	0.750	ug/kg							
4,4'-DDE	ND	1.50	ug/kg							
4,4'-DDT	ND	1.50	ug/kg							
Dieldrin	ND	0.750	ug/kg							
Endosulfan I	ND	1.50	ug/kg							
Endosulfan II	ND	0.750	ug/kg							
Endosulfan sulfate	ND	0.750	ug/kg							
Endrin	ND	0.750	ug/kg							
Technical Chlordane	ND	3.75	ug/kg							
Endrin aldehyde	ND	0.750	ug/kg							
Endrin ketone	ND	2.25	ug/kg							
Heptachlor	ND	0.750	ug/kg							
Heptachlor epoxide	ND	0.750	ug/kg							
Methoxychlor	ND	3.75	ug/kg							
Toxaphene	ND	11.2	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	7.11		ug/kg	12.50		56.9	55-126			
Surrogate: Decachlorobiphenyl	8.43		ug/kg	12.50		67.4	49-133			
<b>LCS Prepared: 02/23/18 Analyzed: 03/01/18</b>										
Aldrin	10.3	2.00	ug/kg	13.33		77.2	56-130			
gamma-BHC (Lindane)	9.74	2.00	ug/kg	13.33		73.1	56-133			
4,4'-DDT	9.34	4.00	ug/kg	13.33		70.1	56-133			
Dieldrin	10.0	2.00	ug/kg	13.33		75.4	62-119			
Endrin	11.0	2.00	ug/kg	13.33		82.6	59-127			
Heptachlor	11.7	2.00	ug/kg	13.33		87.9	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.3		ug/kg	16.67		67.9	54-108			
Surrogate: Decachlorobiphenyl	11.6		ug/kg	16.67		69.4	54-127			
<b>Matrix Spike Source: 1802182-19 Prepared: 02/23/18 Analyzed: 02/27/18</b>										
Aldrin	5.97	2.00	ug/kg	13.33	ND	44.7	39-124			
gamma-BHC (Lindane)	6.38	2.00	ug/kg	13.33	ND	47.8	44-120			
4,4'-DDT	609	4.00	ug/kg	33.33	633	NR	48-150			V-3
Dieldrin	38.7	2.00	ug/kg	33.33	16.3	67.1	48-144			
Endrin	122	2.00	ug/kg	33.33	ND	367	54-149			DO
Heptachlor	10.7	2.00	ug/kg	13.33	ND	80.4	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.1		ug/kg	16.67		72.9	57-126			
Surrogate: Decachlorobiphenyl	9.69		ug/kg	16.67		58.1	43-136			
<b>Matrix Spike Dup Source: 1802182-19 Prepared: 02/23/18 Analyzed: 02/27/18</b>										
Aldrin	6.76	2.00	ug/kg	13.33	ND	50.7	39-124	12.5	30	
gamma-BHC (Lindane)	6.46	2.00	ug/kg	13.33	ND	48.4	44-120	1.20	30	









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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	Limit	RPD	Limit	Qualifier
<b>Batch BB82620 - EPA 3050B</b>										
Lead	54.1	1.00	mg/kg	50.20	7.41	93.1	75-125	1.11	30	
<b>Batch BB82621 - EPA 3050B</b>										
<b>Blank Prepared &amp; Analyzed: 02/23/18</b>										
Arsenic	ND	2.00	mg/kg							
Lead	ND	1.00	mg/kg							
<b>LCS Prepared &amp; Analyzed: 02/23/18</b>										
Arsenic	47.1	2.00	mg/kg	50.00		94.1	80-120			
Lead	52.8	1.00	mg/kg	50.20		105	80-120			
<b>Matrix Spike Source: 1802182-18 Prepared &amp; Analyzed: 02/23/18</b>										
Arsenic	50.9	2.00	mg/kg	50.00	5.00	91.9	75-125			
Lead	52.0	1.00	mg/kg	50.20	5.16	93.4	75-125			
<b>Matrix Spike Dup Source: 1802182-18 Prepared &amp; Analyzed: 02/23/18</b>										
Arsenic	51.2	2.00	mg/kg	50.00	5.00	92.4	75-125	0.563	30	
Lead	52.1	1.00	mg/kg	50.20	5.16	93.4	75-125	0.0747	30	
<b>Batch BB82621 - EPA 3050B</b>										
<b>Blank Prepared &amp; Analyzed: 02/23/18</b>										
Antimony	ND	2.00	mg/kg							
Arsenic	ND	2.00	mg/kg							
Barium	ND	1.00	mg/kg							
Beryllium	ND	1.00	mg/kg							
Cadmium	ND	1.00	mg/kg							
Chromium	ND	1.00	mg/kg							
Cobalt	ND	1.00	mg/kg							
Copper	ND	1.00	mg/kg							
Lead	ND	1.00	mg/kg							
Molybdenum	ND	1.00	mg/kg							
Nickel	ND	1.00	mg/kg							
Selenium	ND	2.00	mg/kg							
Silver	ND	1.00	mg/kg							
Thallium	ND	2.00	mg/kg							
Vanadium	ND	1.00	mg/kg							
Zinc	ND	5.00	mg/kg							
<b>LCS Prepared &amp; Analyzed: 02/23/18</b>										
Antimony	45.7	2.00	mg/kg	49.80		91.7	60-140			
Arsenic	47.1	2.00	mg/kg	50.00		94.1	80-120			
Barium	205	1.00	mg/kg	199.3		103	80-120			
Beryllium	4.83	1.00	mg/kg	4.940		97.7	80-120			
Cadmium	5.22	1.00	mg/kg	4.990		105	80-120			





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BB82621 - EPA 3050B</b>										
Chromium	20.3	1.00	mg/kg	19.86		102	80-120			
Cobalt	52.9	1.00	mg/kg	49.57		107	80-120			
Copper	26.2	1.00	mg/kg	25.04		104	80-120			
Lead	52.8	1.00	mg/kg	50.20		105	80-120			
Molybdenum	46.7	1.00	mg/kg	50.10		93.2	80-120			
Nickel	54.6	1.00	mg/kg	49.73		110	80-120			
Selenium	44.9	2.00	mg/kg	50.00		89.8	80-120			
Silver	5.13	1.00	mg/kg	4.970		103	80-120			
Thallium	50.6	2.00	mg/kg	49.37		103	80-120			
Vanadium	48.3	1.00	mg/kg	50.10		96.3	80-120			
Zinc	52.9	5.00	mg/kg	49.98		106	80-120			
<b>Matrix Spike</b>	<b>Source: 1802182-18</b>		<b>Prepared &amp; Analyzed: 02/23/18</b>							
Antimony	43.5	2.00	mg/kg	49.80	ND	87.3	60-140			
Arsenic	50.9	2.00	mg/kg	50.00	5.00	91.9	75-125			
Barium	324	1.00	mg/kg	199.3	133	95.8	75-125			
Beryllium	5.21	1.00	mg/kg	4.940	0.542	94.5	75-125			
Cadmium	4.86	1.00	mg/kg	4.990	0.146	94.5	75-125			
Chromium	33.5	1.00	mg/kg	19.86	14.4	96.4	75-125			
Cobalt	56.7	1.00	mg/kg	49.57	8.95	96.3	75-125			
Copper	39.9	1.00	mg/kg	25.04	14.6	101	75-125			
Lead	52.0	1.00	mg/kg	50.20	5.16	93.4	75-125			
Molybdenum	45.5	1.00	mg/kg	50.10	1.55	87.7	75-125			
Nickel	56.4	1.00	mg/kg	49.73	8.80	95.8	75-125			
Selenium	44.4	2.00	mg/kg	50.00	ND	88.8	75-125			
Silver	4.72	1.00	mg/kg	4.970	ND	95.0	75-125			
Thallium	43.8	2.00	mg/kg	49.37	ND	88.7	75-125			
Vanadium	88.4	1.00	mg/kg	50.10	40.2	96.1	75-125			
Zinc	110	5.00	mg/kg	49.98	60.2	99.8	75-125			
<b>Matrix Spike Dup</b>	<b>Source: 1802182-18</b>		<b>Prepared &amp; Analyzed: 02/23/18</b>							
Antimony	42.5	2.00	mg/kg	49.80	ND	85.3	60-140	2.31	30	
Arsenic	51.2	2.00	mg/kg	50.00	5.00	92.4	75-125	0.563	30	
Barium	318	1.00	mg/kg	199.3	133	92.7	75-125	3.24	30	
Beryllium	5.17	1.00	mg/kg	4.940	0.542	93.7	75-125	0.844	30	
Cadmium	5.01	1.00	mg/kg	4.990	0.146	97.4	75-125	3.03	30	
Chromium	33.3	1.00	mg/kg	19.86	14.4	95.4	75-125	1.06	30	
Cobalt	57.0	1.00	mg/kg	49.57	8.95	96.9	75-125	0.664	30	
Copper	38.9	1.00	mg/kg	25.04	14.6	97.0	75-125	4.08	30	
Lead	52.1	1.00	mg/kg	50.20	5.16	93.4	75-125	0.0747	30	
Molybdenum	46.7	1.00	mg/kg	50.10	1.55	90.2	75-125	2.80	30	
Nickel	57.1	1.00	mg/kg	49.73	8.80	97.2	75-125	1.45	30	



**Certificate of Analysis**

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 03/01/18

Submitted: 02/20/18

**PLS Report No.: 1802182**
**Quality Control Data**

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Units	RPD	RPD Limit	Qualifier
<b>Batch 8882621 - EPA 3050B</b>										
Selenium	44.6	2.00	mg/kg	50.00	ND	89.2	75-125	0.309	30	
Silver	4.71	1.00	mg/kg	4.970	ND	94.8	75-125	0.208	30	
Thallium	44.1	2.00	mg/kg	49.37	ND	89.3	75-125	0.662	30	
Vanadium	85.6	1.00	mg/kg	50.10	40.2	90.5	75-125	5.94	30	
Zinc	106	5.00	mg/kg	49.98	60.2	91.2	75-125	9.02	30	
<b>Batch 8882636 - EPA 7471A</b>										
Blank	<b>Prepared &amp; Analyzed: 02/26/18</b>									
Mercury	ND	0.100	mg/kg							
LCS	<b>Prepared &amp; Analyzed: 02/26/18</b>									
Mercury	0.821	0.100	mg/kg	0.8358		98.2	80-120			
Matrix Spike	Source: 1802181-42	<b>Prepared &amp; Analyzed: 02/26/18</b>								
Mercury		0.913	0.100	mg/kg	0.8358	0.0420	104	75-125		
Matrix Spike Dup	Source: 1802181-42	<b>Prepared &amp; Analyzed: 02/26/18</b>								
Mercury		0.912	0.100	mg/kg	0.8358	0.0420	104	75-125	0.115	30
<b>Batch 8882626 -</b>										
Duplicate	Source: 1802181-42	<b>Prepared &amp; Analyzed: 02/23/18</b>								
pH		5.7	0.1	pH Units	5.7			0.527	5	
Duplicate	Source: 1802182-20	<b>Prepared &amp; Analyzed: 02/23/18</b>								
pH		7.8	0.1	pH Units	7.9			0.752	5	

**Notes and Definitions**

- V-3 Amount spiked was less than 1/4 of concentration in the sample.
- M Matrix Interference
- DO Coeluting Peaks
- NA Not Applicable
- ND Analyte NOT DETECTED at or above the detection limit
- NR Not Reported
- MDL Method Detection Limit
- PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

  
Authorized Signature(s)



**Enviro - Chem, Inc.**

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: February 26, 2018

Mr. John Schmidt  
Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

Project: 1802182 / P.O. #16289  
Lab I.D.: 180221-41, -42


Dear Mr. Schmidt:

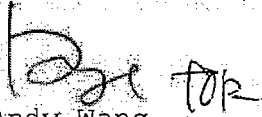
The **analytical results** for the soil samples, received by our lab on February 21, 2018, are attached. The samples were received chilled, intact and accompanying chain of custody record.

The samples were received at five degree Celsius.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

  
Curtis Desilets  
Vice President/Program Manager

  
Andy Wang  
Laboratory Manager



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802182 / P.O. #16289

MATRIX: SOIL  
DATE SAMPLED: 02/19/18  
REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 02/21/18  
DATE EXTRACTED: 02/22-23/18  
DATE ANALYZED: 02/23/18  
DATE REPORTED: 02/26/18

SAMPLE I.D.: NW-S2-3"

LAB I.D.: 180221-41

Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	100*
2,4,5-TP (Silvex)	ND	0.020	100*
2,4-D	ND	0.200	100*
2,4-DB	ND	0.200	100*
Dalapon (Dichloroacetic Acid)	ND	0.500	100*
Dicamba	ND	0.020	100*
Dichloroprop	ND	0.200	100*
Dinoseb (DNBP)	ND	0.100	100*
MCPA	ND	20.0	100*
MCPB	ND	20.0	100*

COMMENTS:


DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

\* = ACTUAL DETECTION LIMIT RAISED DUE TO MATRIX INTERFERENCE

DATA REVIEWED AND APPROVED BY: 

CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

# LABORATORY REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802182 / P.O. #16289

MATRIX: SOIL

DATE SAMPLED: 02/19/18

REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 02/21/18

DATE EXTRACTED: 02/22-23/18

DATE ANALYZED: 02/23/18

DATE REPORTED: 02/26/18

SAMPLE I.D.: NW-S3-3"

LAB I.D.: 180221-42

## Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	100*
2,4,5-TP (Silvex)	ND	0.020	100*
2,4-D	ND	0.200	100*
2,4-DB	ND	0.200	100*
Dalapon (Dichloroacetic Acid)	ND	0.500	100*
Dicamba	ND	0.020	100*
Dichloroprop	ND	0.200	100*
Dinoseb (DNBP)	ND	0.100	100*
MCPA	ND	20.0	100*
MCPP	ND	20.0	100*

### COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

\* = ACTUAL DETECTION LIMIT RAISED DUE TO MATRIX INTERFERENCE

DATA REVIEWED AND APPROVED BY: 24

CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802182 / P.O. #16289

MATRIX: SOIL

DATE SAMPLED: 02/19/18

REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 02/21/18

DATE EXTRACTED: 02/22-23/18

DATE ANALYZED: 02/23/18

DATE REPORTED: 02/26/18

METHOD BLANK FOR LAB I.D.: 180221-41, -42

Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: 

CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro-Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

## QA/QC Report

### Analysis: EPA 8151A

Matrix: **Soil/Solid/Liquid**  
Unit: **mg/Kg (PPM)**

Date Analyzed: **2/23/2018**

#### Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **180223-LCS1/2**

Analyte	S.R.	spk conc	MS	% REC	MSD	% REC	%RPD	ACP %RPD	ACP %REC
2,4,5-T	0	0.0500	0.0509	102%	0.0582	116%	13%	0-20%	50-150

#### Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
2,4,5-T	0.0500	0.0646	129%	70-130
2,4,5-TP	0.0500	0.0632	126%	70-130
DINOSEB	0.250	0.2283	91%	70-130

#### Surrogate Recovery:

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:		M-BLK	180221-41	180221-42	180221-44				
DCAA	50-150	53%	109%	120%	107%				
Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								
Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

S.R. = Sample Result

spk conc = Spike Concentration

%REC = Percent Recovery

ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

\* = Surrogate fail due to matrix interference (if Marked)

Note: LCS, MS, MSD are in control therefore results are in control.

Analyzed and Reviewed By: 

Final Reviewer: 



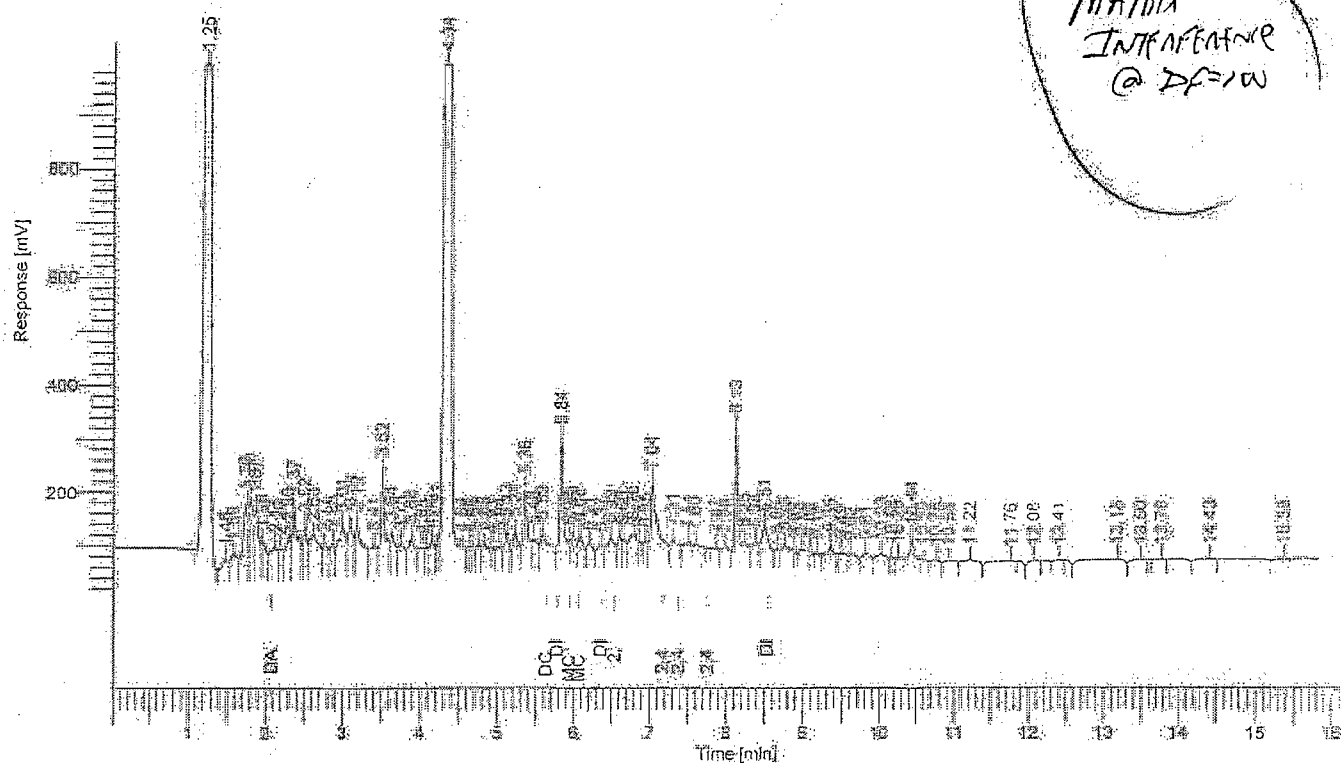
Software Version : 6.3.2.0646  
 Sample Name : 180221-41 5/500 RE  
 Instrument Name : GC-F  
 Rack/Vial : 0/10  
 Sample Amount : 1.000000  
 Cycle : 8

Date : 2/26/2018 11:59:44 AM  
 Data Acquisition Time : 2/23/2018 6:51:05 PM  
 Channel : A  
 Operator : Administrator  
 Dilution Factor : 1.000000

Result File : E:\GC DATA\GC-F\F02018\F1802\F180223\A019.rst

Sequence File : E:\GC DATA\GC-F\F02018\F1802\F180223\F180223.seq

MATRIX  
 INTERFERENCE  
 @ DF=1.00



## 8151A Results

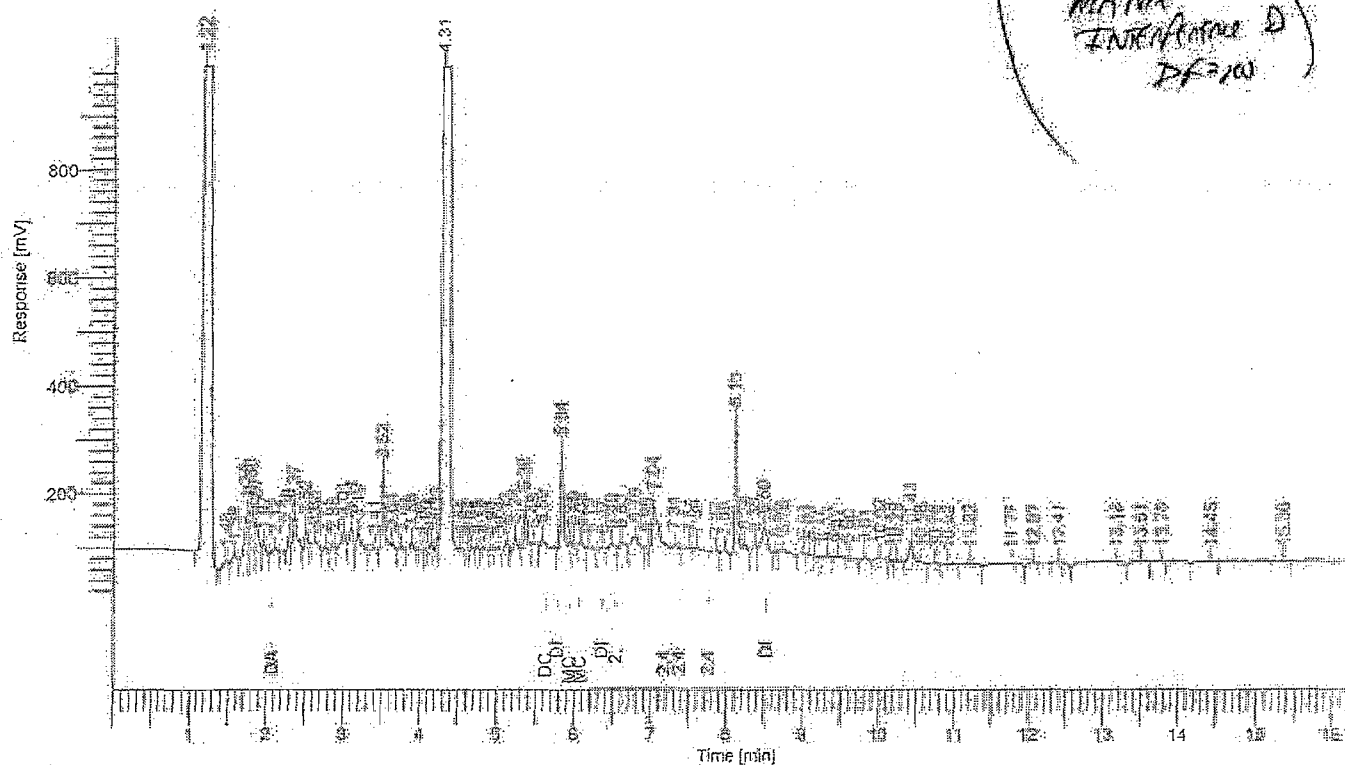
Component Name	Time [min]	Area [uV*sec]	Height [uV]	Adjusted Amount
Dalapon	2.13	258864	36651	0.4865
MCP	5.94	64576	25544	139.7995
MCPA	6.08	137006	31532	165.6941
Dichloroprop	6.37	74971	12335	0.1195
2,4-D	6.49	157597	26156	0.2248
2,4,5-T	7.31	97887	15777	0.0263
2,4-DB	7.87	23683	6674	0.0340
Dinoseb	8.51	304903	50384	0.1231

1119486 205053 306.5078



Software Version	6.3.2.0646	Date	2/26/2018 11:59:48 AM
Sample Name	180221-42 5/500 RE	Data Acquisition Time	2/23/2018 7:15:45 PM
Instrument Name	GC-F	Channel	A
Rack/Vial	0/11	Operator	Administrator
Sample Amount	1.000000	Dilution Factor	1.000000
Cycle	9		

Result File : E:\GC DATA\GC-F\F02018\F1802\F180223\A020.rst  
Sequence File : E:\GC DATA\GC-F\F02018\F1802\F180223\F180223.seq





101703



## CHAIN OF CUSTODY AND ANALYSIS REQUEST

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 746-6572

DATE: \_\_\_\_\_ PAGE 1 OF 1

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

CLIENT NAME: Positive Lab Service Project Name/No. 1802182 P.O. NO. 16289 AIRBILL NO: \_\_\_\_\_

ADDRESS: 781 E. Washington Blvd., LA CA 90021 ANALYSES REQUESTED: \_\_\_\_\_ COOLER TEMP: 5°C

PROJECT MANAGER: John Schmidt PHONE NO: 13.745.5312 FAX NO: \_\_\_\_\_ PRESERVATIVE: \_\_\_\_\_

SAMPLER NAME: Client (Printed) \_\_\_\_\_ (Signature) \_\_\_\_\_ REMARKS: \_\_\_\_\_

TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; (N) = Normal (5-7 Working Days)

CONTAINER TYPES: B = Brass, E = Encore, (G) = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER/COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2.19.18	1:45	NW-S2-3"		✓			N	1	G	-17
2	2.19.18	1:55	NW-S3-3"		✓			N	1	G	-19
3											
4											
5											
6											
7											
8											
9											
10											

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date: 2/21/2018	Time: 2:18 PM	<b>SAMPLE DISPOSITION:</b> 1. Samples returned to client? YES NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: _____ days By: _____ Date: _____
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:	
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:	

SPECIAL INSTRUCTIONS:

PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY





## American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181  
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

### Ordered By

Positive Lab Services  
781 East Washington Blvd.  
Los Angeles, CA 90021-3043


Telephone: (213) 745-5312  
Attention: John Schmidt

Number of Pages 3  
Date Received 02/21/2018  
Date Reported 03/02/2018

Job Number	Order Date	Client
91454	02/21/2018	POSLAB

Project ID: 1802182  
Project Name: PO# 16291

Enclosed please find results of analyses of 1 soil sample which was analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: 

Approved By: 

Cyrus Razmara, Ph.D.  
Laboratory Director



AETL

101704

<b>POSITIVE LAB SERVICE</b>		<b>CHAIN OF CUSTODY AND ANALYSIS REQUEST</b>		DATE: <u>9/4/54</u> PAGE ____ OF ____										
		781 East Washington Blvd., Los Angeles, CA 90021 (213) 745-5312 FAX (213) 745-6372		LOG BOOK NO. _____ FILE NO. _____ LAB NO. _____										
CLIENT NAME: Positive Lab Service Project Name/No. <u>1802182</u>				P.O. NO. <u>160291</u>										
ADDRESS: 781 E. Washington Blvd., LA CA 90021				ANALYSES REQUESTED:										
PROJECT MANAGER: John Schmidt PHONE NO: 213.745.5312 FAX NO:				PRESERVATIVE:										
SAMPLER NAME: Client (Printed) (Signature)				REMARKS:										
TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)														
CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:														
UST Project: Y N - Global ID# _____														
SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX	TAT	CONTAINER	EPA 8310 (PAHS)	SAMPLE CONDITION/ CONTAINER /COMMENTS:						
				WATER	SOIL	SLUDGE			OTHER					
1	2-19-18	2:25	NW-55-3"		✓					N	1	G	✓	-21 9/4/54.01
2														
3														
4														
5														
6														
7														
8														
9														
10														
Relinquished By: (Signature and Printed Name) <u>[Signature]</u>				Received By: (Signature and Printed Name) <u>[Signature]</u>				Date: <u>2/24/18</u> Time: <u>3:30p</u>						
Relinquished By: (Signature and Printed Name) <u>[Signature]</u>				Received By: (Signature and Printed Name) <u>[Signature]</u>				Date: <u>2/21/18</u> Time: <u>1710</u>						
Relinquished By: (Signature and Printed Name) <u>[Signature]</u>				Received By: (Signature and Printed Name) <u>[Signature]</u>				Date: _____ Time: _____						
SPECIAL INSTRUCTIONS:								SAMPLE DISPOSITION: 1. Samples returned to client? YES NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: _____ days By _____ Date _____						

PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY





## American Environmental Testing Laboratory Inc.

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Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

### COOLER RECEIPT FORM

Client Name: <u>positive lab</u>			
Project Name:			
AETL Job Number: <u>91454</u>			
Date Received: <u>02/21/18</u> Received by: <u>Jean Claude</u>			
Carrier: <input checked="" type="checkbox"/> AETL Courier <input type="checkbox"/> Client <input type="checkbox"/> GSO <input type="checkbox"/> FedEx <input type="checkbox"/> UPS			
<input type="checkbox"/> Others:			
Samples were received in: <input checked="" type="checkbox"/> Cooler ( <u>1</u> ) <input type="checkbox"/> Other (Specify):			
Inside temperature of shipping container No 1: <u>3.2°</u> , No 2: , No 3:			
Type of sample containers: <input type="checkbox"/> VOA, <input type="checkbox"/> Glass bottles, <input checked="" type="checkbox"/> Wide mouth jars, <input type="checkbox"/> HDPE bottles, <input type="checkbox"/> Metal sleeves, <input type="checkbox"/> Others (Specify):			
How are samples preserved: <input type="checkbox"/> None, <input type="checkbox"/> Ice, <input checked="" type="checkbox"/> Blue Ice, <input type="checkbox"/> Dry Ice			
<input checked="" type="checkbox"/> None, <u>HNO<sub>3</sub></u> , <u>NaOH</u> , <u>ZnOAc</u> , <u>HCl</u> , <u>Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub></u> , <u>MeOH</u>			
Other (Specify):			
	Yes	No, explain below	Name, if client was notified
1. Are the COCs Correct?	<input checked="" type="checkbox"/>		
2. Are the Sample labels legible?	<input checked="" type="checkbox"/>		
3. Do samples match the COC?	<input checked="" type="checkbox"/>		
4. Are the required analyses clear?	<input checked="" type="checkbox"/>		
5. Is there enough samples for required analysis?	<input checked="" type="checkbox"/>		
6. Are samples sealed with evidence tape?	<u>NA</u>		
7. Are sample containers in good condition?	<input checked="" type="checkbox"/>		
8. Are samples preserved?	<input checked="" type="checkbox"/>		
9. Are samples preserved properly for the intended analysis?	<input checked="" type="checkbox"/>		
10. Are the VOAs free of headspace?	<u>NA</u>		
11. Are the jars free of headspace?	<input checked="" type="checkbox"/>		

Explain all "No" answers for above questions:

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# American Environmental Testing Laboratory Inc.

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Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

Page: 1 A

## Ordered By

Positive Lab Services  
781 East Washington Blvd.  
Los Angeles, CA 90021-3043

Project ID: 1802182

Date Received 02/21/2018

Date Reported 03/02/2018

Telephone: (213) 745-5312

Attention: John Schmidt

Job Number	Order Date	Client
91454	02/21/2018	POSLAB

## CERTIFICATE OF ANALYSIS CASE NARRATIVE

AETL received 1 samples with the following specification on 02/21/2018.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers	
91454.01	NW-S5-3"	02/19/2018	Soil	1	
	Method ^ Submethod	Req Date	Priority	TAT	Units
	(8310)	02/28/2018	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody.  
No analytical non-conformances were encountered.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By:

Approved By:

Cyrus Razmara, Ph.D.  
Laboratory Director





# American Environmental Testing Laboratory Inc.

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## ANALYTICAL RESULTS

### Ordered By

Positive Lab Services  
781 East Washington Blvd.  
Los Angeles, CA 90021-3043

Telephone: (213)745-5312

Attn: John Schmidt

Page: 2

Project ID: 1802182

Project Name: PO# 16291

AETL Job Number	Submitted	Client
91454	02/21/2018	POSLAB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 022618IB1

Our Lab I.D.			Method Blank	91454.01		
Client Sample I.D.				NW-S5-3"		
Date Sampled				02/19/2018		
Date Prepared			02/26/2018	02/26/2018		
Preparation Method			3550B	3550B		
Date Analyzed			02/27/2018	02/27/2018		
Matrix			Soil	Soil		
Units			mg/Kg	mg/Kg		
Dilution Factor			1	1		
Analytes	MDL	PQL	Results	Results		
Benzo(a)anthracene	0.010	0.020	ND	ND		
Benzo(a)pyrene	0.010	0.020	ND	0.0789		
Benzo(b)fluoranthene	0.010	0.020	ND	0.0635		
Benzo(k)fluoranthene	0.010	0.020	ND	0.0238		
Chrysene	0.010	0.020	ND	ND		
Dibenzo(a,h)anthracene	0.010	0.020	ND	ND		
Indeno(1,2,3-cd)pyrene	0.010	0.020	ND	ND		
Acenaphthene	0.010	0.020	ND	0.0228		
Acenaphthylene	0.010	0.020	ND	ND		
Anthracene	0.010	0.020	ND	ND		
Benzo(g,h,i)perylene	0.010	0.020	ND	ND		
Fluoranthene	0.010	0.020	ND	0.115		
Fluorene	0.010	0.020	ND	0.0141J		
Naphthalene	0.010	0.020	ND	ND		
Phenanthrene	0.010	0.020	ND	0.0712		
Pyrene	0.010	0.020	ND	0.110		
2-Methylnaphthalene	0.010	0.020	ND	ND		
Our Lab I.D.			Method Blank	91454.01		
Surrogates	%Rec.Limit		% Rec.	% Rec.		
p-Terphenyl-D14	75-125		115	68.5 S6		





# American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181  
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

## QUALITY CONTROL RESULTS

### Ordered By

Positive Lab Services  
781 East Washington Blvd.  
Los Angeles, CA 90021-3043

Telephone: (213)745-5312

Attn: John Schmidt

Page: 3

Project ID: 1802182  
Project Name: PO# 16291

AETL Job Number	Submitted	Client
91454	02/21/2018	POSLAB

Method: (8310), Polynuclear Aromatic Hydrocarbons (SW-846)

QC Batch No: 022618IB1; Dup or Spiked Sample: 0226; LCS: Clean Sand; QC Prepared: 02/26/2018; QC Analyzed: 02/27/2018;  
Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Benzo(a)anthracene	0.00	0.0500	0.0555	111	0.0500	0.0540	108	2.7	75-125	<20
Benzo(a)pyrene	0.00	0.0500	0.0530	106	0.0500	0.0515	103	2.9	75-125	<20
Naphthalene	0.00	0.500	0.397	79.4	0.500	0.393	78.6	1.0	75-125	<20
<b>Surrogates</b>										
p-Terphenyl-D14	0.00	0.400	0.448	112	0.400	0.432	108	3.6	75-125	<20

QC Batch No: 022618IB1; Dup or Spiked Sample: 0226; LCS: Clean Sand; QC Prepared: 02/26/2018; QC Analyzed: 02/27/2018;  
Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS/LCSD % Limit						
Benzo(a)anthracene	0.0500	0.0540	108	75-125						
Benzo(a)pyrene	0.0500	0.0515	103	75-125						
Naphthalene	0.500	0.446	89.2	75-125						
<b>LCS</b>										
Anthracene	0.0500	0.0515	103	75-125						
Benzo(b)fluoranthene	0.100	0.0752	75.2	75-125						
Benzo(g,h,i)perylene	0.100	0.0989	98.9	75-125						
Benzo(k)fluoranthene	0.0500	0.0515	103	75-125						
Chrysene	0.0500	0.0580	116	75-125						
Dibenzo(a,h)anthracene	0.100	0.0995	99.5	75-125						
Fluoranthene	0.100	0.0989	98.9	75-125						
Fluorene	0.100	0.104	104	75-125						
Indeno(1,2,3-cd)pyrene	0.0500	0.0580	116	75-125						
Phenanthrene	0.0500	0.0500	100	75-125						
Pyrene	0.0500	0.0505	101	75-125						
<b>Surrogates</b>										
p-Terphenyl-D14	0.400	0.444	111	75-125						





## American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street, Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181  
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • [www.aetlab.com](http://www.aetlab.com)

### Data Qualifiers and Descriptors

#### ***Data Qualifier:***

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected. However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

#### ***Definition:***

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.





## American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street, Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181  
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • [www.aetlab.com](http://www.aetlab.com)

### Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

---





## Enthalpy Analytical, LLC

931 W. Barkley Ave - Orange, CA 92868

Tel: (714)771-6900 Fax: (714)538-1209

www.enthalpy.com

info-sc@enthalpy.com



Client: Positive Lab Service  
Address: 781 E. Washington Blvd.  
Los Angeles, CA 90021

Lab Request: 399725  
Report Date: 03/05/2018  
Date Received: 02/22/2018  
Client ID: 2513

Attn: John Schmidt

Comments: Project #: 1802182  
P.O. #: 16295

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAP are indicated on the report. This cover letter is an integral part of the final report.

---

<u>Sample #</u>	<u>Client Sample ID</u>
-----------------	-------------------------

399725-001	NW1A,B,C,D-3"
------------	---------------

399725-002	NW2A,B,C-3"
------------	-------------

399725-003	NW3A,B,C,D-3"
------------	---------------

399725-004	NW4A,B,C,D-3"
------------	---------------

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Chris Myrter, Project Specialist

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

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Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/19/2018 15:12	Site:	
Sample #: <u>399725-001</u>	Client Sample #: NW1A,B,C,D-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 09:33	Site:	
Sample #: <u>399725-002</u>	Client Sample #: NW2A,B,C-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 10:10	Site:	
Sample #: <u>399725-003</u>	Client Sample #: NW3A,B,C,D-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					

Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/20/2018 10:34	Site:	
Sample #: <u>399725-004</u>	Client Sample #: NW4A,B,C,D-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CFA S:18.0	Prep Method: Method					QCBatchID:	
See Attached		1					



## Data Qualifiers and Definitions

### Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

### Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds



Entralpy

101710

<b>POSITIVE LAB SERVICE</b>		<b>CHAIN OF CUSTODY AND ANALYSIS REQUEST</b>		DATE: <u>2.22.18</u> PAGE <u>1</u> OF <u>1</u>	
		781 East Washington Blvd., Los Angeles, CA 90021 (213) 745-5312 FAX (213) 745-6372		LOG BOOK NO. _____ FILE NO. _____ LAB NO. _____	
CLIENT NAME: Positive Lab Service Project Name/No. <u>1802182</u>				P.O. NO. <u>10295</u>	
ADDRESS: 781 E. Washignton Blvd., LA CA 90021				ANALYSES REQUESTED:	
PROJECT MANAGER: John Schmidt PHONE NO: <u>213.745.5312</u> FAX NO:				AIRBILL NO:	
SAMPLER NAME: Client (Printed) (Signature)				COOLER TEMP: <u>1-0/K</u>	
TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; <u>N</u> = Normal (5-7 Working Days)				PRESERVATIVE:	
CONTAINER TYPES: B = Brass, E = Encore, <u>G</u> = Glass, P = Plastic, V = VOA Vial, O = Other:				REMARKS:	
UST Project: Y N - Global ID#				SAMPLE CONDITION/CONTAINER /COMMENTS:	

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER										
				WATER	SOIL	SLUDGE	OTHER		#	TYPE									
1	2.19.18	312	NW1A,B,C,D-3"		✓			N	1	G	✓								-2
2	2.20.18	933	NW2A,B,C-3"		✓			↓	↓	↓	✓								-3
3	2.20.18	1010	NW3A,B,C,D-3"		✓			↓	↓	↓	✓								-4
4	2.20.18	1034	NW4A,B,C,D-3"		✓			↓	↓	↓	✓								-5
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date: <u>2/22/18</u>	Time: <u>1449</u>	<b>SAMPLE DISPOSITION:</b> 1. Samples returned to client? YES NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: _____ days By _____ Date _____
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:	
Relinquished By: (Signature and Printed Name)	Received By: (Signature and Printed Name)	Date:	Time:	

SPECIAL INSTRUCTIONS:

PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY





# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

### Section 1

Client: Positive Labs

Project: 1802182

Date Received: 2/22/18

Sampler's Name Present: ☒ Yes ☐ No

### Section 2

Sample(s) received in a cooler? ☒ Yes, How many? 1 ☐ No (skip section 2) Sample Temp (°C) (No Cooler): \_\_\_\_\_

Sample Temp (°C), One from each cooler: #1: 1.0 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: \_\_\_\_\_

### Section 3

Was the cooler packed with: ☒ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam  
☐ Paper ☐ None ☐ Other \_\_\_\_\_

Cooler Temp (°C): #1: 1.8 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)	✓		
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

### Section 5 Explanations/Comments

### Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: \_\_\_\_\_ Date/Time \_\_\_\_\_

☐ Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_

Project Manager's response: \_\_\_\_\_

Completed By: \_\_\_\_\_

Date: 2/22/18

Enthalpy Analytical, a subsidiary of Montrose Environmental Group, Inc.  
931 W. Barkley Ave, Orange, CA 92868 • T: (714) 771-6900 • F: (714) 538-1209

[www.enthalpy.com/socal](http://www.enthalpy.com/socal)

Sample Acceptance Checklist – Rev 4, 8/8/2017





ENTHALPY  
ANALYTICAL





# Enthalpy Analytical

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 297399  
ANALYTICAL REPORT

Enthalpy Analytical, Inc.  
931 W. Barkley Avenue  
Orange, CA 92868

Project : STANDARD  
Location : 399725  
Level : II

<u>Sample ID</u>	<u>Lab ID</u>
NW1A,B,C,D-3" (399725-001)	297399-001
NW2A,B,C,D-3" (399725-002)	297399-002
NW3A,B,C,D-3" (399725-003)	297399-003
NW4A,B,C,D-3" (399725-004)	297399-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: \_\_\_\_\_  
Will Rice  
Project Manager  
will.rice@enthalpy.com  
(510) 204-2221 Ext 13102

Date: 03/02/2018

CA ELAP# 2896, NELAP# 4044-001



#### CASE NARRATIVE

Laboratory number: 297399  
Client: Enthalpy Analytical, Inc.  
Location: 399725  
Request Date: 02/23/18  
Samples Received: 02/23/18

This data package contains sample and QC results for four soil samples, requested for the above referenced project on 02/23/18. The samples were received cold and intact.

Total Organic Carbon (TOC) (WALKLEY-BLACK):

No analytical problems were encountered.



297399



**Enthalpy Analytical**  
**Formerly Associated Labs**  
 1 Park Plaza, Suite 1000  
 Irvine, CA 92614  
 Tel: 714.771.6900 Fax: 714.538.1209  
 info-sc@enthalpy.com



**Subcontract Laboratory:**

Enthalpy - Berkeley - Sub  
 2323 5th St.  
 Berkeley, CA 94710

ATTN: Will Rice  
 PO#

**Project:** 399725 **Due:**

PM: Chris Myrter

Email: christopher.myrter@enthalpy.com

CC: incomingreports@enthalpy.com

Require: ☐ EDD ☐ EDF ☐ EDT

Report To: ☐ MDL

**Note:** Standard TAT

Matrix	Sampled	Sample ID	Analysis	Comment
Solid	02/19/18 15:12	NW1A,B,C,D-3" (399725-001)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 09:33	NW2A,B,C-3" (399725-002)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 10:10	NW3A,B,C,D-3" (399725-003)	TOC Solid_OUT	Walkley-Black
Solid	02/20/18 10:34	NW4A,B,C,D-3" (399725-004)	TOC Solid_OUT	Walkley-Black

**Note:**

**Relinquished By:**

*Guay*

Date/Time 2/22/18 15:00

**Received By:**

*h*

Date/Time 02/23/18 13:30

Date/Time

Date/Time



# **SAMPLE RECEIPT CHECKLIST**



Section 1: Login # 297399

Client: Enthalpy

Date Received: 02/23/18

Project: 399725

Section 2: Samples received in a cooler? ☒ Yes, how many? 1 ☐ No (skip Section 3 below)

If no cooler Sample Temp (°C): \_\_\_\_\_ using IR Gun # ☐ A, or ☐ B

☐ Samples received on ice directly from the field. Cooling process had begun

If in cooler: Date Opened 02/23/18 By (print) zls (sign) [Signature]

Shipping info (if applicable) 680 539568047

Are custody seals present? ☐ No, or ☐ Yes. If yes, where? ☐ on cooler, ☐ on samples, ☐ on package

☐ Date: \_\_\_\_\_ How many \_\_\_\_\_ ☐ Signature, ☐ Initials, ☐ None

Were custody seals intact upon arrival? ☐ Yes ☐ No ☐ N/A

Section 3: **Important : Notify PM if temperature exceeds 6°C or arrive frozen.**

Packing in cooler: (if other, describe) \_\_\_\_\_

☐ Bubble Wrap, ☐ Foam blocks, ☐ Bags, ☐ None, ☐ Cloth material, ☐ Cardboard, ☐ Styrofoam, ☐ Paper towels

☐ Samples received on ice directly from the field. Cooling process had begun

Type of ice used: ☒ Wet, ☐ Blue/Gel, ☐ None Temperature blank(s) included? ☐ Yes, ☐ No

Temperature measured using ☐ Thermometer ID: \_\_\_\_\_, or IR Gun # ☐ A ☒ B

Cooler Temp (°C): #1: 0.8, #2: \_\_\_\_\_, #3: \_\_\_\_\_, #4: \_\_\_\_\_, #5: \_\_\_\_\_, #6: \_\_\_\_\_, #7: \_\_\_\_\_

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	<input checked="" type="checkbox"/>		
Were Method 5035 sampling containers present?		<input checked="" type="checkbox"/>	
If YES, what time were they transferred to freezer? _____			
Did all bottles arrive unbroken/unopened?	<input checked="" type="checkbox"/>		
Are there any missing / extra samples?		<input checked="" type="checkbox"/>	
Are samples in the appropriate containers for indicated tests?	<input checked="" type="checkbox"/>		
Are sample labels present, in good condition and complete?	<input checked="" type="checkbox"/>		
Does the container count match the COC?			<input checked="" type="checkbox"/>
Do the sample labels agree with custody papers?	<input checked="" type="checkbox"/>		
Was sufficient amount of sample sent for tests requested?	<input checked="" type="checkbox"/>		
Did you change the hold time in LIMS for unpreserved VOAs?			<input checked="" type="checkbox"/>
Did you change the hold time in LIMS for preserved terracores?			<input checked="" type="checkbox"/>
Are bubbles > 6mm absent in VOA samples?			<input checked="" type="checkbox"/>
Was the client contacted concerning this sample delivery?		<input checked="" type="checkbox"/>	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)			<input checked="" type="checkbox"/>
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check?			

pH strip lot# \_\_\_\_\_, pH strip lot# \_\_\_\_\_, pH strip lot# \_\_\_\_\_

Preservative added:

<input type="checkbox"/> H2SO4 lot# _____	added to samples _____	on/at _____
<input type="checkbox"/> HCL lot# _____	added to samples _____	on/at _____
<input type="checkbox"/> HNO3 lot# _____	added to samples _____	on/at _____
<input type="checkbox"/> NaOH lot# _____	added to samples _____	on/at _____

Section 6:

Explanations/Comments: - cool arrived w/ liquid in bag and bubble wrap bag and in sample container-

Date Logged In 2/23/18 By (print) zls (sign) [Signature]

Date Labeled 2 By (print) zls (sign) [Signature]



### Detections Summary for 297399

Results for any subcontracted analyses are not included in this summary.

Client : Enthalpy Analytical, Inc.  
 Project : STANDARD  
 Location : 399725

Client Sample ID : NW1A,B,C,D-3" (399725-001) Laboratory Sample ID : 297399-001

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.66		0.02	%	As Recd	2.278	WALKLEY-BLACK	METHOD

Client Sample ID : NW2A,B,C,D-3" (399725-002) Laboratory Sample ID : 297399-002

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.60		0.02	%	As Recd	2.336	WALKLEY-BLACK	METHOD

Client Sample ID : NW3A,B,C,D-3" (399725-003) Laboratory Sample ID : 297399-003

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.60		0.02	%	As Recd	2.288	WALKLEY-BLACK	METHOD

Client Sample ID : NW4A,B,C,D-3" (399725-004) Laboratory Sample ID : 297399-004

Analyte	Result	Flags	RL	Units	Basis	IDF	Method	Prep Method
Total Organic Carbon	0.69		0.02	%	As Recd	2.326	WALKLEY-BLACK	METHOD



Total Organic Carbon (TOC)			
Lab #:	297399	Location:	399725
Client:	Enthalpy Analytical, Inc.	Prep:	METHOD
Project#:	STANDARD	Analysis:	WALKLEY-BLACK
Analyte:	Total Organic Carbon	Batch#:	256786
Matrix:	Soil	Received:	02/23/18
Units:	%	Analyzed:	02/26/18
Basis:	as received		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled
NW1A,B,C,D-3" (399725-001)	SAMPLE	297399-001	0.66	0.02	2.278	02/19/18
NW2A,B,C,D-3" (399725-002)	SAMPLE	297399-002	0.60	0.02	2.336	02/20/18
NW3A,B,C,D-3" (399725-003)	SAMPLE	297399-003	0.60	0.02	2.288	02/20/18
NW4A,B,C,D-3" (399725-004)	SAMPLE	297399-004	0.69	0.02	2.326	02/20/18
	BLANK	QC921253	ND	0.01	1.000	



# Batch QC Report

Total Organic Carbon (TOC)			
Lab #:	297399	Location:	399725
Client:	Enthalpy Analytical, Inc.	Prep:	METHOD
Project#:	STANDARD	Analysis:	WALKLEY-BLACK
Analyte:	Total Organic Carbon	Basis:	as received
Field ID:	'J'LOT53/TRACT-18065(399622-2)	Batch#:	256786
MSS Lab ID:	297350-002	Sampled:	02/20/18
Matrix:	Soil	Received:	02/22/18
Units:	%	Analyzed:	02/26/18

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln	Fac
LCS	QC921254		0.1300	0.1300	100	80-120				1.000
MS	QC921255	0.3431	0.2600	0.5566	82	54-127				2.000
MSD	QC921256		0.2590	0.5653	86	54-127	2	20		1.992

RPD= Relative Percent Difference



March 06, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1802180  
Project Name: 16195 KHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on February 20, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

  
Project Manager





781 East Washington Blvd., Los Angeles, CA 90021  
[213] 745-5312 FAX [213] 745-6372

## Certificate of Analysis

Page 2 of 12

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/06/18  
Submitted: 02/20/18  
**PLS Report No.: 1802180**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: C18A-3" Soil (1802180-30) Sampled: 02/16/18 11:21 Received: 02/20/18 12:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	68.5 %			55-126		EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	108 %			49-133		EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214

**Sample ID: C18B-3" Soil (1802180-31) Sampled: 02/16/18 11:14 Received: 02/20/18 12:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
<b>4,4'-DDE</b>	<b>19.2</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/06/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: C18B-3" Soil (1802180-31) Sampled: 02/16/18 11:14 Received: 02/20/18 12:45**

Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	74.5 %		55-126		EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	129 %		49-133		EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

**Sample ID: C18C-3" Soil (1802180-32) Sampled: 02/16/18 11:08 Received: 02/20/18 12:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
<b>4,4'-DDE</b>	<b>16.1</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	69.1 %			55-126		EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	121 %			49-133		EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214

**Sample ID: C18B-2' Soil (1802180-33) Sampled: 02/16/18 11:16 Received: 02/20/18 12:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/06/18  
Submitted: 02/20/18  
**PLS Report No.: 1802180**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: C18B-2' Soil (1802180-33) Sampled: 02/16/18 11:16 Received: 02/20/18 12:45										
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	68.1 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	78.3 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

Sample ID: C24A-3" Soil (1802180-34) Sampled: 02/16/18 14:42 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	25.4		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	72.6 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	127 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

Sample ID: C24B-3" Soil (1802180-35) Sampled: 02/16/18 14:50 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	26.5		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/06/18

Submitted: 02/20/18

PLS Report No.: 1802180

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: C24B-3" Soil (1802180-35) Sampled: 02/16/18 14:50 Received: 02/20/18 12:45										
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	73.9 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	108 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

Sample ID: C24C-3" Soil (1802180-36) Sampled: 02/16/18 14:33 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	67.6 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	99.0 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

Sample ID: S3-2' Soil (1802180-37) Sampled: 02/16/18 13:12 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	3.44		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/28/18	03/02/18	lk	BC80110
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/28/18	03/02/18	lk	BC80110
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	02/28/18	03/02/18	lk	BC80110
Surrogate: n-Tetracosane	95.0 %			68-133	EPA 3550C	EPA 8015B	02/28/18	03/02/18	lk	BC80110
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/06/18

Submitted: 02/20/18

PLS Report No.: 1802180

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: S3-2' Soil (1802180-37) Sampled: 02/16/18 13:12 Received: 02/20/18 12:45											
Aldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
beta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	73.1 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: Decachlorobiphenyl	90.8 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	

Sample ID: C13B-2' Soil (1802180-38) Sampled: 02/16/18 08:37 Received: 02/20/18 12:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	8.97		1	mg/kg	2.00	EPA 3050B EPA 6010B	03/02/18	03/02/18	CG	BC80534

Sample ID: C15B-2' Soil (1802180-39) Sampled: 02/16/18 09:39 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	9.55		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/02/18	03/02/18	CG	BC80534

Sample ID: C18A-2' Soil (1802180-40) Sampled: 02/16/18 11:23 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/06/18

Submitted: 02/20/18

PLS Report No.: 1802180

Project: 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: C18A-2' Soil (1802180-40) Sampled: 02/16/18 11:23 Received: 02/20/18 12:45**

Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	77.0 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214
Surrogate: Decachlorobiphenyl	97.2 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/02/18	ai	BC80214

**Sample ID: C18C-2' Soil (1802180-41) Sampled: 02/16/18 11:10 Received: 02/20/18 12:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	74.7 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	87.2 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

**Sample ID: C20B-2' Soil (1802180-42) Sampled: 02/16/18 12:16 Received: 02/20/18 12:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	7.16		1	mg/kg	2.00	EPA 3050B EPA 6010B	03/02/18	03/02/18	CG	BC80534

**Sample ID: C24A-2' Soil (1802180-43) Sampled: 02/16/18 14:45 Received: 02/20/18 12:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214





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Soils Engineering Inc.  
4400 Yeager Way  
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Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443  
Report Date: 03/06/18  
Submitted: 02/20/18  
**PLS Report No.: 1802180**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: C24A-2' Soil (1802180-43) Sampled: 02/16/18 14:45 Received: 02/20/18 12:45											
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
<hr/>											
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	74.6 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: Decachlorobiphenyl	91.5 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	

Sample ID: C24B-2' Soil (1802180-44) Sampled: 02/16/18 14:53 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
<hr/>											
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	69.5 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: Decachlorobiphenyl	84.7 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	

Sample ID: C24C-2' Soil (1802180-45) Sampled: 02/16/18 14:36 Received: 02/20/18 12:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/06/18  
Submitted: 02/20/18  
**PLS Report No.: 1802180**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: C24C-2' Soil (1802180-45) Sampled: 02/16/18 14:36 Received: 02/20/18 12:45											
alpha-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
beta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
<hr/>											
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	74.7 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: Decachlorobiphenyl	84.7 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	





781 East Washington Blvd., Los Angeles, CA 90021  
[213] 745-5312 FAX [213] 745-6372

## Certificate of Analysis

Page 10 of 12

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/06/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80110 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>									
TPH C9 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: n-Tetracosane	23.6		mg/kg	20.83		113	68-133			
<b>LCS</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>									
Diesel	636	6.25	mg/kg	554.7		115	69-137			
Surrogate: n-Tetracosane	24.9		mg/kg	20.83		119	64-140			
<b>Matrix Spike</b>	<b>Source: 1802211-08</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>								
Diesel	134	2.50	mg/kg	110.9	59.2	67.9	53-138			
Surrogate: n-Tetracosane	26.0		mg/kg	20.83		125	68-133			
<b>Matrix Spike Dup</b>	<b>Source: 1802211-08</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>								
Diesel	134	2.50	mg/kg	110.9	59.2	67.4	53-138	0.787	30	
Surrogate: n-Tetracosane	26.0		mg/kg	20.83		125	68-133			
<b>Batch BC80214 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.5		ug/kg	16.67		69.3	55-126			





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 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 11 of 12

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

File #:73443

Report Date: 03/06/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80214 - EPA 3550C</b>										
<i>Surrogate: Decachlorobiphenyl</i>	12.7		ug/kg	16.67		76.3	49-133			
<b>LCS</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>									
Aldrin	7.87	2.00	ug/kg	13.33		59.0	56-130			
gamma-BHC (Lindane)	9.50	2.00	ug/kg	13.33		71.3	56-133			
4,4'-DDT	9.07	4.00	ug/kg	13.33		68.1	56-133			
Dieldrin	10.4	2.00	ug/kg	13.33		78.0	62-119			
Endrin	11.0	2.00	ug/kg	13.33		82.3	59-127			
Heptachlor	13.2	2.00	ug/kg	13.33		98.8	55-110			
<i>Surrogate: 2,4,5,6 Tetrachloro-m-xylene</i>	11.6		ug/kg	16.67		69.9	54-108			
<i>Surrogate: Decachlorobiphenyl</i>	13.2		ug/kg	16.67		79.2	54-127			
<b>Matrix Spike</b>	<b>Source: 1802159-39</b>	<b>Prepared: 02/28/18 Analyzed: 03/02/18</b>								
Aldrin	10.4	2.00	ug/kg	13.33	ND	77.7	39-124			
gamma-BHC (Lindane)	7.39	2.00	ug/kg	13.33	ND	55.4	44-120			
4,4'-DDT	27.6	4.00	ug/kg	33.33	ND	82.8	48-150			
Dieldrin	23.2	2.00	ug/kg	33.33	ND	69.5	48-144			
Endrin	27.1	2.00	ug/kg	33.33	ND	81.4	54-149			
Heptachlor	8.82	2.00	ug/kg	13.33	ND	66.2	46-135			
<i>Surrogate: 2,4,5,6 Tetrachloro-m-xylene</i>	13.1		ug/kg	16.67		78.6	57-126			
<i>Surrogate: Decachlorobiphenyl</i>	14.5		ug/kg	16.67		87.3	43-136			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-39</b>	<b>Prepared: 02/28/18 Analyzed: 03/02/18</b>								
Aldrin	10.6	2.00	ug/kg	13.33	ND	79.7	39-124	2.50	30	
gamma-BHC (Lindane)	7.60	2.00	ug/kg	13.33	ND	57.0	44-120	2.81	30	
4,4'-DDT	27.3	4.00	ug/kg	33.33	ND	82.0	48-150	1.04	30	
Dieldrin	23.9	2.00	ug/kg	33.33	ND	71.6	48-144	3.07	30	
Endrin	27.5	2.00	ug/kg	33.33	ND	82.6	54-149	1.42	30	
Heptachlor	8.99	2.00	ug/kg	13.33	ND	67.4	46-135	1.94	30	
<i>Surrogate: 2,4,5,6 Tetrachloro-m-xylene</i>	13.7		ug/kg	16.67		82.3	57-126			
<i>Surrogate: Decachlorobiphenyl</i>	14.9		ug/kg	16.67		89.4	43-136			
<b>Batch BC80534 - EPA 3050B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>									
Arsenic	ND	2.00	mg/kg							
<b>LCS</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>									
Arsenic	47.3	2.00	mg/kg	50.00		94.6	80-120			
<b>Matrix Spike</b>	<b>Source: 1802159-41</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>								
Arsenic	50.3	2.00	mg/kg	50.00	4.14	92.3	75-125			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-41</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>								
Arsenic	49.2	2.00	mg/kg	50.00	4.14	90.1	75-125	2.42	30	





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(213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 12 of 12

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/06/18

Submitted: 02/20/18

**PLS Report No.: 1802180**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Notes and Definitions

NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

A handwritten signature in blue ink, appearing to read 'John W. Wampler', is written over a horizontal line. Below the line, the words 'Authorized Signature(s)' are printed.

Authorized Signature(s)





**POSITIVE**  
**LAB SERVICE**

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/16/18 PAGE 1 OF 8  
FILE NO. \_\_\_\_\_ LAB NO. 1802180

SEI

Project Name/No.

16195/KHSD-SW

P.O. NO.

D. 16195-Pos

AIRBILL NO:\_\_\_\_\_

COOLER TEMP: 2.4

**PRESERVED:** .

REMARKS:  
 (\*) per B. Becker. 2.20.18  
 use Y2 for composite.

Save remainder  
for discrete analysis

Comp = Composite

**SAMPLE CONDITION/  
CONTAINER /COMMENTS:**

**ADDRESS:**

4400 Yeager Wy, Bakersfield CA 93313

**ANALYSES REQUESTED:**

**PROJECT MANAGER:**

R. Bech

PHONE NO:

601-831-5101

FAX NO: 831-2111

**SAMPLER NAME:**

R. Beck (Printed)

~~(Printed)~~

~~(Signature)~~

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
	2/16/18	8:17	C13A-3"		X			N	1	B
		8:35	C13B-3"							
		8:50	C13C-3"							
		9:14	C14A-3"							
		9:21	C14B-3"							
		9:03	C14C-3"							
		9:28	C15A-3"							
		9:37	C15B-3"							
		9:53	C15C-3"							
		1:20	P3-3"							

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 2/20/18 Time: 10:24

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 201.8 Time: 12.45

Relinquished By: (Signature and Printed Name)

Received By (Signature and Printed Name)

Date: 20/18 Time: 2:10

**SPECIAL INSTRUCTIONS:**

X = Composite analysis  $\sqrt{10} =$  discrete analysis

<b>SAMPLE DISPOSITION:</b>
----------------------------

1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 Frozen days

By SSM Date 2/16/18





## CHAIN OF CUSTODY AND ANALYSIS REQUEST

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

DATE: 2/16/18 PAGE 2 OF 8

LOG BOOK NO. FILE NO. LAB NO. 1802180

CLIENT NAME:

SEI

Project Name/No.

16195/KCHSD-SW

P.O. NO.

16195-Pos

AIRBILL NO:

COOLER TEMP: 2.4

PRESERVED:

 REMARKS: (\*) See pg 1 of 8  
 ✓ Discard testing for OCPs  
 Arsenic, + Pb at 30 2-29-18 9:44  
 See page 1 via email  
 Du B. Becker

ADDRESS:

4400 Yeager Wy, Bakersfield, CA 93313

ANALYSES REQUESTED:

PROJECT MANAGER:

R. Bech

PHONE NO:

661-831-5100

FAX NO:

831-2111

SAMPLER NAME:

R. Bech (Printed)

(Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y ☒ N - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/16/18	10:13	C16A-3"		X			N	1	B	
2		10:23	C16B-3" <i>Comp</i>								
3		10:03	C16C-3"								
4		10:46	C17A-3"								
5		10:35	C17B-3" <i>Comp</i>								
6		10:58	C17C-3"								
7		11:21	C18A-3"								
8		11:14	C18B-3" <i>Comp</i>								
9		11:08	C18C-3"								
10		11:16	C18B-2"								

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date:

Time:

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date:

Time:

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date:

Time:

SPECIAL INSTRUCTIONS:

Same as page 1

## SAMPLE DISPOSITION:

1. Samples returned to client? ☒ YES ☐ NO

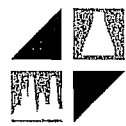
2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 Frozen days

By

Date: 2/16/18




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

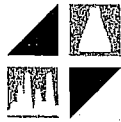
 DATE: 2/16/18 PAGE 3 OF 8  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802180

CLIENT NAME: <u>SEI</u>	Project Name/No. <u>16195/CHSD-SW</u>	P.O. NO. <u>16195-P05</u>	AIRBILL NO: _____
ADDRESS: <u>4400 Yeager Wy, Bakersfield CA 93313</u>			AIRBILL NO: <u>240</u>
PROJECT MANAGER: <u>R. Bech</u>	PHONE NO: <u>661-831-5105</u>	FAX NO: <u>831-2111</u>	PRESERVED: _____
SAMPLER NAME: <u>R. Bech</u> (Printed) <u>[Signature]</u> (Signature)			REMARKS: <u>⊗ Sept 14</u>
TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL			
CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:			
UST Project: Y <u>(N)</u> - Global ID# _____			

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/16/18	11:19	C18B-2"		X			N	1	B	⊗
2		11:47	C19A-3"								
3		11:31	C19B-3" <u>Comp</u>								
4		11:59	C19C-3"								
5		12:21	C20A-3"								
6		12:14	C20B-3" <u>Comp</u>								
7		12:07	C20C-3"								
8		1:04	C21A-3"								
9		1:17	C21B-3" <u>Comp</u>								
10		1:27	C21C-3"								

Relinquished By: (Signature and Printed Name) <u>[Signature] Robert Bech</u>	Received By: (Signature and Printed Name) <u>[Signature] Robert Bech</u>	Date: <u>2/16/18</u>	Time: <u>10:47</u>	<b>SAMPLE DISPOSITION:</b> 1. Samples returned to client? <u>YES</u> NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: <u>60</u> <u>Frozen</u> days By <u>[Signature]</u> Date <u>2/16/18</u>
Relinquished By: (Signature and Printed Name) <u>[Signature] Robert Bech</u>	Received By: (Signature and Printed Name) <u>[Signature] Robert Bech</u>	Date: <u>2/20/18</u>	Time: <u>12:45</u>	
Relinquished By: (Signature and Printed Name) <u>[Signature] Robert Bech</u>	Received By: (Signature and Printed Name) <u>[Signature] Robert Bech</u>	Date: <u>2/20/18</u>	Time: <u>2:50</u>	
SPECIAL INSTRUCTIONS:				




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/16/18 PAGE 4 OF 8  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802180

 CLIENT NAME: SEI Project Name/No. 16195/KHS-D-SW P.O. NO. 16195-Pes AIRBILL NO: \_\_\_\_\_

 ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313 ANALYSES REQUESTED: \_\_\_\_\_  
 PROJECT MANAGER: R. Bech PHONE NO: 661-831-5100 FAX NO: 831-2111 COOLER TEMP: 34

 SAMPLER NAME: R. Bech (Printed) [Signature] (Signature) PRESERVED: \_\_\_\_\_

 TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL REMARKS: ✓ copy 2 of 8

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other: \_\_\_\_\_

 UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO. DATE SAMPLED TIME SAMPLED SAMPLE DESCRIPTION MATRIX WATER SOIL SLUDGE OTHER TAT # TYPE OCPs Arsenic

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX	WATER	SOIL	SLUDGE	OTHER	TAT	#	TYPE	OCPs	Arsenic	SAMPLE CONDITION/CONTAINER /COMMENTS:
1	2/16/18	1:50	C22A-3"			X			N	1	B			
2		2:00	C22B-3"	Comp								X	⊗	
3		1:42	C22C-3"											
4		2:08	C23A-3"											
5		2:17	C23B-3"	Comp								X	⊗	
6		2:26	C23C-3"											
7		2:42	C24A-3"									✓		
8		2:50	C24B-3"	Comp								X	⊗	
9		2:33	C24C-3"									✓		
10	V	1:19	C21D-3"			✓			✓	✓	✓		⊗	

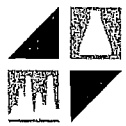
 Relinquished By: (Signature and Printed Name) [Signature] Received By: (Signature and Printed Name) Robert Beche Date: 2/20/18 Time: 12:45 SAMPLE DISPOSITION: 1. Samples returned to client? (YES) NO

 Relinquished By: (Signature and Printed Name) [Signature] Received By: (Signature and Printed Name) [Signature] Date: 2/20/18 Time: 12:45 2. Samples will not be stored over 30 days, unless additional storage time is requested.

 Relinquished By: (Signature and Printed Name) [Signature] Received By: (Signature and Printed Name) [Signature] Date: 2/20/18 Time: 2:10 3. Storage time requested: 60 days

 SPECIAL INSTRUCTIONS: \_\_\_\_\_ By: [Signature] Date: 2/16/18




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/16/18 PAGE 5 OF 8  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802180

CLIENT NAME:

SEI

Project Name/No.

16195/KHSD-SW

P.O. NO.

16195-Pes

AIRBILL NO: \_\_\_\_\_

COOLER TEMP: 2.4°C

PRESERVED: \_\_\_\_\_

REMARKS:

✓ See pg 2 of 8

ADDRESS:

4400 Yeager Wy, Bakersfield, CA 93313

ANALYSES REQUESTED:

PROJECT MANAGER:

R. Bech

PHONE NO:

661-831-5100

FAX NO:

831-2111

SAMPLER NAME:

R. Bech (Printed)

(Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER										SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE									
1	2/16/18	1:10	SB-3"		X			N	1	B	✓	✓	✓	✓	✓				
2		1:12	SB-2"								✓	✓							Hold
3		1:12	P3-2"																Hold
4		8:19	C13A-2"																
5		8:37	C13B-2"												✓				
6		8:52	C13C-2"																
7		8:19	C14A-2"																
8		8:37	C14B-2"																
9		8:52	C14C-2"																
10		9:30	C15A-2"																

Relinquished By: (Signature and Printed Name)

Robert Bech

Received By: (Signature and Printed Name)

Robert Bech

Date:

2/20/18

Time:

10:43

Relinquished By: (Signature and Printed Name)

Michael Henderson

Received By: (Signature and Printed Name)

Michael Henderson

Date:

2/20/18

Time:

12:45

Relinquished By: (Signature and Printed Name)

Michael Henderson

Received By: (Signature and Printed Name)

Michael Henderson

Date:

2/20/18

Time:

2:10

SPECIAL INSTRUCTIONS:

**SAMPLE DISPOSITION:**1. Samples returned to client? (YES) NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 Frozen daysBy MRDate 2/16/18




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/16/18 PAGE 6 OF 8

 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1902180

CLIENT NAME: <u>SEI</u>		Project Name/No. <u>16195/KHSD-SW</u>		P.O. NO. <u>16195-P05</u>		AIRBILL NO: _____					
ADDRESS: <u>4400 Yeager Wy, Bakersfield CA 93313</u>				ANALYSES REQUESTED:							
PROJECT MANAGER: <u>R. Bech</u>		PHONE NO: <u>661-831-5100</u>		FAX NO: <u>831-2111</u>		COOLER TEMP: <u>2.9°C</u>					
SAMPLER NAME: <u>R. Bech</u> (Printed)		(Signature)				PRESERVED: _____					
TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL											
CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:											
UST Project: Y <u>(N)</u> - Global ID# _____											
SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER/COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/16/18	9:39	C15B-2-		X			N	1	B	Hold
2		9:55	C15C-2-								
3		10:16	C16A-2-								
4		10:26	C16B-2-								
5		10:06	C16C-2-								
6		10:48	C17A-2-								
7		10:37	C17B-2-								
8		11:00	C17C-2-								
9		11:23	C18A-2-								
10		11:10	C18C-2-								

Relinquished By: (Signature and Printed Name)  
Robert Bech  
 Relinquished By: (Signature and Printed Name)  
Richard Henderson  
 Relinquished By: (Signature and Printed Name)  
[Signature]

Received By: (Signature and Printed Name)  
Richard Henderson  
 Received By: (Signature and Printed Name)  
[Signature]  
 Received By: (Signature and Printed Name)  
[Signature]

Date: 2/20/18 Time: 10:52  
 Date: 2/20/18 Time: 12:40  
 Date: 2/20/18 Time: 2:10

**SAMPLE DISPOSITION:**  
 1. Samples returned to client? YES NO  
 2. Samples will not be stored over 30 days, unless additional storage time is requested.  
 3. Storage time requested: 60 days  
 By [Signature] Date 2/16/18

**SPECIAL INSTRUCTIONS:**




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/16/18 PAGE 7 OF 8  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802180

CLIENT NAME: SEI Project Name/No. 16195/WHSD-SW P.O. NO. 16195-P05 AIRBILL NO: \_\_\_\_\_

ADDRESS: 4400 Yeager Wy, Bakersfield CA 93313 ANALYSES REQUESTED: \_\_\_\_\_

PROJECT MANAGER: R. Bech PHONE NO: 661-831-5105 FAX NO: 831-2111 COOLER TEMP: 2.4°C

SAMPLER NAME: R. Bech (Printed) [Signature] (Signature) PRESERVED: \_\_\_\_\_

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

REMARKS: ✓ see pg 2 of 8

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER/COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/16/18	11:49	C19A-2-		X				1	B	Hold
2		11:33	C19B-2-								
3		12:01	C19C-2-								
4		12:23	C20A-2-								
5		12:16	C20B-2-							✓	
6		12:09	C20C-2-								
7		1:06	C21A-2-								
8		1:21	C21B-2-								
9		1:29	C21C-2-								
10		1:52	C22A-2-								

Relinquished By: (Signature and Printed Name) [Signature] Robert Bech Received By: (Signature and Printed Name) [Signature] Robert Bech Date: 2/20/18 Time: 10:45

Relinquished By: (Signature and Printed Name) [Signature] Robert Bech Received By: (Signature and Printed Name) [Signature] Robert Bech Date: 2/20/18 Time: 12:45

Relinquished By: (Signature and Printed Name) [Signature] Robert Bech Received By: (Signature and Printed Name) [Signature] Robert Bech Date: 2/20/18 Time: 2:10

SPECIAL INSTRUCTIONS: \_\_\_\_\_

**SAMPLE DISPOSITION:**

1. Samples returned to client? (YES) NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 days

By [Signature] Date 2/16/18




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/16/18 PAGE 8 OF 8  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1902180

CLIENT NAME: <u>SEI</u>		Project Name/No. <u>16195/KHSD-SW</u>		P.O. NO. <u>16195-Pes</u>		AIRBILL NO: _____	
ADDRESS: <u>4400 Yeager Wy, Bakersfield CA 93313</u>				ANALYSES REQUESTED:			
PROJECT MANAGER: <u>R. Beel</u>		PHONE NO: <u>661-831-5105</u>		FAX NO: <u>831-2111</u>		COOLER TEMP: <u>2.4</u>	
SAMPLER NAME: <u>R. Beel</u> (Printed)		_____ (Signature)				PRESERVED: _____	
TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL							
CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:							
UST Project: Y <u>(N)</u> - Global ID# _____							

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER/COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/16/18	2:02	C22B-2-		X				1	B	Hold
2		1:45	C22C-2-								
3		2:10	C23A-2-								
4		2:19	C23B-2-								
5		2:28	C23C-2-								
6		2:45	C24A-2-							✓	
7		2:53	C24B-2-							✓	
8		2:36	C24C-2-							✓	
9											
10											

Relinquished By: (Signature and Printed Name) <u>Robert Beel</u>		Received By: (Signature and Printed Name) <u>Robert Beel</u>		Date: <u>2/16/18</u>	Time: <u>0152</u>	<b>SAMPLE DISPOSITION:</b> 1. Samples returned to client? <u>(YES)</u> NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: <u>60</u> days By <u>____</u> Date <u>2/16/18</u>
Relinquished By: (Signature and Printed Name) <u>Richard ...</u>		Received By: (Signature and Printed Name) <u>Richard ...</u>		Date: <u>2/20/18</u>	Time: <u>1245</u>	
Relinquished By: (Signature and Printed Name) <u>____</u>		Received By: (Signature and Printed Name) <u>____</u>		Date: <u>2/20/18</u>	Time: <u>2310</u>	

SPECIAL INSTRUCTIONS:





781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

March 07, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1802159  
Project Name: 16195 KHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on February 16, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

  
Project Manager





781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 2 of 9

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/07/18  
Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: S1-3" Soil (1802159-17) Sampled: 02/15/18 14:45 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>C5 - C8 Aliphatic HC</b>	<b>12.7</b>		50	mg/kg	12.5	EPA 5030B EPA 8015B	02/20/18	03/06/18	lk	BC80536
<b>C6 - C8 Aromatic HC</b>	<b>7.75</b>		50	mg/kg	5.00	EPA 5030B EPA 8021B	02/20/18	03/06/18	lk	BC80536
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>131 %</i>			<i>70-141</i>		<i>EPA 5030B EPA 8015B</i>	<i>02/20/18</i>	<i>03/06/18</i>	<i>lk</i>	<i>BC80536</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
<b>C9 - C16 Aromatic HC</b>	<b>7.15</b>	M	1	mg/kg	2.50	EPA 3550C EPA 8015B	02/20/18	03/05/18	lk	BC80627
C17 - C32 Aromatic HC	ND	M	1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	03/05/18	lk	BC80627
<b>C9 - C18 Aliphatic HC</b>	<b>3.84</b>	M	1	mg/kg	2.50	EPA 3550C EPA 8015B	02/20/18	03/06/18	lk	BC80627
C19 - C35 Aliphatic HC	ND	M	1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	03/06/18	lk	BC80627
<i>Surrogate: n-Tetracosane</i>	<i>2.97 %</i>	<i>M</i>		<i>68-133</i>		<i>EPA 3550C EPA 8015B</i>	<i>02/20/18</i>	<i>03/06/18</i>	<i>lk</i>	<i>BC80627</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Bioassay	See Attachment									

**Sample ID: S2-3" Soil (1802159-31) Sampled: 02/15/18 14:17 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
C5 - C8 Aliphatic HC	ND		1	mg/kg	0.500	EPA 5030B EPA 8015B	02/20/18	02/20/18	lk	BC80536
C6 - C8 Aromatic HC	ND		1	mg/kg	0.100	EPA 5030B EPA 8021B	02/20/18	02/20/18	lk	BC80536
<i>Surrogate: a,a,a-Trifluorotoluene</i>	<i>92.0 %</i>			<i>70-141</i>		<i>EPA 5030B EPA 8015B</i>	<i>02/20/18</i>	<i>02/20/18</i>	<i>lk</i>	<i>BC80536</i>
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
C9 - C16 Aromatic HC	ND		1	mg/kg	2.50	EPA 3550C EPA 8015B	02/20/18	03/05/18	lk	BC80627
<b>C17 - C32 Aromatic HC</b>	<b>271</b>		1	mg/kg	100	EPA 3550C EPA 8015B	02/20/18	03/05/18	lk	BC80627
<b>C9 - C18 Aliphatic HC</b>	<b>84.9</b>		10	mg/kg	25.0	EPA 3550C EPA 8015B	02/20/18	03/05/18	lk	BC80627
<b>C19 - C35 Aliphatic HC</b>	<b>3420</b>		10	mg/kg	1000	EPA 3550C EPA 8015B	02/20/18	03/05/18	lk	BC80627
<i>Surrogate: n-Tetracosane</i>	<i>75.8 %</i>			<i>68-133</i>		<i>EPA 3550C EPA 8015B</i>	<i>02/20/18</i>	<i>03/05/18</i>	<i>lk</i>	<i>BC80627</i>

**Sample ID: C4A-3" Soil (1802159-35) Sampled: 02/15/18 10:20 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
<b>4,4'-DDE</b>	<b>22.8</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214





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 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 3 of 9

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 03/07/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: C4A-3" Soil (1802159-35) Sampled: 02/15/18 10:20 Received: 02/16/18 10:45											
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	74.2 %		55-126		EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: Decachlorobiphenyl	110 %		49-133		EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	

Sample ID: C4B-3" Soil (1802159-36) Sampled: 02/15/18 10:28 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
<b>4,4'-DDE</b>	<b>32.4</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	70.3 %			55-126		EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: Decachlorobiphenyl	138 %			49-133		EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	

Sample ID: C4C-3" Soil (1802159-37) Sampled: 02/15/18 10:14 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/07/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: C4C-3" Soil (1802159-37) Sampled: 02/15/18 10:14 Received: 02/16/18 10:45										
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	74.1 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	129 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

Sample ID: C4A-2' Soil (1802159-38) Sampled: 02/15/18 10:22 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	73.0 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl	111 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

Sample ID: C4B-2' Soil (1802159-39) Sampled: 02/15/18 10:30 Received: 02/16/18 10:45										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDE	25.2		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/07/18  
 Submitted: 02/16/18  
**PLS Report No.: 1802159**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: C4B-2' Soil (1802159-39) Sampled: 02/15/18 10:30 Received: 02/16/18 10:45										
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: 2,4,5,6 Tetrachloro-m-xylor:		73.3 %		55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214
Surrogate: Decachlorobiphenyl		83.5 %		49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214

Sample ID: C4C-2' Soil (1802159-40) Sampled: 02/15/18 10:16 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	64.1 %			55-126	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	
Surrogate: Decachlorobiphenyl	102 %			49-133	EPA 3550C	EPA 8081A	02/28/18	03/01/18	ai	BC80214	

Sample ID: C7B-2' Soil (1802159-41) Sampled: 02/15/18 10:32 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	4.14		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/02/18	03/02/18	CG	BC80534

Sample ID: C10B-2' Soil (1802159-42) Sampled: 02/15/18 13:35 Received: 02/16/18 10:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Arsenic	8.38		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/02/18	03/02/18	CG	BC80534





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 03/07/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: P1-2' Soil (1802159-43) Sampled: 02/15/18 15:02 Received: 02/16/18 10:45**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Surrogate: 2,4,5,6 Tetrachloro-m-xylen.	77.5 %			54-131		EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215
Surrogate: Decachlorobiphenyl	88.1 %			53-131		EPA 3550C EPA 8082	02/28/18	03/01/18	ai	BC80215





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Soils Engineering Inc.  
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Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/07/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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#### Batch BC80536 - EPA 5030B

<b>Blank</b>		<b>Prepared &amp; Analyzed: 02/20/18</b>								
C5 - C8 Aliphatic HC	ND	0.500	mg/kg							
C6 - C8 Aromatic HC	ND	0.100	mg/kg							
Surrogate: <i>a,a,a</i> -Trifluorotoluene	0.0150		mg/kg	0.01500		99.9	70-141			

#### Batch BC80627 - EPA 3550C

<b>Blank</b>		<b>Prepared: 02/20/18 Analyzed: 03/05/18</b>								
C9 - C16 Aromatic HC	ND	2.50	mg/kg							
C17 - C32 Aromatic HC	ND	100	mg/kg							
C9 - C18 Aliphatic HC	ND	2.50	mg/kg							
C19 - C35 Aliphatic HC	ND	100	mg/kg							
Surrogate: <i>n</i> -Tetracosane	30.4		mg/kg	20.83		146	68-133			

#### Batch BC80214 - EPA 3550C

<b>Blank</b>		<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>								
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro- <i>m</i> -xylene	11.5		ug/kg	16.67		69.3	55-126			
Surrogate: Decachlorobiphenyl	12.7		ug/kg	16.67		76.3	49-133			

LCS

**Prepared: 02/28/18 Analyzed: 03/01/18**





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## Certificate of Analysis

Page 8 of 9

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/07/18

Submitted: 02/16/18

**PLS Report No.: 1802159**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80214 - EPA 3550C</b>										
Aldrin	7.87	2.00	ug/kg	13.33		59.0	56-130			
gamma-BHC (Lindane)	9.50	2.00	ug/kg	13.33		71.3	56-133			
4,4'-DDT	9.07	4.00	ug/kg	13.33		68.1	56-133			
Dieldrin	10.4	2.00	ug/kg	13.33		78.0	62-119			
Endrin	11.0	2.00	ug/kg	13.33		82.3	59-127			
Heptachlor	13.2	2.00	ug/kg	13.33		98.8	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.6		ug/kg	16.67		69.9	54-108			
Surrogate: Decachlorobiphenyl	13.2		ug/kg	16.67		79.2	54-127			
<b>Matrix Spike</b>	<b>Source: 1802159-39</b>	<b>Prepared: 02/28/18 Analyzed: 03/02/18</b>								
Aldrin	10.4	2.00	ug/kg	13.33	ND	77.7	39-124			
gamma-BHC (Lindane)	7.39	2.00	ug/kg	13.33	ND	55.4	44-120			
4,4'-DDT	27.6	4.00	ug/kg	33.33	ND	82.8	48-150			
Dieldrin	23.2	2.00	ug/kg	33.33	ND	69.5	48-144			
Endrin	27.1	2.00	ug/kg	33.33	ND	81.4	54-149			
Heptachlor	8.82	2.00	ug/kg	13.33	ND	66.2	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.1		ug/kg	16.67		78.6	57-126			
Surrogate: Decachlorobiphenyl	14.5		ug/kg	16.67		87.3	43-136			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-39</b>	<b>Prepared: 02/28/18 Analyzed: 03/02/18</b>								
Aldrin	10.6	2.00	ug/kg	13.33	ND	79.7	39-124	2.50	30	
gamma-BHC (Lindane)	7.60	2.00	ug/kg	13.33	ND	57.0	44-120	2.81	30	
4,4'-DDT	27.3	4.00	ug/kg	33.33	ND	82.0	48-150	1.04	30	
Dieldrin	23.9	2.00	ug/kg	33.33	ND	71.6	48-144	3.07	30	
Endrin	27.5	2.00	ug/kg	33.33	ND	82.6	54-149	1.42	30	
Heptachlor	8.99	2.00	ug/kg	13.33	ND	67.4	46-135	1.94	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.7		ug/kg	16.67		82.3	57-126			
Surrogate: Decachlorobiphenyl	14.9		ug/kg	16.67		89.4	43-136			
<b>Batch BC80215 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>									
Aroclor-1016	ND	50.0	ug/kg							
Aroclor-1221	ND	50.0	ug/kg							
Aroclor-1232	ND	50.0	ug/kg							
Aroclor-1242	ND	50.0	ug/kg							
Aroclor-1248	ND	50.0	ug/kg							
Aroclor-1254	ND	50.0	ug/kg							
Aroclor-1260	ND	50.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	15.7		ug/kg	16.67		94.2	54-131			
Surrogate: Decachlorobiphenyl	15.5		ug/kg	16.67		92.9	53-131			
<b>LCS</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>									
Aroclor-1260	342	50.0	ug/kg	416.7		82.1	60-129			



**Certificate of Analysis**

Page 9 of 9

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/07/18

Submitted: 02/16/18

**PLS Report No.: 1802159**
**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Quality Control Data**

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80215 - EPA 3550C</b>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.3		ug/kg	16.67		79.5	58-122			
Surrogate: Decachlorobiphenyl	15.7		ug/kg	16.67		94.2	57-141			
<b>Matrix Spike</b>	<b>Source: 1802159-43</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>								
Aroclor-1260	309	50.0	ug/kg	333.3	ND	92.6	53-120			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.6		ug/kg	16.67		75.5	57-129			
Surrogate: Decachlorobiphenyl	14.7		ug/kg	16.67		88.5	57-129			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-43</b>	<b>Prepared: 02/28/18 Analyzed: 03/01/18</b>								
Aroclor-1260	325	50.0	ug/kg	333.3	ND	97.4	53-120	5.03	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.9		ug/kg	16.67		77.5	57-129			
Surrogate: Decachlorobiphenyl	15.6		ug/kg	16.67		94.7	57-129			
<b>Batch BC80534 - EPA 3050B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>									
Arsenic	ND	2.00	mg/kg							
<b>LCS</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>									
Arsenic	47.3	2.00	mg/kg	50.00		94.6	80-120			
<b>Matrix Spike</b>	<b>Source: 1802159-41</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>								
Arsenic	50.3	2.00	mg/kg	50.00	4.14	92.3	75-125			
<b>Matrix Spike Dup</b>	<b>Source: 1802159-41</b>	<b>Prepared &amp; Analyzed: 03/02/18</b>								
Arsenic	49.2	2.00	mg/kg	50.00	4.14	90.1	75-125	2.42	30	

**Notes and Definitions**

M Matrix interference  
NA Not Applicable  
ND Analyte NOT DETECTED at or above the detection limit  
NR Not Reported  
MDL Method Detection Limit  
PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, IACSD No. 10138



Authorized Signature(s)





## Enthalpy Analytical, LLC

931 W. Barkley Ave - Orange, CA 92868

Tel: (714)771-6900 Fax: (714)538-1209

www.enthalpy.com

info-sc@enthalpy.com



Client: Positive Lab Service  
Address: 781 E. Washington Blvd.  
Los Angeles, CA 90021

Attn: John Schmidt

Comments: Project #:1802159  
P.O. #: 16308

Lab Request: 399844  
Report Date: 03/07/2018  
Date Received: 02/26/2018  
Client ID: 2513

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAP are indicated on the report. This cover letter is an integral part of the final report.

---

<u>Sample #</u>	<u>Client Sample ID</u>
-----------------	-------------------------

399844-001	S1-3"
------------	-------

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Chris Myrter, Project Specialist

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

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Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/15/2018 02:45	Site:	
Sample #: <b>399844-001</b>	Client Sample #: S1-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CDFG P&M 1988	Prep Method: Method					QCBatchID: QC1188296	
<b>LC50</b>	<b>Hazardous</b>	1		mg/L		02/27/18	QP



## Data Qualifiers and Definitions

### Qualifiers

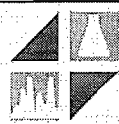
A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

### Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds



101/11


**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372
DATE: 2-26-18PAGE 1 OF 1

LOG BOOK NO. \_\_\_\_\_

FILE NO. \_\_\_\_\_

LAB NO. 399844CLIENT NAME: Positive Lab Service Project Name/No. 1802159P.O. NO. 16308

AIRBILL NO: \_\_\_\_\_

ADDRESS: 781 E. Washington Blvd., LA CA 90021

ANALYSES REQUESTED:

COOLER TEMP: 11/11PROJECT MANAGER: John Schmidt PHONE NO: 213.745.5312 FAX NO: \_\_\_\_\_

PRESERVATIVE: \_\_\_\_\_

SAMPLER NAME: Client (Printed) (Signature)

REMARKS:

TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER										SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE									
1	2-15-18	245	S1-3"		✓			N	1	G	✓								- 17
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 2-26-18Time: 1347

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_

Time: \_\_\_\_\_

**SAMPLE DISPOSITION:**

1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: \_\_\_\_\_ days

By: \_\_\_\_\_ Date: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY





# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

### Section 1

Client: Positive Lab ServiceProject: 1802159Date Received: 2/26/18Sampler's Name Present: ☐ Yes ☒ No

### Section 2

Sample(s) received in a cooler? ☒ Yes, How many? 1 ☐ No (skip section 2) Sample Temp (°C) (No Cooler) \_\_\_\_\_Sample Temp (°C), One from each cooler: #1: 1.1 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: \_\_\_\_\_

### Section 3

Was the cooler packed with: ☒ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam  
☐ Paper ☐ None ☐ Other \_\_\_\_\_Cooler Temp (°C): #1: 1.1 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

### Section 4

	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

### Section 5 Explanations/Comments

### Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
☐ Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_

Project Manager's response: \_\_\_\_\_

Completed By: [Signature]Date: 02/26/18Enthalpy Analytical, a subsidiary of Montrose Environmental Group, Inc.  
931 W. Barkley Ave, Orange, CA 92868 • T: (714) 771-6900 • F: (714) 538-1209  
www.enthalpy.com/socal

Sample Acceptance Checklist - Rev 4, 8/8/2017



Lab. No. 399844Date Received: 2/26/18Date Reported: 03/01/18

## LABORATORY WORKSHEET

QC1188296

Report To: Positive Lab

506

Bioassay Type

Static ☒ Continuous ☐ Renewal ☐Screening ☒ Definitive ☐Sample Description Solid # S1-3"

Test Organism: Pimephales Promelas Source: Thomas Fish Farm Acclimatization 19 Days @ 20 deg. C (F.B. - 02)  
 Aquaria Volume: 10 liters Aquaria Depth: 5 inches No. Fish/Concentration: 10 Total Chlorine Residual: N/D Sample Conductivity: 221 umhos/cm  
 Organism Characteristics - Length (mm): Min: 32 mm Max: 39 mm Avg: 36 mm Weigh (gm): Min: 0.45 gm Max: 0.69 gm Avg: 0.55 gm  
 Dilution water - Source: Soft Water Hardness - Initial: 40 mg/l Final: 50 mg/l Alkaline - Initial: 30 mg/l Final: 38 mg/l  
 Aeration: Air Control Hardness Initial: 40 mg/l Final: 45 mg/l Control Alkaline Initial: 30 mg/l Final: 35 mg/l Control Conductivity: 185 umhos/cm  
 Aeration Rate: 100 bubbles/min Aeration Duration: 96 hrs Tanks: All

Bioassay Conditions	Date Time	Control		Dilution											
		No.	%	750		400		Dup 750		Dup 400					
Organisms Surviving	02/27	10	100	10	100	10	100	10	100	10	100				
	2/28	10	100	0	0	7	70	0	0	8	80				
	3/1	10	100	✓		0	0	✓		0	0				
Dissolved Oxygen mg/l	11:30	6.7		6.4		6.4		6.4		6.4					
	12:30	6.9		6.7		6.8		6.7		6.8					
	11:10	7.18		✓		6.54		✓		6.49					
						✓									
pH	Start	7.2	19.9°C	7.0	19.9°C	7.1	19.9°C	7.0	19.9°C	7.1	19.9°C			°C	°C
	24 Hr	7.1	20.0°C	6.8	20.0°C	7.0	20.0°C	6.8	20.0°C	7.0	20.0°C			°C	°C
	48 Hr	7.0	20.2°C	✓	°C	7.42	20.2°C	✓	°C	7.38	20.2°C			°C	°C
	72 Hr		°C		°C	✓	°C	✓	°C		°C			°C	°C
Temp	96 Hr		°C		°C	✓	°C		°C		°C			°C	°C

Results - LC<sub>50</sub> = Hazardous mg/lHazardous mg/l% Survival N/AToxic Units T.U. N/A

Observation/Remarks \_\_\_\_\_

Method of Calculations

N/A

95% Confidence Limits

✓LC<sub>50</sub> Method\_\_\_\_\_  
Laboratory Supervisor



79123


**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/15/18 PAGE 1 OF 9  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802159

 CLIENT NAME: SEI Project Name/No. 16195/KHSD SW

 P.O. NO. 16195-Pos

 AIRBILL NO: 539090544  
 COOLER TEMP: 1.3°C  
 PRESERVED: 2.1°C

 ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313
**ANALYSES REQUESTED:**

 PROJECT MANAGER: R. Reche PHONE NO: 661-831-5100 FAX NO: 831-2111

 SAMPLER NAME: R. Reche (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

 UST Project: Y (N) - Global ID# \_\_\_\_\_

 REMARKS:  
Use Y2 for Composite  
Save remainder for  
add. analysis  
Comp = Composite

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
1	2/15/18	9:07	C1A-3"		X			N	1	B
2		9:17	C1B-3" <u>Comp</u>							
3		9:23	C1C-3"							
4		9:39	C2A-3"							
5		9:46	C2B-3" <u>Comp</u>							
6		9:31	C2C-3"							
7		9:53	C3A-3"							
8		10:00	C3B-3" <u>Comp</u>							
9		10:07	C3C-3"							
10		3:00	P1-3"		X					

 Relinquished By: (Signature and Printed Name) [Signature]

 Received By: (Signature and Printed Name) [Signature]

 Date: 2/10/18 Time: 10:45

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

X = Composite analysis
⊗ = discrete analysis
⊙ = discrete analysis
**SAMPLE DISPOSITION:**

 1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

 3. Storage time requested: 60 Frozen days

 Date 2/15/18

LAB COPY





## CHAIN OF CUSTODY AND ANALYSIS REQUEST

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/15/18 PAGE 2 OF 9

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

 CLIENT NAME: SEI Project Name/No. 16195/WHSD-SW P.O. NO. 16195-P05 AIRBILL NO: \_\_\_\_\_

 ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313 ANALYSES REQUESTED: \_\_\_\_\_ COOLER TEMP: 1.3°C

 PROJECT MANAGER: R. Becher PHONE NO: 661-831-5100 FAX NO: 831-2111 PRESERVED: \_\_\_\_\_

 SAMPLER NAME: R. Becher (Printed) [Signature] (Signature) REMARKS: \_\_\_\_\_

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

 UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER											
				WATER	SOIL	SLUDGE	OTHER		#	TYPE										
1	<u>2/15/18</u>	<u>2:45*</u>	<u>S1-3"</u>		<u>X</u>			<u>N</u>	<u>1</u>	<u>B</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
2		<u>2:47*</u>	<u>S1-2"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
		<u>10:20</u>	<u>C4A-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
3		<u>10:28</u>	<u>C4B-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
4		<u>10:14</u>	<u>C4C-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
5		<u>10:49</u>	<u>C5A-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
6		<u>10:39</u>	<u>C5B-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
7		<u>10:58</u>	<u>C5C-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
8		<u>11:23</u>	<u>C6A-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
9		<u>11:13</u>	<u>C6B-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>
10		<u>11:05</u>	<u>C6C-3"</u>								<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>

 Relinquished By: (Signature and Printed Name) [Signature] Received By: (Signature and Printed Name) [Signature] Date: 2/16/18 Time: 10:45

Relinquished By: (Signature and Printed Name) \_\_\_\_\_ Received By: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name) \_\_\_\_\_ Received By: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

 SPECIAL INSTRUCTIONS: Same as page 1

 SAMPLE DISPOSITION:  
 1. Samples returned to client? YES NO  
 2. Samples will not be stored over 30 days, unless additional storage time is requested.  
 3. Storage time requested: \_\_\_\_\_ days  
 By \_\_\_\_\_ Date: \_\_\_\_\_




**POSITIVE**  
**LAB SERVICE**

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

SEI

16195/KHSD SW

P.O. NO. 16195-Pos

AIRBILL NO: \_\_\_\_\_

4400 Yeagerway, Bakersfield, CA 93313

**ANALYSES REQUESTED:**

R. Beck

PHONE NO: 661-831-5100 FAX NO: 831-2441

R. Bechy (Printed)

(Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

COOLER TEMP: 1.3-0

**PRESERVED:** \_\_\_\_\_

REMARKS:

See page 1

**SAMPLE CONDITION/  
CONTAINER /COMMENTS:**

[illegible]

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 2/10/18 Time: 1045

**SAMPLE DISPOSITION:**

1. Samples returned to client? ☒ YES ☐ NO

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

2. Samples will not be stored over 30 days, unless additional storage time is requested.

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: Time:

3. Storage time requested: 60 total days

**SPECIAL INSTRUCTIONS:**

Same as page 1

By [Signature] Date 2/15/0

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## CHAIN OF CUSTODY AND ANALYSIS REQUEST

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372
DATE: 2/15/18 PAGE 4 OF 9

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

CLIENT NAME: <u>SEI</u>		Project Name/No. <u>16195/UHSD-SW</u>		P.O. NO. <u>16195-BOS</u>		AIRBILL NO: _____	
ADDRESS: <u>4400 Yeager Wy, Bakersfield, CA 93313</u>				ANALYSES REQUESTED:		COOLER TEMP: <u>1.3°C</u>	
PROJECT MANAGER: <u>R. Bech</u>		PHONE NO: <u>661-831-5160</u> FAX NO: <u>831-2111</u>		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">OCPs (8081)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Arsenic</div> </div>		PRESERVED: _____	
SAMPLER NAME: <u>R. Bech</u> (Printed) <u>[Signature]</u> (Signature)						REMARKS: <u>See page 1</u>	
TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL							
CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:							
UST Project: Y <u>(N)</u> - Global ID# _____							

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER									SAMPLE CONDITION/ CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE								
1	<u>2/15/18</u>	<u>1:24</u>	<u>C10A-3"</u>		<u>X</u>			<u>N</u>	<u>1</u>	<u>B</u>								
2		<u>1:33</u>	<u>C10B-3"</u>								<u>X</u>	<u>X</u>						
3		<u>1:17</u>	<u>C10C-3"</u>															
4		<u>1:42</u>	<u>C11A-3"</u>															
5		<u>1:52</u>	<u>C11B-3"</u>								<u>X</u>	<u>X</u>						
6		<u>1:58</u>	<u>C11C-3"</u>															
7		<u>2:36</u>	<u>C12A-3"</u>															
8		<u>2:29</u>	<u>C12B-3"</u>								<u>X</u>	<u>X</u>						
9		<u>2:04</u>	<u>C12C-3"</u>															
10		<u>10:30</u>	<u>C4D-3"</u>									<u>X</u>						

Relinquished By: (Signature and Printed Name) <u>[Signature]</u> <u>R. Bech</u>		Received By: (Signature and Printed Name) <u>[Signature]</u>		Date: <u>2/15/18</u> Time: <u>1045</u>		<b>SAMPLE DISPOSITION:</b> 1. Samples returned to client? <u>YES</u> NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: <u>60</u> days By <u>[Signature]</u> Date <u>2/15/18</u>	
Relinquished By: (Signature and Printed Name)		Received By: (Signature and Printed Name)		Date: _____ Time: _____			
Relinquished By: (Signature and Printed Name)		Received By: (Signature and Printed Name)		Date: _____ Time: _____			
SPECIAL INSTRUCTIONS: <u>See page 1</u>							





**POSITIVE**  
**LAB SERVICE**

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

P.O. NO. 16195-PDS

AIRBILL NO: \_\_\_\_\_

**ANALYSES REQUESTED:**

COOLER TEMP: 1.3-0

**PRESERVED:** \_\_\_\_\_

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

**CONTAINER TYPES:** B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

**REMARKS:**  
✓ addn 226.18 @ G-18  
P.D. Baker Email attached  
See page 1

\* see pg 2

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE

**SAMPLE CONDITION/  
CONTAINER /COMMENTS:**

[illegible]

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 11/18/18 Time: 10:40

**SAMPLE DISPOSITION:**

1. Samples returned to client? YES NO

Relinquished By: (Signature and Printed Name)

Received By: [Signature] (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

2. Samples will not be stored over 30 days, unless additional storage time is requested.

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

3. Storage time requested: \_\_\_\_\_ days

**SPECIAL INSTRUCTIONS:**

See page 1

By \_\_\_\_\_ Date \_\_\_\_\_

LAB COPY





**POSITIVE**  
LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021  
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LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

SEI

16195/UHSD-SW

P.O. NO. 16195-Pv

AIRBILL NO: 650
-----------------

539490543

COOLER TEMP: 2.1°C

4400 Yeager Way, Bakersfield, CA 93313

**ANALYSES REQUESTED:**

R. Beck

PHONE NO: 661-831-5100 FAX NO: 831-2111

R. Beck (Printed)

(Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

**CONTAINER TYPES:** B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

QPS

**PRESERVED:**

REMARKS:

Hold  
Broken  
✓ 2.26.18 @ 9:48  
OFF Hold per B Book  
(Miami) - attached

**SAMPLE CONDITION/  
CONTAINER /COMMENTS:**

[illegible]

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 2/16/18 Time: @ 1045

**SAMPLE DISPOSITION:**

1. Samples returned to client? YES NO

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

2. Samples will not be stored over 30 days, unless additional storage time is requested.

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

3. Storage time requested: 60 Kozu days

By [Signature] Date 2/15/18

**SPECIAL INSTRUCTIONS:**

LAB COPY





## CHAIN OF CUSTODY AND ANALYSIS REQUEST

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/15/18 PAGE 7 OF 9

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

 CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW P.O. NO. \_\_\_\_\_ AIRBILL NO. \_\_\_\_\_

 ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313 ANALYSES REQUESTED: \_\_\_\_\_ COOLER TEMP: 21°C

 PROJECT MANAGER: R. Beck PHONE NO: 661-831-5100 FAX NO: 831-2111 PRESERVED: \_\_\_\_\_

 SAMPLER NAME: R. Beck (Printed) (Signature) REMARKS: ✓ OFF HOLD 2.26.18 @ 9:48  
Per B. Becker (Email 1/26/18)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

 UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	<u>2/15/18</u>	<u>11:00</u>	<u>C5C-2-</u>		<u>X</u>			<u>N</u>	<u>1</u>	<u>B</u>	<u>Hold</u>
2		<u>11:25</u>	<u>C6A-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
3		<u>11:15</u>	<u>C6B-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
4		<u>11:07</u>	<u>C6C-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
5		<u>11:40</u>	<u>C7A-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
6		<u>10:32</u>	<u>C7B-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
7		<u>11:57</u>	<u>C7C-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
8		<u>12:04</u>	<u>C8A-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
9		<u>12:15</u>	<u>C8B-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
10	<u>✓</u>	<u>12:06</u>	<u>C8C-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>

 Relinquished By: (Signature and Printed Name) R. Beck Received By: (Signature and Printed Name) [Signature] Date: 2/16/18 Time: @ 10:45

Relinquished By: (Signature and Printed Name) \_\_\_\_\_ Received By: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name) \_\_\_\_\_ Received By: (Signature and Printed Name) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

## SAMPLE DISPOSITION:

1. Samples returned to client? YES NO
2. Samples will not be stored over 30 days, unless additional storage time is requested.
3. Storage time requested: 60 Days days  
By [Signature] Date 2/15/18





## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/15/18 PAGE 8 OF 9

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

CLIENT NAME:

SEI

Project Name/No.:

161957 UHSD-SW

P.O. NO. 18195-P

**AIRBILL NO:**

ADDRESS:

4400 Yeager Wy, Bakersfield CA 93317

**ANALYSES REQUESTED:**

PROJECT MANAGER:

R. Beck

PHONE NO:

661-821-5400

FAX NO: 831-2411

SAMPLER NAME:

R. R. (Printed)

(Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y ~~N~~ - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
	2/15/18	12:55	C9A-2-		X			N	1	B
	↓	1:03	C9B-2-		↓			↓	↓	↓
		1:11	C9C-2-		↓			↓	↓	↓
		1:26	C10A-2-		↓			↓	↓	↓
		1:35	C10B-2-		↓			↓	↓	↓
		1:19	C10C-2-		↓			↓	↓	↓
		1:44	C11A-2-		↓			↓	↓	↓
		1:54	C11B-2-		↓			↓	↓	↓
		2:00	C11C-2-		↓			↓	↓	↓
	✓	2:38	C12A-2-		✓			✓	✓	✓

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 2/16/80 Time: 1045

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date:                      Time:

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SPECIAL INSTRUCTIONS:**

SAMPLE DISPOSITION:	
1	2

1. Samples returned to client? ☒ YES ☐ NO

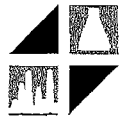
2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 free days

By [Signature] Date 2/15/18

LAB COPY




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 2/15/18 PAGE 9 OF 9

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

CLIENT NAME: <u>SEI</u>		Project Name/No. <u>18195/WH5D-SW</u>		P.O. NO. <u>18195-PoS</u>		AIRBILL NO: _____					
ADDRESS: <u>4400 Yeager Wy, Bakersfield, CA 93313</u>				ANALYSES REQUESTED:							
PROJECT MANAGER: <u>R. Bed</u>		PHONE NO: <u>661-831-5700</u>		FAX NO: <u>831-2111</u>		COOLER TEMP: <u>2.1°C</u>					
SAMPLER NAME: <u>R. Bed</u> (Printed)		(Signature)				PRESERVED: _____					
TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL											
CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:											
UST Project: Y <input checked="" type="radio"/> - Global ID# _____											
SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION / CONTAINER / COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	<u>2/15/18</u>	<u>2:31</u>	<u>C12B-2-</u>		<u>X</u>			<u>N</u>	<u>1</u>	<u>B</u>	<u>Hold</u>
2	<u>1</u>	<u>2:06</u>	<u>C12C-2-</u>		<u>1</u>			<u>1</u>	<u>1</u>	<u>1</u>	<u>↓</u>
3	<u>1</u>	<u>3:02</u>	<u>P1-2-</u>		<u>1</u>						<u>✓</u>
4											
5											
6											
7											
8											
9											
10											

Relinquished By: (Signature and Printed Name) [Signature]  
 Relinquished By: (Signature and Printed Name) [Signature]  
 Relinquished By: (Signature and Printed Name) \_\_\_\_\_

Received By: (Signature and Printed Name) [Signature]  
 Received By: (Signature and Printed Name) [Signature]  
 Received By: (Signature and Printed Name) \_\_\_\_\_

Date: 2/16/18 Time: 1645  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE DISPOSITION:**  
 1. Samples returned to client? ☒ YES ☐ NO  
 2. Samples will not be stored over 30 days, unless additional storage time is requested.  
 3. Storage time requested: 60 days  
 By [Signature] Date 2/15/18

SPECIAL INSTRUCTIONS: \_\_\_\_\_





781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

March 12, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1802182

Project Name: 16195 KHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on February 20, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

A handwritten signature in black ink, appearing to read "J. Johnson", is written over a horizontal line.

Project Manager





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 2 of 17

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/12/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H1-3" Soil (1802182-08) Sampled: 02/20/18 08:40 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDE</b>	<b>135</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDT</b>	<b>22.7</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>Dieldrin</b>	<b>13.3</b>		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	70.9 %			55-126		EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: Decachlorobiphenyl	81.1 %			49-133		EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Sample ID: H2-3" Soil (1802182-09) Sampled: 02/20/18 09:06 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>alpha-Chlordane</b>	<b>9.37</b>		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDD</b>	<b>9.73</b>		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDE</b>	<b>998</b>		5	ug/kg	80.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDT</b>	<b>50.3</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>Dieldrin</b>	<b>87.5</b>		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 03/12/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H2-3" Soil (1802182-09) Sampled: 02/20/18 09:06 Received: 02/20/18 13:00											
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Surrogate: 2,4,5,6 Tetrachloro-m-xylr.	65.8 %		55-126		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Surrogate: Decachlorobiphenyl	64.0 %		49-133		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Lead	23.1		1	mg/L	0.500	DHS WET	EPA 6010B	03/05/18	03/07/18	cg	BC80742

Sample ID: H3-3" Soil (1802182-10) Sampled: 02/20/18 09:02 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
alpha-Chlordane	13.7		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
4,4'-DDD	26.7		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
4,4'-DDE	36.1		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Dieldrin	21400		100	ug/kg	800	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Surrogate: 2,4,5,6 Tetrachloro-m-xylor.	75.4 %			55-126		EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Surrogate: Decachlorobiphenyl	62.4 %			49-133		EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	

Sample ID: H4-3" Soil (1802182-11) Sampled: 02/20/18 08:50 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-Chlordane	103		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-Chlordane	52.5		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDD	76.5		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDE	73.6		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDT	88.2		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Dieldrin	86.1		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/12/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H4-3" Soil (1802182-11) Sampled: 02/20/18 08:50 Received: 02/20/18 13:00											
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	66.8 %			55-126		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: Decachlorobiphenyl	73.5 %			49-133		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Lead	7.31		1	mg/L	0.500	DHS WET	EPA 6010B	03/05/18	03/07/18	cg	BC80742
Sample ID: NW2B-3" Soil (1802182-13) Sampled: 02/20/18 09:26 Received: 02/20/18 13:00											
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	66.7 %			55-126		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: Decachlorobiphenyl	76.8 %			49-133		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Sample ID: NW-S1-3" Soil (1802182-16) Sampled: 02/19/18 13:40 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Lead	1.36		1	mg/L	0.500	DHS WET	EPA 6010B	03/05/18	03/07/18	cg	BC80742
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
EPA 8151A Herbicides	See Attachment										
Sample ID: NW-S5-3" Soil (1802182-21) Sampled: 02/19/18 14:25 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	





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Page 5 of 17

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 03/12/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S5-3" Soil (1802182-21) Sampled: 02/19/18 14:25 Received: 02/20/18 13:00											
C5 - C8 Aliphatic HC	ND		1	mg/kg	0.500	EPA 5030B	EPA 8015B	03/05/18	03/05/18	lk	BC80537
C6 - C8 Aromatic HC	ND		1	mg/kg	0.100	EPA 5030B	EPA 8015B	03/05/18	03/05/18	lk	BC80537
Surrogate: a,a,a-Trifluorotoluene	101 %			70-141		EPA 5030B	EPA 8015B	03/05/18	03/05/18	lk	BC80537
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
C9 - C16 Aromatic HC	ND		1	mg/kg	10.0	EPA 3550C	EPA 8015B	02/26/18	03/05/18	lk	BC80627
<b>C17 - C32 Aromatic HC</b>	<b>652</b>		1	mg/kg	100	EPA 3550C	EPA 8015B	02/26/18	03/05/18	lk	BC80627
<b>C9 - C18 Aliphatic HC</b>	<b>120</b>		1	mg/kg	10.0	EPA 3550C	EPA 8015B	02/26/18	03/05/18	lk	BC80627
<b>C19 - C35 Aliphatic HC</b>	<b>21700</b>		10	mg/kg	1000	EPA 3550C	EPA 8015B	02/26/18	03/07/18	lk	BC80627
Surrogate: n-Tetracosane	102 %			68-133		EPA 3550C	EPA 8015B	02/26/18	03/05/18	lk	BC80627
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Bioassay	See Attachment										

Sample ID: NW-S1-2' Soil (1802182-27) Sampled: 02/19/18 13:42 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>alpha-Chlordane</b>	<b>14.4</b>		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>gamma-Chlordane</b>	<b>47.5</b>		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDD</b>	<b>314</b>		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDE</b>	<b>231</b>		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
<b>4,4'-DDT</b>	<b>4800</b>		100	ug/kg	1600	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80639
<b>Dieldrin</b>	<b>64.7</b>		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	67.7 %			55-126		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: Decachlorobiphenyl	68.4 %			49-133		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
<b>Lead</b>	<b>9.34</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/06/18	03/06/18	CG	BC80738
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
EPA 8151A Herbicides	See Attachment										

Sample ID: NW2A-3" Soil (1802182-31) Sampled: 02/20/18 09:20 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 03/12/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW2A-3" Soil (1802182-31) Sampled: 02/20/18 09:20 Received: 02/20/18 13:00										
alpha-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
beta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
<b>4,4'-DDE</b>	<b>59.0</b>	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
<b>4,4'-DDT</b>	<b>34.1</b>	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
-----										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	67.7 %			55-126	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Surrogate: Decachlorobiphenyl	69.9 %			49-133	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805

Sample ID: NW2C-3" Soil (1802182-32) Sampled: 02/20/18 09:33 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
<b>4,4'-DDE</b>	<b>21.8</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
-----										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	67.5 %			55-126		EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 03/12/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

**Sample ID: NW2C-3" Soil (1802182-32) Sampled: 02/20/18 09:33 Received: 02/20/18 13:00**

Surrogate: Decachlorobiphenyl		87.4 %	49-133		EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Sample ID: NW-P2-2' Soil (1802182-33) Sampled: 02/19/18 13:32 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/05/18	03/06/18	ai	BC80806
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/05/18	03/06/18	ai	BC80806
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/05/18	03/06/18	ai	BC80806
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/05/18	03/06/18	ai	BC80806
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/05/18	03/06/18	ai	BC80806
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/05/18	03/06/18	ai	BC80806
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/05/18	03/06/18	ai	BC80806
Surrogate: 2,4,5,6 Tetrachloro-m-xylr.		75.0 %	54-131		EPA 3550C	EPA 8082	03/05/18	03/06/18	ai	BC80806
Surrogate: Decachlorobiphenyl		77.1 %	53-131		EPA 3550C	EPA 8082	03/05/18	03/06/18	ai	BC80806

**Sample ID: H1-2' Soil (1802182-34) Sampled: 02/20/18 08:42 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Surrogate: 2,4,5,6 Tetrachloro-m-xylr.	65.5 %			55-126		EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Surrogate: Decachlorobiphenyl	72.6 %			49-133		EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805

**Sample ID: H2-2' Soil (1802182-35) Sampled: 02/20/18 09:08 Received: 02/20/18 13:00**

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805



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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/12/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H4-2' Soil (1802182-37) Sampled: 02/20/18 08:52 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	65.5 %			55-126		EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Surrogate: Decachlorobiphenyl	70.2 %			49-133		EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
<b>Lead</b>	<b>5.65</b>		1	mg/kg	1.00	EPA 3050B EPA 6010B	03/06/18	03/06/18	CG	BC80738	

Sample ID: NW2A-2' Soil (1802182-38) Sampled: 02/20/18 09:22 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805	





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 03/12/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW2A-2' Soil (1802182-38) Sampled: 02/20/18 09:22 Received: 02/20/18 13:00										
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	68.8 %	55-126			EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805
Surrogate: Decachlorobiphenyl	68.5 %	49-133			EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805

Sample ID: NW2B-2' Soil (1802182-39) Sampled: 02/20/18 09:28 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	67.6 %		55-126			EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Surrogate: Decachlorobiphenyl	67.0 %		49-133			EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805

Sample ID: NW2C-2' Soil (1802182-40) Sampled: 02/20/18 09:35 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/07/18	ai	BC80805





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/12/18  
Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW2C-2' Soil (1802182-40) Sampled: 02/20/18 09:35 Received: 02/20/18 13:00											
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
-----											
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	70.3 %			55-126	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	
Surrogate: Decachlorobiphenyl	69.3 %			49-133	EPA 3550C	EPA 8081A	03/05/18	03/07/18	ai	BC80805	

Sample ID: NW3B-2' Soil (1802182-41) Sampled: 02/20/18 10:12 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Arsenic	6.14		1	mg/kg	2.00	EPA 3050B EPA 6010B	03/06/18	03/06/18	CG	BC80738	

Sample ID: NW-S2-2' Soil (1802182-42) Sampled: 02/19/18 13:47 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
4,4'-DDT	20.1		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
-----											
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	71.7 %			55-126	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Surrogate: Decachlorobiphenyl	70.9 %			49-133	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Arsenic	8.18		1	mg/kg	2.00	EPA 3050B EPA 6010B	03/06/18	03/06/18	CG	BC80738	

Sample ID: NW-S3-2' Soil (1802182-43) Sampled: 02/19/18 13:57 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/05/18	03/06/18	ai	BC80639	





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/12/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S3-2' Soil (1802182-43) Sampled: 02/19/18 13:57 Received: 02/20/18 13:00										
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDE	77.5	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
4,4'-DDT	41.0	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	72.9 %		55-126		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639
Surrogate: Decachlorobiphenyl	74.1 %		49-133		EPA 3550C	EPA 8081A	03/05/18	03/06/18	ai	BC80639

Sample ID: NW-S7-2' Soil (1802182-44) Sampled: 02/19/18 14:55 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C9 - C22	12.4		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735
Surrogate: n-Tetracosane	91.2 %			68-133		EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735

Sample ID: NW-S8-2' Soil (1802182-45) Sampled: 02/19/18 15:06 Received: 02/20/18 13:00										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Arsenic	3.00		1	mg/kg	2.00	EPA 3050B EPA 6010B	03/06/18	03/06/18	CG	BC80738

Sample ID: NW-S10-2' Soil (1802182-46) Sampled: 02/20/18 08:32 Received: 02/20/18 13:00											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
TPH C9 - C22	5.33		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735
Surrogate: n-Tetracosane	84.3 %			68-133		EPA 3550C	EPA 8015B	03/05/18	03/07/18	lk	BC80735





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/12/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80735 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 03/05/18 Analyzed: 03/06/18</b>									
TPH C9 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: <i>n</i> -Tetracosane	17.6		mg/kg	20.83		84.7	68-133			
<b>LCS</b>	<b>Prepared: 03/05/18 Analyzed: 03/06/18</b>									
Diesel	541	6.25	mg/kg	554.7		97.5	69-137			
Surrogate: <i>n</i> -Tetracosane	18.2		mg/kg	20.83		87.3	64-140			
<b>Matrix Spike</b>	<b>Source: 1803025-01</b>	<b>Prepared: 03/05/18 Analyzed: 03/06/18</b>								
Diesel	122	2.50	mg/kg	110.9	ND	110	53-138			
Surrogate: <i>n</i> -Tetracosane	19.2		mg/kg	20.83		92.3	68-133			
<b>Matrix Spike Dup</b>	<b>Source: 1803025-01</b>	<b>Prepared: 03/05/18 Analyzed: 03/06/18</b>								
Diesel	123	2.50	mg/kg	110.9	ND	111	53-138	0.222	30	
Surrogate: <i>n</i> -Tetracosane	19.6		mg/kg	20.83		93.8	68-133			
<b>Batch BC80537 - EPA 5030B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/05/18</b>									
C5 - C8 Aliphatic HC	ND	0.500	mg/kg							
C6 - C8 Aromatic HC	ND	0.100	mg/kg							
Surrogate: <i>a,a,a</i> -Trifluorotoluene	0.0173		mg/kg	0.01500		115	70-141			
<b>Batch BC80627 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 02/20/18 Analyzed: 03/05/18</b>									
C9 - C16 Aromatic HC	ND	2.50	mg/kg							
C17 - C32 Aromatic HC	ND	100	mg/kg							
C9 - C18 Aliphatic HC	ND	2.50	mg/kg							
C19 - C35 Aliphatic HC	ND	100	mg/kg							
Surrogate: <i>n</i> -Tetracosane	30.4		mg/kg	20.83		146	68-133			
<b>Batch BC80639 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/05/18</b>									
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/12/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80639 - EPA 3550C</b>										
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.5		ug/kg	16.67		69.2	55-126			
Surrogate: Decachlorobiphenyl	11.3		ug/kg	16.67		67.6	49-133			
<b>LCS Prepared: 03/05/18 Analyzed: 03/06/18</b>										
Aldrin	13.1	2.00	ug/kg	13.33		98.1	56-130			
gamma-BHC (Lindane)	10.9	2.00	ug/kg	13.33		81.5	56-133			
4,4'-DDT	13.0	4.00	ug/kg	13.33		97.4	56-133			
Dieldrin	12.3	2.00	ug/kg	13.33		92.5	62-119			
Endrin	12.6	2.00	ug/kg	13.33		94.5	59-127			
Heptachlor	15.5	2.00	ug/kg	13.33		116	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.7		ug/kg	16.67		76.2	54-108			
Surrogate: Decachlorobiphenyl	12.2		ug/kg	16.67		73.2	54-127			
<b>Matrix Spike Source: 1802181-82 Prepared: 03/05/18 Analyzed: 03/06/18</b>										
Aldrin	11.9	2.00	ug/kg	13.33	ND	89.0	39-124			
gamma-BHC (Lindane)	8.07	2.00	ug/kg	13.33	ND	60.5	44-120			
4,4'-DDT	20.6	4.00	ug/kg	33.33	ND	61.9	48-150			
Dieldrin	26.0	2.00	ug/kg	33.33	ND	77.9	48-144			
Endrin	25.4	2.00	ug/kg	33.33	ND	76.2	54-149			
Heptachlor	9.84	2.00	ug/kg	13.33	ND	73.8	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.1		ug/kg	16.67		72.7	57-126			
Surrogate: Decachlorobiphenyl	13.3		ug/kg	16.67		79.8	43-136			
<b>Matrix Spike Dup Source: 1802181-82 Prepared: 03/05/18 Analyzed: 03/06/18</b>										
Aldrin	12.1	2.00	ug/kg	13.33	ND	90.5	39-124	1.66	30	
gamma-BHC (Lindane)	8.38	2.00	ug/kg	13.33	ND	62.9	44-120	3.85	30	
4,4'-DDT	22.9	4.00	ug/kg	33.33	ND	68.6	48-150	10.2	30	
Dieldrin	26.7	2.00	ug/kg	33.33	ND	80.2	48-144	2.89	30	
Endrin	26.6	2.00	ug/kg	33.33	ND	79.8	54-149	4.73	30	
Heptachlor	10.2	2.00	ug/kg	13.33	ND	76.4	46-135	3.40	30	





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/12/18  
 Submitted: 02/20/18  
**PLS Report No.: 1802182**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80639 - EPA 3550C</b>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.3		ug/kg	16.67		73.7	57-126			
Surrogate: Decachlorobiphenyl	13.1		ug/kg	16.67		78.6	43-136			
<b>Batch BC80805 - EPA 3550C</b>										
<b>Blank</b>										
<b>Prepared: 03/05/18 Analyzed: 03/07/18</b>										
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.9		ug/kg	16.67		71.6	55-126			
Surrogate: Decachlorobiphenyl	11.8		ug/kg	16.67		70.9	49-133			
<b>LCS</b>										
<b>Prepared: 03/05/18 Analyzed: 03/07/18</b>										
Aldrin	12.4	2.00	ug/kg	13.33		92.9	56-130			
gamma-BHC (Lindane)	9.61	2.00	ug/kg	13.33		72.1	56-133			
4,4'-DDT	10.5	4.00	ug/kg	13.33		78.5	56-133			
Dieldrin	10.6	2.00	ug/kg	13.33		79.1	62-119			
Endrin	10.5	2.00	ug/kg	13.33		79.1	59-127			
Heptachlor	13.5	2.00	ug/kg	13.33		101	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	11.9		ug/kg	16.67		71.2	54-108			
Surrogate: Decachlorobiphenyl	11.5		ug/kg	16.67		68.9	54-127			
<b>Matrix Spike</b>										
<b>Source: 1803017-02 Prepared: 03/05/18 Analyzed: 03/07/18</b>										
Aldrin	12.9	2.00	ug/kg	13.33	ND	96.7	39-124			
gamma-BHC (Lindane)	7.05	2.00	ug/kg	13.33	ND	52.9	44-120			





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

File #: 73443

Report Date: 03/12/18

Submitted: 02/20/18

**PLS Report No.: 1802182**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80805 - EPA 3550C</b>										
4,4'-DDT	18.7	4.00	ug/kg	33.33	ND	56.0	48-150			
Dieldrin	21.7	2.00	ug/kg	33.33	ND	65.0	48-144			
Endrin	24.8	2.00	ug/kg	33.33	ND	74.5	54-149			
Heptachlor	7.97	2.00	ug/kg	13.33	ND	59.8	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.6		ug/kg	16.67		87.6	57-126			
Surrogate: Decachlorobiphenyl	12.2		ug/kg	16.67		72.9	43-136			
<b>Matrix Spike Dup Source: 1803017-02 Prepared: 03/05/18 Analyzed: 03/07/18</b>										
Aldrin	11.1	2.00	ug/kg	13.33	ND	82.9	39-124	15.4	30	
gamma-BHC (Lindane)	7.01	2.00	ug/kg	13.33	ND	52.6	44-120	0.512	30	
4,4'-DDT	17.5	4.00	ug/kg	33.33	ND	52.6	48-150	6.41	30	
Dieldrin	21.5	2.00	ug/kg	33.33	ND	64.6	48-144	0.662	30	
Endrin	23.9	2.00	ug/kg	33.33	ND	71.7	54-149	3.82	30	
Heptachlor	8.53	2.00	ug/kg	13.33	ND	64.0	46-135	6.84	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.2		ug/kg	16.67		73.4	57-126			
Surrogate: Decachlorobiphenyl	9.83		ug/kg	16.67		59.0	43-136			
<b>Batch BC80806 - EPA 3550C</b>										
<b>Blank Prepared: 03/05/18 Analyzed: 03/06/18</b>										
Aroclor-1016	ND	50.0	ug/kg							
Aroclor-1221	ND	50.0	ug/kg							
Aroclor-1232	ND	50.0	ug/kg							
Aroclor-1242	ND	50.0	ug/kg							
Aroclor-1248	ND	50.0	ug/kg							
Aroclor-1254	ND	50.0	ug/kg							
Aroclor-1260	ND	50.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.4		ug/kg	16.67		80.7	54-131			
Surrogate: Decachlorobiphenyl	13.0		ug/kg	16.67		77.9	53-131			
<b>LCS Prepared: 03/05/18 Analyzed: 03/06/18</b>										
Aroclor-1260	313	50.0	ug/kg	416.7		75.1	60-129			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.3		ug/kg	16.67		73.6	58-122			
Surrogate: Decachlorobiphenyl	13.0		ug/kg	16.67		77.9	53-141			
<b>Matrix Spike Source: 1802182-33 Prepared: 03/05/18 Analyzed: 03/06/18</b>										
Aroclor-1260	289	50.0	ug/kg	333.3	ND	86.8	53-120			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.4		ug/kg	16.67		74.4	57-129			
Surrogate: Decachlorobiphenyl	12.3		ug/kg	16.67		73.7	57-129			
<b>Matrix Spike Dup Source: 1802182-33 Prepared: 03/05/18 Analyzed: 03/06/18</b>										
Aroclor-1260	306	50.0	ug/kg	333.3	ND	91.8	53-120	5.58	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.1		ug/kg	16.67		72.6	57-129			
Surrogate: Decachlorobiphenyl	13.4		ug/kg	16.67		80.6	57-129			



**Certificate of Analysis**

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100

FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 03/12/18

Submitted: 02/20/18

**PLS Report No.: 1802182**
**Quality Control Data**

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC80738 - EPA 3050B</b>										
Blank	Prepared & Analyzed: 03/06/18									
Arsenic	ND	2.00	mg/kg							
LCS	Prepared & Analyzed: 03/06/18									
Arsenic	48.0	2.00	mg/kg	50.00		96.1	80-120			
Matrix Spike	Source: 1802182-27	Prepared & Analyzed: 03/06/18								
Arsenic	52.4	2.00	mg/kg	50.00	7.20	90.3	75-125			
Matrix Spike Dup	Source: 1802182-27	Prepared & Analyzed: 03/06/18								
Arsenic	50.6	2.00	mg/kg	50.00	7.20	86.8	75-125	4.04	30	
<b>Batch BC80738 - EPA 3050B</b>										
Blank	Prepared & Analyzed: 03/06/18									
Lead	ND	1.00	mg/kg							
LCS	Prepared & Analyzed: 03/06/18									
Lead	53.5	1.00	mg/kg	50.20		107	80-120			
Matrix Spike	Source: 1802182-27	Prepared & Analyzed: 03/06/18								
Lead	55.2	1.00	mg/kg	50.20	9.34	91.4	75-125			
Matrix Spike Dup	Source: 1802182-27	Prepared & Analyzed: 03/06/18								
Lead	54.2	1.00	mg/kg	50.20	9.34	89.4	75-125	2.22	30	
<b>Batch BC80742 - DHS WET</b>										
Blank	Prepared: 03/05/18 Analyzed: 03/07/18									
Lead	ND	0.500	mg/L							
LCS	Prepared: 03/05/18 Analyzed: 03/07/18									
Lead	4.95	0.500	mg/L	5.020		96.7	80-120			
Duplicate	Source: 1802209-07	Prepared: 03/05/18 Analyzed: 03/07/18								
Lead	4.25	0.500	mg/L		4.41			3.56	30	
Post Spike	Source: 1802209-07	Prepared: 03/05/18 Analyzed: 03/07/18								
Lead	9.12		mg/L	5.020	4.41	93.8	70-130			

**Notes and Definitions**

NA Not Applicable

ND Analyte NOT DETECTED at or above the detection limit

NR Not Reported

MDL Method Detection Limit

PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138



Authorized Signature(s)





## Enthalpy Analytical, LLC

931 W. Barkley Ave - Orange, CA 92868

Tel: (714)771-6900 Fax: (714)538-1209

www.enthalpy.com

info-sc@enthalpy.com



Client: Positive Lab Service  
Address: 781 E. Washington Blvd.  
Los Angeles, CA 90021

Attn: John Schmidt

Comments: Project #: 1802182  
P.O. #: 16321

Lab Request: 400062  
Report Date: 03/12/2018  
Date Received: 03/02/2018  
Client ID: 2513

LC50 > 750 mg/L = Non Hazardous

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

---

<u>Sample #</u>	<u>Client Sample ID</u>
-----------------	-------------------------

400062-001	NW-S5-3"
------------	----------

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

Report Review performed by: Chris Myrter, Project Specialist

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 60 days from date received.

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Matrix: Solid	Client: Positive Lab Service	Collector: Client
Sampled: 02/19/2018 14:25	Site:	
Sample #: <u>400062-001</u>	Client Sample #: NW-S5-3"	Sample Type:

Analyte	Result	DF	RDL	Units	Prepared	Analyzed By	Notes
Method: CDFG P&M 1988	Prep Method: Method					QC Batch ID: QC1188545	
LC50	>750	1		mg/L		03/03/18	QP



## Data Qualifiers and Definitions

### Qualifiers

A	See Report Comments.
B	Analyte was present in an associated method blank.
B1	Analyte was present in a sample and associated method blank greater than MDL but less than RDL.
BQ1	No valid test replicates. Sample Toxicity is possible. Best result was reported.
BQ2	No valid test replicates.
BQ3	No valid test replicates. Final DO is less than 1.0 mg/L. Result may be greater.
C	Possible laboratory contamination.
D	RPD was not within control limits. The sample data was reported without further clarification.
D1	Lesser amount of sample was used due to insufficient amount of sample supplied.
D2	Reporting limit is elevated due to sample matrix. Target analyte was not detected above the elevated reporting limit.
D3	Insufficient sample was supplied for TCLP. Client was notified. TCLP was performed per the Client's instructions.
DW	Sample result is calculated on a dry weigh basis.
E	Concentration is estimated because it exceeds the quantification limits of the method.
I	The sample was read outside of the method required incubation period.
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
M1	The matrix spike (MS) or matrix spike duplicate (MSD) is not within control limits due to matrix interference.
M2	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits. The associated LCS and/or LCSD was not within control limits. Sample result is estimated.
N1	Sample chromatography does not match the specified TPH standard pattern.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
P1	Temperature of sample storage refrigerator was out of acceptance limits.
P2	The sample was preserved within 24 hours of collection in accordance with EPA 218.6.
P3	Per Client request, sample was composited for volatile analysis. Sample compositing for volatile analysis is not recommended due to potential loss of target analytes. Results may be biased low.
Q1	Analyte Calibration Verification exceeds criteria. The result is estimated.
Q2	Analyte calibration was not verified and the result was estimated.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated.
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
S1	The associated surrogate recovery was out of control limits; result is estimated.
S2	The surrogate was diluted out due to the presence of high concentrations of target and/or non-target compounds. Surrogate recoveries in the associated batch QC met recovery criteria.
S3	Internal Standard did not meet recovery limits. Analyte concentration is estimated.
T	Sample was extracted/analyzed past the holding time.
T1	Reanalysis was reported past hold time due to failing replicates in the original analysis (BOD only).
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
T3	Sample received and analyzed out of hold time per client's request.
T4	Sample was analyzed out of hold time per client's request.
T5	Reanalysis was reported past hold time. The original analysis was within hold time, but not reportable.
T6	Hold time is indeterminable due to unspecified sampling time.
T7	Sample was analyzed past hold time due to insufficient time remaining at time of receipt.

### Definitions

DF	Dilution Factor
MDL	Method Detection Limit. Result is reported ND when it is less than or equal to MDL.
ND	Analyte was not detected or was less than the detection limit.
NR	Not Reported. See Report Comments.
RDL	Reporting Detection Limit
TIC	Tentatively Identified Compounds



Entomology

4100062

101721

<b>POSITIVE LAB SERVICE</b>		<b>CHAIN OF CUSTODY AND ANALYSIS REQUEST</b>		DATE: _____ PAGE _____ OF _____													
		781 East Washington Blvd., Los Angeles, CA 90021 (213) 745-5312 FAX (213) 745-6372		LOG BOOK NO. _____ FILE NO. _____ LAB NO. _____													
CLIENT NAME: Positive Lab Service Project Name/No. <u>1802182</u>		P.O. NO. <u>16321</u>		AIRBILL NO: _____													
ADDRESS: 781 E. Washington Blvd., LA CA 90021		ANALYSES REQUESTED:		COOLER TEMP: _____													
PROJECT MANAGER: John Schmidt PHONE NO <u>213.745.5312</u> FAX NO: _____		Biocassay		PRESERVATIVE: _____													
SAMPLER NAME: Client (Printed) _____ (Signature) _____						REMARKS: _____											
TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)																	
CONTAINER TYPES: B = Brass, <sup>nt</sup> E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:																	
UST Project: Y N - Global ID# _____																	
SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER								SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE							
1	2/19/18	1425	NW-S5-3"		✓			N	1	G	✓						
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Relinquished By: (Signature and Printed Name) [Signature]  
 Relinquished By: (Signature and Printed Name) \_\_\_\_\_  
 Relinquished By: (Signature and Printed Name) \_\_\_\_\_

Received By: (Signature and Printed Name) [Signature]  
 Received By: (Signature and Printed Name) \_\_\_\_\_  
 Received By: (Signature and Printed Name) \_\_\_\_\_

Date: 3-2/18 Time: 1345  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SAMPLE DISPOSITION:**  
 1. Samples returned to client? YES NO  
 2. Samples will not be stored over 30 days, unless additional storage time is requested.  
 3. Storage time requested: \_\_\_\_\_ days  
 By \_\_\_\_\_ Date \_\_\_\_\_

**SPECIAL INSTRUCTIONS:**

PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

06/27

LAB COPY





# ENTHALPY ANALYTICAL

## SAMPLE ACCEPTANCE CHECKLIST

### Section 1

Client: Positive Lab Service

Project: \_\_\_\_\_

Date Received: 3/2/18

Sampler's Name Present: ☐ Yes ☒ No

### Section 2

Sample(s) received in a cooler? ☒ Yes, How many? 1 ☐ No (skip section 2) Sample Temp (°C) (No Cooler): \_\_\_\_\_

Sample Temp (°C), One from each cooler: #1: 3.7 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_  
(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: \_\_\_\_\_

### Section 3

Was the cooler packed with: ☒ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam  
☐ Paper ☐ None ☐ Other \_\_\_\_\_

Cooler Temp (°C): #1: 0.6 #2: \_\_\_\_\_ #3: \_\_\_\_\_ #4: \_\_\_\_\_

### Section 4

	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)		✓	
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

### Section 5 Explanations/Comments

### Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
☐ Email (email sent to/on): \_\_\_\_\_ / \_\_\_\_\_

Project Manager's response:

Completed By: \_\_\_\_\_

Date: 3/02/18



Lab. No. 400062

## LABORATORY WORKSHEET

Date Received: 03/02/18Date Reported: 3/7/18Report To: Positive Lab Service  
507

QC 1188545

Bioassay Type

Static ☒ Continuous \_\_\_\_\_ Renewal \_\_\_\_\_Screening ☒ Definitive \_\_\_\_\_Sample Description Solid + NW-SS-3"

Test Organism: Pimephales Promelas Source: Thomas Fish Farm Acclimatization 14 Days @ 20 deg. C (F. B. -2)  
 Aquaria Volume: 10 liters Aquaria Depth: 5 inches No. Fish/Concentration: 10 Total Chlorine Residual: N/D Sample Conductivity: 235  $\mu$ mhos/cm  
 Organism Characteristics - Length (mm): Min: 32 mm Max: 39 mm Avg: 36 mm Weigh (gm): Min: 0.46 gm Max: 0.69 gm Avg: 0.59 gm  
 Dilution water - Source Soft Water Hardness - Initial: 40 mg/l Final: 55 mg/l Alkaline - Initial: 30 mg/l Final: 42 mg/l  
 Aeration: Air Control Hardness Initial: 40 mg/l Final: 45 mg/l Control Alkaline Initial: 30 mg/l Final: 35 mg/l Control Conductivity 185  $\mu$ mhos/cm  
 Aeration Rate: 100 bubbles/min Aeration Duration: 96 hrs Tanks: All

Bioassay Conditions	Date Time	Control		Dilution											
				750		400		Dup 750		Dup 400					
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Organisms Surviving	03/3	10	100	10	100	10	100	10	100	10	100				
	3/4	10	100	10	100	10	100	10	100	10	100				
	3/5	10	100	10	100	10	100	10	100	10	100				
	3/6	10	100	10	100	10	100	10	100	10	100				
	3/7	10	100	9	90	10	100	9	90	10	100				
Dissolved Oxygen mg/l	1205	6.7		6.3		6.3		6.3		6.3					
	1325	7.4		7.0		7.3		7.0		7.3					
	1145	8.1		7.5		7.7		7.5		7.7					
	1125	7.7		7.8		7.2		7.8		7.2					
	1115	7.9		7.4		7.6		7.4		7.6					
pH	Start	7.2	20.0 °C	7.7	20.0 °C	7.5	20.0 °C	7.7	20.0 °C	7.5	20.0 °C		°C		°C
	24 Hr	7.0	20.0 °C	7.5	20.0 °C	7.4	20.0 °C	7.5	20.0 °C	7.4	20.0 °C		°C		°C
Temp	48 Hr	6.9	20.2 °C	7.4	20.2 °C	7.3	20.2 °C	7.4	20.2 °C	7.3	20.2 °C		°C		°C
	72 Hr	7.1	20.0 °C	7.6	20.0 °C	7.4	20.0 °C	7.6	20.0 °C	7.4	20.0 °C		°C		°C
	96 Hr	7.0	20.0 °C	7.5	20.0 °C	7.3	20.0 °C	7.5	20.0 °C	7.3	20.0 °C		°C		°C

Results - LC<sub>50</sub> = > 750 mg/l> 750 mg/l% Survival N/A (QP)Toxic Units T.U. N/A

Observation/Remarks \_\_\_\_\_

Method of Calculations

N/A

95% Confidence Limits

✓LC<sub>50</sub> Method

Laboratory Supervisor



**Enviro - Chem, Inc.**  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: March 12, 2018

Mr. John Schmidt  
Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel(213)745-5312 Fax(213)745-6372

Project: 1802182 / P.O. #16319  
Lab I.D.: 180305-4, -5


Dear Mr. Schmidt:

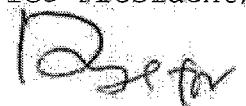
The analytical results for the soil samples, received by our lab on March 5, 2018, are attached. The samples were received chilled, intact and accompanying chain of custody record.

The samples were received at six degree Celsius

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,

  
Curtis Desilets  
Vice President/Program Manager

  
Andy Wang  
Laboratory Manager



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

### LABORATORY REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802182 / P.O. #16319

MATRIX: SOIL  
DATE SAMPLED: 02/19/18  
REPORT TO: MR. JOHN SCHMIDT  
DATE RECEIVED: 03/05/18  
DATE EXTRACTED: 03/06-07/18  
DATE ANALYZED: 03/08/18  
DATE REPORTED: 03/12/18

SAMPLE I.D.: NW-S1-3"

LAB I.D.: 180305-4

#### Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

#### COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:   
CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802182 / P.O. #16319

MATRIX: SOIL

DATE SAMPLED: 02/19/18

REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 03/05/18

DATE EXTRACTED: 03/06-07/18

DATE ANALYZED: 03/08/18

DATE REPORTED: 03/12/18

SAMPLE I.D.: NW-S1-2'

LAB I.D.: 180305-5

Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:   
CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1802182 / P.O. #16319

MATRIX: SOIL  
DATE SAMPLED: 02/19/18  
REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 03/05/18  
DATE EXTRACTED: 03/06-07/18  
DATE ANALYZED: 03/07/18  
DATE REPORTED: 03/12/18

METHOD BLANK FOR LAB I.D.: 180305-4, -5

Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPB	ND	20.0	1


COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:   
CAL-DHS ELAP CERTIFICATE No.: 1555



# QA/QC Report

## Analysis: EPA 8151A

Matrix: **Soil/Solid/Liquid**  
Unit: **mg/Kg (PPM)**

Date Analyzed: **3/7-8/2018**

### Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **180306-51 MS/MSD**

Analyte	S.R.	spk conc	MS	% REC	MSD	% REC	%RPD	ACP %RPD	ACP %REC
2,4,5-T	0	0.0500	0.0487	97%	0.0478	96%	2%	0-20%	50-150

### Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
2,4,5-T	0.0500	0.0599	120%	70-130
2,4,5-TP	0.0500	0.0598	120%	70-130
DINOSEB	0.125	0.1215	97%	70-130

### Surrogate Recovery:

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:		M-BLK	180306-51	180305-4	180305-5				
DCAA	50-150	128%	127%	95%	88%				

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

S.R. = Sample Result

spk conc = Spike Concentration

%REC = Percent Recovery

ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

\* = Surrogate fail due to matrix interference (If Marked)

Note: LCS, MS, MSD are in control therefore results are in control.

Analyzed and Reviewed By: 

Final Reviewer: 



Envirochem

101720



# CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-5372

DATE: \_\_\_\_\_ PAGE 1 of 1

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. \_\_\_\_\_

CLIENT NAME: Positive Lab Service Project Name/No. 1802182

P.O. NO. 16319

AIRBILL NO: \_\_\_\_\_

ADDRESS: 781 E. Washington Blvd., LA CA 90021

ANALYSES REQUESTED:

COOLER TEMP: 8°C

PROJECT MANAGER: John Schmidt PHONE NO. 213.745.5312 FAX NO: \_\_\_\_\_

PRESERVATIVE: \_\_\_\_\_

SAMPLER NAME: Client (Printed) (Signature)

REMARKS:

TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)

CONTAINER TYPES: B = Brass, E = Encore G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/ CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1/80305	2.10.18	1340	NW-SI-3"		✓			N	1	G	✓
2		1342	NW-SI-2'		✓			N	1	G	✓
3											
4											
5											
6											
7											
8											
9											
10											

EPA 8161A Herbicides

Relinquished By: (Signature and Printed Name) John Schmidt

Received By: (Signature and Printed Name) JESSICA HUANG

Date: 3/5/2018 Time: 8:50 AM

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

**SAMPLE DISPOSITION:**  
1. Samples returned to client? YES NO  
2. Samples will not be stored over 30 days, unless additional storage time is requested.  
3. Storage time requested: \_\_\_\_\_ days  
By \_\_\_\_\_ Date \_\_\_\_\_

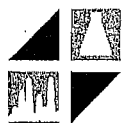
PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY









# POSITIVE

## LAB SERVICE

### CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/20/18 PAGE 2 OF 7  
LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802182

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-P05

AIRBILL NO: \_\_\_\_\_  
COOLER TEMP: 2.6

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

#### ANALYSES REQUESTED:

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becker (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

REMARKS:  
see pg 1 of 7

see pg. 1

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
1	2/20/18	9:20	NW2A-3"		X			N	1	B
2		9:26	NW2B-3" <u>Comp</u>							
3		9:33	NW2C-3"							
4		9:52	NW3A-3"							
5		10:10	NW3B-3" <u>Comp</u>							
6		9:58	NW3C-3"							
7		10:04	NW3D-3"							
8		10:10	NW3E-3"							
9	2/19/18	1:40	NW-S1-3"							
10		1:45	NW-S2-3"							

OCPs (8081)	Arsenic	CAM17 Metals	LEAD/SIC	TPH (C8-C36)	BTEX	pH	OCH (815U)	TDC (2/22/18)
✓								
X	X							X
X	X							X
	X							
X		X	X	X	X	X	✓	
X		X	X	X	X	X		

SAMPLE CONDITION/  
CONTAINER /COMMENTS:

Relinquished By: (Signature and Printed Name) [Signature] Robert Ben Received By: (Signature and Printed Name) [Signature] Michael Henderson

Date: 2/20/18 Time: 10:52

Relinquished By: (Signature and Printed Name) [Signature] Robert Ben Received By: (Signature and Printed Name) [Signature] Michael Henderson

Date: 2/20/18 Time: 1:20pm

Relinquished By: (Signature and Printed Name) [Signature] Robert Ben Received By: (Signature and Printed Name) [Signature] Michael Henderson

Date: 2/20/18 Time: 2:10

SPECIAL INSTRUCTIONS:

see pg. 1

SAMPLE DISPOSITION:  
1. Samples returned to client? (YES) NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 days

By [Signature] Date 2/20/18





## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372DATE: 2/20/18 PAGE 3 OF 7  
LOG BOOK NO. FILE NO. LAB NO. 1802182

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-Pes

AIRBILL NO:

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

## ANALYSES REQUESTED:

COOLER TEMP: 2.6

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

PRESERVED:

SAMPLER NAME: R. Becker (Printed) (Signature)

REMARKS:

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
1	2/20/18	10:34	NW4A-3"		X			N	1	B
2		10:23	NW4B-3"							
3		10:30	NW4C-3"							
4		10:17	NW4D-3"							
5	2/19/18	1:55	NW-S3-3"							
6		2:18	NW-S4-3"							
7		2:25	NW-S5-3"							
8		2:38	NW-S6-3"							
9		2:53	NW-S7-3"							
10		3:04	NW-S8-3"							

Relinquished By: (Signature and Printed Name) Received By: (Signature and Printed Name)

Date: 2/20/18 Time: 10:52

## SAMPLE DISPOSITION:

1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

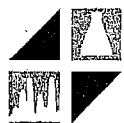
3. Storage time requested: 60 days

By: Date: 2/20/18

SPECIAL INSTRUCTIONS:

see pg. 1





# POSITIVE LAB SERVICE

## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/ PAGE 4 OF 7  
LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802182

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-Pas

AIRBILL NO: \_\_\_\_\_

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

### ANALYSES REQUESTED:

COOLER TEMP: 2.6

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

PRESERVED: \_\_\_\_\_

SAMPLER NAME: R. Becker (Printed) [Signature] (Signature)

### REMARKS:

See pg 1 of 7

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		TPH Cc8-C36	BTEX	CAM17 Metals	PH	OCPS (C80E1)	Lead	8082 PCBs	SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE								
1	2/20/18	8:19	NW-S9-3"		X			N	1	B	X	X	X	X				
2	↓	8:30	NW-S10-3"								X	X	X	X				
3	2/19/18	1:27	NW-P1-2"															Hold
4	↓	1:32	NW-P2-2"													✓		↓
5	2/20/18	8:42	H1-2"											✓				Hold
6	↓	9:08	H2-2"											✓	✓			↓
7	↓	9:04	H3-2"											✓				↓
8	↓	8:52	H4-2"											✓	✓			↓
9	2/19/18	2:49	NW/A-2"															↓
10	↓	3:00	NW/B-2"															↓

Relinquished By: (Signature and Printed Name) [Signature] Received By: (Signature and Printed Name) [Signature]

Date: 2/20/18 Time: 10:52

### SAMPLE DISPOSITION:

1. Samples returned to client? YES NO

Relinquished By: (Signature and Printed Name) [Signature] Received By: (Signature and Printed Name) [Signature]

Date: 2/20/18 Time: 2:00pm

2. Samples will not be stored over 30 days, unless additional storage time is requested.

Relinquished By: (Signature and Printed Name) [Signature] Received By: (Signature and Printed Name) [Signature]

Date: 2/20/18 Time: 2:10

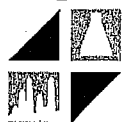
3. Storage time requested: \_\_\_\_\_ days

SPECIAL INSTRUCTIONS:

See pg 1

By \_\_\_\_\_ Date \_\_\_\_\_





# POSITIVE

## LAB SERVICE

### CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/ PAGE 5 OF 7  
LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802182

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-Pas

AIRBILL NO: \_\_\_\_\_

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

ANALYSES REQUESTED:

COOLER TEMP: 2.6

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

PRESERVED: \_\_\_\_\_

SAMPLER NAME: R. Becker (Printed) [Signature] (Signature)

REMARKS:

✓ see pg 1 of 7

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

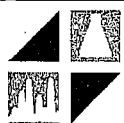
SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/19/18	3:08	NW1C-2-		X				1	B	Hold
2	↓	3:14	NW1D-2-								
3	2/20/18	9:22	NW2A-2-								
4		9:28	NW2B-2-								
5		9:35	NW2C-2-								
6		9:54	NW3A-2-								
7		10:12	NW3B-2-								
8		10:00	NW3C-2-								
9	↓	10:06	NW3D-2-								
10	2/19/18	1:42	NW-SI-2-		✓				✓	✓	

Relinquished By: (Signature and Printed Name) <u>[Signature]</u> <u>Dee Pitt Ben</u>	Received By: (Signature and Printed Name) <u>[Signature]</u> <u>Richard Henderson</u>	Date: <u>2/24/18</u> Time: <u>10:52</u>	<b>SAMPLE DISPOSITION:</b> 1. Samples returned to client? YES NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: _____ days By _____ Date _____
Relinquished By: (Signature and Printed Name) <u>[Signature]</u> <u>Richard Henderson</u>	Received By: (Signature and Printed Name) <u>[Signature]</u> <u>[Signature]</u>	Date: <u>2/20/18</u> Time: <u>6:00 p.m.</u>	
Relinquished By: (Signature and Printed Name) <u>[Signature]</u> <u>[Signature]</u>	Received By: (Signature and Printed Name) <u>[Signature]</u> <u>[Signature]</u>	Date: <u>2/20/18</u> Time: <u>2:10</u>	

SPECIAL INSTRUCTIONS:

see pg 1





# POSITIVE

## LAB SERVICE

### CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/ PAGE 6 OF 7  
LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1902182

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-Pos

AIRBILL NO: \_\_\_\_\_

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

ANALYSES REQUESTED:

COOLER TEMP: 2.6

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

PRESERVED: \_\_\_\_\_

SAMPLER NAME: R. Becker (Printed) [Signature] (Signature)

REMARKS:

see pg 1 of 7

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

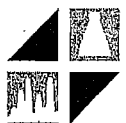
SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1	2/19/18	1:47	NW-S2-2-		X				1	B	Hold
2		1:57	NW-S3-2-								
3		2:20	NW-S4-2-								
4		2:27	NW-S5-2-					N			
5		2:40	NW-S6-2-					N			
6		2:55	NW-S7-2-								Hold
7		3:06	NW-S8-2-								
8	2/20/18	8:21	NW-S9-2-								
9		8:32	NW-S10-2-								
10		10:36	NW4A-2-								

Relinquished By: (Signature and Printed Name) <u>[Signature]</u> <u>Robert R...</u>	Received By: (Signature and Printed Name) <u>[Signature]</u> <u>Richard H...</u>	Date: <u>2/20/18</u> Time: <u>10:52</u>	<b>SAMPLE DISPOSITION:</b> 1. Samples returned to client? YES NO 2. Samples will not be stored over 30 days, unless additional storage time is requested. 3. Storage time requested: _____ days By _____ Date _____
Relinquished By: (Signature and Printed Name) <u>[Signature]</u> <u>Richard H...</u>	Received By: (Signature and Printed Name) <u>[Signature]</u> <u>[Signature]</u>	Date: <u>2/20/18</u> Time: <u>1:00pm</u>	
Relinquished By: (Signature and Printed Name) <u>[Signature]</u> <u>[Signature]</u>	Received By: (Signature and Printed Name) <u>[Signature]</u> <u>[Signature]</u>	Date: <u>2/20/18</u> Time: <u>2:50</u>	

SPECIAL INSTRUCTIONS:

See pg 1





**POSITIVE**  
**LAB SERVICE**

**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 2/ PAGE 7 OF 7  
LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1802102

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-Pes

AIRBILL NO: \_\_\_\_\_

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

**ANALYSES REQUESTED:**

COOLER TEMP: 2-6

PROJECT MANAGER: R. Becker PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Becker (Printed) [Signature] (Signature)

PRESERVED: \_\_\_\_\_

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

REMARKS:

✓ see pg 1 of 7

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER										SAMPLE CONDITION/CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE									
1	2/20/18	10:25	NW4B-2-		X				1	B									Hold
2		10:32	NW4C-2-																
3		10:19	NW4D-2-																
4	2/19/18	2:29	NW-SS-4-				N												
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished By: (Signature and Printed Name) [Signature] Robert Becker

Received By: (Signature and Printed Name) [Signature] Richard H.

Date: 2/20/18 Time: 10:52

**SAMPLE DISPOSITION:**

Relinquished By: (Signature and Printed Name) [Signature] Richard H.

Received By: (Signature and Printed Name) [Signature]

Date: 2/20/18 Time: 1:00pm

1. Samples returned to client? (YES) NO

Relinquished By: (Signature and Printed Name) [Signature]

Received By: (Signature and Printed Name) [Signature]

Date: 2/20/18 Time: 2:10

2. Samples will not be stored over 30 days, unless additional storage time is requested.

SPECIAL INSTRUCTIONS: See pg 1

3. Storage time requested: 60 days  
By: [Signature] Date 2/20/18





781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

March 26, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1803227

Project Name: 16195 KHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on March 14, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

  
Project Manager





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

# Certificate of Analysis

Page 2 of 29

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/26/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-P2-W-3" Soil (1803227-01) Sampled: 03/13/18 08:15 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	63.7 %				54-131	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141
Surrogate: Decachlorobiphenyl	68.6 %				53-131	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk BC82141

Sample ID: NW-S1-4' Soil (1803227-02) Sampled: 03/13/18 08:30 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
gamma-Chlordane	20.9		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
4,4'-DDD	154		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
4,4'-DDE	180		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
4,4'-DDT	3230		20	ug/kg	320	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	77.5 %				55-126	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
Surrogate: Decachlorobiphenyl	73.5 %				49-133	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144

Sample ID: NW-S1-S-3" Soil (1803227-03) Sampled: 03/13/18 08:35 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
TPH C9 - C22	152		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk BC81607
TPH C23 - C32	878		1	mg/kg	100	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk BC81607
TPH C33 - C36	125		1	mg/kg	100	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk BC81607
Surrogate: n-Tetracosane	93.2 %				68-133	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk BC81607
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

# Certificate of Analysis

Page 3 of 29

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/26/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-S-3" Soil (1803227-03) Sampled: 03/13/18 08:35 Received: 03/14/18 10:28											
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
<b>4,4'-DDD</b>	<b>13.1</b>	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
<b>4,4'-DDE</b>	<b>69.4</b>	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
<b>4,4'-DDT</b>	<b>989</b>	5	ug/kg	80.0	EPA 3550C	EPA 8081A	03/15/18	03/22/18	lk	BC82144	
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
<b>Heptachlor epoxide</b>	<b>13.2</b>	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
<i>Surrogate: 2,4,5,6 Tetrachloro-m-xylol</i>		<i>78.0 %</i>	<i>55-126</i>		<i>EPA 3550C</i>	<i>EPA 8081A</i>	<i>03/15/18</i>	<i>03/21/18</i>	<i>lk</i>	<i>BC82144</i>	
<i>Surrogate: Decachlorobiphenyl</i>		<i>52.9 %</i>	<i>49-133</i>		<i>EPA 3550C</i>	<i>EPA 8081A</i>	<i>03/15/18</i>	<i>03/21/18</i>	<i>lk</i>	<i>BC82144</i>	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
<b>Lead</b>	<b>59.0</b>		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941

Sample ID: NW-S1-S-2" Soil (1803227-04) Sampled: 03/13/18 08:37 Received: 03/14/18 10:28											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
4,4'-DDT	22.8		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144	
Surrogate: 2,4,5,6 Tetrachloro-m-xylol.	75.2 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144	





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

# Certificate of Analysis

Page 4 of 29

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 03/26/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-S-2' Soil (1803227-04) Sampled: 03/13/18 08:37 Received: 03/14/18 10:28										
Surrogate: Decachlorobiphenyl	67.6 %			49-133		EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	6.50		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Sample ID: NW-S1-W-3" Soil (1803227-05) Sampled: 03/13/18 08:40 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	4.40		1	mg/kg	2.50	EPA 3550C	EPA 8015B	03/15/18	03/16/18	IK BC81607
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/15/18	03/16/18	IK BC81607
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/15/18	03/16/18	IK BC81607
Surrogate: n-Tetracosane	90.1 %			68-133		EPA 3550C	EPA 8015B	03/15/18	03/16/18	IK BC81607
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
gamma-Chlordane	59.8		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
4,4'-DDD	157		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
4,4'-DDE	2970		50	ug/kg	800	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
4,4'-DDT	6490		50	ug/kg	800	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Dieldrin	26.9		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	71.7 %			55-126		EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Surrogate: Decachlorobiphenyl	66.7 %			49-133		EPA 3550C	EPA 8081A	03/15/18	03/21/18	IK BC82144
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	24.2		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Sample ID: NW-S1-W-2' Soil (1803227-06) Sampled: 03/13/18 08:42 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144
4,4'-DDD	23.1		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	IK BC82144





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/26/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-W-2' Soil (1803227-06) Sampled: 03/13/18 08:42 Received: 03/14/18 10:28										
4,4'-DDE	76.7	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDT	195	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	77.7 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: Decachlorobiphenyl	73.5 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	6.86		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Sample ID: NW-S1-E-3' Soil (1803227-07) Sampled: 03/13/18 08:50 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	2590		10	mg/kg	25.0	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk BC81607
TPH C23 - C32	2060		10	mg/kg	1000	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk BC81607
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	03/15/18	03/15/18	lk BC81607
Surrogate: n-Tetracosane	92.5 %			68-133	EPA 3550C	EPA 8015B	03/15/18	03/15/18	lk	BC81607
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-BHC (Lindane)	12.8		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-Chlordane	18.4		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDD	18.6		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDE	65.2		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDT	917		10	ug/kg	160	EPA 3550C	EPA 8081A	03/15/18	03/22/18	lk BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-E-3" Soil (1803227-07) Sampled: 03/13/18 08:50 Received: 03/14/18 10:28										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	128 %	DO	55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Surrogate: Decachlorobiphenyl	49.2 %		49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144	
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	18.3		1	mg/kg	1.00	EPA 3050B EPA 6010B	03/16/18	03/16/18	CG	BC81941

Sample ID: NW-S1-E-2" Soil (1803227-08) Sampled: 03/13/18 08:52 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDT	47.4		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	74.4 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: Decachlorobiphenyl	72.3 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	5.38		1	mg/kg	1.00	EPA 3050B EPA 6010B	03/16/18	03/16/18	CG	BC81941

Sample ID: NW-S5-W-3" Soil (1803227-09) Sampled: 03/13/18 09:10 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	80.5		1	mg/kg	2.50	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C23 - C32	509		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C33 - C36	128		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
Surrogate: n-Tetracosane	115 %			68-133	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk	BC81607
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	14.0		1	mg/kg	1.00	EPA 3050B EPA 6010B	03/16/18	03/16/18	CG	BC81941

Sample ID: NW-S5-W-2" Soil (1803227-10) Sampled: 03/13/18 09:12 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	ND		1	mg/kg	2.50	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 03/26/18  
Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S5-W-2' Soil (1803227-10) Sampled: 03/13/18 09:12 Received: 03/14/18 10:28										
Surrogate: n-Tetracosane	98.3 %		68-133		EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk	BC81607

Sample ID: H1-4' Soil (1803227-11) Sampled: 03/13/18 10:15 Received: 03/14/18 10:28										
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Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylen.	80.2 %		55-126		EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: Decachlorobiphenyl	77.9 %		49-133		EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144

Sample ID: H1-S-3' Soil (1803227-12) Sampled: 03/13/18 10:20 Received: 03/14/18 10:28										
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Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDE	30.5		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H1-S-3" Soil (1803227-12) Sampled: 03/13/18 10:20 Received: 03/14/18 10:28										
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	70.6 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: Decachlorobiphenyl	88.8 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144

Sample ID: H1-S-2' Soil (1803227-13) Sampled: 03/13/18 10:22 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	76.9 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: Decachlorobiphenyl	74.9 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144

Sample ID: H2-E-3" Soil (1803227-14) Sampled: 03/13/18 09:55 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/26/18  
Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H2-E-3" Soil (1803227-14) Sampled: 03/13/18 09:55 Received: 03/14/18 10:28										
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	73.3 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: Decachlorobiphenyl	86.0 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	17.6		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941

Sample ID: H2-E-2' Soil (1803227-15) Sampled: 03/13/18 09:57 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	107 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: Decachlorobiphenyl	113 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144

Sample ID: H3-4 Soil (1803227-16) Sampled: 03/13/18 09:25 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk BC82144





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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #: 73443  
Report Date: 03/26/18  
Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H3-4' Soil (1803227-16) Sampled: 03/13/18 09:25 Received: 03/14/18 10:28										
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	76.6 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144
Surrogate: Decachlorobiphenyl	70.5 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/20/18	lk	BC82144

Sample ID: H3-N-3" Soil (1803227-17) Sampled: 03/13/18 09:30 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	66.9 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: Decachlorobiphenyl	96.9 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144

Sample ID: H3-N-2' Soil (1803227-18) Sampled: 03/13/18 09:32 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/26/18  
Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H3-N-2' Soil (1803227-18) Sampled: 03/13/18 09:32 Received: 03/14/18 10:28										
alpha-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
beta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	74.9 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: Decachlorobiphenyl	92.5 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144

Sample ID: P1-E-3" Soil (1803227-19) Sampled: 03/13/18 10:40 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	65.3 %			54-131	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk	BC82141
Surrogate: Decachlorobiphenyl	79.3 %			53-131	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk	BC82141

Sample ID: S1-W-3" Soil (1803227-20) Sampled: 03/13/18 10:55 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	7.43		1	mg/kg	2.50	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
Surrogate: n-Tetracosane	86.5 %			68-133	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk	BC81607
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
N-Nitrosodimethylamine (NDMA)	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/26/18	03/26/18	mb	BC82631
Pyridine	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/26/18	03/26/18	mb	BC82631
Aniline	ND		1	ug/kg	500	EPA 3550C EPA 8270C	03/26/18	03/26/18	mb	BC82631
Bis(2-chloroethyl)ether	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/26/18	03/26/18	mb	BC82631
Phenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/26/18	03/26/18	mb	BC82631





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# Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/26/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: S1-W-3" Soil (1803227-20) Sampled: 03/13/18 10:55 Received: 03/14/18 10:28										
2-Chlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
1,3-Dichlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
1,4-Dichlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
1,2-Dichlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Benzyl alcohol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Bis(2-chloroisopropyl)ether	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2-Methylphenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Hexachloroethane	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
N-Nitrosodi-n-propylamine	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4-Methylphenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Nitrobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Isophorone	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2-Nitrophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,4-Dimethylphenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Bis(2-chloroethoxy)methane	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Benzolic acid	ND	1	ug/kg	2000	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
1,2,4-Trichlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Naphthalene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4-Chloroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Hexachlorobutadiene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2-Methylnaphthalene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,6-Dichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Hexachlorocyclopentadiene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,4,6-Trichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,4,5-Trichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2-Chloronaphthalene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Acenaphthylene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Dimethyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,6-Dinitrotoluene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Acenaphthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
3-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Dibenzofuran	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,4-Dichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,4-Dinitrophenol	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
2,4-Dinitrotoluene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4-Nitrophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Fluorene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4-Chlorophenyl phenyl ether	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Diethyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	1	ug/kg	500	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
N-Nitrosodiphenylamine	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
1,2-Diphenylhydrazine as Azobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
4-Bromophenyl phenyl ether	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Hexachlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Pentachlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/26/18  
Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: S1-W-3" Soil (1803227-20) Sampled: 03/13/18 10:55 Received: 03/14/18 10:28										
Phenanthrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Anthracene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Di-n-butyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Fluoranthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Benzidine	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Pyrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Butyl benzyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
3,3'-Dichlorobenzidine	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Benzo(a)anthracene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
(1,2-Benzanthracene)										
Chrysene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Bis(2-ethylhexyl)phthalate	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Di-n-octyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Benzo(b)fluoranthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
(3,4-Benzofluoranthene)										
Benzo(k)fluoranthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
(11,12-Benzofluoranthene)										
Benzo(a)pyrene (3,4-Benzopyrene)	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Indeno(1,2,3-cd)pyrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Dibenzo(a,h)anthracene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
(1,2,5,6-Dibenzanthracene)										
Benzo(ghi)perylene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
(1,12-Benzoperylene)										
Surrogate: 2-Fluorophenol	92.1 %		48-117		EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Surrogate: Phenol-d5	109 %		46-129		EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Surrogate: Nitrobenzene-d5	79.0 %		46-110		EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Surrogate: 2-Fluorobiphenyl	78.4 %		49-108		EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Surrogate: 2,4,6-Tribromophenol	99.5 %		55-129		EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Surrogate: Terphenyl-d14	89.9 %		58-135		EPA 3550C	EPA 8270C	03/26/18	03/26/18	mb	BC82631
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDE	29.4		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	03/15/18	03/21/18	lk	BC82144





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

Sample ID: S1-W-3" Soil (1803227-20) Sampled: 03/13/18 10:55 Received: 03/14/18 10:28										
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	65.6 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: Decachlorobiphenyl	91.6 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144

Sample ID: S1-W-2" Soil (1803227-21) Sampled: 03/13/18 10:57 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	ND		1	mg/kg	2.50	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
Surrogate: n-Tetracosane	87.9 %			68-133	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk	BC81607

Sample ID: P1-W-3" Soil (1803227-22) Sampled: 03/13/18 10:45 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C EPA 8082	03/19/18	03/20/18	lk	BC82141
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	65.3 %			54-131	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk	BC82141
Surrogate: Decachlorobiphenyl	73.7 %			53-131	EPA 3550C	EPA 8082	03/19/18	03/20/18	lk	BC82141

Sample ID: SP-S1-E-3" Soil (1803227-23) Sampled: 03/13/18 11:20 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	3.60		1	mg/kg	2.50	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/15/18	03/16/18	lk	BC81607
Surrogate: n-Tetracosane	99.9 %			68-133	EPA 3550C	EPA 8015B	03/15/18	03/16/18	lk	BC81607

Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
N-Nitrosodimethylamine (NDMA)	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Pyridine	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Aniline	ND		1	ug/kg	500	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Bis(2-chloroethyl)ether	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Phenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
2-Chlorophenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
1,3-Dichlorobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
1,4-Dichlorobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
1,2-Dichlorobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Benzyl alcohol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Bis(2-chloroisopropyl)ether	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
2-Methylphenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Hexachloroethane	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
N-Nitrosodi-n-propylamine	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
4-Methylphenol	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Nitrobenzene	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310
Isophorone	ND		1	ug/kg	200	EPA 3550C EPA 8270C	03/19/18	03/21/18	mb	BC82310





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# Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/26/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: SP-S1-E-3" Soil (1803227-23) Sampled: 03/13/18 11:20 Received: 03/14/18 10:28										
2-Nitrophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,4-Dimethylphenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Bis(2-chloroethoxy)methane	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Benzolc acid	ND	1	ug/kg	2000	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
1,2,4-Trichlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Naphthalene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
4-Chloroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Hexachlorobutadiene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2-Methylnaphthalene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,6-Dichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Hexachlorocyclopentadiene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,4,6-Trichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,4,5-Trichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2-Chloronaphthalene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Acenaphthylene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Dimethyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,6-Dinitrotoluene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Acenaphthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
3-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,4-Dichlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Dibenzofuran	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,4-Dinitrophenol	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
2,4-Dinitrotoluene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
4-Nitrophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Fluorene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
4-Chlorophenyl phenyl ether	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Diethyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
4-Nitroaniline	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	1	ug/kg	500	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
N-Nitrosodiphenylamine	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
1,2-Diphenylhydrazine as Azobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
4-Bromophenyl phenyl ether	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Hexachlorobenzene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Pentachlorophenol	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Phenanthrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Anthracene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Di-n-butyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Fluoranthene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Benzidine	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Pyrene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Butyl benzyl phthalate	ND	1	ug/kg	100	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
3,3'-Dichlorobenzidine	ND	1	ug/kg	1000	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Benzo(a)anthracene (1,2-Benzanthracene)	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Chrysene	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310
Bis(2-ethylhexyl)phthalate	ND	1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb	BC82310





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

Sample ID: SP-S1-E-3" Soil (1803227-23) Sampled: 03/13/18 11:20 Received: 03/14/18 10:28										
Di-n-octyl phthalate	ND		1	ug/kg	100	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Benzo(b)fluoranthene	ND		1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
(3,4-Benzofluoranthene)										
Benzo(k)fluoranthene	ND		1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
(11,12-Benzofluoranthene)										
Benzo(a)pyrene (3,4-Benzopyrene)	ND		1	ug/kg	100	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Indeno(1,2,3-cd)pyrene	ND		1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Dibenzo(a,h)anthracene	ND		1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
(1,2,5,6-Dibenzanthracene)										
Benzo(ghi)perylene	ND		1	ug/kg	200	EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
(1,12-Benzoperylene)										
Surrogate: 2-Fluorophenol	55.5 %			48-117		EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Surrogate: Phenol-d5	58.4 %			46-129		EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Surrogate: Nitrobenzene-d5	48.7 %			46-110		EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Surrogate: 2-Fluorobiphenyl	48.5 %			49-108		EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Surrogate: 2,4,6-Tribromophenol	59.6 %			55-129		EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Surrogate: Terphenyl-d14	68.4 %			58-135		EPA 3550C	EPA 8270C	03/19/18	03/21/18	mb BC82310
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	69.4 %			55-126		EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Surrogate: Decachlorobiphenyl	84.7 %			49-133		EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Antimony	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Arsenic	ND		1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Barium	6.80		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Beryllium	ND		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Cadmium	17.1		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941
Chromium	42.4		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941





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## Certificate of Analysis

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File #:73443  
 Report Date: 03/26/18  
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**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: SP-S1-E-3" Soil (1803227-23) Sampled: 03/13/18 11:20 Received: 03/14/18 10:28										
Cobalt	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Copper	35.0	1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Lead	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Molybdenum	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Nickel	3.10	1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Selenium	ND	1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Silver	ND	1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Thallium	2.11	1	mg/kg	2.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Vanadium	240	1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Zinc	889	1	mg/kg	5.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG	BC81941
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Mercury	ND	1	mg/kg	0.100	EPA 7471A	EPA 7471A	03/15/18	03/15/18	pj	BC81603
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch

EPA 8151A Herbicides

See  
Attachment

Sample ID: H4-W-3" Soil (1803227-24) Sampled: 03/13/18 10:10 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDD	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
4,4'-DDT	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Surrogate: 2,4,5,6 Tetrachloro-m-xylen	70.8 %			55-126		EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Surrogate: Decachlorobiphenyl	83.1 %			49-133		EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Lead	18.0		1	mg/kg	1.00	EPA 3050B	EPA 6010B	03/16/18	03/16/18	CG BC81941

Sample ID: H4-W-2" Soil (1803227-25) Sampled: 03/13/18 10:12 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk BC82144





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

File #:73443  
Report Date: 03/26/18  
Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: H4-W-2' Soil (1803227-25) Sampled: 03/13/18 10:12 Received: 03/14/18 10:28										
beta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
delta-BHC	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-BHC (Lindane)	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
alpha-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
gamma-Chlordane	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDD	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDE	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
4,4'-DDT	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Dieldrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan I	ND	1	ug/kg	16.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan II	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endosulfan sulfate	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Technical Chlordane	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin aldehyde	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Endrin ketone	ND	1	ug/kg	24.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Heptachlor epoxide	ND	1	ug/kg	8.00	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Methoxychlor	ND	1	ug/kg	40.0	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
<hr/>										
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	73.2 %			55-126	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144
Surrogate: Decachlorobiphenyl	83.5 %			49-133	EPA 3550C	EPA 8081A	03/15/18	03/21/18	lk	BC82144





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC81607 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/15/18</b>									
TPH C9 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: n-Tetracosane	16.9		mg/kg	20.83		81.2	68-133			
<b>LCS</b>	<b>Prepared &amp; Analyzed: 03/15/18</b>									
Diesel	667	6.25	mg/kg	554.7		120	69-137			
Surrogate: n-Tetracosane	19.4		mg/kg	20.83		93.0	64-140			
<b>Matrix Spike</b>	<b>Source: 1803227-07</b>	<b>Prepared &amp; Analyzed: 03/15/18</b>								
Diesel	3950	2.50	mg/kg	110.9	4270	NR	53-138			V-3
Surrogate: n-Tetracosane	20.5		mg/kg	20.83		98.4	68-133			
<b>Matrix Spike Dup</b>	<b>Source: 1803227-07</b>	<b>Prepared: 03/15/18 Analyzed: 03/16/18</b>								
Diesel	4680	2.50	mg/kg	110.9	4270	369	53-138	NR	30	V-3
Surrogate: n-Tetracosane	20.4		mg/kg	20.83		98.1	68-133			
<b>Batch BC82310 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 03/19/18 Analyzed: 03/21/18</b>									
N-Nitrosodimethylamine (NDMA)	ND	200	ug/kg							
Pyridine	ND	200	ug/kg							
Aniline	ND	500	ug/kg							
Bis(2-chloroethyl)ether	ND	200	ug/kg							
Phenol	ND	200	ug/kg							
2-Chlorophenol	ND	200	ug/kg							
1,3-Dichlorobenzene	ND	200	ug/kg							
1,4-Dichlorobenzene	ND	200	ug/kg							
1,2-Dichlorobenzene	ND	200	ug/kg							
Benzyl alcohol	ND	200	ug/kg							
Bis(2-chloroisopropyl)ether	ND	200	ug/kg							
2-Methylphenol	ND	200	ug/kg							
Hexachloroethane	ND	200	ug/kg							
N-Nitrosodi-n-propylamine	ND	200	ug/kg							
4-Methylphenol	ND	200	ug/kg							
Nitrobenzene	ND	200	ug/kg							
Isophorone	ND	200	ug/kg							
2-Nitrophenol	ND	200	ug/kg							
2,4-Dimethylphenol	ND	200	ug/kg							
Bis(2-chloroethoxy)methane	ND	200	ug/kg							
Benzic acid	ND	2000	ug/kg							
1,2,4-Trichlorobenzene	ND	200	ug/kg							
Naphthalene	ND	200	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

File #:73443

Report Date: 03/26/18

Submitted: 03/14/18

**PLS Report No.: 1803227**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

## Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC82310 - EPA 3550C</b>										
4-Chloroaniline	ND	200	ug/kg							
Hexachlorobutadiene	ND	200	ug/kg							
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	ND	200	ug/kg							
2-Methylnaphthalene	ND	200	ug/kg							
2,6-Dichlorophenol	ND	200	ug/kg							
Hexachlorocyclopentadiene	ND	200	ug/kg							
2,4,6-Trichlorophenol	ND	200	ug/kg							
2,4,5-Trichlorophenol	ND	200	ug/kg							
2-Chloronaphthalene	ND	200	ug/kg							
2-Nitroaniline	ND	200	ug/kg							
Acenaphthylene	ND	200	ug/kg							
Dimethyl phthalate	ND	100	ug/kg							
2,6-Dinitrotoluene	ND	200	ug/kg							
Acenaphthene	ND	200	ug/kg							
3-Nitroaniline	ND	200	ug/kg							
2,4-Dichlorophenol	ND	200	ug/kg							
Dibenzofuran	ND	200	ug/kg							
2,4-Dinitrophenol	ND	1000	ug/kg							
2,4-Dinitrotoluene	ND	200	ug/kg							
4-Nitrophenol	ND	200	ug/kg							
Fluorene	ND	200	ug/kg							
4-Chlorophenyl phenyl ether	ND	200	ug/kg							
Diethyl phthalate	ND	100	ug/kg							
4-Nitroaniline	ND	200	ug/kg							
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	500	ug/kg							
N-Nitrosodiphenylamine	ND	200	ug/kg							
1,2-Diphenylhydrazine as Azobenzene	ND	200	ug/kg							
4-Bromophenyl phenyl ether	ND	200	ug/kg							
Hexachlorobenzene	ND	200	ug/kg							
Pentachlorophenol	ND	200	ug/kg							
Phenanthrene	ND	200	ug/kg							
Anthracene	ND	200	ug/kg							
Di-n-butyl phthalate	ND	100	ug/kg							
Fluoranthene	ND	200	ug/kg							
Benzidine	ND	1000	ug/kg							
Pyrene	ND	200	ug/kg							
Butyl benzyl phthalate	ND	100	ug/kg							
3,3'-Dichlorobenzidine	ND	1000	ug/kg							
Benzo(a)anthracene (1,2-Benzanthracene)	ND	200	ug/kg							
Chrysene	ND	200	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

## Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC82310 - EPA 3550C</b>										
Bis(2-ethylhexyl)phthalate	ND	200	ug/kg							
Di-n-octyl phthalate	ND	100	ug/kg							
Benzo(b)fluoranthene	ND	200	ug/kg							
(3,4-Benzofluoranthene)										
Benzo(k)fluoranthene	ND	200	ug/kg							
(11,12-Benzofluoranthene)										
Benzo(a)pyrene (3,4-Benzopyrene)	ND	100	ug/kg							
Indeno(1,2,3-cd)pyrene	ND	200	ug/kg							
Dibenzo(a,h)anthracene	ND	200	ug/kg							
(1,2,5,6-Dibenzanthracene)										
Benzo(ghi)perylene (1,12-Benzoperylene)	ND	200	ug/kg							
Surrogate: 2-Fluorophenol	9820		ug/kg	13330		73.7	48-117			
Surrogate: Phenol-d5	10100		ug/kg	13330		75.4	46-129			
Surrogate: Nitrobenzene-d5	4920		ug/kg	6667		73.8	46-110			
Surrogate: 2-Fluorobiphenyl	4920		ug/kg	6667		73.8	49-108			
Surrogate: 2,4,6-Tribromophenol	9460		ug/kg	13330		71.0	55-129			
Surrogate: Terphenyl-d14	5380		ug/kg	6667		80.6	58-135			
<b>LCS</b>										
<b>Prepared: 03/19/18 Analyzed: 03/21/18</b>										
Phenol	2370	200	ug/kg	3333		71.0	52-101			
1,4-Dichlorobenzene	2320	200	ug/kg	3333		69.6	58-97			
1,2,4-Trichlorobenzene	2370	200	ug/kg	3333		71.2	53-99			
Acenaphthene	2590	200	ug/kg	3333		77.7	57-113			
Di-n-butyl phthalate	2740	100	ug/kg	3333		82.1	62-128			
Pyrene	2800	200	ug/kg	3333		83.9	57-124			
Surrogate: 2-Fluorophenol	9920		ug/kg	13330		74.4	56-113			
Surrogate: Phenol-d5	10300		ug/kg	13330		77.2	54-119			
Surrogate: Nitrobenzene-d5	4870		ug/kg	6667		73.1	46-119			
Surrogate: 2-Fluorobiphenyl	5010		ug/kg	6667		75.1	54-108			
Surrogate: 2,4,6-Tribromophenol	10600		ug/kg	13330		79.7	62-119			
Surrogate: Terphenyl-d14	5280		ug/kg	6667		79.2	70-127			
<b>Matrix Spike</b>										
<b>Source: 1803257-02 Prepared &amp; Analyzed: 03/23/18</b>										
Phenol	5320	200	ug/kg	6667	ND	79.8	47-107			
1,4-Dichlorobenzene	2370	200	ug/kg	3333	ND	71.1	53-100			
1,2,4-Trichlorobenzene	2520	200	ug/kg	3333	ND	75.7	54-108			
Acenaphthene	2700	200	ug/kg	3333	ND	80.9	64-112			
Di-n-butyl phthalate	4180	100	ug/kg	3333	ND	126	67-133			
Pyrene	4040	200	ug/kg	3333	ND	121	55-132			
Surrogate: 2-Fluorophenol	10000		ug/kg	13330		75.0	55-104			
Surrogate: Phenol-d5	11500		ug/kg	13330		86.5	51-121			
Surrogate: Nitrobenzene-d5	4510		ug/kg	6667		67.6	56-105			
Surrogate: 2-Fluorobiphenyl	5110		ug/kg	6667		76.6	54-109			
Surrogate: 2,4,6-Tribromophenol	14100		ug/kg	13330		106	52-125			





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC82310 - EPA 3550C</b>										
Surrogate: Terphenyl-d14	7600		ug/kg	6667		114	62-141			
Matrix Spike Dup Source: 1803257-02	Prepared: 03/19/18 Analyzed: 03/21/18									
Phenol	4080	200	ug/kg	6667	ND	61.1	47-107	26.5	30	
1,4-Dichlorobenzene	1990	200	ug/kg	3333	ND	59.7	53-100	17.4	30	
1,2,4-Trichlorobenzene	2240	200	ug/kg	3333	ND	67.1	54-108	12.0	30	
Acenaphthene	2190	200	ug/kg	3333	ND	65.6	64-112	20.9	30	
Di-n-butyl phthalate	3000	100	ug/kg	3333	ND	90.0	67-133	33.0	30	
Pyrene	1960	200	ug/kg	3333	ND	58.7	55-132	69.4	30	
Surrogate: 2-Fluorophenol	8280		ug/kg	13330		62.1	55-104			
Surrogate: Phenol-d5	8980		ug/kg	13330		67.3	51-121			
Surrogate: Nitrobenzene-d5	4270		ug/kg	6667		64.1	56-105			
Surrogate: 2-Fluorobiphenyl	4470		ug/kg	6667		67.0	54-109			
Surrogate: 2,4,6-Tribromophenol	9190		ug/kg	13330		68.9	52-125			
Surrogate: Terphenyl-d14	5140		ug/kg	6667		77.1	62-141			
<b>Batch BC82631 - EPA 3550C</b>										
Blank	Prepared & Analyzed: 03/26/18									
N-Nitrosodimethylamine (NDMA)	ND	200	ug/kg							
Pyridine	ND	200	ug/kg							
Aniline	ND	500	ug/kg							
Bis(2-chloroethyl)ether	ND	200	ug/kg							
Phenol	ND	200	ug/kg							
2-Chlorophenol	ND	200	ug/kg							
1,3-Dichlorobenzene	ND	200	ug/kg							
1,4-Dichlorobenzene	ND	200	ug/kg							
1,2-Dichlorobenzene	ND	200	ug/kg							
Benzyl alcohol	ND	200	ug/kg							
Bis(2-chloroisopropyl)ether	ND	200	ug/kg							
2-Methylphenol	ND	200	ug/kg							
Hexachloroethane	ND	200	ug/kg							
N-Nitrosodi-n-propylamine	ND	200	ug/kg							
4-Methylphenol	ND	200	ug/kg							
Nitrobenzene	ND	200	ug/kg							
Isophorone	ND	200	ug/kg							
2-Nitrophenol	ND	200	ug/kg							
2,4-Dimethylphenol	ND	200	ug/kg							
Bis(2-chloroethoxy)methane	ND	200	ug/kg							
Benzolc acid	ND	2000	ug/kg							
1,2,4-Trichlorobenzene	ND	200	ug/kg							
Naphthalene	ND	200	ug/kg							
4-Chloroaniline	ND	200	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 03/26/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC82631 - EPA 3550C</b>										
Hexachlorobutadiene	ND	200	ug/kg							
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	ND	200	ug/kg							
2-Methylnaphthalene	ND	200	ug/kg							
2,6-Dichlorophenol	ND	200	ug/kg							
Hexachlorocyclopentadiene	ND	200	ug/kg							
2,4,6-Trichlorophenol	ND	200	ug/kg							
2,4,5-Trichlorophenol	ND	200	ug/kg							
2-Chloronaphthalene	ND	200	ug/kg							
2-Nitroaniline	ND	200	ug/kg							
Acenaphthylene	ND	200	ug/kg							
Dimethyl phthalate	ND	100	ug/kg							
2,6-Dinitrotoluene	ND	200	ug/kg							
Acenaphthene	ND	200	ug/kg							
3-Nitroaniline	ND	200	ug/kg							
Dibenzofuran	ND	200	ug/kg							
2,4-Dichlorophenol	ND	200	ug/kg							
2,4-Dinitrophenol	ND	1000	ug/kg							
2,4-Dinitrotoluene	ND	200	ug/kg							
4-Nitrophenol	ND	200	ug/kg							
Fluorene	ND	200	ug/kg							
4-Chlorophenyl phenyl ether	ND	200	ug/kg							
Diethyl phthalate	ND	100	ug/kg							
4-Nitroaniline	ND	200	ug/kg							
4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol)	ND	500	ug/kg							
N-Nitrosodiphenylamine	ND	200	ug/kg							
1,2-Diphenylhydrazine as Azobenzene	ND	200	ug/kg							
4-Bromophenyl phenyl ether	ND	200	ug/kg							
Hexachlorobenzene	ND	200	ug/kg							
Pentachlorophenol	ND	200	ug/kg							
Phenanthrene	ND	200	ug/kg							
Anthracene	ND	200	ug/kg							
Di-n-butyl phthalate	ND	100	ug/kg							
Fluoranthene	ND	200	ug/kg							
Benzidine	ND	1000	ug/kg							
Pyrene	ND	200	ug/kg							
Butyl benzyl phthalate	ND	100	ug/kg							
3,3'-Dichlorobenzidine	ND	1000	ug/kg							
Benzo(a)anthracene (1,2-Benzanthracene)	ND	200	ug/kg							
Chrysene	ND	200	ug/kg							
Bis(2-ethylhexyl)phthalate	ND	200	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

## Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC82631 - EPA 3550C</b>										
Di-n-octyl phthalate	ND	100	ug/kg							
Benzo(b)fluoranthene	ND	200	ug/kg							
(3,4-Benzofluoranthene)										
Benzo(k)fluoranthene	ND	200	ug/kg							
(11,12-Benzofluoranthene)										
Benzo(a)pyrene (3,4-Benzopyrene)	ND	100	ug/kg							
Indeno(1,2,3-cd)pyrene	ND	200	ug/kg							
Dibenzo(a,h)anthracene	ND	200	ug/kg							
(1,2,5,6-Dibenzanthracene)										
Benzo(ghi)perylene (1,12-Benzoperylene)	ND	200	ug/kg							
Surrogate: 2-Fluorophenol	13200		ug/kg	13330		99.1	48-117			
Surrogate: Phenol-d5	15600		ug/kg	13330		117	46-129			
Surrogate: Nitrobenzene-d5	5910		ug/kg	6667		88.6	46-110			
Surrogate: 2-Fluorobiphenyl	5600		ug/kg	6667		84.0	49-108			
Surrogate: 2,4,6-Tribromophenol	12300		ug/kg	13330		92.2	55-129			
Surrogate: Terphenyl-d14	5970		ug/kg	6667		89.6	58-135			
<b>LCS Prepared &amp; Analyzed: 03/26/18</b>										
Phenol	3430	200	ug/kg	3333		103	52-101			
1,4-Dichlorobenzene	2720	200	ug/kg	3333		81.5	58-97			
1,2,4-Trichlorobenzene	2660	200	ug/kg	3333		79.9	53-99			
Acenaphthene	3150	200	ug/kg	3333		94.5	57-113			
Di-n-butyl phthalate	3710	100	ug/kg	3333		111	62-128			
Pyrene	3020	200	ug/kg	3333		90.7	57-124			
Surrogate: 2-Fluorophenol	12900		ug/kg	13330		96.9	56-113			
Surrogate: Phenol-d5	15200		ug/kg	13330		114	54-119			
Surrogate: Nitrobenzene-d5	5850		ug/kg	6667		87.8	46-119			
Surrogate: 2-Fluorobiphenyl	5620		ug/kg	6667		84.3	54-108			
Surrogate: 2,4,6-Tribromophenol	13200		ug/kg	13330		98.7	62-119			
Surrogate: Terphenyl-d14	5910		ug/kg	6667		88.6	70-127			
<b>Batch BC82144 - EPA 3550C</b>										
<b>Blank Prepared: 03/15/18 Analyzed: 03/20/18</b>										
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

## Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC82144 - EPA 3550C</b>										
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.9		ug/kg	16.67		77.1	55-126			
Surrogate: Decachlorobiphenyl	12.4		ug/kg	16.67		74.2	49-133			
<b>LCS</b>										
<b>Prepared: 03/15/18 Analyzed: 03/20/18</b>										
Aldrin	13.3	2.00	ug/kg	13.33		100	56-130			
gamma-BHC (Lindane)	10.8	2.00	ug/kg	13.33		80.7	56-133			
4,4'-DDT	12.6	4.00	ug/kg	13.33		94.3	56-133			
Dieldrin	12.2	2.00	ug/kg	13.33		91.6	62-119			
Endrin	10.5	2.00	ug/kg	13.33		79.0	59-127			
Heptachlor	15.9	2.00	ug/kg	13.33		119	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.5		ug/kg	16.67		74.8	54-108			
Surrogate: Decachlorobiphenyl	11.8		ug/kg	16.67		70.6	54-127			
<b>LCS Dup</b>										
<b>Prepared: 03/15/18 Analyzed: 03/20/18</b>										
Aldrin	13.2	2.00	ug/kg	13.33		99.2	56-130	0.813	30	
gamma-BHC (Lindane)	11.0	2.00	ug/kg	13.33		82.1	56-133	1.79	30	
4,4'-DDT	11.7	4.00	ug/kg	13.33		87.8	56-133	7.17	30	
Dieldrin	12.5	2.00	ug/kg	13.33		93.9	62-119	2.51	30	
Endrin	9.82	2.00	ug/kg	13.33		73.6	59-127	6.99	30	
Heptachlor	16.5	2.00	ug/kg	13.33		124	55-110	3.92	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.9		ug/kg	16.67		77.4	54-108			
Surrogate: Decachlorobiphenyl	11.8		ug/kg	16.67		70.7	54-127			
<b>Matrix Spike</b>										
<b>Source: 1803227-07 Prepared: 03/15/18 Analyzed: 03/22/18</b>										
Aldrin	12.1	2.00	ug/kg	13.33	ND	90.8	39-124			
gamma-BHC (Lindane)	21.0	2.00	ug/kg	13.33	12.8	61.7	44-120			
4,4'-DDT	852	40.0	ug/kg	33.33	917	NR	48-150			V-3
Dieldrin	27.5	2.00	ug/kg	33.33	ND	82.5	48-144			
Endrin	297	2.00	ug/kg	33.33	ND	890	54-149			DO
Heptachlor	13.2	2.00	ug/kg	13.33	3.86	70.2	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	21.6		ug/kg	16.67		130	57-126			DO





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC82144 - EPA 3550C</b>										
Surrogate: Decachlorobiphenyl	7.92		ug/kg	16.67		47.5	43-136			
<b>Matrix Spike Dup Source: 1803227-07</b>	<b>Prepared: 03/15/18 Analyzed: 03/22/18</b>									
Aldrin	13.2	2.00	ug/kg	13.33	ND	98.9	39-124	8.55	30	
gamma-BHC (Lindane)	21.7	2.00	ug/kg	13.33	12.8	67.2	44-120	8.48	30	
4,4'-DDT	774	40.0	ug/kg	33.33	917	NR	48-150	NR	30	V-3
Dieldrin	28.2	2.00	ug/kg	33.33	ND	84.7	48-144	2.68	30	
Endrin	288	2.00	ug/kg	33.33	ND	865	54-149	2.78	30	DO
Heptachlor	14.6	2.00	ug/kg	13.33	3.86	80.3	46-135	13.4	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	21.8		ug/kg	16.67		131	57-126			DO
Surrogate: Decachlorobiphenyl	7.85		ug/kg	16.67		47.1	43-136			
<b>Batch BC82141 - EPA 3550C</b>										
<b>Blank</b>	<b>Prepared: 03/19/18 Analyzed: 03/20/18</b>									
Aroclor-1016	ND	50.0	ug/kg							
Aroclor-1221	ND	50.0	ug/kg							
Aroclor-1232	ND	50.0	ug/kg							
Aroclor-1242	ND	50.0	ug/kg							
Aroclor-1248	ND	50.0	ug/kg							
Aroclor-1254	ND	50.0	ug/kg							
Aroclor-1260	ND	50.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.2		ug/kg	16.67		79.1	54-131			
Surrogate: Decachlorobiphenyl	13.6		ug/kg	16.67		81.4	53-131			
<b>LCS</b>	<b>Prepared: 03/19/18 Analyzed: 03/20/18</b>									
Aroclor-1260	409	50.0	ug/kg	416.7		98.2	60-129			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	13.2		ug/kg	16.67		79.2	58-122			
Surrogate: Decachlorobiphenyl	14.0		ug/kg	16.67		84.2	53-141			
<b>Matrix Spike Source: 1803227-01</b>	<b>Prepared: 03/19/18 Analyzed: 03/20/18</b>									
Aroclor-1260	353	50.0	ug/kg	333.3	33.8	95.8	53-120			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	12.0		ug/kg	16.67		71.8	57-129			
Surrogate: Decachlorobiphenyl	13.6		ug/kg	16.67		81.6	57-129			
<b>Matrix Spike Dup Source: 1803227-01</b>	<b>Prepared: 03/19/18 Analyzed: 03/20/18</b>									
Aroclor-1260	292	50.0	ug/kg	333.3	33.8	77.5	53-120	21.2	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	10.2		ug/kg	16.67		61.0	57-129			
Surrogate: Decachlorobiphenyl	10.2		ug/kg	16.67		61.4	57-129			
<b>Batch BC81941 - EPA 3050B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/16/18</b>									
Lead	ND	1.00	mg/kg							
<b>LCS</b>	<b>Prepared &amp; Analyzed: 03/16/18</b>									
Lead	52.2	1.00	mg/kg	50.20		104	80-120			





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## Certificate of Analysis

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Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC81941 - EPA 3050B</b>										
<b>Matrix Spike</b>	<b>Source: 1803227-07</b>		<b>Prepared &amp; Analyzed: 03/16/18</b>							
Lead	64.0	1.00	mg/kg	50.20	18.3	91.0	75-125			
<b>Matrix Spike Dup</b>	<b>Source: 1803227-07</b>		<b>Prepared &amp; Analyzed: 03/16/18</b>							
Lead	64.4	1.00	mg/kg	50.20	18.3	91.9	75-125	0.990	30	
<b>Batch BC81941 - EPA 3050B</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/16/18</b>									
Antimony	ND	2.00	mg/kg							
Arsenic	ND	2.00	mg/kg							
Barium	ND	1.00	mg/kg							
Beryllium	ND	1.00	mg/kg							
Cadmium	ND	1.00	mg/kg							
Chromium	ND	1.00	mg/kg							
Cobalt	ND	1.00	mg/kg							
Copper	ND	1.00	mg/kg							
Lead	ND	1.00	mg/kg							
Molybdenum	ND	1.00	mg/kg							
Nickel	ND	1.00	mg/kg							
Selenium	ND	2.00	mg/kg							
Silver	ND	1.00	mg/kg							
Thallium	ND	2.00	mg/kg							
Vanadium	ND	1.00	mg/kg							
Zinc	ND	5.00	mg/kg							
<b>LCS</b>	<b>Prepared &amp; Analyzed: 03/16/18</b>									
Antimony	44.7	2.00	mg/kg	49.80		89.7	60-140			
Arsenic	47.1	2.00	mg/kg	50.00		94.3	80-120			
Barium	199	1.00	mg/kg	199.3		99.6	80-120			
Beryllium	4.71	1.00	mg/kg	4.940		95.4	80-120			
Cadmium	5.19	1.00	mg/kg	4.990		104	80-120			
Chromium	19.8	1.00	mg/kg	19.86		99.9	80-120			
Cobalt	51.8	1.00	mg/kg	49.57		105	80-120			
Copper	25.1	1.00	mg/kg	25.04		100	80-120			
Lead	52.2	1.00	mg/kg	50.20		104	80-120			
Molybdenum	45.9	1.00	mg/kg	50.10		91.7	80-120			
Nickel	53.7	1.00	mg/kg	49.73		108	80-120			
Selenium	46.2	2.00	mg/kg	50.00		92.3	80-120			
Silver	4.96	1.00	mg/kg	4.970		99.9	80-120			
Thallium	49.4	2.00	mg/kg	49.37		100	80-120			
Vanadium	45.4	1.00	mg/kg	50.10		90.7	80-120			
Zinc	51.0	5.00	mg/kg	49.98		102	80-120			





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## Certificate of Analysis

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Attn: Mr. Robert Becker

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File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

**PLS Report No.: 1803227**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BC81941 - EPA 3050B</b>										
<b>Matrix Spike</b>	<b>Source: 1803227-07</b>		<b>Prepared &amp; Analyzed: 03/16/18</b>							
Antimony	41.4	2.00	mg/kg	49.80	ND	83.1	60-140			
Arsenic	49.6	2.00	mg/kg	50.00	4.07	91.0	75-125			
Barium	328	1.00	mg/kg	199.3	128	101	75-125			
Beryllium	5.04	1.00	mg/kg	4.940	0.449	92.8	75-125			
Cadmium	5.01	1.00	mg/kg	4.990	0.367	93.1	75-125			
Chromium	29.9	1.00	mg/kg	19.86	11.3	93.8	75-125			
Cobalt	53.9	1.00	mg/kg	49.57	7.36	94.0	75-125			
Copper	41.2	1.00	mg/kg	25.04	14.6	106	75-125			
Lead	64.0	1.00	mg/kg	50.20	18.3	91.0	75-125			
Molybdenum	43.4	1.00	mg/kg	50.10	0.468	85.6	75-125			
Nickel	54.8	1.00	mg/kg	49.73	8.30	93.5	75-125			
Selenium	45.2	2.00	mg/kg	50.00	1.66	87.0	75-125			
Silver	4.68	1.00	mg/kg	4.970	ND	94.1	75-125			
Thallium	43.4	2.00	mg/kg	49.37	ND	87.9	75-125			
Vanadium	76.9	1.00	mg/kg	50.10	30.7	92.2	75-125			
Zinc	197	5.00	mg/kg	49.98	142	110	75-125			
<b>Matrix Spike Dup</b>	<b>Source: 1803227-07</b>		<b>Prepared &amp; Analyzed: 03/16/18</b>							
Antimony	41.4	2.00	mg/kg	49.80	ND	83.2	60-140	0.116	30	
Arsenic	50.1	2.00	mg/kg	50.00	4.07	92.1	75-125	1.22	30	
Barium	314	1.00	mg/kg	199.3	128	93.4	75-125	7.35	30	
Beryllium	5.01	1.00	mg/kg	4.940	0.449	92.4	75-125	0.469	30	
Cadmium	5.03	1.00	mg/kg	4.990	0.367	93.4	75-125	0.275	30	
Chromium	29.8	1.00	mg/kg	19.86	11.3	93.0	75-125	0.806	30	
Cobalt	54.1	1.00	mg/kg	49.57	7.36	94.4	75-125	0.441	30	
Copper	39.5	1.00	mg/kg	25.04	14.6	99.5	75-125	6.32	30	
Lead	64.4	1.00	mg/kg	50.20	18.3	91.9	75-125	0.990	30	
Molybdenum	43.7	1.00	mg/kg	50.10	0.468	86.3	75-125	0.751	30	
Nickel	54.8	1.00	mg/kg	49.73	8.30	93.5	75-125	0.0412	30	
Selenium	45.8	2.00	mg/kg	50.00	1.66	88.3	75-125	1.43	30	
Silver	4.76	1.00	mg/kg	4.970	ND	95.7	75-125	1.67	30	
Thallium	43.1	2.00	mg/kg	49.37	ND	87.3	75-125	0.711	30	
Vanadium	75.7	1.00	mg/kg	50.10	30.7	89.8	75-125	2.65	30	
Zinc	189	5.00	mg/kg	49.98	142	92.6	75-125	16.8	30	
<b>Batch BC81603 - EPA 7471A</b>										
<b>Blank</b>	<b>Prepared &amp; Analyzed: 03/15/18</b>									
Mercury	ND	0.100	mg/kg							
<b>LCS</b>	<b>Prepared &amp; Analyzed: 03/15/18</b>									
Mercury	0.846	0.100	mg/kg	0.8358		101	80-120			





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(213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 29 of 29

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 03/26/18

Submitted: 03/14/18

**PLS Report No.: 1803227**

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch: BC81603 - EPA 7471A</b>										
<b>Matrix Spike</b>	<b>Source: 1803241-03</b>		<b>Prepared &amp; Analyzed: 03/15/18</b>							
Mercury	0.921	0.100	mg/kg	0.8358	0.0790	101	75-125			
<b>Matrix Spike Dup</b>	<b>Source: 1803241-03</b>		<b>Prepared &amp; Analyzed: 03/15/18</b>							
Mercury	0.921	0.100	mg/kg	0.8358	0.0790	101	75-125	0.00	30	

### Notes and Definitions

V-3 Amount spiked was less than 1/4 of concentration in the sample.  
DO Coeluting Peaks  
NA Not Applicable  
ND Analyte NOT DETECTED at or above the detection limit  
NR Not Reported  
MDL Method Detection Limit  
PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)



**Enviro - Chem, Inc.**  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: March 22, 2018

Mr. John Schmidt  
Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

Project: 1803227 / P.O. #16349  
Lab I.D.: 180315-44

Dear Mr. Schmidt:

The analytical results for the soil sample, received by our lab on March 15, 2018, are attached. The sample was received chilled, intact and accompanying chain of custody record.

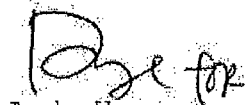
The samples were received at five degree Celsius

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,



Curtis Desilets  
Vice President/Program Manager



Andy Wang  
Laboratory Manager



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1803227 / P.O. #16349

MATRIX: SOIL

DATE SAMPLED: 03/13/18

REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 03/15/18

DATE EXTRACTED: 03/16&19/18

DATE ANALYZED: 03/19/18

DATE REPORTED: 03/22/18

SAMPLE I.D.: SP-S1-E-3"

LAB I.D.: 180315-44

Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

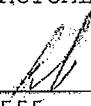
COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: 

CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro - Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: Positive Lab Service  
781 E. Washington Blvd.,  
Los Angeles, CA 90021  
Tel (213) 745-5312 Fax (213) 745-6372

PROJECT: 1803227 / P.O. #16349

MATRIX: SOIL

DATE SAMPLED: 03/13/18

REPORT TO: MR. JOHN SCHMIDT

DATE RECEIVED: 03/15/18

DATE EXTRACTED: 03/16&19/18

DATE ANALYZED: 03/19/18

DATE REPORTED: 03/22/18

METHOD BLANK FOR LAB I.D.: 180315-44

Chlorinated Herbicides Analysis

Method: EPA 8151A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
2,4,5-T	ND	0.020	1
2,4,5-TP (Silvex)	ND	0.020	1
2,4-D	ND	0.200	1
2,4-DB	ND	0.200	1
Dalapon (Dichloroacetic Acid)	ND	0.500	1
Dicamba	ND	0.020	1
Dichloroprop	ND	0.200	1
Dinoseb (DNBP)	ND	0.100	1
MCPA	ND	20.0	1
MCPP	ND	20.0	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: 

CAL-DHS ELAP CERTIFICATE No.: 1555



Enviro-Chem, Inc.  
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

## QA/QC Report

### Analysis: EPA 8151A

Matrix: **Soil/Solid/Liquid**

Date Analyzed: **3/19/2018**

Unit: **mg/Kg (PPM)**

#### Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **180315-44 MS/MSD**

Analyte	S.R.	spk conc	MS	% REC	MSD	% REC	%RPD	ACP %RPD	ACP %REC
2,4,5-T	0	0.0250	0.0137	55%	0.0132	53%	4%	0-20%	50-150

#### Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
2,4,5-T	0.0250	0.0218	87%	70-130
2,4,5-TP	0.0250	0.0183	73%	70-130
DINOSEB	0.1250	0.1313	105%	70-130

#### Surrogate Recovery:

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:		M-BLK	180315-44						
DCAA	50-150	64%	53%						

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

Analyte	ACP %	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample ID:									
DCAA	50-150								

S.R. = Sample Result

spk conc = Spike Concentration

%REC = Percent Recovery

ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

\* = Surrogate fail due to matrix Interference (If Marked)

Note: LCS, MS, MSD are In control therefore results are in control.

Analyzed and Reviewed By: 

Final Reviewer: 



101733

**POSITIVE****LAB SERVICE****CHAIN OF CUSTODY AND ANALYSIS REQUEST**781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 1803227CLIENT NAME: Positive Lab Service Project Name/No. 1803227 P.O. NO. 1649 AIRBILL NO: \_\_\_\_\_ADDRESS: 781 E. Washington Blvd., LA CA 90021 ANALYSES REQUESTED: \_\_\_\_\_ COOLER TEMP: 5°CPROJECT MANAGER: John Schmidt PHONE NO: 213.745.5312 FAX NO: \_\_\_\_\_ PRESERVATIVE: \_\_\_\_\_

SAMPLER NAME: Client (Printed) \_\_\_\_\_ (Signature) \_\_\_\_\_ REMARKS: \_\_\_\_\_

TAT (Analytical Turn Around Time): 0 = Same Day; 1 = 1 Day; 2 = 2 Days; 3 = 3 Days; N = Normal (5-7 Working Days)CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:UST Project: Y N Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		SAMPLE CONDITION/CONTAINER/COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE	
1/1803/15	3.13.18	1:20	SP-SI-E-3"		✓			N	1	G	✓
2-44											
3											
4											
5											
6											
7											
8											
9											
10											

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 3-13-18 Time: 1:30

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

**SAMPLE DISPOSITION:**

1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: \_\_\_\_\_ days

By \_\_\_\_\_ Date: \_\_\_\_\_

PRESERVATIVE: 1-HNO<sub>3</sub>, 2-H<sub>2</sub>SO<sub>4</sub>, 3-HCL, 4-Zinc Acetate, 5-NaOH, 6-NH<sub>4</sub> Buffer, 7-Other

LAB COPY



78612



## CHAIN OF CUSTODY AND ANALYSIS REQUEST

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

DATE: 3/13/18 PAGE 1 OF 3

LOG BOOK NO. FILE NO. LAB NO. 1609221

CLIENT NAME:

SEI

Project Name/No.

16195/VHSD-SW

P.O. NO.

16195-Pos

AIRBILL NO: GSD

599791907 2.3

ADDRESS:

4400 Yeager Wy, Bakersfield, CA 93313

ANALYSES REQUESTED:

PROJECT MANAGER:

R. Bech

PHONE NO:

661-831-5100

FAX NO:

831-2111

SAMPLER NAME:

R. Bech (Printed)

(Signature)

TAT (Analytical Turn Around Time)

0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project:

Y

N

Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER									
				WATER	SOIL	SLUDGE	OTHER		#	TYPE								
1	3/13/18	8:15	NW-P2-W-3"		X			N	1	B	X							
2		8:17	NW-P2-W-2"															Hold
3		8:30	NW-S1-4"											X				
4		8:35	NW-S1-S-3"								X	X	X					
5		8:37	NW-S1-S-2"									X	X					
6		8:40	NW-S1-W-3"								X	X	X					
7		8:42	NW-S1-W-2"									X	X					
8		8:50	NW-S1-E-3"								X	X	X					
9		8:52	NW-S1-E-2"									X	X					
10		9:10	NW-S5-W-3"								X		X					

Relinquished By: (Signature and Printed Name)

R. Bech

Received By: (Signature and Printed Name)

L. Bech

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

SPECIAL INSTRUCTIONS:

Date: 3/14/18 Time: 10:28

Date: 3/14/18 Time: 10:28

SAMPLE DISPOSITION:

1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 days

By: [Signature] Date: 3/13/18

LAB COPY



78612



## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 3/13/18 PAGE 2 OF 3

LOG BOOK NO. FILE NO. LAB NO. 16195

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-P05

AIRBILL NO: G50

53 979 19 07

COOLER TEMP: 2.3

ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

## ANALYSES REQUESTED:

PROJECT MANAGER: R. Beed PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Beed (Printed) (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y ☒ - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER									
				WATER	SOIL	SLUDGE	OTHER		#	TYPE								
1	3/13/18	9:12	NW-SS-W-2"		X			N	1	B		X						
2		10:15	H1-4"										X					
3		10:20	H1-S-3"										X					
4		10:22	H1-S-2"										X					
5		9:55	H2-E-3"										X	X				
6		9:57	H2-E-2"										X					
7		9:25	H3-4"										X					
8		9:30	H3-N-3"										X					
9		9:32	H3-N-2"										X					
10		10:40	P1-E-3"									X						

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 3/14/18 Time: 10:29

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 3/14/18 Time: 10:29

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: Time:

SPECIAL INSTRUCTIONS:

## SAMPLE DISPOSITION:

1. Samples returned to client? ☒ YES ☐ NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 days

By: (Signature) Date: 3/13/18



78612


**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 3/13/18 PAGE 3 OF 3

 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 16195-Pos

 CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

 P.O. NO. 16195-Pos

 ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313
**ANALYSES REQUESTED:**

 PROJECT MANAGER: R. Beed PHONE NO: 661-831-5100 FAX NO: 831-2111

 SAMPLER NAME: R. Beed (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

 UST Project: Y ☒ - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE

PCBS 882  
TPH (C9-C36)  
8270  
Lead  
OCPS 8081  
OCHS 8181  
CAMP Metals

 AIRBILL NO: G750  
539791967  
 COOLER TEMP: 2.3°C

PRESERVED: \_\_\_\_\_

 REMARKS:  
2/29/18

 SAMPLE CONDITION/  
 CONTAINER /COMMENTS:

1		3/13/18	10:42	P1-E-2"		X			N	1	B										Hold
2			10:55	S1-W-3"									X	X		X					
3			10:57	S1-W-2"									X								
4			10:45	P1-W-3"								X									
5			10:47	P1-W-2"																	Hold
6			11:20	SP-S1-E-3"				X					X	X		X	X	X			
7			10:10	H4-W-3"		X									X	X					
8			10:12	H4-W-2"		X										X					
9																					
10																					

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

 Date: 3/14/18 Time: 10:28
**SAMPLE DISPOSITION:**

 1. Samples returned to client? ☒ YES ☐ NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

 3. Storage time requested: 60 days

 By: [Signature] Date: 3/13/18

SPECIAL INSTRUCTIONS:





781 East Washington Blvd., Los Angeles, CA 90021  
[213] 745-5312 FAX [213] 745-6372

March 29, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1803227

Project Name: 16195 KHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on March 14, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

  
\_\_\_\_\_  
Project Manager





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 2 of 4

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/29/18

Submitted: 03/14/18

PLS Report No.: 1803227

Project: 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-S-3" Soil (1803227-03) Sampled: 03/13/18 08:35 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Toluene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Surrogate: a,a,a-Trifluorotoluene	87.9 %			46-132		EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Sample ID: NW-S1-S-2' Soil (1803227-04) Sampled: 03/13/18 08:37 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	ND		1	mg/kg	2.50	EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
Surrogate: n-Tetracosane	83.3 %			68-133		EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Toluene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Surrogate: a,a,a-Trifluorotoluene	84.4 %			46-132		EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Sample ID: NW-S1-E-3" Soil (1803227-07) Sampled: 03/13/18 08:50 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Toluene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Surrogate: a,a,a-Trifluorotoluene	75.7 %			46-132		EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Sample ID: NW-S1-E-2' Soil (1803227-08) Sampled: 03/13/18 08:52 Received: 03/14/18 10:28										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	5.67		1	mg/kg	2.50	EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
Surrogate: n-Tetracosane	93.1 %			68-133		EPA 3550C EPA 8015B	03/27/18	03/28/18	lk	BC82845
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Toluene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Ethylbenzene	ND		1	ug/kg	1.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Xylenes (total)	ND		1	ug/kg	2.00	EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735
Surrogate: a,a,a-Trifluorotoluene	93.0 %			46-132		EPA 5030B EPA 8021B	03/27/18	03/27/18	lk	BC82735





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 3 of 4

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 03/29/18  
 Submitted: 03/14/18  
**PLS Report No.: 1803227**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	Limit	RPD	RPD Limit	Qualifier
<b>Batch BC82845 - EPA 3550C</b>										
<b>Blank</b>										
<b>Prepared: 03/27/18 Analyzed: 03/28/18</b>										
TPH C9 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: n-Tetracosane	21.4		mg/kg	20.83		103	68-133			
<b>LCS</b>										
<b>Prepared: 03/27/18 Analyzed: 03/28/18</b>										
Diesel	652	6.25	mg/kg	554.7		118	69-137			
Surrogate: n-Tetracosane	20.1		mg/kg	20.83		96.6	64-140			
<b>Matrix Spike</b>										
<b>Source: 1803433-02 Prepared: 03/27/18 Analyzed: 03/29/18</b>										
Diesel	184	2.50	mg/kg	110.9	59.2	112	53-138			
Surrogate: n-Tetracosane	23.8		mg/kg	20.83		114	68-133			
<b>Matrix Spike Dup</b>										
<b>Source: 1803433-02 Prepared: 03/27/18 Analyzed: 03/29/18</b>										
Diesel	187	2.50	mg/kg	110.9	59.2	115	53-138	2.62	30	
Surrogate: n-Tetracosane	20.4		mg/kg	20.83		97.7	68-133			
<b>Batch BC82735 - EPA 5030B</b>										
<b>Blank</b>										
<b>Prepared &amp; Analyzed: 03/27/18</b>										
Benzene	ND	1.00	ug/kg							
Toluene	ND	1.00	ug/kg							
Ethylbenzene	ND	1.00	ug/kg							
Xylenes (total)	ND	2.00	ug/kg							
Surrogate: a,a,a-Trifluorotoluene	14.1		ug/kg	15.00		94.0	46-132			
<b>LCS</b>										
<b>Prepared &amp; Analyzed: 03/27/18</b>										
Benzene	33.8	1.00	ug/kg	40.00		84.6	76-117			
Toluene	32.5	1.00	ug/kg	40.00		81.3	74-113			
Ethylbenzene	31.3	1.00	ug/kg	40.00		78.3	75-122			
Xylenes (total)	91.8	2.00	ug/kg	120.0		76.5	68-121			
Surrogate: a,a,a-Trifluorotoluene	11.6		ug/kg	15.00		77.1	67-130			
<b>Matrix Spike</b>										
<b>Source: 1803433-04 Prepared &amp; Analyzed: 03/28/18</b>										
Benzene	47.9	1.00	ug/kg	40.00	ND	120	51-129			
Toluene	45.7	1.00	ug/kg	40.00	ND	114	37-129			
Ethylbenzene	46.3	1.00	ug/kg	40.00	ND	116	45-129			
Xylenes (total)	136	2.00	ug/kg	120.0	1.58	112	52-113			
Surrogate: a,a,a-Trifluorotoluene	9.34		ug/kg	15.00		62.3	46-132			
<b>Matrix Spike Dup</b>										
<b>Source: 1803433-04 Prepared &amp; Analyzed: 03/28/18</b>										
Benzene	34.5	1.00	ug/kg	40.00	ND	86.2	51-129	32.6	30	
Toluene	34.4	1.00	ug/kg	40.00	ND	86.0	37-129	28.1	30	
Ethylbenzene	35.0	1.00	ug/kg	40.00	ND	87.5	45-129	27.8	30	
Xylenes (total)	101	2.00	ug/kg	120.0	1.58	83.2	52-113	29.3	30	





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(213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 4 of 4

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 03/29/18

Submitted: 03/14/18

**PLS Report No.: 1803227**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch BC82735 - EPA 5030B										
Surrogate: a,a,a-Trifluorotoluene	11.1		ug/kg	15.00		74.1	46-132			

### Notes and Definitions

NA Not Applicable  
ND Analyte NOT DETECTED at or above the detection limit  
NR Not Reported  
MDL Method Detection Limit  
PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)



78612



## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 3/13/18 PAGE 2 OF 3

LOG BOOK NO. FILE NO. LAB NO. 1609221

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-Pes

AIRBILL NO: 650  
599791907 2.3  
COOLER TEMP:

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

## ANALYSES REQUESTED:

PROJECT MANAGER: R. Beel PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Beel (Printed) [Signature]

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y ☒ N - Global ID#

PRESERVED:

## REMARKS:

⊗ KHSD per Bob.  
Becker 3.14.18 @ 3:07 PM  
⊗ Add on 3/26/18  
@ 5:00 PM via e-mail  
3 day TAT (DUE 3/30/18)

SAMPLE CONDITION/  
CONTAINER /COMMENTS:

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		PCBS	TPH (C9-C36)	OCPS	Lead	BTEX						
				WATER	SOIL	SLUDGE	OTHER		#	TYPE											
1	3/13/18	8:15	NW-P2-W-3"		X			N	1	B	X										
2		8:17	NW-P2-W-2"																		Hold
3		8:30	NW-S1-4"										X								
4		8:35	NW-S1-S-3"									X	X	X	⊗						
5		8:37	NW-S1-S-2"									⊗	X	X	⊗						
6		8:40	NW-S1-W-3"									X	X	X							
7		8:42	NW-S1-W-2"										X	X							
8		8:50	NW-S1-E-3"									X	X	X	⊗						
9		8:52	NW-S1-E-2"									⊗	X	X	⊗						
10		9:10	NW-S5-W-3"									X		X							

Relinquished By: (Signature and Printed Name) Received By: (Signature and Printed Name)

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

SPECIAL INSTRUCTIONS:

## SAMPLE DISPOSITION:

1. Samples returned to client? ☒ YES ☐ NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: 60 days

By: [Signature] Date: 3/13/18

LAB COPY





## CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 3/13/18 PAGE 2 OF 3

LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 140-1221

CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW

P.O. NO. 16195-Pos AIRBILL NO: 53 9791907

ADDRESS: 4400 Yeager Wy, Bakersfield, CA 93313

**ANALYSES REQUESTED:**

PROJECT MANAGER: R. Reed PHONE NO: 661-831-5100 FAX NO: 831-2111

SAMPLER NAME: R. Bech (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER		PC	TOM	OC	Le				SAMPLE CONDITION/ CONTAINER /COMMENTS:
				WATER	SOIL	SLUDGE	OTHER		#	TYPE								
1	3/13/18	9:12	NW-S5-W-2"		X			N	1	B		X						
2		10:15	H1-4"										X					
3		10:20	H1-S-3"										X					
4		10:22	H1-S-2"										X					
5		9:55	H2-E-3"										X	X				
6		9:57	H2-E-2"										X					
7		9:25	H3-4"										X					
8		9:30	H3-N-3"										X					
9		9:32	H3-N-2"										X					
10	✓	10:40	P1-E-3"		✓			✓	✓	✓	X							

Relinquished By: Signature and Printed Name

Received By: (Signature and Printed Name)

Date: 4/1/8 Time: 10:29

**SAMPLE DISPOSITION:**

1. Samples returned to client? ☒ YES ☐ NO

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 3/14/18 @ Time: 10:28

2. Samples will not be stored over 30 days, unless additional storage time is requested.

Relinquished By: (Signature and Printed Name)

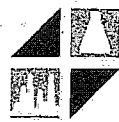
Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

3. Storage time requested: 60 days  
By MA Date 3/13/18

**SPECIAL INSTRUCTIONS:**




**POSITIVE**  
**LAB SERVICE**
**CHAIN OF CUSTODY AND ANALYSIS REQUEST**

 781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

 DATE: 3/13/18 PAGE 3 OF 3  
 LOG BOOK NO. \_\_\_\_\_ FILE NO. \_\_\_\_\_ LAB NO. 607281

 CLIENT NAME: SEI Project Name/No. 16195/KHSD-SW P.O. NO. 16195-Pos

 ADDRESS: 4400 Yeager Way, Bakersfield, CA 93313

 PROJECT MANAGER: R. Bech PHONE NO: 661-831-5100 FAX NO: 831-2111

 SAMPLER NAME: R. Bech (Printed) [Signature] (Signature)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

 UST Project: Y (N) - Global ID# \_\_\_\_\_

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
1	3/13/18	10:42	P1-E-2"		X			N	1	B
2		10:55	S1-W-3"							
3		10:57	S1-W-2"							
4		10:45	P1-W-3"							
5		10:47	P1-W-2"							
6		11:20	SP-S1-E-3"				X			
7		10:10	H4-W-3"		X					
8		10:12	H4-W-2"		X					
9										
10										

**ANALYSES REQUESTED:**

PCBS 882  
 TPH (C9-C36)  
 8270  
 Lead  
 OCPs 8281  
 OCHs 8181  
 CAM 17 Metals

 AIRBILL NO: G50  
539791967  
 COOLER TEMP: 2.30

PRESERVED: \_\_\_\_\_

 REMARKS:  
8/2/18

 SAMPLE CONDITION/  
 CONTAINER /COMMENTS:

Hold
Hold

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

 Date: 3/14/18 Time: 10:28

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

 Date: 3/14/18 Time: 10:28

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

SPECIAL INSTRUCTIONS:

**SAMPLE DISPOSITION:**

 1. Samples returned to client? YES NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

 3. Storage time requested: 60 days

 By [Signature] Date 3/13/18





781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

April 16, 2018

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1804106

Project Name: 16195 KHSD SW / P.O. # 16195-POS

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on April 11, 2018.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

  
Project Manager





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 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 2 of 7

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 04/16/18  
 Submitted: 04/11/18  
**PLS Report No.: 1804106**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-6' Soil (1804106-01) Sampled: 04/10/18 09:40 Received: 04/11/18 10:38										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
<b>4,4'-DDD</b>	<b>17.9</b>		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
<b>4,4'-DDT</b>	<b>123</b>		1	ug/kg	16.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	91.6 %				55-126	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: Decachlorobiphenyl	117 %				49-133	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302

Sample ID: NW-S1-8' Soil (1804106-02) Sampled: 04/10/18 09:50 Received: 04/11/18 10:38										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
<b>4,4'-DDD</b>	<b>102</b>		5	ug/kg	40.0	EPA 3550C EPA 8081A	04/12/18	04/16/18	al	BD81302
4,4'-DDE	ND		5	ug/kg	80.0	EPA 3550C EPA 8081A	04/12/18	04/16/18	al	BD81302
<b>4,4'-DDT</b>	<b>273</b>		5	ug/kg	80.0	EPA 3550C EPA 8081A	04/12/18	04/16/18	al	BD81302
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302





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## Certificate of Analysis

Page 3 of 7

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #: 73443  
 Report Date: 04/16/18  
 Submitted: 04/11/18  
**PLS Report No.: 1804106**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

**Project:** 16195 KHSD SW / P.O. # 16195-POS

Sample ID: NW-S1-8" Soil (1804106-02) Sampled: 04/10/18 09:50 Received: 04/11/18 10:38										
Toxaphene	ND	1	ug/kg	120	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	86.2 %		55-126		EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: Decachlorobiphenyl	117 %		49-133		EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Sample ID: NW-S1-N-3" Soil (1804106-03) Sampled: 04/10/18 10:00 Received: 04/11/18 10:38										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	17.3		1	mg/kg	2.50	EPA 3550C EPA 8015B	04/12/18	04/14/18	lk	BD81234
TPH C23 - C32	106		1	mg/kg	100	EPA 3550C EPA 8015B	04/12/18	04/14/18	lk	BD81234
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C EPA 8015B	04/12/18	04/14/18	lk	BD81234
Surrogate: n-Tetracosane	102 %			68-133		EPA 3550C EPA 8015B	04/12/18	04/14/18	lk	BD81234
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Benzene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	04/12/18	04/12/18	mb	BD81311
Toluene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	04/12/18	04/12/18	mb	BD81311
Ethylbenzene	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	04/12/18	04/12/18	mb	BD81311
Xylenes, total	ND		1	ug/kg	2.00	EPA 5030B EPA 8260B	04/12/18	04/12/18	mb	BD81311
Surrogate: Dibromofluoromethane	98.7 %			81-134		EPA 5030B EPA 8260B	04/12/18	04/12/18	mb	BD81311
Surrogate: Toluene-d8	96.4 %			80-120		EPA 5030B EPA 8260B	04/12/18	04/12/18	mb	BD81311
Surrogate: 4-Bromofluorobenzene	98.8 %			78-122		EPA 5030B EPA 8260B	04/12/18	04/12/18	mb	BD81311
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
Aldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-Chlordane	59.4		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
4,4'-DDD	876		20	ug/kg	160	EPA 3550C EPA 8081A	04/12/18	04/16/18	al	BD81302
4,4'-DDE	515		20	ug/kg	320	EPA 3550C EPA 8081A	04/12/18	04/16/18	al	BD81302
4,4'-DDT	4480		20	ug/kg	320	EPA 3550C EPA 8081A	04/12/18	04/16/18	al	BD81302
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Toxaphene	ND		1	ug/kg	120	EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: 2,4,5,6 Tetrachloro-m-xylol	82.6 %			55-126		EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: Decachlorobiphenyl	98.6 %			49-133		EPA 3550C EPA 8081A	04/12/18	04/13/18	al	BD81302
Sample ID: NW-S1-N-2 Soil (1804106-04) Sampled: 04/10/18 10:02 Received: 04/11/18 10:38										
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch
TPH C9 - C22	5.72	H-2	1	mg/kg	2.50	EPA 3550C EPA 8015B	04/12/18	04/13/18	lk	BD81234





781 East Washington Blvd., Los Angeles, CA 90021  
 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 4 of 7

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 04/16/18

Submitted: 04/11/18

**PLS Report No.: 1804106**

**Project:** 16195 KHSW SW / P.O. # 16195-POS

Sample ID: NW-S1-N-2 Soil (1804106-04) Sampled: 04/10/18 10:02 Received: 04/11/18 10:38											
TPH C23 - C32	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	04/12/18	04/13/18	lk	BD81234
TPH C33 - C36	ND		1	mg/kg	100	EPA 3550C	EPA 8015B	04/12/18	04/13/18	lk	BD81234
Surrogate: n-Tetracosane	92.2 %			68-133		EPA 3550C	EPA 8015B	04/12/18	04/13/18	lk	BD81234
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Benzene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	04/12/18	04/12/18	mb	BD81311
Toluene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	04/12/18	04/12/18	mb	BD81311
Ethylbenzene	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	04/12/18	04/12/18	mb	BD81311
Xylenes, total	ND		1	ug/kg	2.00	EPA 5030B	EPA 8260B	04/12/18	04/12/18	mb	BD81311
Surrogate: Dibromofluoromethane	93.2 %			81-134		EPA 5030B	EPA 8260B	04/12/18	04/12/18	mb	BD81311
Surrogate: Toluene-d8	95.6 %			80-120		EPA 5030B	EPA 8260B	04/12/18	04/12/18	mb	BD81311
Surrogate: 4-Bromofluorobenzene	96.7 %			78-122		EPA 5030B	EPA 8260B	04/12/18	04/12/18	mb	BD81311
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method	Prepared	Analyzed	By	Batch	
Aldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
beta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
delta-BHC	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-BHC (Lindane)	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
alpha-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
gamma-Chlordane	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
4,4'-DDD	19.4		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
4,4'-DDE	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
4,4'-DDT	134		1	ug/kg	16.0	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Dieldrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan I	ND		1	ug/kg	16.0	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan II	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Endosulfan sulfate	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Technical Chlordane	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin aldehyde	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Endrin ketone	ND		1	ug/kg	24.0	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Heptachlor epoxide	ND		1	ug/kg	8.00	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Methoxychlor	ND		1	ug/kg	40.0	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Toxaphene	ND		1	ug/kg	120	EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: 2,4,5,6 Tetrachloro-m-xylenes	82.1 %			55-126		EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302
Surrogate: Decachlorobiphenyl	113 %			49-133		EPA 3550C	EPA 8081A	04/12/18	04/13/18	al	BD81302





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 04/16/18

Submitted: 04/11/18

PLS Report No.: 1804106

Project: 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BD81234 - EPA 3550C</b>										
<b>Blank Prepared &amp; Analyzed: 04/12/18</b>										
TPH C9 - C22	ND	2.50	mg/kg							
TPH C23 - C32	ND	100	mg/kg							
TPH C33 - C36	ND	100	mg/kg							
Surrogate: n-Tetracosane	18.4		mg/kg	20.83		88.5	68-133			
<b>LCS Prepared &amp; Analyzed: 04/12/18</b>										
Diesel	756	6.25	mg/kg	554.7		136	69-137			
Surrogate: n-Tetracosane	23.6		mg/kg	20.83		113	64-140			
<b>Matrix Spike Source: 1804117-02 Prepared &amp; Analyzed: 04/12/18</b>										
Diesel	246	2.50	mg/kg	110.9	165	73.1	53-138			
Surrogate: n-Tetracosane	21.1		mg/kg	20.83		101	68-133			
<b>Matrix Spike Dup Source: 1804117-02 Prepared &amp; Analyzed: 04/12/18</b>										
Diesel	304	2.50	mg/kg	110.9	165	125	53-138	52.4	30	V-2
Surrogate: n-Tetracosane	21.3		mg/kg	20.83		102	68-133			
<b>Batch BD81311 - EPA 5030B</b>										
<b>Blank Prepared &amp; Analyzed: 04/12/18</b>										
Benzene	ND	2.00	ug/kg							
Toluene	ND	2.00	ug/kg							
Ethylbenzene	ND	2.00	ug/kg							
Xylenes, total	ND	2.00	ug/kg							
Surrogate: Dibromofluoromethane	9.62		ug/kg	10.00		96.2	81-134			
Surrogate: Toluene-d8	9.84		ug/kg	10.00		98.4	80-120			
Surrogate: 4-Bromofluorobenzene	9.38		ug/kg	10.00		93.8	78-122			
<b>LCS Prepared &amp; Analyzed: 04/12/18</b>										
Benzene	21.9	2.00	ug/kg	20.00		110	70-132			
Toluene	19.4	2.00	ug/kg	20.00		96.8	67-124			
1,1-Dichloroethene	25.7	4.00	ug/kg	20.00		129	64-131			
Methyl tert-butyl ether (MTBE)	24.5	4.00	ug/kg	20.00		123	70-127			
Trichloroethene (TCE)	21.8	4.00	ug/kg	20.00		109	74-131			
Chlorobenzene	19.8	4.00	ug/kg	20.00		98.8	65-127			
Surrogate: Dibromofluoromethane	10.2		ug/kg	10.00		102	80-120			
Surrogate: Toluene-d8	10.0		ug/kg	10.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	10.1		ug/kg	10.00		101	80-120			
<b>Matrix Spike Source: 1804119-01 Prepared &amp; Analyzed: 04/12/18</b>										
Benzene	21.0	2.00	ug/kg	20.00	ND	105	66-125			
Toluene	18.7	2.00	ug/kg	20.00	ND	93.7	59-111			
1,1-Dichloroethene	23.3	4.00	ug/kg	20.00	ND	116	59-132			
Trichloroethene (TCE)	20.8	4.00	ug/kg	20.00	ND	104	57-117			
Chlorobenzene	19.9	4.00	ug/kg	20.00	ND	99.4	60-111			





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## Certificate of Analysis

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Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 04/16/18

Submitted: 04/11/18

**PLS Report No.: 1804106**

**Project:** 16195 KHSD SW / P.O. # 16195-POS

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BD81311 - EPA 5030B</b>										
Surrogate: Dibromofluoromethane	10.1		ug/kg	10.00		101	81-134			
Surrogate: Toluene-d8	10.1		ug/kg	10.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	10.0		ug/kg	10.00		100	78-122			
<b>Matrix Spike Dup Source: 1804119-01 Prepared &amp; Analyzed: 04/12/18</b>										
Benzene	20.5	2.00	ug/kg	20.00	ND	103	66-125	2.17	30	
Toluene	18.4	2.00	ug/kg	20.00	ND	92.1	59-111	1.72	30	
1,1-Dichloroethene	23.5	4.00	ug/kg	20.00	ND	117	59-132	0.855	30	
Trichloroethene (TCE)	20.5	4.00	ug/kg	20.00	ND	103	57-117	1.50	30	
Chlorobenzene	19.0	4.00	ug/kg	20.00	ND	95.0	60-111	4.42	30	
Surrogate: Dibromofluoromethane	10.3		ug/kg	10.00		103	81-134			
Surrogate: Toluene-d8	9.98		ug/kg	10.00		99.8	80-120			
Surrogate: 4-Bromofluorobenzene	9.93		ug/kg	10.00		99.3	78-122			
<b>Batch BD81302 - EPA 3550C</b>										
<b>Blank Prepared: 04/12/18 Analyzed: 04/13/18</b>										
Aldrin	ND	2.00	ug/kg							
alpha-BHC	ND	2.00	ug/kg							
beta-BHC	ND	2.00	ug/kg							
delta-BHC	ND	2.00	ug/kg							
gamma-BHC (Lindane)	ND	2.00	ug/kg							
alpha-Chlordane	ND	2.00	ug/kg							
gamma-Chlordane	ND	2.00	ug/kg							
4,4'-DDD	ND	2.00	ug/kg							
4,4'-DDE	ND	4.00	ug/kg							
4,4'-DDT	ND	4.00	ug/kg							
Dieldrin	ND	2.00	ug/kg							
Endosulfan I	ND	4.00	ug/kg							
Endosulfan II	ND	2.00	ug/kg							
Endosulfan sulfate	ND	2.00	ug/kg							
Endrin	ND	2.00	ug/kg							
Technical Chlordane	ND	10.0	ug/kg							
Endrin aldehyde	ND	2.00	ug/kg							
Endrin ketone	ND	6.00	ug/kg							
Heptachlor	ND	2.00	ug/kg							
Heptachlor epoxide	ND	2.00	ug/kg							
Methoxychlor	ND	10.0	ug/kg							
Toxaphene	ND	30.0	ug/kg							
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.3		ug/kg	16.67		85.7	55-126			
Surrogate: Decachlorobiphenyl	16.3		ug/kg	16.67		97.8	49-133			

LCS

Prepared: 04/12/18 Analyzed: 04/13/18





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## Certificate of Analysis

Page 7 of 7

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

Project: 16195 KHSD SW / P.O. # 16195-POS

File #: 73443

Report Date: 04/16/18

Submitted: 04/11/18

PLS Report No.: 1804106

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BD81302 - EPA 3550C</b>										
Aldrin	12.0	2.00	ug/kg	13.33		89.7	56-130			
gamma-BHC (Lindane)	12.9	2.00	ug/kg	13.33		96.9	56-133			
4,4'-DDT	9.67	4.00	ug/kg	13.33		72.5	56-133			
Dieldrin	14.4	2.00	ug/kg	13.33		108	62-119			
Endrin	12.6	2.00	ug/kg	13.33		94.7	59-127			
Heptachlor	14.3	2.00	ug/kg	13.33		108	55-110			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.7		ug/kg	16.67		88.0	54-108			
Surrogate: Decachlorobiphenyl	15.8		ug/kg	16.67		94.7	54-127			
<b>Matrix Spike Source: 1804106-02 Prepared: 04/12/18 Analyzed: 04/13/18</b>										
Aldrin	12.5	8.00	ug/kg	13.33	ND	94.0	39-124			
gamma-BHC (Lindane)	12.7	8.00	ug/kg	13.33	ND	95.5	44-120			
4,4'-DDT	583	16.0	ug/kg	33.33	273	931	48-150			V-3
Dieldrin	45.6	8.00	ug/kg	33.33	ND	137	48-144			
Endrin	129	8.00	ug/kg	33.33	ND	387	54-149			DO
Heptachlor	12.3	8.00	ug/kg	13.33	ND	92.5	46-135			
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	15.0		ug/kg	16.67		90.0	57-126			
Surrogate: Decachlorobiphenyl	20.4		ug/kg	16.67		122	43-136			
<b>Matrix Spike Dup Source: 1804106-02 Prepared: 04/12/18 Analyzed: 04/13/18</b>										
Aldrin	13.8	8.00	ug/kg	13.33	ND	103	39-124	9.44	30	
gamma-BHC (Lindane)	13.4	8.00	ug/kg	13.33	ND	101	44-120	5.31	30	
4,4'-DDT	750	16.0	ug/kg	33.33	273	NR	48-150	42.3	30	V-3
Dieldrin	46.6	8.00	ug/kg	33.33	ND	140	48-144	2.31	30	
Endrin	156	8.00	ug/kg	33.33	ND	468	54-149	18.9	30	DO
Heptachlor	13.3	8.00	ug/kg	13.33	ND	99.8	46-135	7.59	30	
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	14.8		ug/kg	16.67		89.1	57-126			
Surrogate: Decachlorobiphenyl	22.7		ug/kg	16.67		136	43-136			

### Notes and Definitions

V-3	Amount spiked was less than 1/4 of concentration in the sample.
V-2	Out-of-Range recovery was due to sample Heterogeneity.
H-2	Single peak(s) was present in the HC range.
DO	Coeluting Peaks
NA	Not Applicable
ND	Analyte NOT DETECTED at or above the detection limit
NR	Not Reported
MDL	Method Detection Limit
PQL	Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)



# POSITIVE

---

## LAB SERVICE

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

DATE: 4/10/18 PAGE 1 OF 1  
FILE NO. LAB NO. 180400

CLIENT NAME:

SEI

Project Name/No.

16195/KHSD-SW

P.O. NO.

1. 16195-Pos

AIRBILL NO: 650

COOLER TEMP: 2.8°C

**PRESERVED:**

REMARKS:

\* KHS D. P. Beckel  
3/4/18 @ 3:07a

**SAMPLE CONDITION/  
CONTAINER /COMMENTS:**

ADDRESS:

4400 Yeager Way, Bakersfield CA 93313

**ANALYSES REQUESTED:**

PROJECT MANAGER:

R. Beech

PHONE NO:

661-831-51a

FAX NO: 87-7111

SAMPLER NAME:

R. Beck (Printed)

TAT (Analytical Turn Around Time) 0 = Same day; 1 = 24 Hour; 2 = 48 Hour; (Etc.) N = NORMAL

**CONTAINER TYPES:** B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

[illegible]

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: 4/11/18 @ Time: 10:38am

Time: 10:38 am

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Relinquished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: \_\_\_\_\_ Time: \_\_\_\_\_

**SPECIAL INSTRUCTIONS:**

SAMPLE DISPOSITION:	
1	2

1. Samples returned to client? ☒ YES ☐ NO

2. Samples will not be stored over 30 days, unless additional storage time is requested.

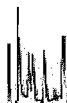
3. Storage time requested: 60 days  
By [Signature] Date 4/10/18





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Date of Report: 02/28/2018

Bob Becker

Soils Engineering

4400 Yeager Way

Bakersfield, CA 93313

Client Project: [none]

BCL Project: Bacteriological

BCL Work Order: 1805913

Invoice ID: B295465

Enclosed are the results of analyses for samples received by the laboratory on 2/22/2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Felicia Johnson

Client Service Rep

Stuart Buttram

Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

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1805913-01 - NW-RW

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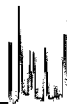
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**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 02/28/2018 10:33  
**Project:** Bacteriological  
**Project Number:** [none]  
**Project Manager:** Bob Becker

### Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1805913-01	<b>COC Number:</b>	---	<b>Receive Date:</b>	02/22/2018 14:20
	<b>Project Number:</b>	---	<b>Sampling Date:</b>	02/22/2018 11:20
	<b>Sampling Location:</b>	---	<b>Sample Depth:</b>	---
	<b>Sampling Point:</b>	NW-RW	<b>Lab Matrix:</b>	Water
	<b>Sampled By:</b>	Robert Becker	<b>Sample Type:</b>	Water

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 02/28/2018 10:33  
Project: Bacteriological  
Project Number: [none]  
Project Manager: Bob Becker

1805913-01

## Water Analysis (Bacteriological)

<b>COC Number:</b>	---	<b>District ID:</b>	
<b>Project Number:</b>	---	<b>System Number:</b>	
<b>Sampling Location:</b>	---	<b>Station Number:</b>	
<b>Sampling Point:</b>	NW-RW	<b>Sample Site:</b>	
<b>Sampled By:</b>	Robert Becker	<b>Residual Chlorine, ppm:</b>	
<b>Receive Date:</b>	02/22/2018 14:20	<b>Temperature, C:</b>	16.5
<b>Sampling Date:</b>	02/22/2018 11:20		
<b>Sample Depth:</b>	---		
<b>Sample Matrix:</b>	Water		

### Multiple Tube Fermentation (5,5,5)

Constituent	Result	Units	Method	Analyst	Initial Dilution	Date Started	Date Completed	Lab Quals
Total Coliform, Presumptive Test	15	Positive Tubes	SM-9221B	FBV	1	02/22/2018 15:30	02/24/2018	
Total Coliform, Confirmed Test	15	Positive Tubes	SM-9221B	FBV	1	02/22/2018 15:30	02/24/2018	
Total Coliform, Density	>1600	MPN/100ml	SM-9221B	FBV	1	02/22/2018 15:30	02/24/2018	
Fecal Coliform, Confirmed Test	15	Positive Tubes	SM-9221E	FBV	1	02/22/2018 15:30	02/24/2018	
Fecal Coliform, Density	>1600	MPN/100ml	SM-9221E	FBV	1	02/22/2018 15:30	02/24/2018	





**Laboratories, Inc.**

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 02/28/2018 10:33  
**Project:** Bacteriological  
**Project Number:** [none]  
**Project Manager:** Bob Becker

## Notes And Definitions

MPN      Most Probable Number





**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Date of Report: 03/13/2018

Bob Becker

Soils Engineering

4400 Yeager Way

Bakersfield, CA 93313

Client Project: 16195

BCL Project: Drinking Water

BCL Work Order: 1805918

Invoice ID: B296793

Enclosed are the results of analyses for samples received by the laboratory on 2/22/2018. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Felicia Johnson

Client Service Rep

Stuart Buttram

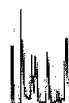
Technical Director

Certifications: CA ELAP #1186; NV #CA00014; OR ELAP #4032-001; AK UST101

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BC Laboratories, Inc.

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BC Laboratories, Inc.		Chain of Custody Form		Analysis Requested		Page 1 of 1	
Client: SEI		Project #: 16195		Comments:		Turnaround # of work days	
Attn: Bob Becker		Project Name: UH50-SW		Sample Matrix		Are there any leaks with holding times less than or equal to 48 hours? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Street Address: 4400 Yeagerway		Global ID #:		Drinking Water		* Standard Turnaround = 10 work days	
City, State, Zip: Bakersfield, CA 93308		R. Becker		Ground Water		Notes	
Phone: 661-831-5700		831-2111		Soil			
Email Address: bob@seengineering.com				Other			
Work Order #: 18-05918							
Sample #	Description	Date Sampled	Time Sampled				
-1	NW-DW	2/22/18	11:00	X	X	X	10
-2	NW-Sump	11	11:05	X	X	X	↓
-3	NW-RW	11	11:20	X	X	X	
				CHN BY: [Signature]			
				DISTRIBUTION			
				SUB OUT			
				SHORT HOLDING TIME			
				Grd NO <sub>2</sub> NO <sub>3</sub> OF SS			
				TPO Cl <sub>2</sub> BOD GASES COT			
Billing: Same as above		EDF Required: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		Global ID (Needed for EDT)		System # (Needed for EDT)	
Client: [Signature]		Send Copy to State of CA? (EDT)		1. Relinquished By [Signature]		1. Received By [Signature]	
Address: [Signature]		City: State: Zip:		2. Relinquished By		2. Received By	
City: State: Zip:		City: State: Zip:		3. Relinquished By		3. Received By	
Attn: PO#:		City: State: Zip:		Date		Date	

BC Laboratories, Inc. - 4100 Atlas Ct. - Bakersfield, CA 93308 - 661.327.4911 - Fax: 661.327.1918 - www.bclabs.com

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**BC Laboratories, Inc.**

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**BC Laboratories**

2/22/2018

**Analytical Method Information**

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Blank Spike / LCS RPD
<b>ciw Aggressive Index in Water (Calc)</b>						
Preservation:*** DEFAULT PRESERVATION ***						
Container:*** DEFAULT CONTAINER Amount Required:N Hold Time:181 days						
***						
Aggressive Index	0.00	0.00 NA				
<b>ciw Alkalinity in Water (Calc)</b>						
Preservation:*** DEFAULT PRESERVATION ***						
Container:*** DEFAULT CONTAINER Amount Required:N Hold Time:181 days						
***						
Alkalinity as CaCO <sub>3</sub>	4.1	4.1 mg/L				
<b>ciw Hardness (TRM) in Water (Calc)</b>						
Preservation:*** DEFAULT PRESERVATION ***						
Container:*** DEFAULT CONTAINER Amount Required:M-TRM Hold Time:181 days						
***						
Hardness as CaCO <sub>3</sub>	0.10	0.50 mg/L				
<b>ciw Langlier Index in Water (Calc)</b>						
Preservation:*** DEFAULT PRESERVATION ***						
Container:*** DEFAULT CONTAINER Amount Required:N Hold Time:181 days						
***						
Langlier Index	-2.00	-2.00 NA				
<b>ciw NO<sub>3</sub>+NO<sub>2</sub> as N (mg/L) in Water (Calc)</b>						
Preservation:*** DEFAULT PRESERVATION ***						
Container:*** DEFAULT CONTAINER Amount Required:N Hold Time:181 days						
***						
Nitrate + Nitrite as N	0.018	0.10 mg/L				
<b>ciw Total Anions in Water (Calc)</b>						
Preservation:*** DEFAULT PRESERVATION ***						
Container:*** DEFAULT CONTAINER Amount Required:N Hold Time:181 days						
***						
Total Anions	0.10	0.10 meq/L				
<b>ciw Total Cations (TRM) in Water (Calc)</b>						
Preservation:*** DEFAULT PRESERVATION ***						
Container:*** DEFAULT CONTAINER Amount Required:M-TRM Hold Time:181 days						
***						
Total Cations	0.10	0.10 meq/L				

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18-05918





Environmental Testing Laboratory Since 1949  
**BC Laboratories, Inc.**

Chain of Custody and Cooler Receipt Form for 1805918 Page 3 of 6

# BC Laboratories

2/22/2018

## Analytical Method Information

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Blank Spike / LCS %R	RPD
<b>1150.1w pH in Water (EPA-150.1)</b>							
Preservation:Store cool at 4°C							
Container:116: GMPI (WHITE), PE 1000ml, No Preserve							
Amount Required:N				Hold Time:0.01 days			
pH	0.05000	±000 pH Units		20		95 - 105	
<b>1200.7wm TRM Calcium in Water (EPA-200.7)</b>							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical Metals (RED), PE 1000ml							
Amount Required:M-TRM				Hold Time:181 days			
Total Recoverable Calcium	0.014	0.10 mg/L		20	75 - 125	20	85 - 115 20
<b>1200.7wm TRM Magnesium in Water (EPA-200.7)</b>							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical Metals (RED), PE 1000ml							
Amount Required:M-TRM				Hold Time:181 days			
Total Recoverable Magnesium	0.019	0.050 mg/L		20	75 - 125	20	85 - 115 20
<b>1200.7wm TRM Potassium in Water (EPA-200.7)</b>							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical Metals (RED), PE 1000ml							
Amount Required:M-TRM				Hold Time:181 days			
Total Recoverable Potassium	0.10	1.0 mg/L		20	75 - 125	20	85 - 115 20
<b>1200.7wm TRM Sodium in Water (EPA-200.7)</b>							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical Metals (RED), PE 1000ml							
Amount Required:M-TRM				Hold Time:181 days			
Total Recoverable Sodium	0.051	0.50 mg/L		20	75 - 125	20	85 - 115 20
<b>1300.0w Chloride in Water (EPA-300.0)</b>							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)							
Amount Required:N				Hold Time:28 days			
Chloride	0.077	0.50 mg/L		10	80 - 120	10	90 - 110 10
<b>1300.0w Fluoride in Water (EPA-300.0)</b>							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)							
Amount Required:N				Hold Time:28 days			
Fluoride	0.012	0.050 mg/L		10	80 - 120	10	90 - 110 10

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Environmental Testing Laboratory Since 1949  
**BC Laboratories, Inc.**



Chain of Custody and Cooler Receipt Form for 1805918 Page 4 of 6

# BC Laboratories

2/22/2018

## Analytical Method Information

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Blank Spike / LCS RPD	Blank Spike %R
1300.0w Nitrate as N in Water (EPA-300.0)							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)		Amount Required:N			Hold Time:2 days		
Nitrate as N	0.021	0.10 mg/L		10	80 - 120	10	90 - 110
Nitrate as NO3	0.092	0.44 mg/L		10	80 - 120	10	90 - 110
i300.0w Sulfate in Water (EPA-300.0)							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)		Amount Required:N			Hold Time:28 days		
Sulfate	0.13	1.0 mg/L		10	80 - 120	10	90 - 110
i353.2wm NO2 as N in Water (EPA-353.2)							
Preservation:Store cool at 4°C							
Container:I16: GMPI (WHITE), PE		Amount Required:N			Hold Time:2 days		
1000ml, No Preserve							
Nitrite as N	0.010	0.050 mg/L		10	90 - 110	10	90 - 110
Nitrite as NO2	0.040	0.17 mg/L		10	90 - 110	10	90 - 110
iSM2320Bw CO3 in Water (SM-2320B)							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)		Amount Required:N			Hold Time:14 days		
Carbonate	2.5	2.5 mg/L		10			
iSM2320Bw HCO3 in Water (SM-2320B)							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)		Amount Required:N			Hold Time:14 days		
Bicarbonate	5.0	5.0 mg/L		10		10	
iSM2320Bw OH in Water (SM-2320B)							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)		Amount Required:N			Hold Time:14 days		
Hydroxide	1.4	1.4 mg/L		10			
iSM2510Bw EC in Water (SM-2510B)							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)		Amount Required:N			Hold Time:28 days		
Electrical Conductivity @ 25 C	1.00	.00 umhos/cm		10			90 - 110

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Environmental Testing Laboratory Since 1949



Chain of Custody and Cooler Receipt Form for 1805918 Page 5 of 6

2/22/2018

# BC Laboratories

## Analytical Method Information

Analyte	MDL	Reporting Limit	Surrogate %R	Duplicate RPD	Matrix Spike %R	Blank Spike / LCS %R	RPD
18-05918							
ISM2540Cw TDS in Water (SM-2540C)							
Preservation:Store cool at 4°C							
Container:X48: Plastic 1000 ml (quart)							
Amount Required:N							
Hold Time:7 days							
Total Dissolved Solids @ 180 C	10	10 mg/L		10		90 - 110	
ISM5540Cw MBAS in Water (SM-5540C)							
Preservation:Store cool at 4°C							
Container:116: GMPI (WHITE), PE							
Amount Required:N							
Hold Time:2 days							
1000ml, No Preserve							
MBAS	0.015	0.10 mg/L		20	80 - 120	20	85 - 115 20
m200.7wb TRM Copper in Water (EPA-200.7)							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical							
Amount Required:M-TRM							
Hold Time:181 days							
Metals (RED), PE 1000ml							
Total Recoverable Copper	1.2	10 ug/L		20	75 - 125	20	85 - 115 20
m200.7wb TRM Iron in Water (EPA-200.7)							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical							
Amount Required:M-TRM							
Hold Time:181 days							
Metals (RED), PE 1000ml							
Total Recoverable Iron	30	50 ug/L		20	75 - 125	20	85 - 115 20
m200.7wb TRM Manganese in Water (EPA-200.7)							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical							
Amount Required:M-TRM							
Hold Time:181 days							
Metals (RED), PE 1000ml							
Total Recoverable Manganese	4.0	10 ug/L		20	75 - 125	20	85 - 115 20
m200.7wb TRM Zinc in Water (EPA-200.7)							
Preservation:Add HNO3 to pH<2							
Container:M08: Inorganic Chemical							
Amount Required:M-TRM							
Hold Time:181 days							
Metals (RED), PE 1000ml							
Total Recoverable Zinc	9.5	50 ug/L		20	75 - 125	20	85 - 115 20
mp200.2w TRM 200.(7,8,9), 2xx.x in Water (EPA 200.2)							
Preservation:*** DEFAULT PRESERVATION ***							
Container:*** DEFAULT CONTAINER							
Amount Required:M-TRM							
Hold Time:181 days							

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BC Laboratories, Inc.

Environmental Testing Laboratory Since 1949

Chain of Custody and Cooler Receipt Form for 1805918 Page 6 of 6

BC LABORATORIES INC.		COOLER RECEIPT FORM		Page 1 Of 1							
Submission #: 18-05918											
SHIPPING INFORMATION			SHIPPING CONTAINER		FREE LIQUID						
Fed Ex <input type="checkbox"/>	UPS <input type="checkbox"/>	Ontrac <input type="checkbox"/> Hand Delivery <input checked="" type="checkbox"/>	Ice Chest <input checked="" type="checkbox"/>	None <input type="checkbox"/> Box <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>						
BC Lab Field Service <input type="checkbox"/> Other <input type="checkbox"/> (Specify)			Other <input type="checkbox"/> (Specify)		W / S						
Refrigerant: Ice <input checked="" type="checkbox"/> Blue Ice <input type="checkbox"/> None <input type="checkbox"/> Other <input type="checkbox"/> Comments:											
Custody Seals: Ice Chest <input type="checkbox"/> Containers <input type="checkbox"/> None <input checked="" type="checkbox"/> Comments:											
All samples received? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All samples containers intact? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Description(s) match COC? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											
COC Received YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Emissivity: 95	Container: OPR	Thermometer ID: T1074	Date/Time: 2/22/18/1425						
		Temperature: (A) 16.0 °C (C) 16.7 °C		Analyst Init: CBI							
SAMPLE CONTAINERS		SAMPLE NUMBERS									
		1	2	3	4	5	6	7	8	9	10
QT PE UNPRES											
4oz / 8oz / 16oz PE UNPRES											
2oz Cr <sup>6+</sup>											
QT INORGANIC CHEMICAL METALS											
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz											
PT CYANIDE											
PT NITROGEN FORMS											
PT TOTAL SULFIDE											
2oz NITRATE / NITRITE											
PT TOTAL ORGANIC CARBON											
PT CHEMICAL OXYGEN DEMAND											
PIA PHENOLICS											
40ml VOA VIAL TRAVEL BLANK											
40ml VOA VIAL											
QT EPA 1664											
PT ODOR											
RADIOLOGICAL											
BACTERIOLOGICAL											
40 ml VOA VIAL - 504											
QT EPA 505/506/508/510											
QT EPA 515/516/518											
QT EPA 525											
QT EPA 525 TRAVEL BLANK											
40ml EPA 547											
40ml EPA 531.1											
8oz EPA 548											
QT EPA 549											
QT EPA 5015M											
QT EPA 5370											
8oz / 16oz / 32oz AMBR											
8oz / 16oz / 32oz JAR											
SOIL SLURRY											
PCB VIAL											
PLASTIC BAG											
TEDLAR BAG											
FERROUS IRON											
ENCORE											
SMART KIT											
SUMMA CANISTER											

Comments:

Sample Numbering Completed By: JJB

A = Actual / C = Corrected

Date/Time: 2/22/18 1530

Rev 21 01/23/2015

(S:\WP\Doc\WordPerfect\LAZ\DOCS\FORMS\CHAINCOCV 20)

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**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

### Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1805918-01	<b>COC Number:</b>	---	<b>Receive Date:</b>	02/22/2018 14:25
	<b>Project Number:</b>	---	<b>Sampling Date:</b>	02/22/2018 11:00
	<b>Sampling Location:</b>	---	<b>Sample Depth:</b>	---
	<b>Sampling Point:</b>	NW-DW	<b>Lab Matrix:</b>	Water
	<b>Sampled By:</b>	B. Becker	<b>Sample Type:</b>	Drinking Water
1805918-02	<b>COC Number:</b>	---	<b>Receive Date:</b>	02/22/2018 14:25
	<b>Project Number:</b>	---	<b>Sampling Date:</b>	02/22/2018 11:05
	<b>Sampling Location:</b>	---	<b>Sample Depth:</b>	---
	<b>Sampling Point:</b>	NW-Sump	<b>Lab Matrix:</b>	Water
	<b>Sampled By:</b>	B. Becker	<b>Sample Type:</b>	Drinking Water
1805918-03	<b>COC Number:</b>	---	<b>Receive Date:</b>	02/22/2018 14:25
	<b>Project Number:</b>	---	<b>Sampling Date:</b>	02/22/2018 11:20
	<b>Sampling Location:</b>	---	<b>Sample Depth:</b>	---
	<b>Sampling Point:</b>	NW-RW	<b>Lab Matrix:</b>	Water
	<b>Sampled By:</b>	B. Becker	<b>Sample Type:</b>	Drinking Water

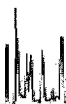
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**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949

Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker**Volatile Organic Analysis (EPA Method 8260B)**

<b>BCL Sample ID:</b>	1805918-01	<b>Client Sample Name:</b>	NW-DW, 2/22/2018 11:00:00AM, B. Becker					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.083	EPA-8260B	ND		1
Bromobenzene	ND	ug/L	0.50	0.13	EPA-8260B	ND		1
Bromochloromethane	ND	ug/L	0.50	0.24	EPA-8260B	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.14	EPA-8260B	ND		1
Bromoform	ND	ug/L	0.50	0.27	EPA-8260B	ND		1
Bromomethane	ND	ug/L	1.0	0.25	EPA-8260B	ND		1
n-Butylbenzene	ND	ug/L	0.50	0.11	EPA-8260B	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.15	EPA-8260B	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.13	EPA-8260B	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.18	EPA-8260B	ND		1
Chlorobenzene	ND	ug/L	0.50	0.093	EPA-8260B	ND		1
Chloroethane	ND	ug/L	0.50	0.14	EPA-8260B	ND		1
Chloroform	ND	ug/L	0.50	0.12	EPA-8260B	ND		1
Chloromethane	ND	ug/L	0.50	0.14	EPA-8260B	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.20	EPA-8260B	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.15	EPA-8260B	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.13	EPA-8260B	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.44	EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.16	EPA-8260B	ND		1
Dibromomethane	ND	ug/L	0.50	0.24	EPA-8260B	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.072	EPA-8260B	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-8260B	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.062	EPA-8260B	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.099	EPA-8260B	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.11	EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-8260B	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.18	EPA-8260B	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.085	EPA-8260B	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.15	EPA-8260B	ND		1
Total 1,2-Dichloroethene	ND	ug/L	1.0	0.23	EPA-8260B	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.13	EPA-8260B	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.086	EPA-8260B	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.13	EPA-8260B	ND		1

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1805918-01		Client Sample Name: NW-DW, 2/22/2018 11:00:00AM, B. Becker						
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
1,1-Dichloropropene	ND	ug/L	0.50	0.085	EPA-8260B	ND		1
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-8260B	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.079	EPA-8260B	ND		1
Total 1,3-Dichloropropene	ND	ug/L	1.0	0.21	EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50	0.098	EPA-8260B	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.17	EPA-8260B	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-8260B	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.12	EPA-8260B	ND		1
Methylene chloride	ND	ug/L	1.0	0.48	EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.11	EPA-8260B	ND		1
Naphthalene	ND	ug/L	0.50	0.36	EPA-8260B	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.11	EPA-8260B	ND		1
Styrene	ND	ug/L	0.50	0.068	EPA-8260B	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.18	EPA-8260B	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-8260B	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.13	EPA-8260B	ND		1
Toluene	ND	ug/L	0.50	0.093	EPA-8260B	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.16	EPA-8260B	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-8260B	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.11	EPA-8260B	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.16	EPA-8260B	ND		1
Trichloroethene	ND	ug/L	0.50	0.085	EPA-8260B	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.13	EPA-8260B	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.24	EPA-8260B	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.15	EPA-8260B	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.12	EPA-8260B	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.12	EPA-8260B	ND		1
Vinyl chloride	ND	ug/L	0.50	0.12	EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0	0.36	EPA-8260B	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.63	EPA-8260B	ND		1
Total Purgeable Petroleum Hydrocarbons	ND	ug/L	50	7.2	Luft-GC/MS	ND		1
1,2-Dichloroethane-d4 (Surrogate)	107	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	104	%	80 - 120 (LCL - UCL)		EPA-8260B			1

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Volatile Organic Analysis (EPA Method 8260B)

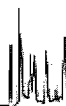
BCL Sample ID: 1805918-01		Client Sample Name: NW-DW, 2/22/2018 11:00:00AM, B. Becker						
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
4-Bromofluorobenzene (Surrogate)	102	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	03/03/18 06:00	03/04/18 13:56	JPT	MS-V13	1	B006570

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

BCL Sample ID: 1805918-01		Client Sample Name: NW-DW, 2/22/2018 11:00:00AM, B. Becker						
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Calcium	62	mg/L	0.10	0.014	EPA-200.7	ND		1
Total Recoverable Magnesium	8.3	mg/L	0.050	0.019	EPA-200.7	ND		1
Total Recoverable Sodium	33	mg/L	0.50	0.051	EPA-200.7	ND		1
Total Recoverable Potassium	1.8	mg/L	1.0	0.10	EPA-200.7	ND		1
Bicarbonate	250	mg/L	5.0	5.0	SM-2320B	ND		2
Carbonate	ND	mg/L	2.5	2.5	SM-2320B	ND		2
Hydroxide	ND	mg/L	1.4	1.4	SM-2320B	ND		2
Alkalinity as CaCO <sub>3</sub>	200	mg/L	4.1	4.1	Calc	ND		3
Chloride	9.9	mg/L	0.50	0.077	EPA-300.0	ND		4
Fluoride	0.088	mg/L	0.050	0.012	EPA-300.0	ND		4
Nitrate as N	3.5	mg/L	0.10	0.021	EPA-300.0	ND		4
Sulfate	31	mg/L	1.0	0.13	EPA-300.0	ND		4
Total Cations	5.3	meq/L	0.10	0.10	Calc	ND		3
Total Anions	5.2	meq/L	0.10	0.10	Calc	ND		3
Hardness as CaCO <sub>3</sub>	190	mg/L	0.50	0.10	Calc	ND		3
pH	8.14	pH Units	0.05	0.05	EPA-150.1		S05	5
Electrical Conductivity @ 25 C	501	umhos/cm	1.00	1.00	SM-2510B			6
Total Dissolved Solids @ 180 C	340	mg/L	20	20	SM-2540C	ND		7
MBAS	ND	mg/L	0.20	0.030	SM-5540C	ND	A07	8
Total Nitrogen	3.5	mg/L	0.30	0.10	Calc	ND		9
Total Kjeldahl Nitrogen	ND	mg/L	0.20	0.084	EPA-351.2	ND		10
Ammonia as NH <sub>3</sub>	0.036	mg/L	0.13	0.025	EPA-350.1	ND	J	11
Nitrite as N	ND	mg/L	0.050	0.010	EPA-353.2	ND		12

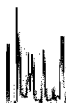
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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Water Analysis (General Chemistry)

BCL Sample ID: 1805918-01		Client Sample Name: NW-DW, 2/22/2018 11:00:00AM, B. Becker					
Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-200.7	03/06/18 17:34	03/07/18 10:32	JCC	PE-OP2	1	B006824
2	SM-2320B	02/28/18 07:30	02/28/18 14:54	MEV	MET-1	1	B005350
3	Calc	02/26/18 11:01	03/12/18 14:48	MSA	Calc	1	B\B0406
4	EPA-300.0	02/22/18 23:30	02/23/18 05:40	OLH	IC1	1	B005826
5	EPA-150.1	02/28/18 07:30	02/28/18 14:54	MEV	MET-1	1	B005350
6	SM-2510B	02/28/18 07:30	02/28/18 14:54	MEV	MET-1	1	B005350
7	SM-2540C	02/28/18 14:30	02/28/18 14:30	CAD	MANUAL	2	B006290
8	SM-5540C	02/23/18 07:30	02/23/18 07:30	JMN	SPEC06	2	B006089
9	Calc	02/26/18 11:01	03/13/18 11:51	MSA	Calc	1	B\B0406
10	EPA-351.2	03/08/18 23:00	03/12/18 14:28	JMH	SC-1	1	B007091
11	EPA-350.1	03/06/18 13:23	03/08/18 15:04	JMH	SC-1	1	B006804
12	EPA-353.2	02/23/18 07:34	02/23/18 07:47	JNC	KONE-1	1	B005921

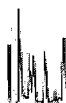
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**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Metals Analysis

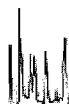
<b>BCL Sample ID:</b>	1805918-01	<b>Client Sample Name:</b>	NW-DW, 2/22/2018 11:00:00AM, B. Becker					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Arsenic	4.1	ug/L	2.0	0.70	EPA-200.8	ND		1
Total Recoverable Copper	2.5	ug/L	10	1.2	EPA-200.7	ND	J	2
Total Recoverable Iron	ND	ug/L	50	30	EPA-200.7	ND		2
Total Recoverable Lead	0.29	ug/L	1.0	0.10	EPA-200.8	ND	J	1
Total Recoverable Manganese	ND	ug/L	10	4.0	EPA-200.7	ND		2
Total Recoverable Zinc	43	ug/L	50	9.5	EPA-200.7	ND	J	2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-200.8	03/02/18 14:36	03/02/18 18:56	MH1	PE-EL3	1	B006548
2	EPA-200.7	03/06/18 17:34	03/07/18 10:32	JCC	PE-OP2	1	B006824

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

BCL Sample ID:	1805918-02	Client Sample Name:	NW-Sump, 2/22/2018 11:05:00AM, B. Becker					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Calcium	27	mg/L	0.10	0.014	EPA-200.7	ND		1
Total Recoverable Magnesium	4.6	mg/L	0.050	0.019	EPA-200.7	ND		1
Total Recoverable Sodium	31	mg/L	0.50	0.051	EPA-200.7	ND		1
Total Recoverable Potassium	4.0	mg/L	1.0	0.10	EPA-200.7	ND		1
Bicarbonate	130	mg/L	5.0	5.0	SM-2320B	ND		2
Carbonate	ND	mg/L	2.5	2.5	SM-2320B	ND		2
Hydroxide	ND	mg/L	1.4	1.4	SM-2320B	ND		2
Alkalinity as CaCO <sub>3</sub>	110	mg/L	4.1	4.1	Calc	ND		3
Chloride	8.5	mg/L	0.50	0.077	EPA-300.0	ND		4
Fluoride	0.21	mg/L	0.050	0.012	EPA-300.0	ND		4
Nitrate as N	0.054	mg/L	0.10	0.021	EPA-300.0	ND	J	4
Sulfate	33	mg/L	1.0	0.13	EPA-300.0	ND		4
Total Cations	3.5	meq/L	0.10	0.10	Calc	ND		3
Total Anions	3.2	meq/L	0.10	0.10	Calc	ND		3
Hardness as CaCO <sub>3</sub>	97	mg/L	0.50	0.10	Calc	ND		3
pH	8.29	pH Units	0.05	0.05	EPA-150.1		S05	5
Electrical Conductivity @ 25 C	322	umhos/cm	1.00	1.00	SM-2510B			6
Total Dissolved Solids @ 180 C	210	mg/L	10	10	SM-2540C	ND		7
MBAS	0.022	mg/L	0.10	0.015	SM-5540C	ND	J	8
Total Nitrogen	0.74	mg/L	0.30	0.10	Calc	ND		9
Total Kjeldahl Nitrogen	0.67	mg/L	0.20	0.084	EPA-351.2	ND		10
Ammonia as NH <sub>3</sub>	0.62	mg/L	0.13	0.025	EPA-350.1	ND		11
Nitrite as N	ND	mg/L	0.050	0.010	EPA-353.2	ND		12

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Water Analysis (General Chemistry)

BCL Sample ID: 1805918-02		Client Sample Name: NW-Sump, 2/22/2018 11:05:00AM, B. Becker					
Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-200.7	03/05/18 09:00	03/12/18 11:08	JCC	PE-OP2	1	B007262
2	SM-2320B	02/28/18 07:30	02/28/18 16:01	MEV	MET-1	1	B005350
3	Calc	02/26/18 11:01	03/09/18 09:26	MSA	Calc	1	B\B0406
4	EPA-300.0	02/22/18 23:30	02/23/18 06:37	OLH	IC1	1	B005826
5	EPA-150.1	02/28/18 07:30	02/28/18 16:01	MEV	MET-1	1	B005350
6	SM-2510B	02/28/18 07:30	02/28/18 16:01	MEV	MET-1	1	B005350
7	SM-2540C	02/28/18 14:30	02/28/18 14:30	CAD	MANUAL	1	B006290
8	SM-5540C	02/23/18 07:30	02/23/18 07:30	JMN	SPEC06	1	B006089
9	Calc	02/26/18 11:01	03/13/18 11:51	MSA	Calc	1	B\B0406
10	EPA-351.2	03/08/18 23:00	03/12/18 14:30	JMH	SC-1	1	B007091
11	EPA-350.1	03/06/18 13:23	03/08/18 15:05	JMH	SC-1	1	B006804
12	EPA-353.2	02/23/18 07:34	02/23/18 07:47	JNC	KONE-1	1	B005921

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Metals Analysis

<b>BCL Sample ID:</b> 1805918-02		<b>Client Sample Name:</b> NW-Sump, 2/22/2018 11:05:00AM, B. Becker						
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Arsenic	6.2	ug/L	2.0	0.70	EPA-200.8	ND		1
Total Recoverable Copper	2.7	ug/L	10	1.2	EPA-200.7	ND	J	2
Total Recoverable Iron	720	ug/L	50	30	EPA-200.7	ND		2
Total Recoverable Lead	0.69	ug/L	1.0	0.10	EPA-200.8	ND	J	1
Total Recoverable Manganese	120	ug/L	10	4.0	EPA-200.7	ND		2
Total Recoverable Zinc	ND	ug/L	50	9.5	EPA-200.7	ND		2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-200.8	03/05/18 09:00	03/05/18 23:37	ARD	PE-EL2	1	B006653
2	EPA-200.7	03/05/18 09:00	03/06/18 14:51	JCC	PE-OP2	1	B006642

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

BCL Sample ID: 1805918-03		Client Sample Name: NW-RW, 2/22/2018 11:20:00AM, B. Becker						
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Calcium	110	mg/L	0.10	0.014	EPA-200.7	0.030		1
Total Recoverable Magnesium	19	mg/L	0.050	0.019	EPA-200.7	ND		1
Total Recoverable Sodium	180	mg/L	0.50	0.051	EPA-200.7	ND		1
Total Recoverable Potassium	82	mg/L	1.0	0.10	EPA-200.7	ND		1
Bicarbonate	770	mg/L	10	10	SM-2320B	ND	A07	2
Carbonate	ND	mg/L	5.0	5.0	SM-2320B	ND	A07	2
Hydroxide	ND	mg/L	2.8	2.8	SM-2320B	ND	A07	2
Alkalinity as CaCO <sub>3</sub>	630	mg/L	4.1	4.1	Calc	ND		3
Chloride	96	mg/L	1.0	0.15	EPA-300.0	ND	A07	4
Fluoride	0.048	mg/L	0.10	0.024	EPA-300.0	ND	J,A07	4
Nitrate as N	ND	mg/L	0.20	0.042	EPA-300.0	ND	A07	4
Sulfate	40	mg/L	2.0	0.26	EPA-300.0	ND	A07	4
Total Cations	17	meq/L	0.10	0.10	Calc	ND		3
Total Anions	16	meq/L	0.10	0.10	Calc	ND		3
Hardness as CaCO <sub>3</sub>	360	mg/L	0.50	0.10	Calc	ND		3
pH	6.77	pH Units	0.05	0.05	EPA-150.1		S05	5
Electrical Conductivity @ 25 C	2110	umhos/cm	1.00	1.00	SM-2510B			6
Total Dissolved Solids @ 180 C	1100	mg/L	50	50	SM-2540C	ND		7
MBAS	0.86	mg/L	1.0	0.15	SM-5540C	ND	J,A07	8
Total Nitrogen	150	mg/L	0.30	0.10	Calc	ND		9
Total Kjeldahl Nitrogen	150	mg/L	10	4.2	EPA-351.2	ND	A07	10
Ammonia as NH <sub>3</sub>	150	mg/L	32	6.2	EPA-350.1	ND	A07	11
Nitrite as N	ND	mg/L	0.050	0.010	EPA-353.2	ND		12

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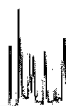
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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

BCL Sample ID: 1805918-03		Client Sample Name: NW-RW, 2/22/2018 11:20:00AM, B. Becker					
Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-200.7	03/05/18 09:00	03/06/18 14:54	JCC	PE-OP2	1	B006642
2	SM-2320B	02/28/18 07:30	02/28/18 16:42	MEV	MET-1	2	B005351
3	Calc	02/26/18 11:01	03/09/18 09:26	MSA	Calc	1	B\B0406
4	EPA-300.0	02/22/18 23:30	02/23/18 05:59	OLH	IC1	2	B005826
5	EPA-150.1	02/28/18 07:30	02/28/18 16:42	MEV	MET-1	1	B005351
6	SM-2510B	02/28/18 07:30	02/28/18 16:42	MEV	MET-1	1	B005351
7	SM-2540C	02/28/18 14:30	02/28/18 14:30	CAD	MANUAL	5	B006290
8	SM-5540C	02/23/18 07:30	02/23/18 07:30	JMN	SPEC06	10	B006089
9	Calc	02/26/18 11:01	03/13/18 11:51	MSA	Calc	1	B\B0406
10	EPA-351.2	03/08/18 23:00	03/12/18 15:23	JMH	SC-1	50	B007091
11	EPA-350.1	03/06/18 13:23	03/08/18 14:36	JMH	SC-1	250	B006804
12	EPA-353.2	02/23/18 07:34	02/23/18 07:57	JNC	KONE-1	1	B005921

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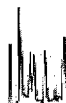
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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Metals Analysis

<b>BCL Sample ID:</b>	1805918-03	<b>Client Sample Name:</b>	NW-RW, 2/22/2018 11:20:00AM, B. Becker					
Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Arsenic	9.5	ug/L	2.0	0.70	EPA-200.8	ND		1
Total Recoverable Copper	1.8	ug/L	10	1.2	EPA-200.7	ND	J	2
Total Recoverable Iron	2400	ug/L	50	30	EPA-200.7	ND		2
Total Recoverable Lead	0.99	ug/L	1.0	0.10	EPA-200.8	ND	J	1
Total Recoverable Manganese	100	ug/L	10	4.0	EPA-200.7	ND		2
Total Recoverable Zinc	16	ug/L	50	9.5	EPA-200.7	ND	J	2

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-200.8	03/05/18 09:00	03/05/18 23:41	ARD	PE-EL2	1	B006653
2	EPA-200.7	03/05/18 09:00	03/06/18 14:54	JCC	PE-OP2	1	B006642

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Volatile Organic Analysis (EPA Method 8260B)

### Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
<b>QC Batch ID: B006570</b>						
Benzene	B006570-BLK1	ND	ug/L	0.50	0.083	
Bromobenzene	B006570-BLK1	ND	ug/L	0.50	0.13	
Bromochloromethane	B006570-BLK1	ND	ug/L	0.50	0.24	
Bromodichloromethane	B006570-BLK1	ND	ug/L	0.50	0.14	
Bromoform	B006570-BLK1	ND	ug/L	0.50	0.27	
Bromomethane	B006570-BLK1	ND	ug/L	1.0	0.25	
n-Butylbenzene	B006570-BLK1	ND	ug/L	0.50	0.11	
sec-Butylbenzene	B006570-BLK1	ND	ug/L	0.50	0.15	
tert-Butylbenzene	B006570-BLK1	ND	ug/L	0.50	0.13	
Carbon tetrachloride	B006570-BLK1	ND	ug/L	0.50	0.18	
Chlorobenzene	B006570-BLK1	ND	ug/L	0.50	0.093	
Chloroethane	B006570-BLK1	ND	ug/L	0.50	0.14	
Chloroform	B006570-BLK1	ND	ug/L	0.50	0.12	
Chloromethane	B006570-BLK1	ND	ug/L	0.50	0.14	
2-Chlorotoluene	B006570-BLK1	ND	ug/L	0.50	0.20	
4-Chlorotoluene	B006570-BLK1	ND	ug/L	0.50	0.15	
Dibromochloromethane	B006570-BLK1	ND	ug/L	0.50	0.13	
1,2-Dibromo-3-chloropropane	B006570-BLK1	ND	ug/L	1.0	0.44	
1,2-Dibromoethane	B006570-BLK1	ND	ug/L	0.50	0.16	
Dibromomethane	B006570-BLK1	ND	ug/L	0.50	0.24	
1,2-Dichlorobenzene	B006570-BLK1	ND	ug/L	0.50	0.072	
1,3-Dichlorobenzene	B006570-BLK1	ND	ug/L	0.50	0.15	
1,4-Dichlorobenzene	B006570-BLK1	ND	ug/L	0.50	0.062	
Dichlorodifluoromethane	B006570-BLK1	ND	ug/L	0.50	0.099	
1,1-Dichloroethane	B006570-BLK1	ND	ug/L	0.50	0.11	
1,2-Dichloroethane	B006570-BLK1	ND	ug/L	0.50	0.17	
1,1-Dichloroethene	B006570-BLK1	ND	ug/L	0.50	0.18	
cis-1,2-Dichloroethene	B006570-BLK1	ND	ug/L	0.50	0.085	
trans-1,2-Dichloroethene	B006570-BLK1	ND	ug/L	0.50	0.15	
Total 1,2-Dichloroethene	B006570-BLK1	ND	ug/L	1.0	0.23	
1,2-Dichloropropane	B006570-BLK1	ND	ug/L	0.50	0.13	
1,3-Dichloropropane	B006570-BLK1	ND	ug/L	0.50	0.086	
2,2-Dichloropropane	B006570-BLK1	ND	ug/L	0.50	0.13	
1,1-Dichloropropene	B006570-BLK1	ND	ug/L	0.50	0.085	

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Bakersfield, CA 93313

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Project Number: 16195  
Project Manager: Bob Becker

## Volatile Organic Analysis (EPA Method 8260B)

### Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
<b>QC Batch ID: B006570</b>						
cis-1,3-Dichloropropene	B006570-BLK1	ND	ug/L	0.50	0.14	
trans-1,3-Dichloropropene	B006570-BLK1	ND	ug/L	0.50	0.079	
Total 1,3-Dichloropropene	B006570-BLK1	ND	ug/L	1.0	0.21	
Ethylbenzene	B006570-BLK1	ND	ug/L	0.50	0.098	
Hexachlorobutadiene	B006570-BLK1	ND	ug/L	0.50	0.17	
Isopropylbenzene	B006570-BLK1	ND	ug/L	0.50	0.14	
p-Isopropyltoluene	B006570-BLK1	ND	ug/L	0.50	0.12	
Methylene chloride	B006570-BLK1	ND	ug/L	1.0	0.48	
Methyl t-butyl ether	B006570-BLK1	ND	ug/L	0.50	0.11	
Naphthalene	B006570-BLK1	ND	ug/L	0.50	0.36	
n-Propylbenzene	B006570-BLK1	ND	ug/L	0.50	0.11	
Styrene	B006570-BLK1	ND	ug/L	0.50	0.068	
1,1,1,2-Tetrachloroethane	B006570-BLK1	ND	ug/L	0.50	0.18	
1,1,2,2-Tetrachloroethane	B006570-BLK1	ND	ug/L	0.50	0.17	
Tetrachloroethene	B006570-BLK1	ND	ug/L	0.50	0.13	
Toluene	B006570-BLK1	ND	ug/L	0.50	0.093	
1,2,3-Trichlorobenzene	B006570-BLK1	ND	ug/L	0.50	0.16	
1,2,4-Trichlorobenzene	B006570-BLK1	ND	ug/L	0.50	0.19	
1,1,1-Trichloroethane	B006570-BLK1	ND	ug/L	0.50	0.11	
1,1,2-Trichloroethane	B006570-BLK1	ND	ug/L	0.50	0.16	
Trichloroethene	B006570-BLK1	ND	ug/L	0.50	0.085	
Trichlorofluoromethane	B006570-BLK1	ND	ug/L	0.50	0.13	
1,2,3-Trichloropropane	B006570-BLK1	ND	ug/L	1.0	0.24	
1,1,2-Trichloro-1,2,2-trifluoroethane	B006570-BLK1	ND	ug/L	0.50	0.15	
1,2,4-Trimethylbenzene	B006570-BLK1	ND	ug/L	0.50	0.12	
1,3,5-Trimethylbenzene	B006570-BLK1	ND	ug/L	0.50	0.12	
Vinyl chloride	B006570-BLK1	ND	ug/L	0.50	0.12	
Total Xylenes	B006570-BLK1	ND	ug/L	1.0	0.36	
Total Trihalomethanes	B006570-BLK1	ND	ug/L	2.0	0.63	
Total Purgeable Petroleum Hydrocarbons	B006570-BLK1	ND	ug/L	50	7.2	
1,2-Dichloroethane-d4 (Surrogate)	B006570-BLK1	107	%	75 - 125 (LCL - UCL)		
Toluene-d8 (Surrogate)	B006570-BLK1	99.2	%	80 - 120 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	B006570-BLK1	98.5	%	80 - 120 (LCL - UCL)		

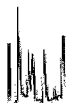
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Environmental Testing Laboratory Since 1949



Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Volatile Organic Analysis (EPA Method 8260B)

### Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	Quals
QC Batch ID: B006570										
Benzene	B006570-BS1	LCS	26.820	25.000	ug/L	107		70 - 130		
Bromodichloromethane	B006570-BS1	LCS	27.830	25.000	ug/L	111		70 - 130		
Chlorobenzene	B006570-BS1	LCS	26.460	25.000	ug/L	106		70 - 130		
Chloroethane	B006570-BS1	LCS	24.740	25.000	ug/L	99.0		70 - 130		
1,4-Dichlorobenzene	B006570-BS1	LCS	26.320	25.000	ug/L	105		70 - 130		
1,1-Dichloroethane	B006570-BS1	LCS	26.060	25.000	ug/L	104		70 - 130		
1,1-Dichloroethene	B006570-BS1	LCS	25.810	25.000	ug/L	103		70 - 130		
Toluene	B006570-BS1	LCS	27.150	25.000	ug/L	109		70 - 130		
Trichloroethene	B006570-BS1	LCS	25.710	25.000	ug/L	103		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B006570-BS1	LCS	10.680	10.000	ug/L	107		75 - 125		
Toluene-d8 (Surrogate)	B006570-BS1	LCS	10.080	10.000	ug/L	101		80 - 120		
4-Bromofluorobenzene (Surrogate)	B006570-BS1	LCS	10.370	10.000	ug/L	104		80 - 120		

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker**Volatile Organic Analysis (EPA Method 8260B)****Quality Control Report - Precision & Accuracy**

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits			
								Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B006570		Used client sample: N									
Benzene	MS	1804625-64	ND	26.180	25.000	ug/L		105		70 - 130	
	MSD	1804625-64	ND	26.330	25.000	ug/L	0.6	105	20	70 - 130	
Bromodichloromethane	MS	1804625-64	ND	27.080	25.000	ug/L		108		70 - 130	
	MSD	1804625-64	ND	27.380	25.000	ug/L	1.1	110	20	70 - 130	
Chlorobenzene	MS	1804625-64	ND	25.830	25.000	ug/L		103		70 - 130	
	MSD	1804625-64	ND	26.200	25.000	ug/L	1.4	105	20	70 - 130	
Chloroethane	MS	1804625-64	ND	24.590	25.000	ug/L		98.4		70 - 130	
	MSD	1804625-64	ND	24.850	25.000	ug/L	1.1	99.4	20	70 - 130	
1,4-Dichlorobenzene	MS	1804625-64	ND	25.980	25.000	ug/L		104		70 - 130	
	MSD	1804625-64	ND	26.750	25.000	ug/L	2.9	107	20	70 - 130	
1,1-Dichloroethane	MS	1804625-64	ND	25.390	25.000	ug/L		102		70 - 130	
	MSD	1804625-64	ND	25.750	25.000	ug/L	1.4	103	20	70 - 130	
1,1-Dichloroethene	MS	1804625-64	ND	26.110	25.000	ug/L		104		70 - 130	
	MSD	1804625-64	ND	26.730	25.000	ug/L	2.3	107	20	70 - 130	
Toluene	MS	1804625-64	ND	26.290	25.000	ug/L		105		70 - 130	
	MSD	1804625-64	ND	26.760	25.000	ug/L	1.8	107	20	70 - 130	
Trichloroethene	MS	1804625-64	ND	25.350	25.000	ug/L		101		70 - 130	
	MSD	1804625-64	ND	26.070	25.000	ug/L	2.8	104	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1804625-64	ND	10.170	10.000	ug/L		102		75 - 125	
	MSD	1804625-64	ND	10.120	10.000	ug/L	0.5	101		75 - 125	
Toluene-d8 (Surrogate)	MS	1804625-64	ND	10.030	10.000	ug/L		100		80 - 120	
	MSD	1804625-64	ND	9.9500	10.000	ug/L	0.8	99.5		80 - 120	
4-Bromofluorobenzene (Surrogate)	MS	1804625-64	ND	10.290	10.000	ug/L		103		80 - 120	
	MSD	1804625-64	ND	10.340	10.000	ug/L	0.5	103		80 - 120	

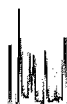
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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker**Water Analysis (General Chemistry)****Quality Control Report - Method Blank Analysis**

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
<b>QC Batch ID: B\B0406</b>						
Alkalinity as CaCO <sub>3</sub>	B\B0406-BLK1	ND	mg/L	4.1	4.1	
Total Cations	B\B0406-BLK1	ND	meq/L	0.10	0.10	
Total Anions	B\B0406-BLK1	ND	meq/L	0.10	0.10	
Hardness as CaCO <sub>3</sub>	B\B0406-BLK1	ND	mg/L	0.50	0.10	
Total Nitrogen	B\B0406-BLK1	ND	mg/L	0.30	0.10	
<b>QC Batch ID: B005350</b>						
Bicarbonate	B005350-BLK1	ND	mg/L	5.0	5.0	
Carbonate	B005350-BLK1	ND	mg/L	2.5	2.5	
Hydroxide	B005350-BLK1	ND	mg/L	1.4	1.4	
<b>QC Batch ID: B005351</b>						
Bicarbonate	B005351-BLK1	ND	mg/L	5.0	5.0	
Carbonate	B005351-BLK1	ND	mg/L	2.5	2.5	
Hydroxide	B005351-BLK1	ND	mg/L	1.4	1.4	
<b>QC Batch ID: B005826</b>						
Chloride	B005826-BLK1	ND	mg/L	0.50	0.077	
Fluoride	B005826-BLK1	ND	mg/L	0.050	0.012	
Nitrate as N	B005826-BLK1	ND	mg/L	0.10	0.021	
Sulfate	B005826-BLK1	ND	mg/L	1.0	0.13	
<b>QC Batch ID: B005921</b>						
Nitrite as N	B005921-BLK1	ND	mg/L	0.050	0.010	
<b>QC Batch ID: B006089</b>						
MBAS	B006089-BLK1	ND	mg/L	0.10	0.015	
<b>QC Batch ID: B006290</b>						
Total Dissolved Solids @ 180 C	B006290-BLK1	ND	mg/L	6.7	6.7	
<b>QC Batch ID: B006642</b>						
Total Recoverable Calcium	B006642-BLK1	0.030200	mg/L	0.10	0.014	J
Total Recoverable Magnesium	B006642-BLK1	ND	mg/L	0.050	0.019	
Total Recoverable Sodium	B006642-BLK1	ND	mg/L	0.50	0.051	
Total Recoverable Potassium	B006642-BLK1	ND	mg/L	1.0	0.10	
<b>QC Batch ID: B006804</b>						
Ammonia as NH <sub>3</sub>	B006804-BLK1	ND	mg/L	0.13	0.025	

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Soils Engineering  
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**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Water Analysis (General Chemistry)

### Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
<b>QC Batch ID: B006824</b>						
Total Recoverable Calcium	B006824-BLK1	ND	mg/L	0.10	0.014	
Total Recoverable Magnesium	B006824-BLK1	ND	mg/L	0.050	0.019	
Total Recoverable Sodium	B006824-BLK1	ND	mg/L	0.50	0.051	
Total Recoverable Potassium	B006824-BLK1	ND	mg/L	1.0	0.10	
<b>QC Batch ID: B007091</b>						
Total Kjeldahl Nitrogen	B007091-BLK1	ND	mg/L	0.20	0.084	
<b>QC Batch ID: B007262</b>						
Total Recoverable Calcium	B007262-BLK1	ND	mg/L	0.10	0.014	
Total Recoverable Magnesium	B007262-BLK1	ND	mg/L	0.050	0.019	
Total Recoverable Sodium	B007262-BLK1	ND	mg/L	0.50	0.051	
Total Recoverable Potassium	B007262-BLK1	ND	mg/L	1.0	0.10	

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4400 Yeager Way  
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Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

### Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab Quals
								Percent Recovery	RPD	
QC Batch ID: B005350										
pH	B005350-BS2	LCS	7.0400	7.0000	pH Units	101		95 - 105		
Electrical Conductivity @ 25 C	B005350-BS1	LCS	318.60	303.00	umhos/cm	105		90 - 110		
QC Batch ID: B005351										
pH	B005351-BS2	LCS	7.0400	7.0000	pH Units	101		95 - 105		
Electrical Conductivity @ 25 C	B005351-BS1	LCS	322.40	303.00	umhos/cm	106		90 - 110		
QC Batch ID: B005826										
Chloride	B005826-BS1	LCS	52.506	50.000	mg/L	105		90 - 110		
Fluoride	B005826-BS1	LCS	1.0970	1.0000	mg/L	110		90 - 110		
Nitrate as N	B005826-BS1	LCS	5.1330	5.0000	mg/L	103		90 - 110		
Sulfate	B005826-BS1	LCS	103.85	100.00	mg/L	104		90 - 110		
QC Batch ID: B005921										
Nitrite as N	B005921-BS1	LCS	0.51167	0.50000	mg/L	102		90 - 110		
QC Batch ID: B006089										
MBAS	B006089-BS1	LCS	0.21570	0.20000	mg/L	108		85 - 115		
QC Batch ID: B006290										
Total Dissolved Solids @ 180 C	B006290-BS1	LCS	600.00	586.00	mg/L	102		90 - 110		
QC Batch ID: B006642										
Total Recoverable Calcium	B006642-BS1	LCS	10.229	10.000	mg/L	102		85 - 115		
Total Recoverable Magnesium	B006642-BS1	LCS	10.730	10.000	mg/L	107		85 - 115		
Total Recoverable Sodium	B006642-BS1	LCS	10.355	10.000	mg/L	104		85 - 115		
Total Recoverable Potassium	B006642-BS1	LCS	9.8377	10.000	mg/L	98.4		85 - 115		
QC Batch ID: B006804										
Ammonia as NH3	B006804-BS1	LCS	1.1422	1.2160	mg/L	93.9		90 - 110		
QC Batch ID: B006824										
Total Recoverable Calcium	B006824-BS1	LCS	10.597	10.000	mg/L	106		85 - 115		
Total Recoverable Magnesium	B006824-BS1	LCS	10.499	10.000	mg/L	105		85 - 115		
Total Recoverable Sodium	B006824-BS1	LCS	10.672	10.000	mg/L	107		85 - 115		
Total Recoverable Potassium	B006824-BS1	LCS	10.233	10.000	mg/L	102		85 - 115		
QC Batch ID: B007091										
Total Kjeldahl Nitrogen	B007091-BS1	LCS	1.9887	2.0000	mg/L	99.4		90 - 110		
QC Batch ID: B007262										
Total Recoverable Calcium	B007262-BS1	LCS	10.395	10.000	mg/L	104		85 - 115		

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

### Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	Quals
QC Batch ID: B007262										
Total Recoverable Magnesium	B007262-BS1	LCS	10.356	10.000	mg/L	104		85 - 115		
Total Recoverable Sodium	B007262-BS1	LCS	10.508	10.000	mg/L	105		85 - 115		
Total Recoverable Potassium	B007262-BS1	LCS	9.9139	10.000	mg/L	99.1		85 - 115		





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Environmental Testing Laboratory Since 1949



Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

### Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B005350		Used client sample: Y - Description: NW-DW, 02/22/2018 11:00									
Bicarbonate	DUP	1805918-01	246.71	243.55		mg/L	1.3		10		
Carbonate	DUP	1805918-01	ND	ND		mg/L			10		
Hydroxide	DUP	1805918-01	ND	ND		mg/L			10		
pH	DUP	1805918-01	8.1400	8.1500		pH Units	0.1		20		
Electrical Conductivity @ 25 C	DUP	1805918-01	501.00	503.60		umhos/cm	0.5		10		
QC Batch ID: B005351		Used client sample: N									
Bicarbonate	DUP	1805957-03	309.77	303.47		mg/L	2.1		10		
Carbonate	DUP	1805957-03	ND	ND		mg/L			10		
Hydroxide	DUP	1805957-03	ND	ND		mg/L			10		
pH	DUP	1805957-03	7.5400	7.5300		pH Units	0.1		20		
Electrical Conductivity @ 25 C	DUP	1805957-03	1365.3	1366.7		umhos/cm	0.1		10		
QC Batch ID: B005826		Used client sample: N									
Chloride	DUP	1805928-03	74.317	74.057		mg/L	0.4		10		
	MS	1805928-03	74.317	128.26	50.505	mg/L		107		80 - 120	
	MSD	1805928-03	74.317	128.58	50.505	mg/L	0.2	107	10	80 - 120	
Fluoride	DUP	1805928-03	0.066000	0.068000		mg/L	3.0		10		
	MS	1805928-03	0.066000	1.1707	1.0101	mg/L		109		80 - 120	
	MSD	1805928-03	0.066000	1.1606	1.0101	mg/L	0.9	108	10	80 - 120	
Nitrate as N	DUP	1805928-03	10.053	9.9070		mg/L	1.5		10		
	MS	1805928-03	10.053	15.501	5.0505	mg/L		108		80 - 120	
	MSD	1805928-03	10.053	15.460	5.0505	mg/L	0.3	107	10	80 - 120	
Sulfate	DUP	1805928-03	93.355	92.588		mg/L	0.8		10		
	MS	1805928-03	93.355	204.12	101.01	mg/L		110		80 - 120	
	MSD	1805928-03	93.355	203.92	101.01	mg/L	0.1	109	10	80 - 120	
QC Batch ID: B005921		Used client sample: Y - Description: NW-DW, 02/22/2018 11:00									
Nitrite as N	DUP	1805918-01	ND	ND		mg/L			10		
	MS	1805918-01	ND	0.51741	0.52632	mg/L		98.3		90 - 110	
	MSD	1805918-01	ND	0.52467	0.52632	mg/L	1.4	99.7	10	90 - 110	
QC Batch ID: B006089		Used client sample: Y - Description: NW-DW, 02/22/2018 11:00									
MBAS	DUP	1805918-01	ND	ND		mg/L			20		
	MS	1805918-01	ND	0.47120	0.40000	mg/L		118		80 - 120	
	MSD	1805918-01	ND	0.45620	0.40000	mg/L	3.2	114	20	80 - 120	
QC Batch ID: B006290		Used client sample: N									
Total Dissolved Solids @ 180 C	DUP	1805983-06	910.00	900.00		mg/L	1.1		10		
QC Batch ID: B006642		Used client sample: N									

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Water Analysis (General Chemistry)

### Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab
Quals											
QC Batch ID: B006642		Used client sample: N									
Total Recoverable Calcium	DUP	1806476-01	96.796	99.599		mg/L	2.9		20		
	MS	1806476-01	96.796	105.16	10.000	mg/L		83.6		75 - 125	
	MSD	1806476-01	96.796	106.56	10.000	mg/L	1.3	97.6	20	75 - 125	
Total Recoverable Magnesium	DUP	1806476-01	21.513	22.987		mg/L	6.6		20		
	MS	1806476-01	21.513	32.338	10.000	mg/L		108		75 - 125	
	MSD	1806476-01	21.513	32.371	10.000	mg/L	0.1	109	20	75 - 125	
Total Recoverable Sodium	DUP	1806476-01	104.46	108.18		mg/L	3.5		20		
	MS	1806476-01	104.46	113.10	10.000	mg/L		86.4		75 - 125	
	MSD	1806476-01	104.46	114.59	10.000	mg/L	1.3	101	20	75 - 125	
Total Recoverable Potassium	DUP	1806476-01	5.6166	6.0155		mg/L	6.9		20		
	MS	1806476-01	5.6166	16.120	10.000	mg/L		105		75 - 125	
	MSD	1806476-01	5.6166	16.337	10.000	mg/L	1.3	107	20	75 - 125	
QC Batch ID: B006804		Used client sample: N									
Ammonia as NH3	DUP	1805880-01	0.034291	0.035994		mg/L	4.8		10		J
	MS	1805880-01	0.034291	1.2784	1.3511	mg/L		92.1		90 - 110	
	MSD	1805880-01	0.034291	1.3204	1.3511	mg/L	3.2	95.2	10	90 - 110	
QC Batch ID: B006824		Used client sample: N									
Total Recoverable Calcium	DUP	1806421-01	33.259	33.621		mg/L	1.1		20		
	MS	1806421-01	33.259	43.584	10.204	mg/L		101		75 - 125	
	MSD	1806421-01	33.259	43.767	10.204	mg/L	0.4	103	20	75 - 125	
Total Recoverable Magnesium	DUP	1806421-01	14.054	14.056		mg/L	0.0		20		
	MS	1806421-01	14.054	24.383	10.204	mg/L		101		75 - 125	
	MSD	1806421-01	14.054	24.574	10.204	mg/L	0.8	103	20	75 - 125	
Total Recoverable Sodium	DUP	1806421-01	165.16	164.31		mg/L	0.5		20		
	MS	1806421-01	165.16	172.15	10.204	mg/L		68.5		75 - 125	A03
	MSD	1806421-01	165.16	171.70	10.204	mg/L	0.3	64.0	20	75 - 125	A03
Total Recoverable Potassium	DUP	1806421-01	2.9368	2.9502		mg/L	0.5		20		
	MS	1806421-01	2.9368	13.276	10.204	mg/L		101		75 - 125	
	MSD	1806421-01	2.9368	13.413	10.204	mg/L	1.0	103	20	75 - 125	
QC Batch ID: B007091		Used client sample: N									
Total Kjeldahl Nitrogen	DUP	1806526-01	ND	ND		mg/L			20		
	MS	1806526-01	ND	1.9571	2.0000	mg/L		97.9		90 - 110	
	MSD	1806526-01	ND	1.9240	2.0000	mg/L	1.7	96.2	20	90 - 110	
QC Batch ID: B007262		Used client sample: N									
Total Recoverable Calcium	DUP	1806839-01	3.8425	3.8537		mg/L	0.3		20		
	MS	1806839-01	3.8425	14.036	10.204	mg/L		99.9		75 - 125	
	MSD	1806839-01	3.8425	14.064	10.204	mg/L	0.2	100	20	75 - 125	

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Environmental Testing Laboratory Since 1949

Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker**Water Analysis (General Chemistry)****Quality Control Report - Precision & Accuracy**

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B007262		Used client sample: N									
Total Recoverable Magnesium	DUP	1806839-01	ND	0.024978		mg/L			20		J
	MS	1806839-01	ND	10.427	10.204	mg/L		102		75 - 125	
	MSD	1806839-01	ND	10.422	10.204	mg/L	0.0	102	20	75 - 125	
Total Recoverable Sodium	DUP	1806839-01	46.402	46.975		mg/L	1.2		20		
	MS	1806839-01	46.402	56.995	10.204	mg/L		104		75 - 125	
	MSD	1806839-01	46.402	56.558	10.204	mg/L	0.8	99.5	20	75 - 125	
Total Recoverable Potassium	DUP	1806839-01	0.38909	0.28332		mg/L	31.5		20		J,A02
	MS	1806839-01	0.38909	10.377	10.204	mg/L		97.9		75 - 125	
	MSD	1806839-01	0.38909	10.220	10.204	mg/L	1.5	96.3	20	75 - 125	

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**Laboratories, Inc.**

Environmental Testing Laboratory Since 1949



Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

## Metals Analysis

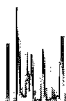
### Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
<b>QC Batch ID: B006548</b>						
Total Recoverable Arsenic	B006548-BLK1	ND	ug/L	2.0	0.70	
Total Recoverable Lead	B006548-BLK1	ND	ug/L	1.0	0.10	
<b>QC Batch ID: B006642</b>						
Total Recoverable Copper	B006642-BLK1	ND	ug/L	10	1.2	
Total Recoverable Iron	B006642-BLK1	ND	ug/L	50	30	
Total Recoverable Manganese	B006642-BLK1	ND	ug/L	10	4.0	
Total Recoverable Zinc	B006642-BLK1	ND	ug/L	50	9.5	
<b>QC Batch ID: B006653</b>						
Total Recoverable Arsenic	B006653-BLK1	ND	ug/L	2.0	0.70	
Total Recoverable Lead	B006653-BLK1	ND	ug/L	1.0	0.10	
<b>QC Batch ID: B006824</b>						
Total Recoverable Copper	B006824-BLK1	ND	ug/L	10	1.2	
Total Recoverable Iron	B006824-BLK1	ND	ug/L	50	30	
Total Recoverable Manganese	B006824-BLK1	ND	ug/L	10	4.0	
Total Recoverable Zinc	B006824-BLK1	ND	ug/L	50	9.5	

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4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Metals Analysis

### Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits		Lab
								Percent Recovery	RPD	Quals
QC Batch ID: B006548										
Total Recoverable Arsenic	B006548-BS1	LCS	106.35	100.00	ug/L	106		85 - 115		
Total Recoverable Lead	B006548-BS1	LCS	95.851	100.00	ug/L	95.9		85 - 115		
QC Batch ID: B006642										
Total Recoverable Copper	B006642-BS1	LCS	388.64	400.00	ug/L	97.2		85 - 115		
Total Recoverable Iron	B006642-BS1	LCS	1083.1	1000.0	ug/L	108		85 - 115		
Total Recoverable Manganese	B006642-BS1	LCS	524.34	500.00	ug/L	105		85 - 115		
Total Recoverable Zinc	B006642-BS1	LCS	549.56	500.00	ug/L	110		85 - 115		
QC Batch ID: B006653										
Total Recoverable Arsenic	B006653-BS1	LCS	97.911	100.00	ug/L	97.9		85 - 115		
Total Recoverable Lead	B006653-BS1	LCS	106.02	100.00	ug/L	106		85 - 115		
QC Batch ID: B006824										
Total Recoverable Copper	B006824-BS1	LCS	392.90	400.00	ug/L	98.2		85 - 115		
Total Recoverable Iron	B006824-BS1	LCS	1036.3	1000.0	ug/L	104		85 - 115		
Total Recoverable Manganese	B006824-BS1	LCS	509.16	500.00	ug/L	102		85 - 115		
Total Recoverable Zinc	B006824-BS1	LCS	548.81	500.00	ug/L	110		85 - 115		

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Reported: 03/13/2018 12:38  
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## Metals Analysis

### Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Control Limits			Lab Quals
								Percent Recovery	RPD	Percent Recovery	
QC Batch ID: B006548		Used client sample: N									
Total Recoverable Arsenic	DUP	1806679-01	ND	0.76100		ug/L			20		J
	MS	1806679-01	ND	114.77	102.04	ug/L		112		70 - 130	
	MSD	1806679-01	ND	112.91	102.04	ug/L	1.6	111	20	70 - 130	
Total Recoverable Lead	DUP	1806679-01	ND	ND		ug/L			20		
	MS	1806679-01	ND	103.37	102.04	ug/L		101		70 - 130	
	MSD	1806679-01	ND	99.983	102.04	ug/L	3.3	98.0	20	70 - 130	
QC Batch ID: B006642		Used client sample: N									
Total Recoverable Copper	DUP	1806476-01	1.9771	2.2758		ug/L	14.0		20		J
	MS	1806476-01	1.9771	434.75	400.00	ug/L		108		75 - 125	
	MSD	1806476-01	1.9771	442.96	400.00	ug/L	1.9	110	20	75 - 125	
Total Recoverable Iron	DUP	1806476-01	44.663	43.569		ug/L	2.5		20		J
	MS	1806476-01	44.663	1152.5	1000.0	ug/L		111		75 - 125	
	MSD	1806476-01	44.663	1195.7	1000.0	ug/L	3.7	115	20	75 - 125	
Total Recoverable Manganese	DUP	1806476-01	8.7080	8.6208		ug/L	1.0		20		J
	MS	1806476-01	8.7080	546.23	500.00	ug/L		108		75 - 125	
	MSD	1806476-01	8.7080	566.25	500.00	ug/L	3.6	112	20	75 - 125	
Total Recoverable Zinc	DUP	1806476-01	11.704	ND		ug/L			20		
	MS	1806476-01	11.704	569.91	500.00	ug/L		112		75 - 125	
	MSD	1806476-01	11.704	584.53	500.00	ug/L	2.5	115	20	75 - 125	
QC Batch ID: B006653		Used client sample: N									
Total Recoverable Arsenic	DUP	1806810-01	26.452	28.297		ug/L	6.7		20		
	MS	1806810-01	26.452	139.70	100.00	ug/L		113		70 - 130	
	MSD	1806810-01	26.452	148.18	100.00	ug/L	5.9	122	20	70 - 130	
Total Recoverable Lead	DUP	1806810-01	0.56500	0.17700		ug/L	105		20		J,A02
	MS	1806810-01	0.56500	100.71	100.00	ug/L		100		70 - 130	
	MSD	1806810-01	0.56500	100.78	100.00	ug/L	0.1	100	20	70 - 130	
QC Batch ID: B006824		Used client sample: N									
Total Recoverable Copper	DUP	1806421-01	ND	ND		ug/L			20		
	MS	1806421-01	ND	407.05	408.16	ug/L		99.7		75 - 125	
	MSD	1806421-01	ND	405.71	408.16	ug/L	0.3	99.4	20	75 - 125	
Total Recoverable Iron	DUP	1806421-01	58.380	59.868		ug/L	2.5		20		
	MS	1806421-01	58.380	1072.9	1020.4	ug/L		99.4		75 - 125	
	MSD	1806421-01	58.380	1072.2	1020.4	ug/L	0.1	99.4	20	75 - 125	
Total Recoverable Manganese	DUP	1806421-01	10.420	10.758		ug/L	3.2		20		
	MS	1806421-01	10.420	514.66	510.20	ug/L		98.8		75 - 125	
	MSD	1806421-01	10.420	509.61	510.20	ug/L	1.0	97.8	20	75 - 125	

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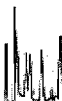
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Environmental Testing Laboratory Since 1949



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4400 Yeager Way  
Bakersfield, CA 93313

Reported: 03/13/2018 12:38  
Project: Drinking Water  
Project Number: 16195  
Project Manager: Bob Becker

## Metals Analysis

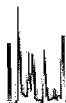
### Quality Control Report - Precision & Accuracy

									Control Limits		
Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	RPD	Percent Recovery	Lab Quals
QC Batch ID: B006824		Used client sample: N									
Total Recoverable Zinc	DUP	1806421-01	ND	ND		ug/L			20		
	MS	1806421-01	ND	548.36	510.20	ug/L		107		75 - 125	
	MSD	1806421-01	ND	550.43	510.20	ug/L	0.4	108	20	75 - 125	

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Soils Engineering  
4400 Yeager Way  
Bakersfield, CA 93313

**Reported:** 03/13/2018 12:38  
**Project:** Drinking Water  
**Project Number:** 16195  
**Project Manager:** Bob Becker

### Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A02	The difference between duplicate readings is less than the quantitation limit.
A03	The sample concentration is more than 4 times the spike level.
A07	Detection and quantitation limits were raised due to sample dilution caused by high analyte concentration or matrix interference.
S05	The sample holding time was exceeded.





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	2790
	2122

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## CASE NARRATIVE

Authorized Signature Name / Title (print)

Ken Zheng, President

Signature / Date

Ken Zheng, President  
02/27/2018 10:11 AM

Laboratory Job No. (Certificate of Analysis No.)

1802-00145

Project Name / No.

Engle Rd and Wible Rd., Bakersfield

Dates Sampled (from/to)

02/20/18 To 02/20/18

Dates Received (from/to)

02/20/18 To 02/20/18

Dates Reported (from/to)

02/27/18 To 2/27/2018

Chains of Custody Received

Yes

Comments:

### Subcontracting

Organic Analyses

No analyses sub-contracted

### Sample Condition(s)

All samples intact

### Positive Results (Organic Compounds)

Sample	Analyte	Result	Qual	Units	RL	Sample	Analyte	Result	Qual	Units	RL
SG2-S	Heptane	25		ppmv	15	SG1-15	Heptane	25		ppmv	15
SG2-S	Heptane	16		ppmv	15	SG2-15	Heptane	16		ppmv	15
SG4-S	Heptane	20		ppmv	15	SG4-15	Heptane	17		ppmv	15
SG5-S	Chloroform	2.4		ug/L	0.10	SG5-15	Chloroform	0.31		ug/L	0.10
SG6-S	Chloroform	0.000	1	ug/L	0.10	SG6-S	Heptane	19		ppmv	15
SG8-15	Chloroform	0.000	1	ug/L	0.10	SG7-S	Chloroform	0.000	1	ug/L	0.10
SG7-15	Chloroform	0.000	1	ug/L	0.10	SG8-15	Heptane	22		ppmv	15
SG8-15 DUP	Heptane	19		ppmv	15						





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 001 SG1-5					Date & Time Sampled:			02/20/18	@	11:07
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
Hydrogen Sulfide	<0.010		ppm	Jérôme Analyser 631-X	1.0	0.0100	0.50	02/20/18	11:28	KZ
Methane	25		ppm	EPA 80130	1.0	10.0000	15	02/20/18	11:25	KZ
[VOCs by GCMS]										
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:21	KZ
1-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Benzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
1-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:21	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:21	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:21	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	11:21	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	11:21	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	11:21	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 001 <b>SG1-5</b>					Date & Time Sampled:					02/20/18	@ 11:07
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: 3											
....continued											
Dichlorodifluoromethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,1-Dichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,2-Dichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,1-Dichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
cis-1,2-Dichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
trans-1,2-Dichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,2-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,3-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
2,2-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,1-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
cis-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
trans-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Diisopropyl Ether (DiPE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Ethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Propyl-1-butyl Ether (PBPE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Hexachlorobutadiene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
2-Hexanone	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:21	KZ	
Isopropylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
4-Isopropyltoluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Methylene Chloride	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	11:21	KZ	
4-Methyl-2-Pentanone (MIBK)	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:21	KZ	
Methyl-t-butyl Ether (MTBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Naphthalene	<0.032		ug/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	11:21	KZ	
n-Propylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Styrene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,1,1,2-Tetrachloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,1,2,2-Tetrachloroethane	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Tetrachloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Toluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,2,3-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 001 <b>SG1-5</b>					Date & Time Sampled:					02/20/18	@ 11:07
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: 3											
.....continued											
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	11:21	KZ	
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Trichlorobromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	11:21	KZ	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	11:21	KZ	
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:21	KZ	
[VOC Vapor Sampling Tracer]											
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:21	KZ	
(VOC Surrogates)											
Obromofluoromethane	120		%REC	EPA 8260B			70-130	02/20/18	11:21	KZ	
Toluene-D8	110		%REC	EPA 8260B			70-130	02/20/18	11:21	KZ	
Bromofluorobenzene	104		%REC	EPA 8260B			70-130	02/20/18	11:21	KZ	
Sample: 002 <b>SG1-15</b>					Date & Time Sampled:					02/20/18	@ 11:38
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: 3											
Hydrogen Sulfide	<0.010		ppmv	Jerome Analyser 631-X	1.0	0.0100	0.50	02/20/18	12:00	KZ	
Methane	25		ppmv	EPA 8015B	1.0	0.0000	15	02/20/18	11:55	KZ	
[VOCs by GC/MS]											
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:51	KZ	
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ	
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.060	02/20/18	11:51	KZ	
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ	
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ	

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Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 002 SG1-15					Date & Time Sampled: 02/20/18 @ 11:38					
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
.....continued										
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:51	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:51	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:51	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	11:51	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,2-Dibromopropane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	11:51	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	11:51	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ

The data and information on this, and other accompanying documents, represent only the sample(s) analyzed and is rendered accurate only if the sample(s) is/are not to be reproduced, wholly or in part, for advertising or other purposes without approval from the laboratory.

USDA-ARS-NRCS Testing Food Safety Consulting Chemical and Microbiological Analysis and Research





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. R1898  
Cust # 1567  
Percent Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 002 SG1-15					Date & Time Sampled: 02/20/18 @ 11:38					
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
...continued										
1,1-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
2,2-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
cis-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
trans-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Dioxopropyl Ether (DPE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Ethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Ethyl-H-Butyl Ether (EHBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Hexachlorobutadiene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
2-Hexanone	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:51	KZ
Isopropylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
n-Isopropyltoluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Methylene Chloride	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	11:51	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:51	KZ
Methyl-n-butyl Ether (MTBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Napthalene	<0.032		ug/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	11:51	KZ
n-Propylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Styrene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1,1,2-Tetrachloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1,2,2-Tetrachloroethane	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Tetrachloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Toluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1,2 Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,2,4-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1,1-Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,1,2 Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Trichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
1,2,3-Trichloropropane	<0.020		ug/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	11:51	KZ
Trichlorofluoromethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ
Trichlorotrifluoroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/26/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech		
Sample: 002 <b>SG1-15</b>					Date & Time Sampled:					02/20/18	@	11:38
Sample Matrix: <b>Soil Vapor</b>												
Purge Volume Sampled: 3												
.....continued												
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ		
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ		
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	11:51	KZ		
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	11:51	KZ		
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	11:51	KZ		
[VOC Vapor Sampling Trace]												
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	11:51	KZ		
[VOC Surrogates]												
Dibromofluoromethane	118		%REC	EPA 8260B			70-130	02/20/18	11:51	KZ		
Toluene D8	126		%REC	EPA 8260B			70-130	02/20/18	11:51	KZ		
Bromofluorobenzene	103		%REC	EPA 8260B			70-130	02/20/18	11:51	KZ		
Sample: 003 <b>SG2-5</b>					Date & Time Sampled:					02/20/18	@	12:16
Sample Matrix: <b>Soil Vapor</b>												
Purge Volume Sampled: 3												
Hydrogen Sulfide	<0.010		ppmv	Jerome Analyser 631-X	1.0	0.0100	0.50	02/20/18	12:30	KZ		
Methane	19		ppmv	EPA 8015B	1.0	10.0000	25	02/20/18	12:25	KZ		
[VOCs by GC/MS]												
Axeltone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	12:23	KZ		
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	12:23	KZ		
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	12:23	KZ		
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	12:23	KZ		
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ		

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 003 SG2-5								Date & Time Sampled:	02/20/18	@ 12:18
Sample Matrix: Soil Vapor										
Purge Volume Sampled:	3									
.....continued										
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	12:23	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	12:23	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2-Dibromomethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	12:23	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	12:23	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
cis-1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Diisopropyl Ether (DIPE)	<0.350		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDI	RI	Date	Time	Tech
Sample: 003 <b>SG2-5</b>					Date & Time Sampled: 02/20/18 @ 12:16					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
...continued										
Ethyl-t-Butyl Ether (EtBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
2-hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	12:23	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	12:23	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	12:23	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	12:23	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2,3-Trichlorobenzene	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	12:23	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	12:23	KZ
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.70	02/20/18	12:23	KZ
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	12:23	KZ
[VOC Vapor Sampling Triplet]										
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	12:23	KZ





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## CERTIFICATE OF ANALYSIS

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Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
<b>Sample: 003 SG2-5</b>										
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
.....continued										
[VOC Surrogates]										
Chloromethane	110	%REC		EPA 8260B			70-130	02/20/18	12:23	K2
Toluene-D8	90	%REC		EPA 8260B			70-130	02/20/18	12:23	K2
Bromofluorobenzene	105	%REC		EPA 8260B			70-130	02/20/18	12:23	K2
<b>Sample: 004 SG2-15</b>										
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
[VOCs by GC/MS]										
Hydrogen Sulfide	<0.010		ppm	Jérôme Analyser 631-X	1.0	0.0100	0.50	02/20/18	1:40	K2
Methane	16		ppm	EPA 8013B	1.0	10.0000	15	02/20/18	1:40	K2
[VOCs by GC/MS]										
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:35	K2
1-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	1:35	K2
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
1-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:35	K2
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:35	K2
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:35	K2
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	1:35	K2
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 004 <b>SG2-15</b>							Date & Time Sampled:	02/20/18	@	13.20
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
.....continued										
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,2-Dibromomethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	1:35	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	1:35	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
Ethyl t Butyl Ether (EtBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:35	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	1:35	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:35	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 004 <b>SG2-15</b>					Date & Time Sampled:					02/20/18	@ 13:20
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
.....continued											
Methyl- <i>n</i> -butyl Ether (MnBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	1:35	K2	
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	1:35	K2	
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	1:35	K2	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	1:35	K2	
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:35	K2	
[VOC Vapor Sampling Tracer]											
Isopropenol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:35	K2	
[VOC Surrogates]											
Dibromofluoromethane	104		%REC	EPA 8260B			70-130	02/20/18	1:35	K2	
Toluene-D8	98		%REC	EPA 8260B			70-130	02/20/18	1:35	K2	
Bromofluorobenzene	101		%REC	EPA 8260B			70-130	02/20/18	1:35	K2	

Sample: 005 **SG3-5**  
Sample Matrix: **Soil Vapor**

Date & Time Sampled: 02/20/18 @ 13:45





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported: 02/27/18  
Date Received: 02/20/18  
Invoice No: 81898  
Cust #: 1567  
Permit Number:  
Customer P.O.:

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 005 <b>SG3-5</b>					Date & Time Sampled: 02/20/18 @ 13:45					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
Methane	<10		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	2:02	KZ
[VOCs by GC/MS]										
Axetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:59	KZ
n-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	1:59	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Bromotorm	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Bromonethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
n-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:59	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:59	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:59	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	1:59	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Chlorotorm	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	1:59	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	1:59	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 005 SG3-5					Date & Time Sampled: 02/20/18 @ 13:45					
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
....continued										
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Dibutyl Ether (DiBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:59	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	1:59	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:59	KZ
Methyl-t-butyl Ether (MtBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	1:59	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cast # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RI	Date	Time	Tech
Sample: 005 <b>SG3-5</b>								Date & Time Sampled:	02/20/18	Ⓢ 13:45
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
...continued										
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2,3-Trichlorobenzene	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	1:59	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	1:59	KZ
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	1:59	KZ
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	1:59	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	1:59	KZ
[VOC Surrogates]										
Chlorodifluoromethane	104		%REC	EPA 8260B			70-130	02/20/18	1:59	KZ
Toluene-D8	90		%REC	EPA 8260B			70-130	02/20/18	1:59	KZ
Bromofluorobenzene	104		%REC	EPA 8260B			70-130	02/20/18	1:59	KZ
Sample: 006 <b>SG3-15</b>								Date & Time Sampled:	02/20/18	Ⓢ 14:13
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
Methane	<10		ppmv	EPA 9015B	1.0	10.0000	15	02/20/18	2:25	KZ
[VOCs by GCMS]										
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:23	KZ
1-Anyol Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	2:23	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 006 <b>SG3-15</b>								Date & Time Sampled:	02/20/18	@ 14:13
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
...continued										
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:23	K2
2-Butanol (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:23	K2
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:23	K2
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	2:23	K2
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	2:23	K2
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	2:23	K2
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	K2

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Pennis Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 006 <b>SG3-15</b>					Date & Time Sampled:					02/20/18	14.13
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
.....continued											
1,1-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:21	KZ	
cis-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
trans-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Diisopropyl Ether (DIPE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Ethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Ethyl t-Butyl Ether (EtBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Hexachlorocycladiene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
2-Hexanone	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:23	KZ	
Isopropylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
4-Isopropyltoluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Methylene Chloride	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	2:21	KZ	
4-methyl-2-Pentanone (MIBK)	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:23	KZ	
Methyl t-butyl Ether (MtBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Naphthalene	<0.032		ug/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	2:21	KZ	
n-Propylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Styrene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,1,1,2-Tetrachloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:21	KZ	
1,1,2,2-Tetrachloroethane	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Tetrachloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Toluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,2,3-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,2,4-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,1,1-Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,1,2-Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Trichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,2,3-Trichloropropane	<0.020		ug/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	2:23	KZ	
Trichlorofluoromethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
Trichlorotrifluoromethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,2,4-Trimethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	
1,3,5-Trimethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ	

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 006 <b>SG3-15</b>					Date & Time Sampled: 02/20/18 @ 14:13					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
....continued										
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	2:23	KZ
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	2:23	KZ
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:23	KZ
[VOC Vapor Sampling Trailer]										
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:23	KZ
[VOC Surrogates]										
Dichlorofluoromethane	108		%REC	EPA 8260B			70-130	02/20/18	2:23	KZ
Toluene-D8	90		%REC	EPA 8260B			70-130	02/20/18	2:23	KZ
Bromofluorobenzene	105		%REC	EPA 8260B			70-130	02/20/18	2:23	KZ
Sample: 007 <b>SG4-5</b>										
Sample Matrix: <b>Soil Vapor</b>					Date & Time Sampled: 02/20/18 @ 14:38					
Purge Volume Sampled: 3										
Methane	20		ppmv	EPA 8015B	1.0	10.0000	≤5	02/20/18	2:50	KZ
[VOCs by GC/MS]										
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:48	KZ
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	2:48	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:48	KZ
2-Butanol (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:48	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:48	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	2:48	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P O

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 007 SG4-5							Date & Time Sampled:	02/20/18	@	14:18
Sample Matrix: Soil Vapor										
Purge Volume Sampled:	3									
.....continued										
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,2-Dibromoethane (DOB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	2:48	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	2:48	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Ethyl-4-Butyl Ether (EBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:48	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RI	Date	Time	Tech
Sample 007 <b>SG4-5</b>								Date & Time Sampled:	02/20/18	14:38
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
...continued										
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	2:48	KZ
4 Methyl 2 Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:48	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	2:48	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1,1-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,1,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	2:48	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	2:48	KZ
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	2:48	KZ
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	2:48	KZ
[VOC Vapor Sampling Trace]										
Isopropenol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	2:48	KZ
[VOC Surrogates]										
Dichlorofluoromethane	107		%REC	EPA 8260B			70-130	02/20/18	2:48	KZ
Toluene-D8	92		%REC	EPA 8260B			70-130	02/20/18	2:48	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 007 <b>SG4-5</b>					Date & Time Sampled: 02/20/18 @ 14:38					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
.....continued										
Bromofluorobenzene	102		%REC	EPA 8260B			70.130	02/20/18	2:48	KZ
Sample: 008 <b>SG4-15</b>					Date & Time Sampled: 02/20/18 @ 15:01					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
Methane	17		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	3:16	KZ
[VOCs by GC/MS]										
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	0.10	02/20/18	3:13	KZ
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	3:13	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Bromotrim	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:13	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:13	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:13	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	3:13	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	3:13	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/26/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 008 <b>SG4-15</b>					Date & Time Sampled: 02/20/18 @ 15:01					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
....continued										
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	3:13	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Ethyl-t-Butyl Ether (ETBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:13	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	3:13	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:13	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Napthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	3:13	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 008 SG4-15					Date & Time Sampled:					02/20/18	@ 15:01
Sample Matrix: Soil Vapor											
Purge Volume Sampled: 3											
.....continued											
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	3:13	KZ	
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	3:13	KZ	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	3:13	KZ	
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:13	KZ	
[VOC vapor Sampling Tracer]											
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:13	KZ	
[VOC Surrogates]											
Dibromofluoromethane	106		%REC	EPA 8260B			70-130	02/20/18	3:13	KZ	
Toluene-d8	91		%REC	EPA 8260B			70-130	02/20/18	3:13	KZ	
Bromofluorobenzene	103		%REC	EPA 8260B			70-130	02/20/18	3:13	KZ	
Sample: 009 SG5-5					Date & Time Sampled:					02/20/18	@ 15:27
Sample Matrix: Soil Vapor											
Purge Volume Sampled: 3											
Methane	<10		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	3:42	KZ	
[VOCs by GC/MS]											
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:38	KZ	





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 009 SG5-5					Date & Time Sampled:			02/20/18	@	15:27
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
.....continued										
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	3:38	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:38	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:38	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:38	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	3:38	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Chloroform	2.4		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	3:38	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	3:38	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ

The data and information on this report reflect a comparison of analytical observations with the sample(s) analyzed and is rendered upon condition

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Eagle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 009 <b>SG5-5</b>					Date & Time Sampled:					02/20/18	@ 15:27
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
....continued											
1,1-Dichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
cis-1,2-Dichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
trans-1,2-Dichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,2-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,3-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
2,2-Dichloropropane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,1-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
cis-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
trans-1,3-Dichloropropene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Diisopropyl Ether (DIPE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Ethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Ethyl-t-Butyl Ether (EtBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Hexachlorobutadiene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
2-Hexanone	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:38	KZ	
Isopropylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
4-Isopropyltoluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Mesitylene Chloride	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	3:38	KZ	
4-Methyl-2-Pentanone (MIBK)	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:38	KZ	
Methyl-t-butyl Ether (MTBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Naphthalene	<0.032		ug/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	3:38	KZ	
n-Propylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Styrene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,1,1,2-Tetrachloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,1,2,2-Tetrachloroethane	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Tetrachloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
Toluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,2,3-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,2,4-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,1,1-Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	
1,1,2-Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ	

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 8189R  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RI	Date	Time	Tech
<b>Sample: 009 SG5-5</b>										
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
.....continued										
Trichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	3:38	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	3:38	KZ
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	3:38	KZ
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	3:38	KZ
[VOC Vapor Sampling Tracer]										
Isopropane (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	3:38	KZ
[VOC Surrogates]										
Dibromofluoromethane	104		%REC	EPA 8260B			70-130	02/20/18	3:38	KZ
Toluene (M)	91		%REC	EPA 8260B			70-130	02/20/18	3:38	KZ
Bromofluorobenzene	101		%REC	EPA 8260B			70-130	02/20/18	3:38	KZ
<b>Sample: 010 SG5-15</b>										
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
Methane	<1.0		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	4:07	KZ
[VOCs by GC/MS]										
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:04	KZ
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	4:04	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:04	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 010 <b>SGS-15</b> Date & Time Sampled: 02/20/18 @ 15:50										
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
.....continued										
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:04	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:04	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	4:04	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Chloroform	<b>0.51</b>		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:04	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:04	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ

The data and information on this, and other accompanying documents, represent only the sample(s) analyzed and a rendered upon condition that it is not to be reproduced, whole or in part, for advertising or other purposes without approval from the laboratory.

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RI	Date	Time	Tech
Sample: 010 <b>SG5-15</b>								Date & Time Sampled:	02/20/18	@ 15:50
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
.....continued										
trans-1,3-dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Dibromodifluoromethane (DBDF)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Ethyl-t-Butyl Ether (ETBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:04	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	4:04	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:04	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	4:04	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:04	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	4:04	KZ
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	4:04	KZ

The data and information on this, and other accompanying documents, represent only the sample(s) analyzed and is not an assurance of quality.  
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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 010 SG5-15					Date & Time Sampled:			02/20/18	@	15:50
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
.....continued										
>-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:04	KZ
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:04	KZ
[VOC Surrogates]										
Dibromofluoromethane	112		%REC	EPA 8260B			70-130	02/20/18	4:04	KZ
Toluene-D8	51		%REC	EPA 8260B			70-130	02/20/18	4:04	KZ
Bromofluorobenzene	102		%REC	EPA 8260B			70-130	02/20/18	4:04	KZ
Sample: 011 SG6-5					Date & Time Sampled:			02/20/18	@	16:17
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
Methane	19		pmv	EPA 8015B	1.0	10.0000	15	02/20/18	4:02	KZ
[VOCs by GC/MS]										
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:29	KZ
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	4:29	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:29	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:29	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:29	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	4:29	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 011 <b>SG6-5</b>					Date & Time Sampled: 02/20/18 @ 16:17					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
.....continued										
Chloroform	0.080	J	µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:29	KZ
1,1-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:29	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Diisopropyl Ether (DiPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Hexachlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:29	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
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Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 011 <b>SG6-5</b>					Date & Time Sampled: 02/20/18 @ 16:17					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
.....continued										
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	4:29	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:29	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	4:29	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,1,1,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:29	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	4:29	KZ
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	4:29	KZ
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:29	KZ
[VOC Vapor Sampling Tracer]										
Isopropiencol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:29	KZ
[VOC Surrogates]										
Dibromofluoromethane	107		%REC	EPA 8260B			70-130	02/20/18	4:29	KZ
Toluene-D8	93		%REC	EPA 8260B			70-130	02/20/18	4:29	KZ
Bromofluorobenzene	104		%REC	EPA 8260B			70-130	02/20/18	4:29	KZ





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RI	Date	Time	Tech
Sample: 012 <b>SG6-15</b>					Date & Time Sampled: 02/20/18 @ 16:40					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
Methane	<10		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	4:57	KZ
[VOCs by GC/MS]										
Acetone	<0.30		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:54	KZ
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	4:54	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:54	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:54	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:54	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	4:54	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Chloroform	<b>0.080</b>	J	µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:54	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:54	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ

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Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 012 <b>SG6-15</b>					Date & Time Sampled: 02/20/18 @ 16:40					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: 3										
... continued										
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
2 Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:54	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	4:54	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:54	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	4:54	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ





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Cust #.: 1567  
Permit Number:  
Customer P.O.:

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RI	Date	Time	Tech	
Sample: 012 <b>SG6-15</b>					Date & Time Sampled:					02/20/18	@ 16:40
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
.... continued											
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	4:54	KZ	
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	4:54	KZ	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	4:54	KZ	
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	4:54	KZ	
[VOC Vapor Sampling Tracer]											
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	4:54	KZ	
[VOC Surrogates]											
Dibromofluoromethane	110		%REC	EPA 8260B			70-130	02/20/18	4:54	KZ	
Toluene d8	93		%REC	EPA 8260B			70-130	02/20/18	4:54	KZ	
Bromofluorobenzene	104		%REC	EPA 8260B			70-130	02/20/18	4:54	KZ	
Sample: 013 <b>SG7-5</b>					Date & Time Sampled:					02/20/18	@ 17:16
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
Hydrogen Sulfide	<0.010		ppmv	Jerome Analyser 631-X	1.0	0.0100	0.50	02/20/18	5:40	KZ	
Methane	<10		ppmv	EPA 8215B	1.0	10.0000	15	02/20/18	5:36	KZ	
(VOCs by GC/MS)											
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:32	KZ	
n-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ	
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	5:32	KZ	
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ	
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ	
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ	





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Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 013 SG7-5					Date & Time Sampled: 02/20/18 @ 17:16					
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
.....continued										
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
t-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:32	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:32	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:32	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	5:32	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
Chloroform	0.050	J	µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,2-Dibromomethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	5:32	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	5:32	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
cis-1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ

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Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 013 <b>SG7-5</b>					Date & Time Sampled:					02/20/18	@ 17:16
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
.....continued											
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,1-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Ethyl-4-Butyl Ether (EBBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:32	K2	
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	5:32	K2	
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:32	K2	
Methyl- <i>t</i> -butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Isophthalene	<0.031		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	5:32	K2	
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,2,3-Trichloropropene	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	5:32	K2	
Trichlorofluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	K2	

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90048

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 013 <b>SG7-5</b>					Date & Time Sampled:					02/20/18	@ 17:16
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
.....Continued											
1,2,3-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ	
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	5:32	KZ	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	5:32	KZ	
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:32	KZ	
[VOC Vapor Sampling Tracer]											
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:32	KZ	
[VOC Surrogates]											
Dibromofluoromethane	114		%REC	EPA 8260B			70-130	02/20/18	5:32	KZ	
Toluene D8	100		%REC	EPA 8260B			70-130	02/20/18	5:32	KZ	
Bromofluorobenzene	102		%REC	EPA 8260B			70-130	02/20/18	5:32	KZ	
Sample: 014 <b>SG7-15</b>					Date & Time Sampled:					02/20/18	@ 17:42
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
Hydrogen Sulfide	<0.010		ppmv	Jerome Analyser 531-X	1.0	0.0100	0.50	02/20/18	6:00	KZ	
Methane	<10		ppmv	EPA 80158	1.0	10.0000	15	02/20/18	5:59	KZ	
[VOCs by GC/MS]											
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:55	KZ	
1-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	5:55	KZ	
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:55	KZ	
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:55	KZ	
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. S1898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Eagle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 014 <b>SG7-15</b>					Date & Time Sampled:					02/20/18	@ 17:42
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
.....continued											
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:55	KZ	
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	5:55	KZ	
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Chloroform	<b>0.090</b>	J	µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	5:55	KZ	
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	5:55	KZ	
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	
Ethyl-t-Butyl Ether (ETBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	KZ	





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported: 02/27/18  
Date Received: 02/20/18  
Invoice No.: 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 014 SG7-15							Date & Time Sampled:		02/20/18	@ 17:42
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
.....continued										
Hexachlorobutadiene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
2-Hexanone	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:55	K2
Isopropylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
4-Isopropyltoluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Methylene Chloride	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	5:55	K2
4-Methyl-2-Pentanone (MIBK)	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:55	K2
Methyl-t-Butyl Ether (MTBE)	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Naphthalene	<0.032		ug/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	5:55	K2
n-Propylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Styrene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,1,1,2-Tetrachloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,1,1,2 Tetrachloroethane	<0.05		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Tetrachloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Toluene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,2,3-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,2,4-Trichlorobenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,1,1-Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,1,2-Trichloroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Trichloroethene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,2,3-Trichloropropane	<0.020		ug/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	5:55	K2
Trichlorofluoromethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Trichlorotrifluoroethane	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,2,4-Trimethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
1,3,5-Trimethylbenzene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
Vinyl Chloride	<0.025		ug/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	5:55	K2
m,p-Xylenes	<0.10		ug/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	5:55	K2
n-Xylene	<0.050		ug/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	5:55	K2
[VOC Vapor Sampling Tracer]										
Isopropanol (IPA)	<0.50		ug/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	5:55	K2
[VOC Surrogates]										

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 014 <b>SG7-15</b>					Date & Time Sampled: 02/20/18 @ 17:42					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
.....continued										
Dibromofluoromethane	108		%REC	EPA 8260B			70-130	02/20/18	5:55	KZ
Toluene-D8	93		%REC	EPA 8260B			70-130	02/20/18	6:55	KZ
Bromofluorobenzene	102		%REC	EPA 8260B			70-130	02/20/18	5:55	KZ
Sample: 015 <b>SG8-5</b>					Date & Time Sampled: 02/20/18 @ 18:03					
Sample Matrix: <b>Soil Vapor</b>										
Purge Volume Sampled: <b>3</b>										
Methane	<10		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	6:19	KZ
[VOCs by GC/MS]										
Axetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	0.10	02/20/18	6:16	KZ
1-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	6:16	KZ
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:16	KZ
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:16	KZ
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:16	KZ
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	6:16	KZ
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Chloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Eagle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 015 SGB-5					Date & Time Sampled: 02/20/18 @ 18:03					
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
.....continued										
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	6:16	KZ
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	6:16	KZ
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,2-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
2,2-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Ethyl-t-Butyl Ether (ETBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:16	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	6:16	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:16	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	6:16	KZ

The data and information on this, and other accompanying documents, represent only the samples analyzed and is rendered void without the original sample and its container.

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 015 SGB-5					Date & Time Sampled:					02/20/18	@ 18:03
Sample Matrix: Soil Vapor											
Purge Volume Sampled: 3											
....continued											
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	6:16	KZ	
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	6:16	KZ	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	6:16	KZ	
n-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:16	KZ	
[VOC Vapor Sampling Tracer]											
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:16	KZ	
[VOC Surrogates]											
Dibromofluoromethane	104		%REC	EPA 8260B			70-130	02/20/18	6:16	KZ	
Toluene-D8	95		%REC	EPA 8260B			70-130	02/20/18	6:16	KZ	
Bromofluorobenzene	100		%REC	EPA 8260B			70-130	02/20/18	6:16	KZ	
Sample: 016 SGB-15					Date & Time Sampled:					02/20/18	@ 18:28
Sample Matrix: Soil Vapor											
Purge Volume Sampled: 3											
Methane	22		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	6:42	KZ	





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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90048

Date Reported: 02/27/18  
Date Received: 02/20/18  
Invoice No.: 81898  
Cust #: 1567  
Permit Number:  
Customer P.O.:

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 016 SG8-15					Date & Time Sampled:					02/20/18	@ 18:28
Sample Matrix: Soil Vapor											
Purge Volume Sampled: 3											
.....continued											
[VOCs by GC/MS]											
Axetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:38	K2	
n-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	6:38	K2	
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Bromoforn	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Bromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
n-Butanol (TBA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:38	K2	
2-Butanone (MEK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:38	K2	
n-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
sec-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
tert-Butylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Carbon Disulfide	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:38	K2	
Carbon Tetrachloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	6:38	K2	
Chlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Chloroform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Chloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
2-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
4-Chlorotoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Dibromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
1,2-Dibromoethane (EDB)	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	6:38	K2	
1,2-Dibromo-3-Chloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	6:38	K2	
Dibromomethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
1,2-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
1,3-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
1,4-Dichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	
Dichlorodifluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	K2	

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RI	Date	Time	Tech
Sample: 016 SGB-15					Date & Time Sampled: 02/20/18 @ 18:28					
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
... continued										
1,1-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,2-Dichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,1-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
cis-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
trans-1,2-Dichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,3-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
2,2-Dichloropropane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Ethyl-t-Butyl Ether (EtBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:38	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	6:38	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:38	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Naphthalene	<0.012		µg/L	EPA 8260B	1.0	0.0120	0.050	02/20/18	6:38	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,1,1,2-Tetrachloroethene	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ

The data and information of this and other accompanying documents, represent only the samples as analyzed and do not represent any conditions.

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Eagle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 016 <b>SG8-15</b>					Date & Time Sampled:					02/20/18	@ 18:28
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
.....continued											
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
1,2,3-Trichloropropane	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	6:38	KZ	
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	6:38	KZ	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	6:38	KZ	
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	6:38	KZ	
[VOC Vapor Sampling Tracer]											
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	6:38	KZ	
[VOC Surrogates]											
Dibromofluoromethane	136		%REC	EPA 8260B			70-130	02/20/18	6:38	KZ	
Toluene-D8	94		%REC	EPA 8260B			70-130	02/20/18	6:38	KZ	
Bromofluorobenzene	101		%REC	EPA 8260B			70-130	02/20/18	6:38	KZ	
Sample: 017 <b>SG8-15 DUP</b>					Date & Time Sampled:					02/20/18	@ 18:28
Sample Matrix: <b>Soil Vapor</b>											
Purge Volume Sampled: <b>3</b>											
Methane	19		ppmv	EPA 8015B	1.0	10.0000	15	02/20/18	7:10	KZ	
[VOCs by GCMS]											
Acetone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	7:04	KZ	
t-Amyl Methyl Ether (TAME)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Benzene	<0.036		µg/L	EPA 8260B	1.0	0.0360	0.050	02/20/18	7:04	KZ	
Bromobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Bromochloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Bromodichloromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Bromoform	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	

This data and information is only valid when accompanied by this certificate, which states the sample(s) analyzed and its associated test condition.

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Eagle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 017 SGB-15 DUP					Date & Time Sampled:					02/20/18	@ 18:28
Sample Matrix: Soil Vapor											
Purge Volume Sampled: 3											
...continued											
Bromomethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
n-Butanol (18A)	< 0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	7:04	KZ	
2-Butanone (MEK)	< 0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	7:04	KZ	
n-Butylbenzene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
sec-Butylbenzene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
tert-Butylbenzene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Carbon Disulfide	< 0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	7:04	KZ	
Carbon Tetrachloride	< 0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	7:04	KZ	
Chlorobenzene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Chloroethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Chloroform	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Chloromethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
2-Chlorotoluene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
4-Chlorotoluene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Dibromochloromethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,2-Dibromoethane (EDB)	< 0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	7:04	KZ	
1,2-Dibromo-3-Chloropropane	< 0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	7:04	KZ	
Dibromomethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,2-Dichlorobenzene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,3-Dichlorobenzene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,4-Dichlorobenzene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
Dichlorodifluoromethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,1-Dichloroethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,2-Dichloroethane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,1-Dichloroethene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
cis-1,2-Dichloroethene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
trans-1,2-Dichloroethene	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,2-Dichloropropane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
1,3-Dichloropropane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
2,2-Dichloropropane	< 0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No. 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech
Sample: 017 SGB-15 DUP	Date & Time Sampled:						02/20/18	@	18:28	
Sample Matrix: Soil Vapor										
Purge Volume Sampled: 3										
.....continued										
1,1-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
cis-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
trans-1,3-Dichloropropene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Diisopropyl Ether (DIPE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Ethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Ethyl-t-Butyl Ether (ETBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Hexachlorobutadiene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
2-Hexanone	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	7:04	KZ
Isopropylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
4-Isopropyltoluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Methylene Chloride	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.1	02/20/18	7:04	KZ
4-Methyl-2-Pentanone (MIBK)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	7:04	KZ
Methyl-t-butyl Ether (MTBE)	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Naphthalene	<0.032		µg/L	EPA 8260B	1.0	0.0320	0.050	02/20/18	7:04	KZ
n-Propylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Styrene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,1,1,2-Tetrachloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,1,2,2-Tetrachloroethane	<0.05		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Tetrachloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Toluene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,2,3-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,2,4-Trichlorobenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,1,1-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,1,2-Trichloroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Trichloroethene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,2,3-Trichloropropene	<0.020		µg/L	EPA 8260B	1.0	0.0200	0.10	02/20/18	7:04	KZ
Trichlorofluoromethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
Trichlorotrifluoroethane	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,2,4-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ
1,3,5-Trimethylbenzene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ

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## CERTIFICATE OF ANALYSIS

1802-00145

INTERPHASE  
ROSE WILLIAMS  
6200 PEACHTREE STREET  
LOS ANGELES, CA 90040

Date Reported 02/27/18  
Date Received 02/20/18  
Invoice No 81898  
Cust # 1567  
Permit Number  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Analysis	Result	Qual	Units	Method	DF	MDL	RL	Date	Time	Tech	
Sample: 017 SGB-15 DUP					Date & Time Sampled:					02/20/18	@ 18:28
Sample Matrix: Soil Vapor											
Purge Volume Sampled: 3											
.....continued											
Vinyl Chloride	<0.025		µg/L	EPA 8260B	1.0	0.0250	0.050	02/20/18	7:04	KZ	
m,p-Xylenes	<0.10		µg/L	EPA 8260B	1.0	0.1000	0.20	02/20/18	7:04	KZ	
o-Xylene	<0.050		µg/L	EPA 8260B	1.0	0.0500	0.10	02/20/18	7:04	KZ	
[VOC Vapor Sampling Tracer]											
Isopropanol (IPA)	<0.50		µg/L	EPA 8260B	1.0	0.5000	1.0	02/20/18	7:04	KZ	
[VOC Surrogates]											
Bromofluoromethane	107		%REC	EPA 8260B			70-130	02/20/18	7:04	KZ	
Toluene-D8	100		%REC	EPA 8260B			70-130	02/20/18	7:04	KZ	
Bromofluorobenzene	99		%REC	EPA 8260B			70-130	02/20/18	7:04	KZ	

Respectfully Submitted:

*Ken Zheng*  
Ken Zheng, President

### QUALIFIERS

B = Detected in the associated Method Blank at a concentration above the routine RL.  
B1 = BOD dilution water is over specifications. The reported result may be biased high.  
D = Surrogate recoveries are not calculated due to sample dilution.  
E = Estimated value. Value exceeds calibration level of instrument.  
H = Analyte was prepared and/or analyzed outside of the analytical method holding time.  
I = Matrix Interference.  
J = Analyte concentration detected between RL and MDL.  
Q = One or more quality control criteria did not meet specifications. See Comments for further explanation.  
S = Customer provided specification limit exceeded.

### ABBREVIATIONS

DF = Dilution Factor  
RL = Reporting Limit, Adjusted by DF  
MDL = Method Detection Limit, Adjusted by DF  
Qual = Qualifier  
Tech = Technician

As regulatory limits change frequently, A & R Laboratories advises the recipient of this report to confirm such limits with the appropriate federal, state, or local authorities before acting in reliance on the regulatory limits provided.

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.





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## QUALITY CONTROL DATA REPORT

INTERPHASE  
LOS ANGELES, CA 90040

1802-00145

Date Reported 02/27/2018  
Date Received 02/20/2018  
Date Sampled 02/20/2018  
Invoice No. 81898  
Customer # 1567  
Customer P.O.

Project: Engle Rd and Wible Rd., Bakersfield

Method # EPA 8210B  
QC Reference # 71825 Date Analyzed: 2/20/2018 Technician: KZ  
Samples 001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017

No QC recoveries reported.

Method # EPA 8260B  
QC Reference # 71825 Date Analyzed: 2/20/2018 Technician: KZ  
Samples 001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017

### Results

	LCS %REC	LCS %SUP	LCS %RFD	BIASR% REC
1,1-Dichloroethane	100	108	7	
Benzene	118	125	6	
Bromofluorobenzene				97
Chlorobenzene	103	110	7	
Dibromofluoromethane				96
Toluene	110	115	4	
Toluene D8				89
Trichloroethane	115	123	7	

### Control Ranges

LCS %REC	LCS %RFD	BIASR%REL
70 - 130	0 - 25	
70 - 130	0 - 25	
70 - 130	0 - 25	75 - 130
70 - 130	0 - 25	
70 - 130	0 - 25	70 - 130
70 - 130	0 - 25	75 - 130
70 - 130	0 - 25	

Method # Jerome Analyzer 635-X  
QC Reference # 71827 Date Analyzed: 2/20/2018 Technician: KZ  
Samples 001 002 003 004 013 014

### Results

	LCS %REC	LCS %SUP	LCS %RFD
Hydrogen Sulfide	95	92	3

### Control Ranges

LCS %REC	LCS %RFD
70 - 130	0 - 25





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## QUALITY CONTROL DATA REPORT

INTERPHASE

1802-00145

Date Reported 02/27/2018  
Date Received 02/20/2018  
Date Sampled 02/20/2018

Project: Engle Rd and Wible Rd., Bakersfield

### Method blank results

Ref	Test Name	Result	Qualif	Units	MDL	Ref	Test Name	Result	Qualif	Units	MDL
71825	Acetone	<0.50		ug/L	0.50		Isopropylbenzene	<0.050		ug/L	0.050
	1-Amyl Methyl Ether (TAME)	<0.050		ug/L	0.050		4-Isopropyltoluene	<0.050		ug/L	0.050
	Benzene	<0.036		ug/L	0.036		Methylene Chloride	<0.05		ug/L	0.05
	Bromobenzene	<0.050		ug/L	0.050		4-Methyl-2-Pentanone (MIBK)	<0.50		ug/L	0.50
	Bromochloromethane	<0.050		ug/L	0.050		Methyl-1-butyl Ether (MBE)	<0.050		ug/L	0.050
	Bromodichloromethane	<0.050		ug/L	0.050		Naphthalene	<0.032		ug/L	0.032
	Bromofarm	<0.050		ug/L	0.050		n-Propylbenzene	<0.050		ug/L	0.050
	Bromomethane	<0.050		ug/L	0.050		Styrene	<0.050		ug/L	0.050
	1,2-Dichloro-1,1,1,2-Tetrafluoroethane (MTBE)	<0.50		ug/L	0.50		1,1,1,2-Tetrachloroethane	<0.050		ug/L	0.050
	2-Butanone (MEK)	<0.50		ug/L	0.50		1,1,2,2-Tetrachloroethane	<0.05		ug/L	0.05
	n-Butylbenzene	<0.050		ug/L	0.050		Tetrachloromethane	<0.050		ug/L	0.050
	sec-Butylbenzene	<0.050		ug/L	0.050		Toluene	<0.050		ug/L	0.050
	tert-Butylbenzene	<0.050		ug/L	0.050		1,2,3-Trichlorobenzene	<0.050		ug/L	0.050
	Carbon Disulfide	<0.50		ug/L	0.50		1,2,4-Trichlorobenzene	<0.050		ug/L	0.050
	Carbon Tetrachloride	<0.025		ug/L	0.025		1,1,1-Trichloroethane	<0.050		ug/L	0.050
	Chlorobenzene	<0.050		ug/L	0.050		1,1,2-Trichloroethane	<0.050		ug/L	0.050
	Chloromethane	<0.050		ug/L	0.050		Trichloroethene	<0.050		ug/L	0.050
	Chloroform	<0.050		ug/L	0.050		1,2,3-Trichloropropane	<0.050		ug/L	0.050
	Chloromethane	<0.050		ug/L	0.050		Trichlorofluoromethane	<0.050		ug/L	0.050
	2-Chlorotoluene	<0.050		ug/L	0.050		Trichlorofluoroethane	<0.050		ug/L	0.050
	4-Chlorotoluene	<0.050		ug/L	0.050		1,2,4-Trimethylbenzene	<0.050		ug/L	0.050
	Dibromochloromethane	<0.050		ug/L	0.050		1,3,5-Trimethylbenzene	<0.050		ug/L	0.050
	1,2-Dibromoethane (BPE)	<0.025		ug/L	0.025		Vinyl Chloride	<0.025		ug/L	0.025
	1,2-Dibromo-3-Chloropropane	<0.025		ug/L	0.025		m,p-Xylene	<0.10		ug/L	0.10
	Dibromomethane	<0.050		ug/L	0.050		o-Xylene	<0.050		ug/L	0.050
	1,2-Dichlorobenzene	<0.050		ug/L	0.050		Xenon	<0.10		ug/L	0.10
	1,3-Dichlorobenzene	<0.050		ug/L	0.050	71826	Methane	<10		ppmv	10
	1,4-Dichlorobenzene	<0.050		ug/L	0.050						
	Dichlorodifluoromethane	<0.050		ug/L	0.050						
	1,1-Dichloroethane	<0.050		ug/L	0.050						
	1,2-Dichloroethane	<0.050		ug/L	0.050						
	1,3-Dichloroethane	<0.050		ug/L	0.050						
	cis-1,2-Dichloroethene	<0.050		ug/L	0.050						
	trans-1,2-Dichloroethene	<0.050		ug/L	0.050						
	1,2-Dichloropropane	<0.050		ug/L	0.050						
	1,3-Dichloropropane	<0.050		ug/L	0.050						
	2,2-Dichloropropane	<0.050		ug/L	0.050						
	1,1-Dichloropropane	<0.050		ug/L	0.050						
	cis-1,3-Dichloropropene	<0.050		ug/L	0.050						
	trans-1,3-Dichloropropene	<0.050		ug/L	0.050						
	Dipropyl Ether (DPE)	<0.050		ug/L	0.050						
	Ethylbenzene	<0.050		ug/L	0.050						
	Ethyl-1-Butyl Ether (EBE)	<0.050		ug/L	0.050						
	Hexachlorobenzene	<0.050		ug/L	0.050						
	2-Hexanone	<0.50		ug/L	0.50						





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Page 3 of 3

FDAL#	2698513
LA City#	10261
ELAP#s	2789
	2790
	2122

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### QUALITY CONTROL DATA REPORT

INTERPHASE

1802-00145

Date Reported 02/27/2018

Date Received 02/20/2018

Date Sampled 02/20/2018

Project: Engle Rd and Wible Rd., Bakersfield

Respectfully Submitted:

*Ken Zheng*

Ken Zheng - President

For any feedback concerning our services, please contact Jenny Jiang, Project Manager at 951.779.0310. You may also contact Ken Zheng, President at office@arlaboratories.com.



## A &amp; R Laboratories

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## CHAIN OF CUSTODY

[A &amp; R Work Order #]

1807-145

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## CHAIN OF CUSTODY

[illegible]



## APPENDIX B

**Boring Logs of Soil Gas and Geotechnical Borings (B-1 to B-5), USER  
Questionnaire, and Environmental Questionnaire & Disclosure Statement,  
Portion of KCEHSD File for BS Baldwin Dairy, Portion of Report of Waste  
Discharge, Conditional Use Permit and Portion of Preliminary Title Report**



Boring Completion	ANALYSES		BLOWCOUNT	DEPTH (feet)	SAMPLE		Lithology symbol	U. S. C. S. desig.	SOIL DESCRIPTION
	Lab	Field			INTERVAL	NUMBER			
	Vapor Samples (Vocs in ug/l methane & H2S in ppm)	PID							
<div>Vapor Sampling &amp; Purging Unit</div> <div>Syringe or Hand-held Meter</div> <div>1/4" Poly line</div> <div>Hydrated Bentonite</div> <div>12" Dry Bentonite</div> <div>#3 Sand Pack (1')</div> <div>Porous Filter</div> <div>Hydrated Bentonite</div> <div>12" Dry Bentonite</div> <div>#3 Sand Pack (1')</div> <div>Porous Filter</div> <div>2.5" Diam Hole</div>				0					AC like Surface with dirt
				2.5					Continuous Core
	SG1-5' VOCs All ND Meth =25 H2S = 0	0		5		SG1-5'		SM SP	Silty Sand/Sand - dk yel brn, damp, vfn gr sand, no odor or staining
				7.5					
		0		10		SG1-10'		SP	Sand - lt yel brn, damp, vfn-fn gr sand, no odor or staining
				12.5					
	SG1-15' VOCs All ND Meth =25 H2S = 0	0		15		SG1-15'		SW	Sand - lt yel brn, damp, med-vcrs gr sand, no odor or staining

Drilled: 2/20/18  
Total Depth: 15'

Drill Rig: Geoprobe  
Depth to Water: NA

**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313

PROJECT NAME: Proposed High School Site  
SITE NAME: SE of Wible Rd. & Engle Rd.  
Bakersfield, California  
BORING LOCATION: Former UST Area (35.252380,-119.037796)

PLATE

Project Number: 16195  
DATE: 4/18

**SG-1 BORING LOG**

pg. 1 of 1



Boring Completion	ANALYSES		BLOWCOUNT	DEPTH (feet)	SAMPLE		Lithology symbol	U. S. C. S. desig.	SOIL DESCRIPTION
	Lab	Field			INTERVAL	NUMBER			
	Vapor Samples (Vocs in ug/l methane & H2S in ppm)	PID							
<div><div>Vapor Sampling &amp; Purging Unit</div><div>Syringe or Hand-held Meter</div><div>1/8" Poly line</div><div>Hydrated Bentonite</div><div>12" Dry Bentonite</div><div>#3 Sand Pack (1')</div><div>Porous Filter</div><div>Hydrated Bentonite</div><div>12" Dry Bentonite</div><div>#3 Sand Pack (1')</div><div>Porous Filter</div><div>2.5" Diam Hole</div></div>				0					Dirt Surface
				2.5				SM	Silty Sand - med-dk yel brn, damp, vfn-fn gr sand, no odor or staining
	SG2-5'			5	SG2-5'			SP	Sand - lt yel brn, damp, fn gr sand, damp no odor or staining
	VOCs All ND Meth =19 H2S = 0			7.5					
				10	SG2-10'			SP	Sand - lt yel brn, damp, fn gr sand, damp no odor or staining
				12.5					
	SG2-15'			15	SG2-15'			SP	Sand - lt yel brn, damp, fn-crs gr sand, dry no odor or staining
	VOCs All ND Meth =16 H2S = 0								

Drilled: 2/20/18  
Total Depth: 15'

Drill Rig: Geoprobe  
Depth to Water: NA

**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313

PROJECT NAME: Proposed High School Site  
SITE NAME: SE of Wible Rd. & Engle Rd.  
Bakersfield, California  
BORING LOCATION: 30' E of Water Tank (35.25222,-119.03783)

PLATE

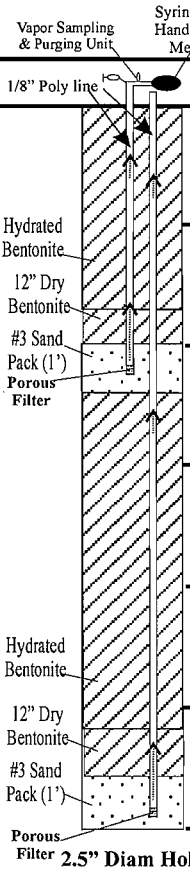
Project Number: 16195  
DATE: 4/18

**SG-2 BORING LOG**

pg. 1 of 1



Boring Completion	ANALYSES		BLOWCOUNT	DEPTH (feet)	SAMPLE		Lithology symbol	U. S. C. S. desig.	SOIL DESCRIPTION
	Lab	Field			INTERVAL	NUMBER			
	Vapor Samples (Vocs in ug/l methane & H2S in ppm)	PID							

				0					Dirt Surface
				2.5			SM		Silty Sand - med yel brn, damp, vfn-fn gr sand, damp, no odor or staining
	SG3-5'	0		5	SG3-5'		SP/ SW		Silty Sand/Sand - dk yel brn, damp, fn to crs gr sand, no odor or staining
	VOCs All ND Meth =<10			7.5					
		0		10	SG3-10'		SP/ SW		Sand - as above
				12.5					
	SG3-15'	0		15	SG3-15'		SP/ SW		Sand - as above with trace silt @ 15'
	VOCs All ND Meth =<10								



pg. 1 of 1



Boring Completion	ANALYSES		BLOWCOUNT	DEPTH (feet)	SAMPLE		Lithology symbol	U. S. C. S. desig.	SOIL DESCRIPTION
	Lab	Field			INTERVAL	NUMBER			
Vapor Sampling & Purging Unit Syringe or Hand-held Meter 1/8" Poly line		PID		0					Dirt Surface
Hydrated Bentonite 12" Dry Bentonite #3 Sand Pack (1') Porous Filter	SG5-5'	0		2.5			SM		Silty Sand - dk yel brn, damp, vfn-fn gr sand, damp, no odor or staining
	VOCs Chloroform = 2.4 Meth =<10			5	SG5-5'		SW		Sand - med yel brn, fn -crs gr, damp, no odor or staining
		0		7.5					
Hydrated Bentonite 12" Dry Bentonite #3 Sand Pack (1') Porous Filter				10	SG5-10'		SP		Sand - lt yel brn, fn gr, damp, no odor or staining
				12.5					
Porous Filter 2.5" Diam Hole	SG5-15'	0		15	SG5-15'		SP/ SW		Sand as above with fn to crs gr.
	VOCs Chloroform = 0.51 Meth =<10								

Drilled: 2/20/18  
Total Depth: 15'

Drill Rig: Geoprobe  
Depth to Water: NA

**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313

PROJECT NAME: Proposed High School Site  
SITE NAME: SE of Wible Rd. & Engle Rd.  
Bakersfield, California  
BORING LOCATION: NW Portion of Pistachio Trees  
(35.250441,-119.037698)

PLATE

Project Number: 16195  
DATE: 4/18

**SG-5 BORING LOG**

pg. 1 of 1



Boring Completion	ANALYSES		BLOWCOUNT	DEPTH (feet)	SAMPLE		Lithology symbol	U. S. C. S. desig.	SOIL DESCRIPTION
	Lab	Field			INTERVAL	NUMBER			
	Vapor Samples (Vocs in ug/l methane & H2S in ppm)	PID							
Vapor Sampling & Purging Unit									
Syringe or Hand-held Meter									
1/8" Poly line				0					Dirt Surface
Hydrated Bentonite				2.5			SM		Silty Sand - dk yel brn, damp, vfn-fn gr sand, damp, no odor or staining
12" Dry Bentonite				5	SG6-5'		SP		Sand - lt yel brn, vfn -fn gr, damp, no odor or staining
#3 Sand Pack (1')	SG6-5'			7.5					
Porous Filter	VOCs Chloroform = 0.08 Meth =19			10	SG6-10'		SP/ SW		Sand - lt yel brn, fn to crs gr, damp, no odor or staining
Hydrated Bentonite				12.5					
12" Dry Bentonite				15	SG6-15'		SP/ SW		Sand as above
#3 Sand Pack (1')	SG6-15'								
Porous Filter	VOCs Chloroform = 0.08 Meth =<10								
2.5" Diam Hole									

Drilled: 2/20/18  
Total Depth: 15'

Drill Rig: Geoprobe  
Depth to Water: NA

**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313

PROJECT NAME: Proposed High School Site  
SITE NAME: SE of Wible Rd. & Engle Rd.  
Bakersfield, California  
BORING LOCATION: NE Portion of Pistachio Trees  
(35.250437,-119.037017)

PLATE

Project Number: 16195  
DATE: 4/18

**SG-6 BORING LOG**

pg. 1 of 1



Boring Completion	ANALYSES		BLOWCOUNT	DEPTH (feet)	SAMPLE		Lithology symbol	U. S. C. S. design.	SOIL DESCRIPTION
	Lab	Field			INTERVAL	NUMBER			
	Vapor Samples (Vocs in ug/l methane & H2S in ppm)	PID							
<div><div>Vapor Sampling &amp; Purging Unit</div><div>Syringe or Hand-held Meter</div><div>1/8" Poly line</div><div>Hydrated Bentonite</div><div>12" Dry Bentonite</div><div>#3 Sand Pack (1')</div><div>Porous Filter</div><div>Hydrated Bentonite</div><div>12" Dry Bentonite</div><div>#3 Sand Pack (1')</div><div>Porous Filter</div><div>2.5" Diam Hole</div></div>				0					Dirt Surface
				2.5					
	SG7-5'			5	SG7-5'			SM	Silty Sand - dk yel brn, damp, vfn-fn gr, no odor or staining
	VOCs Chloroform = 0.05 Meth =<10 H2S=0			7.5				SM/ML	Silty Sand/Sandy Silt - dk yel brn, damp, vfn gr sand with silt, damp, no odor or staining
				10	SG7-10'				
				12.5					
	SG7-15'			15	SG7-15'			SM	Silty Sand - dk yel brn, damp, vfn gr sand with silt, damp, no odor or staining
	VOCs Chloroform = 0.09 Meth =<10 H2S=0								

Drilled: 2/20/18  
Total Depth: 15'

Drill Rig: Geoprobe  
Depth to Water: NA

**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313

PROJECT NAME: Proposed High School Site  
SITE NAME: SE of Wible Rd. & Engle Rd.  
Bakersfield, California  
BORING LOCATION: Central Portion of Pistachio Trees  
(35.249663,-119.037034)

PLATE

Project Number: 16195  
DATE: 4/18

**SG-7 BORING LOG**

pg. 1 of 1



Boring Completion	ANALYSES		BLOWCOUNT	DEPTH (feet)	SAMPLE		Lithology symbol	U. S. C. S. design.	SOIL DESCRIPTION
	Lab	Field			INTERVAL	NUMBER			
	Vapor Samples (Vocs in ug/l methane & H2S in ppm)	PID							
<div>Vapor Sampling &amp; Purging Unit</div> <div>Syringe or Hand-held Meter</div> <div>1/8" Poly line</div> <div>Hydrated Bentonite</div> <div>12" Dry Bentonite</div> <div>#3 Sand Pack (1')</div> <div>Porous Filter</div> <div>Hydrated Bentonite</div> <div>12" Dry Bentonite</div> <div>#3 Sand Pack (1')</div> <div>Porous Filter</div> <div>2.5" Diam Hole</div>				0					Dirt Surface
				2.5				SM	Silty Sand - dk yel brn, damp, vfn gr sand, no odor or staining
	SG8-5' VOCs = ND Meth =<10			5	SG8-5'			SM	Silty Sand - med-dk yel brn, damp, vfn gr sand, no odor or staining
				7.5					
				10	SG8-10'			SP	Sand - lt yel brn, damp, vfn-med gr sand, damp no odor or staining
				12.5					
	SG8-15' VOCs = All ND Meth =22 22 dup			15	SG8-15'			SP	Sand - lt yel brn, damp, vfn-med gr sand, damp no odor or staining

Drilled: 2/20/18  
Total Depth: 15'

Drill Rig: Geoprobe  
Depth to Water: NA

**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313

PROJECT NAME: Proposed High School Site  
SITE NAME: SE of Wible Rd. & Engle Rd.  
Bakersfield, California  
BORING LOCATION: Southern Portion of Pistachio Trees  
(35.249056,-119.037016)

PLATE

Project Number: 16195  
DATE: 4/18

**SG-8 BORING LOG**

pg. 1 of 1





# LOG OF TEST BORING BORING B-1

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; yellow brown; dry to damp; fine grained			
325 5	4/6 6/6 8/6		medium dense		96.8	4.4
320 10	4/6 7/6 7/6		brown; damp		109.5	7.4
315 15	4/6 6/6 10/6	SM	SILTY SAND; brown; damp; fine grained medium dense		105.4	7.3
310 20	6/6 9/6 10/6		brown; damp; cohesive.		92.8	23.3
305 25	4/6 13/6 18/6		CLAYEY SILT; brown; damp; hard; low plasticity		113.8	15.6
300 30	11/6 18/6 28/6	SP- SM	POORLY-GRADED SAND with low fine content; light yellowish brown; dry to damp; fine grained dense		105.8	3.1
295 35						

Figure Number 2





# LOG OF TEST BORING BORING B-1

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	12/6 22/6 35/6		very dense		106.3	3.0
285 45	12/6 23/6 30/6				104.4	3.2
280 50	11/6 20/6 24/6	SP	POORLY GRADED SAND; yellowish brown; non cohesive; dense		102.9	5.2
275 55	14/6 33/6 50/6		very dense		103.3	3.0
270 60			BOTTOM			
265 65						
260 70						

Figure Number 2





# LOG OF TEST BORING BORING B-2

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; yellow brown; dry; fine grained			
325 5	5/6 6/6 7/6		medium dense		89.2	4.7
320 10	5/6 3/6 3/6	SP- SM	POORLY-GRADED SAND with low fine content; light yellowish brown; dry to damp; fine grained loose		96.2	3.4
315 15	4/6 6/6 6/6		medium dense		99.2	7.7
310 20	4/6 5/6 5/6	SP	POORLY GRADED SAND; olive; low cohesion; loose		99.1	4.5
305 25	1/6 1/6 3/6	ML	CLAYEY SANDY SILT; olive brown; v moist; low plasticity		105.3	22.3
300 30	7/6 8/6 12/6	SP	soft POORLY-GRADED SAND; light yellowish brown; dry to damp; fine graded medium dense		110	4.5
295 35						

Figure Number 3





# LOG OF TEST BORING BORING B-2

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  : N/A

CAVING -  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

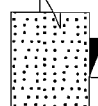



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	 9/6 16/6 17/6		dense		99.4	4.7
285 45	 10/6 17/6 20/6				110	3.7
280 50	 7/6 7/6 13/6 17/6				114	4.7
275 55	 9/6 16/6 20/6		BOTTOM		116.9	4.3
270 60						
265 65						
260 70						

Figure Number 3





# LOG OF TEST BORING BORING B-3

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\frac{1}{2}$  : N/A

CAVING -  $\frac{1}{2}$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; brown; dry; fine grained; cohesive.			
325 5	5/6 8/6 6/6		medium dense		107.1	4.8
320 10	3/6 4/6 4/6		loose		105.2	8.9
315 15	2/6 3/6 3/6	ML	SANDY CLAYEY SILT; olive; high plasticity medium stiff.		99.6	20.0
310 20	2/6 3/6 5/6		stiff		94.5	20.7
305 25	1/6 3/6 4/6		medium stiff		95.2	24.0
300 30	10/6 8/6 6/6	SM	SILTY SAND; light brown; damp; fine grained			
		CL	CLAY; olive brown; damp; stiff; low plasticity		104.8	9.5
295 35		SP-SM	POORLY GRADED SAND with low fine content; light yellowish			

Figure Number 4





# LOG OF TEST BORING BORING B-3

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	9/6 16/6 18/6		brown; dry; fine grained dense		103.1	3.2
285 45	11/6 17/6 20/6				112.6	2.3
280 50	6/6 8/6 25/6	ML	SANDY CLAYEY SILT; olive; damp; low plasticity; hard		105.5	20.2
		SM	SILTY SAND; light brown; damp; fine grained			
	17/6 17/6 16/6	CL	SITLY CLAY; olive brown; damp; low plasticity		102.8	20.2
		SM	SILTY SAND; light brown; dry to damp; dense; fine grained			
275 55			BOTTOM			
270 60						
265 65						
260 70						

Figure Number 4





# LOG OF TEST BORING BORING B-4

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER - : N/A

CAVING - : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; brown; dry; low plasticity			
325 5	3/6 4/6 5/6		stiff		97	11.1
320 10	4/6 5/6 7/6				107	16.8
315 15	2/6 2/6 2/6		soft; traces of clay		102	16.4
310 20	3/6 5/6 7/6		stiff		108.4	15.8
305 25	2/6 5/6 6/6				106.1	20.8
300 30	4/6 6/6 19/6	SC	CLAYEY SILTY SAND; light yellowish brown; dry; medium dense; fine grained		111.8	15.8
295 35						

Figure Number 5





# LOG OF TEST BORING BORING B-4

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

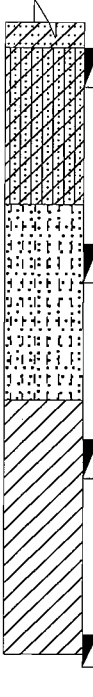
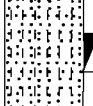
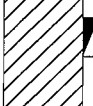

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40		SM	SILTY SAND; olive brown; damp; loose; cohesive.		110	13.3
285 45		SP- SM	POORLY GRADED SAND with low fine content; light yellowish brown; dry to damp; low cohesion. dense		106.2	3.5
280 50		CL	SILTY CLAY; olive brown; damp to wet; low plasticity very stiff		108.4	29.0
275 55			BOTTOM		100.1	30.8
270 60						
265 65						
260 70						

Figure Number 5





# LOG OF TEST BORING BORING B-5

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine			
325 5	2/6 4/6 4/6		loose		94.6	3.3
320 10	3/6 6/6 6/6		medium dense; fine to medium grained		91.3	2.1
315 15	5/6 9/6 11/6	SM	SILTY SAND; light brown; dry to damp; fine medium dense		96.4	7.0
310 20	3/6 4/6 11/6	CL ML SM	SILTY CLAY; brown; damp to v moist; low plasticity SANDY SILT; brown; damp; low plasticity		122.5	6.6
305 25	2/6 8/6 17/6	ML	SILTY SAND; yellow brown; damp; medium dense; fine grained CLAYEY SANDY SILT; olive brown; damp; low plasticity very stiff		114.6	14.9
300 30	9/6 13/6 28/6	SM	SILTY SAND; light red brown; dry to damp; dense; fine grained		121.0	2.7
295 35		CL	CLAY; olive brown; damp to			

Figure Number 6





# LOG OF TEST BORING BORING B-5

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	5/6 11/6 18/6	SM	wet; low plasticity SILTY SAND; light brown; damp; medium dense; fine grained		101.0	14.7
285 45	14/6 12/6 22/6	CL ML	SILTY CLAY; olive brown; damp; low plasticity CLAYEY SANDY SILT; olive brown; hard; low plasticity		113.1	18.4
280 50	18/6 32/6 50/6	SM	SILTY SAND; light yellowish brown; dry to damp; fine grained very dense		100.4	3.7
275 55	13/6 23/6 34/6	CL SM	SILTY CLAY; olive brown; wet; low plasticity SITLY SAND; yellow brown; damp; very dense; fine grained		114.4	7.3
270 60			BOTTOM			
265 65						
260 70						

Figure Number 6



### PHASE 1 ENVIRONMENTAL SITE ASSESSMENT - USER QUESTIONNAIRE

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.

(1.) Are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law? *no*

(2.) Are you aware of any activity and land use limitations (AULs), such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? *no*

(3.) As the *user* of this Environmental Site Assessment (ESA) do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business? *no*

*yes*  
(4.) Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *property*?

(5.) Are you aware of commonly known or *reasonably ascertainable* information about the *property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases? For example, as *user*,

(a.) Do you know the past uses of the *property*? *yes. Portions of the property have been used as a trading/milk hauling business and as a area*

(b.) Do you know of specific chemicals that are present or once were present at the *property*?

*no*

(c.) Do you know of spills or other chemical releases that have taken place at the *property*?

*milk trucks were rinsed out in specific areas on the property*

(d.) Do you know of any environmental cleanups that have taken place at the *property*?

*no*

(6.) As the *user* of this ESA, based on your knowledge and experience related to the *property* are



there any obvious indicators that point to the presence or likely presence of contamination at the property? *Some former Ag uses could require research on pesticides used for Ag purposes?*

In addition, certain information should be collected, if available, and provided to the *environmental professional*. This information is intended to assist the *environmental professional* but is not necessarily required to qualify for one of the *LLPs*. The information includes:

(a) the reason why the Phase I is required, *required for school site purchase*

(b) the type of *property* and type of *property* transaction, for example, sale, purchase, exchange, etc., *purchase and surplus sale of additional acreage*

(c) the complete and correct address for the *property* (a map or other documentation showing *property* location and boundaries is helpful),

*\* Attached.*

(d) the scope of services desired for the Phase I (including whether any parties to the *property* transaction may have a required standard scope of services or whether any considerations beyond the requirements of Practice E 1527 are to be considered), *DTSC required phase I scope.*

(e) identification of all parties who will rely on the Phase I report, *District (purchaser), real estate representative, DTSC, CDE, CGRA.*

(f) identification of the site contact and how the contact can be reached,

(g) any special terms and conditions which must be agreed upon by the *environmental professional*, and *review of property specific to intended school site, understanding surplus property will not remain as,*

(h) any other knowledge or experience with the *property* that may be pertinent to the *environmental professional* (for example, copies of any available prior *environmental site assessment* reports, documents, correspondence, etc., concerning the *property* and its *environmental condition*).

*Intended school use.*

Site Name: *Southwest new school site  
from Wible & Engle rd.*

Signature of *SEI*

Date *3.23.18*

*Jenny Hennrich*



Please return this form by mail or fax to SEI at:

Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Bob Becker

Tel: (661) 831-5100, Fax (661) 831-2111

Front 20 acres  
12 Acres Pistachio's  
8 Acres Yard

### ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT

SITE INFORMATION	
Current Site Address	11314 Wible Rd, Bakersfield 93313
Current Site Use	12 Acres Pistachio's 8 acres yard (approx)
Current Site Zoning	A-1 with C.U.P.
Current Assessor's Parcel Number	184-150-42
Addresses Formerly Assigned To Site (If any)	N/A

SITE OWNERSHIP AND PAST USE		
Owner Name, Address & Phone	Period of Ownership/Use	Type of Use
Current Wible Ave LLC	2010 - Current	Truck Yard / Farming
Former Jack Pinheiro	2005 - 2010	
Former		



SITE LESSEES		
Name, Address & Phone	Length/Years of Lease	Type of Use
Present:		
Former:		
Former:		

SITE UTILITIES	
Utility	Provider
Electricity	PG & E
Natural Gas	none
Drinking Water	well
Storm Water Drainage	✓
Solid Waste Disposal	Price
Sanitary Sewer	✓ SEPTIC
Emergency Power Source	none



\*\*\*\*\*PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS\*\*\*\*\*

#	Specific Uses of Site or Adjacent Property	SITE			ADJACENT		
		Yes	No	Don't Know	Yes	No	Don't Know
1	Agricultural chemical formulation, distribution, or application	X					
2	Airport and/or airplane maintenance		X				
3	Automotive wrecking yard		X				
4	Bulk chemical or fuel storage	X					
5	Commercial printing		X				
6	Dry cleaning		X				
7	Landfill		X				
8	Metal plating or finishing		X				
9	Mining or minerals processing		X				
10	Motor vehicle or equipment repair and/or maintenance	X					
11	Photographic laboratory		X				
12	Service station		X				
13	Skeet shooting or gun club		X				
14	Waste treatment, storage, disposal, processing or recycling, other than a landfill		X				

"Adjacent Property" includes those properties that border the immediate site and properties located across the street from the site.



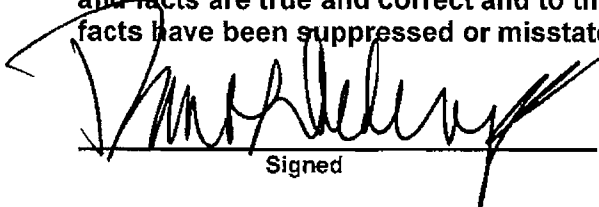
\*\*\*\*\*PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS\*\*\*\*\*

#	ON-SITE HAZARDOUS MATERIALS USE, STORAGE AND DISPOSAL	Yes	No	Don't Know
1	Is liquid waste disposed of to a septic tank on-site?	X		
2	Is liquid waste disposed of	X		
3	Are any ponds, sumps, basins, lagoons, or clarifiers used on-site to collect, treat, or dispose of liquid?	X		
4	If liquid waste is disposed of on-site, is a waste discharge permit required?	X		
5	Is liquid waste disposed of to an off-site treatment works?		X	
6	Is solid waste disposed of on-site (burned or buried)?		X	
7	Does any solid or liquid off-site waste disposal require a waste manifest or disposal permit?	X		
8	Is any hazardous waste generated, stored, or treated on-site?		X	
9	Are any spills or releases of hazardous materials known or suspected to have occurred at the site?			X

THIS ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT WAS PREPARED BY:

Name Wible Ave LLC Title Mar  
DANA Oldenkamp  
 Firm \_\_\_\_\_ Relationship to Site owner  
 Address 11314 Wible Rd  
Bakersfield CA 93313  
 Phone 661 833-3400 Date 4/5/18

Preparer represents that to the best of the preparer's knowledge the above statements and facts are true and correct and to the best of the preparer's knowledge not material facts have been suppressed or misstated.

  
 Signed \_\_\_\_\_

4/5/18  
 Date \_\_\_\_\_



Environmental Questionnaire and Disclosure Statement – Addendum

Wible Avenue LLC – Kern APN 184-150-42

Page 4, Question #1 – Agriculture chemical application for the pistachios

Page 4, Question #4 – Above ground fuel storage island for trucking business

Page 4, Question #10 – Servicing trucks inside shop building

Page 5, Question #5 – Conditional Use Permit was issued for trucking business operation

Page 5, Question #6 – Above ground fuel storage island for trucking business

Page 5, Question #9 – Existing domestic well for office

Page 5, Question #10 – Hazardous Material Permit for ag chemical application to pistachios

Page 5, Question #11 – Agricultural chemicals applied to the pistachios

Page 5, Question #12 – petroleum products stored on site for trucking business

Page 5, Question #13 – Conditional Use Permit issued for trucking business operation



Please return this form by mail or fax to SEI at:

Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Baldwin 80  
Martin 127  

---

207 acres.

Attn: Bob Becker

Tel: (661) 831-5100, Fax (661) 831-2111

### ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT

SITE INFORMATION	
Current Site Address	APN N/A
Current Site Use	FARMING
Current Site Zoning	"A" - EXCLUSIVE AGRICULTURE
Current Assessor's Parcel Number	184-150-38,39,40,41,52
Addresses Formerly Assigned To Site (if any)	

SITE OWNERSHIP AND PAST USE		
Owner Name, Address & Phone	Period of Ownership/Use	Type of Use
Current Pinheiro Family L.P.	PURCHASED IN 2004 : 2012	IRR. FARMLAND
Former		
Former		



ADJACENT PROPERTY USE		
Direction	Type of Use	Length of Use
North	PESTICIDES/TRUCK YARD	
East	IRR. FARMLAND / WATER BANK	
South	IRR. FARMLAND	
West	IRR. FARMLAND / ALMONDS	

EXISTING SITE STRUCTURES			
Structure Description	Location	Use	Date of Construction
AG WELL	NORTH LINE		

FORMER SITE STRUCTURES			
Structure Description	Former Location	Use	Date of Demolition



SITE LESSEES		
Name, Address & Phone	Length/Years of Lease	Type of Use
Present: LEHR BROS.	2018	ROW CROP FARMING
Former:		
Former:		

SITE UTILITIES	
Utility	Provider
Electricity	PG & E
Natural Gas	N/A
Drinking Water	N/A
Storm Water Drainage	N/A
Solid Waste Disposal	N/A
Sanitary Sewer	N/A
Emergency Power Source	N/A



\*\*\*\*\*PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS\*\*\*\*\*

#	ON-SITE HAZARDOUS MATERIALS USE, STORAGE AND DISPOSAL	Yes	No	Don't Know
1	Are asbestos-containing materials present in on-site structures?		X	
2	Has an asbestos survey been conducted for on-site structures?		X	
3	Are any electrical transformers or capacitors on-site?		X	
4	Are any electrical transformers or capacitors on-site not owned by an electrical utility?		X	
5	Has an Environmental Audit or Assessment been conducted for the site?		X	
6	Do you know of any current or former <u>aboveground</u> storage tanks?		X	
7	Do you know of any current or former <u>underground</u> storage tanks (not septic)?		X	
8	Do you know of any fill dirt having been Imported to the site?		X	
9	Do you know of any current or former wells on-site, including, domestic drinking water, irrigation water, disposal, oil and/or abandoned wells?	X		
10	Do you know of any pesticides/herbicides permits for the site?	X		
11	Do you know of any pesticides/herbicides stored or used on-site?		X	
12	Are solvents, petroleum products, or paint products stored on-site?	X		
13	Are you aware of any permits having been issued for the site by the local fire, environmental health, or air pollution control agencies?		X	



\*\*\*\*\*PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS\*\*\*\*\*

#	ON-SITE HAZARDOUS MATERIALS USE, STORAGE AND DISPOSAL	Yes	No	Don't Know
1	Is liquid waste disposed of to a septic tank on-site?		X	
2	Is liquid waste disposed of		X	
3	Are any ponds, sumps, basins, lagoons, or clarifiers used on-site to collect, treat, or dispose of liquid?		X	
4	If liquid waste is disposed of on-site, is a waste discharge permit required?		X	
5	Is liquid waste disposed of to an off-site treatment works?		X	
6	Is solid waste disposed of on-site (burned or buried)?		X	
7	Does any solid or liquid off-site waste disposal require a waste manifest or disposal permit?		X	
8	Is any hazardous waste generated, stored, or treated on-site?		X	
9	Are any spills or releases of hazardous materials known or suspected to have occurred at the site?		X	

THIS ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT WAS PREPARED BY:

Name DANA Eldenkamp Title ownerFirm \_\_\_\_\_ Relationship to Site ownerAddress 5021 E Bear Mtn Blvd  
Bukerfield CA 93311Phone 661 833-3400 Date 4-5-18

Preparer represents that to the best of the preparer's knowledge the above statements and facts are true and correct and to the best of the preparer's knowledge not material facts have been suppressed or misstated.

Dana Eldenkamp  
Signed4-5-18  
Date



Environmental Questionnaire and Disclosure Statement – Addendum

Pinheiro Family LP – Kern APN 184-150-38, 39, 40, 41, 52

Page 4, Question #1 – Agriculture chemical application for row crops

Page 5, Question #9 – Existing ag well for irrigation purposes

Page 5, Question #10 – Hazardous Material Permit for ag chemical application to row crops

Page 5, Question #12 – oil drum used to lubricate ag well motor



Please return this form by mail or fax to SEI at:

Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Bob Becker

Tel: (661) 831-5100, Fax (661) 831-2111

(Back 20 acres)

### ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT

SITE INFORMATION	
Current Site Address	Unknown
Current Site Use	Farming - Pistacio's
Current Site Zoning	A-1
Current Assessor's Parcel Number	184-150-35
Addresses Formerly Assigned To Site (if any)	N/A

SITE OWNERSHIP AND PAST USE		
Owner Name, Address & Phone	Period of Ownership/Use	Type of Use
Current Oldenkamp Family Trust	2014 - Current	Farming
Former Jack Pinheiro	2007 - 2014	Farming
Former		



ADJACENT PROPERTY USE		
Direction	Type of Use	Length of Use
North	IRR. FARMLAND	
East	IRR. FARMLAND	
South	IRR. FARMLAND	
West	TRUCK YARD / PISTACHIOS	

EXISTING SITE STRUCTURES			
Structure Description	Location	Use	Date of Construction
Wood shed	NW Corner	storage	NA

FORMER SITE STRUCTURES			
Structure Description	Former Location	Use	Date of Demolition



SITE LESSEES		
Name, Address & Phone	Length/Years of Lease	Type of Use
Present:		
Former:		
Former:		

SITE UTILITIES	
Utility	Provider
Electricity	PG & E
Natural Gas	
Drinking Water	
Storm Water Drainage	
Solid Waste Disposal	
Sanitary Sewer	
Emergency Power Source	



\*\*\*\*\*PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS\*\*\*\*\*

#	Specific Uses of Site or Adjacent Property	SITE			ADJACENT		
		Yes	No	Don't Know	Yes	No	Don't Know
1	Agricultural chemical formulation, distribution, or application	X					
2	Airport and/or airplane maintenance		X				
3	Automotive wrecking yard		X				
4	Bulk chemical or fuel storage		X				
5	Commercial printing		X				
6	Dry cleaning		X				
7	Landfill		X				
8	Metal plating or finishing		X				
9	Mining or minerals processing		X				
10	Motor vehicle or equipment repair and/or maintenance		X				
11	Photographic laboratory		X				
12	Service station		X				
13	Skeet shooting or gun club		X				
14	Waste treatment, storage, disposal, processing or recycling, other than a landfill		X				

**“Adjacent Property”** includes those properties that border the immediate site and properties located across the street from the site.



\*\*\*\*\*PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS\*\*\*\*\*

#	ON-SITE HAZARDOUS MATERIALS USE, STORAGE AND DISPOSAL	Yes	No	Don't Know
1	Are asbestos-containing materials present in on-site structures?		X	
2	Has an asbestos survey been conducted for on-site structures?		X	
3	Are any electrical transformers or capacitors on-site?		X	
4	Are any electrical transformers or capacitors on-site not owned by an electrical utility?		X	
5	Has an Environmental Audit or Assessment been conducted for the site?		X	
6	Do you know of any current or former <u>aboveground</u> storage tanks?		X	
7	Do you know of any current or former <u>underground</u> storage tanks (not septic)?		X	
8	Do you know of any fill dirt having been imported to the site?		X	
9	Do you know of any current or former wells on-site, including, domestic drinking water, irrigation water, disposal, oil and/or abandoned wells?	X		
10	Do you know of any pesticides/herbicides permits for the site?	X		
11	Do you know of any pesticides/herbicides stored or used on-site?	X		
12	Are solvents, petroleum products, or paint products stored on-site?	X		
13	Are you aware of any permits having been issued for the site by the local fire, environmental health, or air pollution control agencies?		X	



\*\*\*\*\*PLEASE PROVIDE DETAILS FOR ALL YES ANSWERS\*\*\*\*\*

#	ON-SITE HAZARDOUS MATERIALS USE, STORAGE AND DISPOSAL	Yes	No	Don't Know
1	Is liquid waste disposed of to a septic tank on-site?		X	
2	Is liquid waste disposed of		X	
3	Are any ponds, sumps, basins, lagoons, or clarifiers used on-site to collect, treat, or dispose of liquid?		X	
4	If liquid waste is disposed of on-site, is a waste discharge permit required?		X	
5	Is liquid waste disposed of to an off-site treatment works?		X	
6	Is solid waste disposed of on-site (burned or buried)?		X	
7	Does any solid or liquid off-site waste disposal require a waste manifest or disposal permit?		X	
8	Is any hazardous waste generated, stored, or treated on-site?		X	
9	Are any spills or releases of hazardous materials known or suspected to have occurred at the site?		X	

THIS ENVIRONMENTAL QUESTIONNAIRE AND DISCLOSURE STATEMENT WAS PREPARED BY:

Name Dana Oldenkamp Title Trustee  
 Firm Oldenkamp Family Trust Relationship to Site OWNER  
 Address 2406 Exton St  
Bakersfield CA 93311  
 Phone 461 836-7118 Date 4/5/18

Preparer represents that to the best of the preparer's knowledge the above statements and facts are true and correct and to the best of the preparer's knowledge not material facts have been suppressed or misstated.

[Signature]  
 Signed

4-5-18  
 Date



Environmental Questionnaire and Disclosure Statement – Addendum

Oldenkamp Family Trust – Kern APN 184-150-35

Page 4, Question #1 – Agriculture chemical application for the pistachios

Page 5, Question #9 – Existing agricultural well on site for irrigating the pistachios

Page 5, Question #10 – Hazardous Material Permit for ag chemical application to pistachios

Page 5, Question #11 – Agricultural chemicals applied to the pistachios

Page 5, Question #12 – Above ground oil drum for deep well motor lubrication



**ENVIRONMENTAL HEALTH SERVICES DEPARTMENT**

**STEVE McCALLEY, R.E.H.S., Director**  
2700 "M" STREET, SUITE 300  
Bakersfield, CA 93301-2370  
Voice: (805) 862-8700  
FAX: (805) 862-8701  
TTY Relay: 1-800-735-2979



**RESOURCE MANAGEMENT AGENCY**

**DAVID PRICE III, RMA DIRECTOR**  
Engineering & Survey Services Department  
Environmental Health Services Department  
Planning Department  
Roads Department

January 24, 1997

**REMEDIAL ACTION COMPLETION CERTIFICATION**

Barrett Baldwin Jr.  
B S Baldwin Farms, Inc.  
2468 Whitney Drive  
Mountain View, CA 94043

SUBJECT: UNDERGROUND STORAGE TANK (UST) CASE  
Location: 3151 Engle Road, Bakersfield, CA  
Known As: Baldwin Dairy  
Site No.: 320061

Dear Mr. Baldwin:

This letter confirms the completion of site investigation and remedial action for the underground storage tank(s) formerly located at the above-described location. Enclosed is the Case Closure Summary for the referenced site for your records.

Based on the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721(e). (If a change in land use is proposed, the owner must promptly notify this agency.)

Please telephone Brian Pitts at (805) 862-8700 if you have any questions regarding this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Steve McCalley".

Steve McCalley, Director  
Environmental Health Services Department

SMc:ch

Enclosure

cc: Central Valley - RWQCB  
State Board, Underground Tanks Program

colt320061.a



# UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

<b>EMERGENCY</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED?</b> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>FOR LOCAL AGENCY USE ONLY</b> I HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM. SIGNED: <u>Lydia V. von Sydow</u> DATE: <u>02/03/97</u>	
<b>REPORT DATE</b> 0 <u>M</u> 2 <u>M</u> 0 <u>D</u> 3 <u>D</u> 9 <u>Y</u> 7 <u>Y</u>		<b>CASE #</b> 320061			
REPORTED BY	<b>NAME OF INDIVIDUAL FILING REPORT</b> LYDIA V. VON SYDOW		<b>PHONE</b> (805) 862-8700		<b>SIGNATURE</b> <u>Lydia V. von Sydow</u>
	<b>REPRESENTING</b> <input type="checkbox"/> OWNER/OPERATOR <input type="checkbox"/> REGIONAL BOARD <input checked="" type="checkbox"/> LOCAL AGENCY <input type="checkbox"/> OTHER		<b>COMPANY OR AGENCY NAME</b> KERN CO. ENV. HEALTH SERVICES DEPT.		
	<b>ADDRESS</b> 2700 "M" ST., STE. 300, BAKERSFIELD, CA 93301				
RESPONSIBLE PARTY	<b>NAME</b> B. S. BALDWIN FARMS, INC. <input type="checkbox"/> UNKNOWN		<b>CONTACT PERSON</b> BARRETT BALDWIN JR.		<b>PHONE</b> ( )
	<b>ADDRESS</b> 2468 WHITNEY DR., MOUNTAIN VIEW, CA 94043				
SITE LOCATION	<b>FACILITY NAME (IF APPLICABLE)</b> BALDWIN DAIRY		<b>OPERATOR</b>		<b>PHONE</b> ( )
	<b>ADDRESS</b> 3151 ENGLE RD., BAKERSFIELD, KERN COUNTY, 93313				
	<b>CROSS STREET</b>				
IMPLEMENTING AGENCIES	<b>LOCAL AGENCY</b> KERN CO. ENV. HEALTH SERV. DEPT.		<b>CONTACT PERSON</b> BRIAN PITTS		<b>PHONE</b> (805) 862-8700
	<b>REGIONAL BOARD</b> CENTRAL VALLEY		<b>PHONE</b> ( )		
SUBSTANCES INVOLVED	<b>(1) NAME</b> GASOLINE		<b>QUANTITY LOST (GALLONS)</b> <input checked="" type="checkbox"/> UNKNOWN		
	<b>(2)</b>		<input type="checkbox"/> UNKNOWN		
DISCOVERY/ABATEMENT	<b>DATE DISCOVERED</b> 1 <u>M</u> 1 <u>M</u> 2 <u>D</u> 6 <u>D</u> 9 <u>Y</u> 1 <u>Y</u>		<b>HOW DISCOVERED</b> <input type="checkbox"/> INVENTORY CONTROL <input type="checkbox"/> SUBSURFACE MONITORING <input type="checkbox"/> NUISANCE CONDITIONS <input type="checkbox"/> TANK TEST <input checked="" type="checkbox"/> TANK REMOVAL <input type="checkbox"/> OTHER		
	<b>DATE DISCHARGE BEGAN</b> <input checked="" type="checkbox"/> UNKNOWN		<b>METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)</b> <input type="checkbox"/> REMOVE CONTENTS <input checked="" type="checkbox"/> CLOSE TANK & REMOVE <input type="checkbox"/> REPAIR PIPING <input type="checkbox"/> REPAIR TANK <input type="checkbox"/> CLOSE TANK & FILL IN PLACE <input type="checkbox"/> CHANGE PROCEDURE <input type="checkbox"/> REPLACE TANK <input type="checkbox"/> OTHER		
	<b>HAS DISCHARGE BEEN STOPPED?</b> <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, DATE 1 <u>M</u> 1 <u>M</u> 2 <u>D</u> 6 <u>D</u> 9 <u>Y</u> 1 <u>Y</u>				
SOURCE/ CAUSE	<b>SOURCE OF DISCHARGE</b> <input type="checkbox"/> TANK LEAK <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> PIPING LEAK <input type="checkbox"/> OTHER		<b>CAUSE(S)</b> <input type="checkbox"/> OVERFILL <input type="checkbox"/> RUPTURE/FAILURE <input type="checkbox"/> SPILL <input type="checkbox"/> CORROSION <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> OTHER		
CASE TYPE	<b>CHECK ONE ONLY</b> <input type="checkbox"/> UNDETERMINED <input type="checkbox"/> SOIL ONLY <input checked="" type="checkbox"/> GROUNDWATER <input type="checkbox"/> DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)				
CURRENT STATUS	<b>CHECK ONE ONLY</b> <input type="checkbox"/> NO ACTION TAKEN <input type="checkbox"/> PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED <input type="checkbox"/> POLLUTION CHARACTERIZATION <input type="checkbox"/> LEAK BEING CONFIRMED <input type="checkbox"/> PRELIMINARY SITE ASSESSMENT UNDERWAY <input type="checkbox"/> POST CLEANUP MONITORING IN PROGRESS <input type="checkbox"/> REMEDIATION PLAN <input checked="" type="checkbox"/> CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) <input type="checkbox"/> CLEANUP UNDERWAY				
REMEDIAL ACTION	<b>CHECK APPROPRIATE ACTION(S)</b> (SEE BACK FOR DETAILS) <input type="checkbox"/> CAP SITE (CD) <input type="checkbox"/> EXCAVATE & DISPOSE (ED) <input type="checkbox"/> REMOVE FREE PRODUCT (FP) <input type="checkbox"/> ENHANCED BIO DEGRADATION (IT) <input type="checkbox"/> CONTAINMENT BARRIER (CB) <input type="checkbox"/> EXCAVATE & TREAT (ET) <input type="checkbox"/> PUMP & TREAT GROUNDWATER (GT) <input type="checkbox"/> REPLACE SUPPLY (RS) <input checked="" type="checkbox"/> VACUUM EXTRACT (VE) <input type="checkbox"/> NO ACTION REQUIRED (NA) <input type="checkbox"/> TREATMENT AT HOOKUP (HU) <input type="checkbox"/> VENT SOIL (VS) <input type="checkbox"/> OTHER (OT)				
COMMENTS	CASE CLOSED 01/24/97.				



## INSTRUCTIONS

### EMERGENCY

Indicate whether emergency response personnel and equipment were involved at any time. If so, a Hazardous Material Incident Report should be filed with the State Office of Emergency Services (OES) at 2800 Meadowview Road, Sacramento, CA 95832. Copies of the OES report form may be obtained at your local underground storage tank permitting agency. Indicate whether the OES report has been filed as of the date of this report.

### LOCAL AGENCY ONLY

To avoid duplicate notification pursuant to Health and Safety code Section 25180.5, a government employee should sign and date the form in this block. A signature here does not mean that the leak has been determined to pose a significant threat to human health or safety, only that notification procedures have been followed if required.

### REPORTED BY

Enter your name, telephone number, and address. Indicate which party you present and provide company or agency name.

### RESPONSIBLE PARTY

Enter name, telephone number, contact person, and address of the party responsible for the leak. The responsible party would normally be the tank owner.

### SITE LOCATION

Enter information regarding the tank facility. At a minimum, you must provide the facility name and full address.

### IMPLEMENTING AGENCIES

Enter names of the local agency and Regional Water Quality Control Board involved.

### SUBSTANCES INVOLVED

Enter the name and quantity lost of the hazardous substance involved. Room is provided for information on two substances if appropriate. If more than two substances leaked, list the two of most concern for cleanup.

### DISCOVERY/ABATEMENT

Provide information regarding the discovery and abatement of the leak.

### SOURCE/CAUSE

Indicate source(s) of leak. Check box(es) indicating cause of leak.

### CASE TYPE

Indicate the case type category for this leak. Check one box only. Case type is based on the most sensitive resource affected. For example, if both soil and ground water have been affected, case type will be "Ground Water". Indicate "Drinking Water" only if one or more municipal or domestic water wells have actually been affected. A "Ground Water" designation does not imply that the affected water cannot be, or is not, used for drinking water, but only that water wells have not yet been affected. It is understood that case type may change upon further investigation.

### CURRENT STATUS

Indicate the category which best describes the current status of the case. Check one box only. The response should be relative to the case type. For example, if case type is "Ground Water", then "Current Status" should refer to the status of the ground water investigation or cleanup, as opposed to that of soil. Descriptions of options follow:

No Action Taken - No action has been taken by responsible party beyond initial report of leak.

Leak Being Confirmed - Leak suspected at site, but has not been confirmed.  
Preliminary Site Assessment Workplan Submitted - workplan/proposal requested of/submitted by responsible party to determine whether ground water has been, or will be, impacted as a result of the release.  
Preliminary Site Assessment Underway - implementation of workplan.  
Pollution Characterization - responsible party is in the process of fully defining the extent of contamination in soil and ground water and assessing impacts on surface and/or ground water.  
Remediation Plan - remediation plan submitted evaluating long term remediation options. Proposal and implementation schedule for appropriate remediation options also submitted.  
Cleanup Underway - implementation of remediation plan.  
Post Cleanup Monitoring in Progress - periodic ground water or other monitoring at site, as necessary, to verify and/or evaluate effectiveness of remedial activities.  
Case Closed - regional board and local agency in concurrence that no further work is necessary at the site.

IMPORTANT: THE INFORMATION PROVIDED ON THIS FORM IS INTENDED FOR GENERAL STATISTICAL PURPOSES ONLY AND IS NOT TO BE CONSTRUED AS REPRESENTING THE OFFICIAL POSITION OF ANY GOVERNMENTAL AGENCY

### REMEDIAL ACTION

Indicate which action have been used to cleanup or remediate the leak. Descriptions of options follow:

Cap Site - install horizontal impermeable layer to reduce rainfall infiltration.  
Containment Barrier - install vertical dike to block horizontal movement of contaminant.  
Excavate and Dispose - remove contaminated soil and dispose in approved site.  
Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming).  
Remove Free Product - remove floating product from water table.  
Pump and Treat Groundwater - generally employed to remove dissolved contaminants.  
Enhanced Biodegradation - use of any available technology to promote bacterial decomposition of contaminants.  
Replace Supply - provide alternative water supply to affected parties.  
Treatment at Hookup - install water treatment devices at each dwelling or other place of use.  
Vacuum Extract - use pumps or blowers to draw air through soil.  
Vent Soil - bore holes in soil to allow volatilization of contaminants.  
No Action Required - incident is minor, requiring no remedial action.

COMMENTS - Use this space to elaborate on any aspects of the incident.

SIGNATURE - Sign the form in the space provided.

### DISTRIBUTION

If the form is completed by the tank owner or his agent, retain the last copy and forward the remaining copies intact to your local tank permitting agency for distribution.

1. Original - Local Tank Permitting Agency
2. State Water Resources Control Board; Division of Clean Water Programs, Underground Storage Tank Program, P.O. Box 944212, Sacramento, CA 94244-2120
3. Regional Water Quality Control Board
4. Local Health Officer and County Board of Supervisors or their designee to receive Proposition 65 notifications.
5. Owner/responsible party.



# Case Closure Summary

## Leaking Underground Fuel Storage Tank Program

### I. Agency Information

Date: November 27, 1996

Agency Name: KERN COUNTY ENVIRONMENTAL HEALTH SERVICES DEPT.	Address: 2700 "M" STREET, SUITE 300
City/State/Zip: BAKERSFIELD, CA 93301	Phone: (805) 862-7800
Responsible Staff Person: Brian Pitts	Title: HAZARDOUS MATERIALS SPECIALIST

### II. Case Information

Site Facility Name: Baldwin Farms				
Site Facility Address: 3151 Engle Road, Bakersfield CA				
RB LUSTIS Case No:		Local Case No: 320061		LOP Case No:
URF filing date:		SWEEPS No:		
Responsible Parties		Addresses		Phone Numbers
BS Baldwin Farms		2468 Whitney Drive, Mountain View, CA 94043		415-967-8086
Tank No.	Size in Gal.	Contents	Closed in-Place/Removed	Date
1	500	gasoline	removed	November 26, 1991
2				
3				

### III. Release and Site Characterization Information

Cause and type of release: unk			
Site characterization complete? Yes-X No		Date approved by oversight agency: July 15, 1996	
Monitoring Wells Installed? Yes-X No		Number: 3	Proper screened interval? Yes-X No
Highest GW depth below ground surface: 150		Lowest depth: unk	Flow direction: unk
Most Sensitive Current Use: agriculture			
Are drinking water wells affected? Yes No-X		Aquifer name:	
Is surface water affected? Yes No-X		Nearest/affected SW name: unk	
Off-site beneficial use impacts (addresses/locations): none			
Report(s) on file? Yes-X No		Where is report(s) filed? KCEHSD 2700 M Street, suite 300, Bakersfield, CA 93301	
Treatment and Disposal of Affected Material			
Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	1	removed and transported to Golden State Metals	11-26-91
Piping	0		
Free Product	200 gallons	pumped and transported to Gibson Refinery, Bakersfield	1993/94
Soil	0		
Groundwater	unk		
Barrels			



## Case Closure Summary

Page 2

### Leaking Underground Fuel Storage Tank Program

### III. Release and Site Characterization Information (continued)


Maximum Documented Contaminant Concentrations - - Before and After Cleanup									
Contaminant	Soil (ppm)		Water (ppm)		Contaminant	Soil (ppm)		Water (ppm)	
	Before	After	Before	After		Before	After	Before	After
TPH (Gas)	38,700	17	free prod	*	Xylene	3,188	3.5	free prod	*
TPH (Diesel)	na	na	na		Ethylbenzene	920.	0.6	free prod	*
Benzene	168	nd	free prod	*	Oil & Grease	na	na	na	
Toluene	1,911	1.7	free prod	*	Heavy metals	na	na	na	
Other					Other				

**Comments (Depth of Remediation, etc.):** It appears that a plume extended to a small, perched aquifer located about 75 feet below grade. Free product was discovered and subsequently removed. Initially, the VES extracted free product, and later it extracted vapor phase hydrocarbons. In the process it appears that the small perched zone was pumped dry. Consequently, there is no groundwater remaining to test. The VES was operated from October 1993 to March 1996. Confirmation borings were drilled in 1994 and indicated that VES must continue. An additional confirmation boring was advanced in March 1996. The confirmation boring documented that the contamination had been swept from the sands and minor residual contamination remains in the underlying silt layer.

### IV. Closure

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes-X No		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes-X No		
Does corrective action protect public health for current land use? Yes-X No		
Site management requirements: none		
Should corrective action be reviewed if land use changes? Yes No-X		
Monitoring Wells Decommissioned: Yes-X No	Number Decommissioned: 3	Number Retained: 0
List enforcement actions taken: none		
List enforcement actions rescinded: none		

### V. Local Agency Representative Data

Name: Brian Pitts	Title: Hazardous Materials Specialist
Signature: 	Date: November 27, 1996

### VI. RWQCB Notification

Date Submitted to RB: 11-27-96	RB Response: NONE
RWQCB Staff Name: JOHN NOONAN	Date: 1-27-97

### VII. Additional Comments, Data, etc.

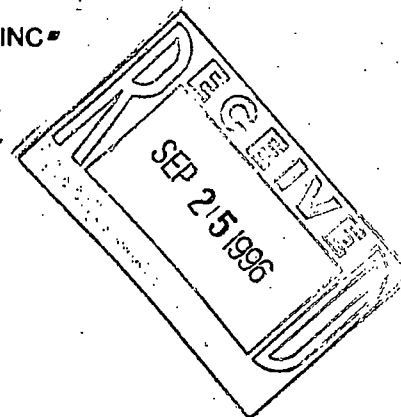
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September 23, 1996 "ADVANCED ENVIRONMENTAL CONCEPTS INC."

Mr. Brian Pitts  
Kern County Environmental Health Department  
2700 "M" Street, Suite 300  
Bakersfield, CA 93301



RE: 1994 Confirmation Borings Performed  
at the Baldwin Farms facility located  
at 3151 Engle Road, Bakersfield Ca.

Dear Mr. Pitts,

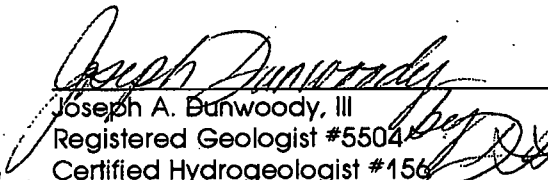
Please find enclosed the laboratory data sheets, Chain-Of-Custody documents, and boring logs for the confirmation soil borings CB-1 and CB-2 advanced in March, 1994 at the above stated facility. A brief summary of the rationale for the borings and the results is provided below.

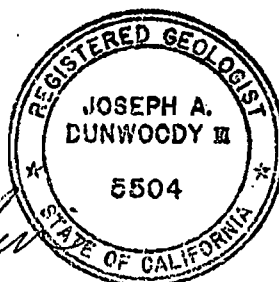
- The borings were advanced to provide information explaining why higher than expected LEL measurements were being recorded along with product condensate collecting in the water knock-out system.
- The borings were not advanced to define the limits of the plume, i.e. depth, that was already established by a series of previous borings during which the deepest boring was advanced to 110 feet BGL. Details of those activities can be reviewed in the respective reports.
- When the boring reached a depth of 75 feet BGL in CB-1 free product was encountered and extremely high concentrations were detected in CB-2 around 55 feet BGL.
- In order for product to collect in the soil it must be trapped/stopped by an underlying substrate that has no effective permeability. To drill through this substrate would risk losing the perched product to the underlying sediments and possibly contaminating the groundwater.
- The borings were converted into vapor extraction wells and connected to the remediation system, put on line, and the free product was removed via the vapor extraction system and disposed of.

If you have any questions or require additional information, please contact me at (805) 831-1646.

Sincerely,

Advanced Environmental Concepts, Inc.

  
Joseph A. Dunwoody, III  
Registered Geologist #5504  
Certified Hydrogeologist #156



LETR232

• ENVIRONMENTAL CONCEPTS WITH DESIGN IN MIND •



WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL BLOWCOUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	—				
	—				
	—				
	5	0			
	—				
	—				
	10	0			
	—				
	—				
	15	0	18 22 25	SP	POORLY GRADED SAND (SP): Light to Yell brown, 10% silt, moderately dense, moist, tr mica, no odor, R dilatancy.
	—				
	20	0	32 32 36	SP	Same
	—				
	25	0	GRAB	SP	SAND (SP): Reddish-brown, moderately dense, unconsolidated, finegrained, slightly moist, no apparent hydrocarbon odor.
	—				
	30	25	29 25 30	ML	SILT (ML): Brown, slightly compact, clayey in part, moist, tr sand.

**AEC** ADVANCED ENVIRONMENTAL CONCEPTS  
P.O. BOX 40872 BAKERSFIELD, CA 93384

## WELL/BORING LOG

1 of 2

PROJECT	Baldwin Farms	LOCATION	3151 Engle Road, Bakersfield, California
WELL/BORING NO.	CB-1	SURFACE ELEVATION	
DATE DRILLED	3/15/94	LOGGED BY	J. Dunwoody
DRILLING COMPANY	S B & S	DRILLER	Vern Smith
BORE HOLE DIAMETER	8 INCH	TOTAL DEPTH	75'
CASING TYPE		SCHEDULE	
SCREEN TYPE		SLOT SIZE	
FILTER PACK TYPE			
SURFACE SEAL TYPE			
NOTES			

WELLHEAD ELEVATION	N/A	REVIEWED BY	J. DUNWOODY
METHOD	HOLLOW STEM AUGER		
DEPTH TO WATER: INITIAL	N/A	STATIC	N/A
INTERVAL	N/A	TO	N/A
INTERVAL	N/A	TO	N/A
INTERVAL	N/A	TO	N/A
INTERVAL	N/A	TO	N/A



WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL COUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	35	10	29 33 39	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, no odor.
	40	30	32 34 39	SM/ML	SILTY SAND/SILT (SM?ML): redbrown to yell brn, 50% sand, 50% silt, tr. clay, dense, stiff, moist, faint hydrocarbon odor.
	45	10	24 29 33	SP	SAND (SP): Yell-brown, sub ang - sub md, moderately dense, unconsolidated, 10% finegrained, moist.
	50	30	38 40 45	SP	SAND (SP): Yell to Reddish-brown, sub ang-sub md, moderately dense, unconsolidated, finegrained, moist, hydrocarbon odor.
	55	80	32 29 36	SP	SAME
	60	150	28 28 33	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, hydrocarbon odor.
	65	400	43 39 45	SW	SAME

**AEC** ADVANCED ENVIRONMENTAL CONCEPTS  
P.O. BOX 40672 BAKERSFIELD, CA 93384

## WELL/BORING LOG

2 of 3


PROJECT Baldwin Farms

LOCATION 3151 Engle Road, Bakersfield, California

WELL/BORING NO.

**CB-1**



WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL VCOUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	70	10	28 33 41	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, no odor.
	75	60	35 39 48	ML	SILT (ML): Yell-brown to brn, dense, moist, tr sand, slight petroleum odor, FeOx staining.
	80				
	85				
	90				
	95				
	100				

**AEC** ADVANCED ENVIRONMENTAL CONCEPTS  
P.O. BOX 40672 BAKERSFIELD, CA 93384

## WELL/BORING LOG

3 of 3

PROJECT Baldwin Farms

LOCATION 3151 Engle Road, Bakersfield, California

WELL/BORING NO.

CB-1



WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL W/COUNT	U.S.C.S. LOG	LIT. LOGIC DESCRIPTION
	5				
	10				
	15	0	18 32 25	SP	POORLY GRADED SAND (SP): Light to Yell brown, 10% silt, moderately dense, moist, tr mica, no odor, R dilatancy.
	20	0	GRAB	SP	Same
	25	0	GRAB	SP	SAND (SP): Reddish-brown, moderately dense, unconsolidated, finegrained, slightly moist, no apparent hydrocarbon odor.
	30	25	29 25 30	ML	SILT (ML): Brown, slightly compact, clayey in part, moist, tr sand.

**AEC** ADVANCED ENVIRONMENTAL CONCEPTS  
P.O. BOX 40672 BAKERSFIELD, CA 93384

## WELL/BORING LOG

1 of 2

PROJECT Baldwin Farms LOCATION 3151 Engle Road, Bakersfield, California

WELL/BORING NO. CB-2 SURFACE ELEVATION \_\_\_\_\_ WELLHEAD ELEVATION N/A

DATE DRILLED 3/15/94 LOGGED BY J. Dunwoody REVIEWED BY J. DUNWOODY

DRILLING COMPANY S B & S DRILLER Vern Smith METHOD HOLLOW STEM AUGER

BORE HOLE DIAMETER 8 INCH TOTAL DEPTH 75' DEPTH TO WATER: INITIAL N/A STATIC N/A

CASING TYPE \_\_\_\_\_ DIAMETER \_\_\_\_\_ SCHEDULE \_\_\_\_\_ INTERVAL N/A TO N/A

SCREEN TYPE \_\_\_\_\_ DIAMETER \_\_\_\_\_ SLOT SIZE \_\_\_\_\_ INTERVAL N/A TO N/A

FILTER PACK TYPE \_\_\_\_\_ INTERVAL N/A TO N/A

SURFACE SEAL TYPE \_\_\_\_\_ INTERVAL N/A TO N/A

NOTES \_\_\_\_\_



WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL COUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	35	1500	29 33 39	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, no odor.
	40	300	32 34 39	SM/ML	SILTY SAND/SILT (SM?ML): redbrown to yell brn, 50% sand, 50% silt, tr. clay, dense, stiff, moist, faint hydrocarbon odor.
	45	10	24 29 33	SP	SAND (SP): Yell-brown, sub ang - sub md, moderately dense, unconsolidated, 10% finegrained, moist.
	50	30	38 40 45	SP	SAND (SP): Yell to Reddish-brown, sub ang - sub md, moderately dense, unconsolidated, finegrained, moist, hydrocarbon odor.
	55	+2000	32 29 36	SP	SAME
	60	150	28 28 33	ML	SILT (ML): Brown, slightly compact, clayey in part, moist, tr sand,
	65	400	43 39 45	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, hydrocarbon odor.

**AEC** ADVANCED ENVIRONMENTAL CONCEPTS  
P.O. BOX 40672 BAKERSFIELD, CA 93384

## WELL/BORING LOG

2 of 3

PROJECT Baldwin Farms

LOCATION 3151 Engle Road, Bakersfield, California

WELL/BORING NO.

**CB-2**



WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL COUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	70	0	45 49 50	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, hydrocarbon odor.
	75				
	80				
	85				
	90				
	95				
	100				

**AEC** ADVANCED ENVIRONMENTAL CONCEPTS  
P.O. BOX 40672 BAKERSFIELD, CA 93384

## WELL/BORING LOG

3 of 3

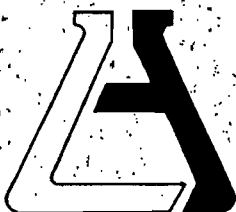
PROJECT Baldwin Farms

LOCATION 3151 Engle Road, Bakersfield, California

WELL/BORING NO.

**CB-2**





# ASSOCIATED LABORATORIES

806 North Batavia - Orange, California 92668 - 714/771-6900

FAX 714/538-1209

## CLIENT

Advanced Environmental Concept (4283)  
Attn: Jon Buck  
4400 Ashe Road  
Suite #206  
Bakersfield, CA 93313

LAB NO. G69296-01  
REPORTED 03/28/94

## SAMPLE

Soil

RECEIVED

03/17/94

## IDENTIFICATION

Baldwin Farm  
Date Collected 03/15/94  
As Submitted

## BASED ON SAMPLE

Total Hydrocarbons  
(TPH DHS) (mg/kg)  
-Gasoline

CB1-65'

560

CB1-70'

ND< 5

CB1-75'

34,700

Benzene (mg/kg)

4.7

ND< 0.005

230

Toluene (mg/kg)

37

ND< 0.005

1,900

Ethylbenzene (mg/kg)

5.1

ND< 0.005

320

Total Xylenes  
(8020) (mg/kg)

70

ND< 0.015

4,400

Date Analyzed: 03/25/94

ASSOCIATED LABORATORIES, by:-

Edward S. Behare, Ph.D.  
Vice President

ESB/ql

NOTE: Unless notified in writing, all samples will be discarded  
by appropriate disposal protocol 30 days from date reported.

TESTING & CONSULTING

Chemical

Microbiological

Environmental

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# ASSOCIATED LABORATORIES

806 North Batavia - Orange, California 92668 - 714/771-6900

FAX 714/538-1209

## CLIENT

Advanced Environmental Concept (4283)  
Attn: Jon Buck  
4400 Ashe Road  
Suite #206  
Bakersfield, CA 93313

LAB NO. G69296-02

REPORTED 03/28/94

SAMPLE Soil

RECEIVED 03/17/94

IDENTIFICATION Baldwin Farm  
Date Collected 03/15/94  
BASED ON SAMPLE As Submitted

Total Hydrocarbons  
(TPH DHS) (mg/kg)  
-Gasoline

CB2-35'

3,490

CB2-55'

38,700

CB2-70'

ND< 5

Benzene (mg/kg)

2.75

530

ND< 0.005

Toluene (mg/kg)

190

2,800

ND< 0.005

Ethylbenzene (mg/kg)

301

360

ND< 0.005

Total Xylenes  
(8020) (mg/kg)

440

4,800

ND< 0.015

Date Analyzed: 03/25/94

ASSOCIATED LABORATORIES, by:

Edward S. Behare, Ph.D.  
Vice President

ESB/ql

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 30 days from date reported.

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TESTING & CONSULTING

Chemical  
Microbiological  
Environmental



# ASSOCIATED LABORATORIES

\* COMMITMENT TO QUALITY \*

## QUALITY CONTROL /QUALITY ASSURANCE REPORT G62421

QA/QC CONTROL NO. G62419-1

INSTRUMENT LOGBOOK Hyd 1-6

DATE G62419-1 ANALYZED Nov 4 1993

I.L.B. PAGE LOCATION 14

DATE G62421 ANALYZED Nov 4 1993

SAMPLE LOG PAGE LOCATION 31

EPA 8015M/D.H.S. L.U.F.T. REPORTING UNITS mg/kg SAMPLE MATRIX soil

COMPOUND	SR	SR1	RPD	S.A.	SSR	SSR1	%RE	%RE1	RPD	BLK
GASOLINE	0	0	0	5	4.715	5.162	94.3	103.2	8.9499	0
DIESEL										

AVERAGE

0

94.3

103.2

8.9499

SR----- SAMPLE  
 SR1----- SAMPLE DUPLICATE  
 RPD----- RELATIVE PERCENT DIFFERENCE  
 S.A.----- ANALYTE SPIKE IN SAMPLE MATRIX  
 SSR----- SPIKE RECOVERED AND SAMPLE 'SR'  
 SSR1----- SPIKE RECOVERED AND SAMPLE 'SR1'  
 %RE----- PERCENT RECOVERY OF SPIKE IN 'SR'  
 %RE1----- PERCENT RECOVERY OF SPIKE IN 'SR1'  
 BLK----- ANALYTE CONCENTRATION DETECTED IN LAB BLANK  
 99%----- UPPER/LOWER CONTROL LIMIT  
 95%----- UPPER/LOWER WARNING LIMIT  
 s----- STANDARD DEVIATION  
 2s----- 2 x STANDARD DEVIATION (WARNING LIMIT)  
 3s----- 3 x STANDARD DEVIATION (CONTROL LIMIT)  
 MEAN-- TIME WEIGHTED AVERAGE OF SPIKE RECOVERY

SURROGATE SPIKE DATE  
 BENZENYL FLUORIDE SPIKE CONCENTRATION OF  
 WITH A RECOVERY OF  
 BENZENYL FLUORIDE RECOVERY LIMITS OF TO

PASS / NO PASS

DATE TYPED Nov 10 1993

B133201

ACTION TAKEN

SPIKE SOURCE SH-R

STANDARD LOT NO.

603082393

ANALYST Danielle Lujan

QA / QC COMPILER

*[Signature]*



# ASSOCIATED LABORATORIES

\* COMMITMENT TO QUALITY \*

## QUALITY CONTROL /QUALITY ASSURANCE REPORT G62421

QA/QC CONTROL NO. G62419-1

INSTRUMENT LOGBOOK Hyd 1-6

DATE G62419-1 ANALYZED Nov 4 1993

I.L.B. PAGE LOCATION 14

DATE G62421 ANALYZED Nov 4 1993

SAMPLE LOG PAGE LOCATION 24

EPA 8020

REPORTING UNITS mg/kg

SAMPLE MATRIX soil

COMPOUND	SR	SR1	RPD	S.A.	SSR	SSR1	%RE	%RE1	RPD	BLK
BENZENE	0	0	0	0.05	0.0454	0.0439	90.8	87.8	3	0
TOLUENE	0	0	0	0.05	0.048	0.0516	96	103.2	7.2	0
ETHYLBENZENE	0	0	0	0.05	0.0464	0.0472	92.9	94.5	1.6	0
XYLENES	0	0	0	0.15	0.1587	0.1591	105.8	106.1	0.3	0
CHLOROBENZENE										
1,2-DICHLOROBENZENE										
1,3-DICHLOROBENZENE										
1,4-DICHLOROBENZENE										
AVERAGE	0						96.4	97.9	1.5	

SR----- SAMPLE  
 SR1----- SAMPLE DUPLICATE  
 RPD----- RELATIVE PERCENT DIFFERENCE  
 S.A.----- ANALYTE SPIKE IN SAMPLE MATRIX  
 SSR----- SPIKE RECOVERED AND SAMPLE 'SR'  
 SSR1----- SPIKE RECOVERED AND SAMPLE 'SR1'  
 %RE----- PERCENT RECOVERY OF SPIKE IN 'SR'  
 %RE1----- PERCENT RECOVERY OF SPIKE IN 'SR1'  
 BLK----- ANALYTE CONCENTRATION DETECTED IN LAB BLANK  
 99%----- UPPER/LOWER CONTROL LIMIT  
 95%----- UPPER/LOWER WARNING LIMIT  
 s----- STANDARD DEVIATION  
 2s----- 2 x STANDARD DEVIATION (WARNING LIMIT)  
 3s----- 3 x STANDARD DEVIATION (CONTROL LIMIT)  
 MEAN-- TIME WEIGHTED AVERAGE OF SPIKE RECOVERY

SURROGATE SPIKE DATE  
 BENZENYL FLUORIDE SPIKE CONCENTRATION OF 150 ng  
 WITH A RECOVERY OF 110 %  
 BENZENYL FLUORIDE RECOVERY LIMITS OF 81 % TO 129 %

PASS / NO PASS

DATE TYPED Nov 10 1993

A133201

ACTION TAKEN

SPIKE SOURCE EPA Repository Dil.

STANDARD LOT NO. BTX 40893

ANALYST Danielle Lujan

QA / QC COMPILER



# CHAIN-OF-CUSTODY RECORD

Client AEC Date 3/15/94

Project Name Baldwin Farm Client Project#

Project Address Engle Road Turn Around Requested:

Bakersfield CA

Sampler's Signature [Signature]

☐ 24-Hour-Rush

☐ 48-Hour-Rush

☒ Normal

☐ Mobile Lab

Analysis Requested

LAB Project #

Page 1 of 1

Lab Use Only.  
Sample Condition as received:

Chilled Yes / No

Sealed Yes / No

Number of Containers

Container / Comments

Sample	Sample Location	Date	Time	Laboratory Sample Number	Sample Matrix: Soil(S) Sludge(SL), Aqueous(A)	TPH	BTEX											
CB1-65	cond. Boring 1. S.T.P	3/15/94				1	1											
CB1-70	" " "					1	1											
CB1-75	" " "					1	1											
CB2-35	cond. Boring 2.					1	1											
CB2-55						1	1											
CB2-70						1	1											

1 Relinquished by: (Signature) [Signature] Date 3/16/94 Time 16:00

Company: AEC

2 Received by: (Signature) [Signature] Date 3-17 Time 11:15

Company: ASSOC. LABS

3 Relinquished by: (Signature) [Signature] Date 3-17 Time 4:15

Company: ASSOC. LABS

4 Received by Laboratory: (Signature) [Signature] Date 3-17-94 Time 4:30 pm

Company: ASSOC. LABS

Total Number of Containers

**AEC**

ADVANCED ENVIRONMENTAL CONCEPTS INC.

805 / 831-1648  
FAX 805 / 831-1771

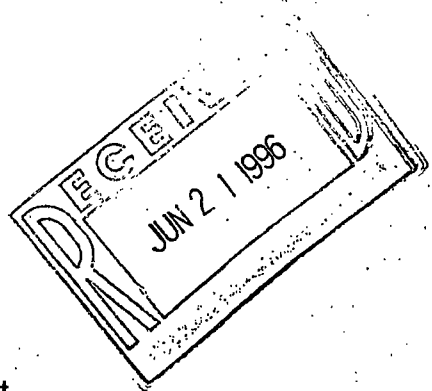
4400 ASHE ROAD #206  
BAKERSFIELD, CA 93313





June 20, 1996

Mr. Brian Pitts  
Kern County  
Environmental Health Services Department  
2700 "M" Street, Suite 300  
Bakersfield, California 93301



Regarding: **Confirmation Boring Assessment Report**  
Baldwin Farms  
3151 Engle Road  
Bakersfield, California

Dear Mr. Pitts:

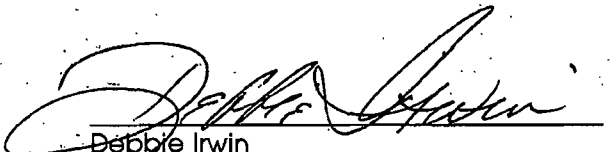
**Advanced Environmental Concepts, Inc. (AEC)** has prepared the Confirmation Boring Assessment Report for the above referenced project/location.

Enclosed please find that report, which AEC is submitting for review.

Should you have any questions or require clarification on any aspects of the enclosed, please do not hesitate to contact our office at (805) 831-1646.

Respectfully yours,

**Advanced Environmental Concepts, Inc.**

  
Debbie Irwin  
Project Coordinator / Office Administrator

Attachments: Report (1)

Distribution: 1/ Addressee - REG MAIL  
1/ Mr. Barrett Baldwin  
1/ Bksfld File




ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

KERN COUNTY

Office Memorandum

February 5, 1996

TO: Joe Canas, HMS IV  
FROM: Brian Pitts, HMS II   
SUBJECT: BALDWIN FARM; COLT# 320061

Enclosed is a copy of a letter from Mr. Barrett Baldwin JR. He is the son of the former owner of Baldwin Farms, Barrett Baldwin Sr. Mr. Baldwin Sr. passed on and his son is apparently handling the estate.

Mr. Barrett Baldwin Jr. is understandably upset for what he perceives as a waste of money at his site. Apparently he has received a copy of a newspaper article that discusses changes in the state policy towards contaminated sites. He has erroneously concluded that if the leak was discovered today his site would be exempt from remediation and possibly even an assessment.

He should be made aware that:

1. Contaminated sites must be assessed and sites that have free-product on groundwater should get top priority for remediation. Free product was discovered floating on water when this site was assessed. Consequently remediation was begun. This would most likely have been the same course of action if the contamination was discovered today.
2. He was denied access to funding because the farm lobby exempted small farm tanks from regulatory oversight during the operational life of the tank. Unfortunately, his tank leaked and they remain liable for damages but had no opportunity to access the reimbursement program.



The status of the case is as follows:

1. Free product and water were discovered at approximately eighty-five feet below grade. Two-hundred gallons of free product were pumped as liquid phase. The vapor extraction system removed over 26,280 pounds (3982 gallon equivalent) of fuel to 12-94. The system was changed over to a charcoal canister system that had been running intermittently. The consultant concluded that the system was at the economic limit for operation and introduced liquid nutrients into the zone for microbial enhancement, in accord with the approved remediation plan.
2. The project is approaching the point where a post-remediation boring(s) is necessary for evaluating the project. The consultant is concerned that the remaining contamination is in excess of LUFT recommendations and that, because of recent newspaper articles, his client will not pay for additional remediation.

My recommendation is to evaluate the post-remediation data and consider the case closeable if the data shows that the plume is below saturation and therefore immobile.

CC:

colt\baldwin.mem



**ENVIRONMENTAL HEALTH SERVICES DEPARTMENT**

**STEVE McCALLEY, R.E.H.S., Director**  
2700 "M" STREET, SUITE 300  
BAKERSFIELD, CA 93301  
Phone: (805) 862-8700  
FAX: (805) 862-8701



**SOURCE MANAGEMENT AGENCY**

**DAVID PRICE III, RMA DIRECTOR**  
Engineering & Survey Services Department  
Environmental Health Services Department  
Planning Department  
Roads Department

February 7, 1996

Mr. Barrett S. Baldwin Jr.  
B S Baldwin Farms, Inc.  
2468 Whitney Drive  
Mountain View, CA 94043

**SUBJECT:** LOCATION: 3151 ENGLE ROAD, BAKERSFIELD, CA  
KNOWN AS: BALDWIN DAIRY  
PERMIT #: 320061

Dear Mr. Baldwin:

We are in receipt of your letter dated January 23, 1996. In light of media articles regarding a recent study by the Lawrence Livermore National Laboratory (LLNL), it is understandable that you may feel that the assessment and remediation of contamination at your site is without merit. What may have been lost in your sources of information is that little if anything would be different had the contamination at this site been discovered today.

The LLNL report concluded, in part, that stabilized "soils-only cases" that have contamination below saturation levels can be considered "low risk" and closed. Their conclusion is consistent with the view held by this Department for years. Under the anticipated new guidelines from the state, prompted by the LLNL report, your site still would not be considered "low-risk" because of the occurrence of liquid gasoline eighty-five feet below grade and the presence of a nearby water well.

Your project is coming to its natural conclusion. Our recommendation is to proceed with the post-remediation assessment to verify that the liquid phase contamination has been removed. Additionally, it is important to determine to what degree the unsaturated contamination has been eliminated or reduced and thereby rendered immobile. If the confirmation boring(s) demonstrate that the contamination is immobile then the site can be regarded as "low risk" and considered for closure. Please have your contractor make the necessary arrangements and notify this Department before proceeding.



Mr. Barrett S. Baldwin Jr.  
Re: Baldwin Dairy  
February 7, 1996  
Page 2

Call me at (805) 862-8758 if you have any questions, or if you feel that a meeting would be beneficial.

Sincerely,

Steve McCalley, Director



By: Brian Pitts  
Hazardous Materials Specialist II  
Hazardous Materials Management Program

BP:ch

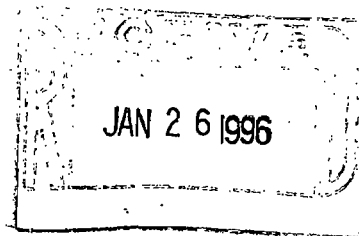
cc: Ms. Patricia Cederwall

File  
AEC

pitts\baldwin8



JANUARY 23, 1996



STEVE McCALLEY, R.E.H.S.  
DIRECTOR

SUBJECT: AFFECT OF NEW STATE RESOURCES CONTROL BOARD GUIDELINES  
ON PERMIT #320061, LOCATION 3151 ENGLE ROAD, BKSFD, CA

DEAR MR McCALLEY:

NATURALLY, WE ARE DISAPPOINTED TO LEARN THAT THE VAPOR  
EXTRACTION PROJECT ON WHICH WE HAVE SPENT \$105,777.79 IS NOW  
REGARDED AS NOT COST EFFECTIVE. HOWEVER, WE REALIZE THAT THE  
ACTION WAS NECESSARY ACCORDING TO THE GUIDELINES AVAILABLE IN  
PREVIOUS YEARS.

IT WAS ALSO A DISAPPOINTMENT THAT OUR APPLICATION TO THE  
UST CLEANUP FUND WAS DENIED BECAUSE OUR 500 GALLON TANK (WHICH  
WAS NOT USED FOR 8 YEARS PRIOR TO REMOVAL) DOES NOT FIT THE  
DESCRIPTION OF UST (COPY OF LETTER ENCLOSED).

WE WOULD GREATLY APPRECIATE HAVING OUR CASE AGRESSIVELY  
CLOSED AS SOON AS POSSIBLE ACCORDING TO PRESENT GUIDELINES.

SINCERELY,

*Barrett S Baldwin Jr*  
BARRETT S BALDWIN JR,  
PRESIDENT  
B S BALDWIN FARMS, INC.  
2468 WHITNEY DRIVE  
MOUNTAIN VIEW, CA 94043

cc: ADVANCED ENVIRONMENTAL CONCEPTS

TRICIA OTTESEN



# ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

STEVE McCALLEY, R.E.H.S.  
DIRECTOR



2700 "M" Street, Suite 300  
Bakersfield, CA 93301  
(805) 861-3636  
(805) 861-3429 FAX

January 23, 1995

Ms. Patricia Cederwall  
886 Loyola Way  
Livermore, CA 94550

SUBJECT: LOCATION: 3151 ENGLE ROAD, BAKERSFIELD, CA  
KNOWN AS: BALDWIN DAIRY  
PERMIT #: 320061

Dear Ms. Cederwall:

A file review has revealed that this Department has not received a progress report for remediation at the subject location. Please have your consultant provide one within thirty days of receipt of this letter.

Call me at (805) 861-3636, Extension 8758, if you have any questions or if you feel that a meeting would be beneficial.

Sincerely,

Steve McCalley, Director

A handwritten signature in cursive script, appearing to read "Brian Pitts".

By: Brian Pitts  
Hazardous Materials Specialist  
Hazardous Materials Management Program

BP:jrw

cc: (File)  
AEC

(hm\pitts\baldwin5)





Advanced Environmental Concepts, Inc. is pleased to present the following:

## CONFIRMATION BORING ASSESSMENT REPORT

for

Baldwin Farms  
3151 Engle Road  
County of Kern • Bakersfield, California

This report has been prepared for:

Mr. Barrett Baldwin  
Baldwin Farms

Prepared: June 1996



Table of Contents

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2.0 BACKGROUND	1
3.0 SITE CHARACTERISTICS	4
3.1 Site Description	4
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3.4 Hydrogeology	5
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7.0 CONCLUSIONS	8
8.0 RECOMMENDATIONS	9
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Appendices:

- (A) Project Maps / Figures
- (B) Boring Logs
- (C) Laboratory Reports / Chain-of-Custody Documents

Project: AEC 92C-1255



## 1.0 INTRODUCTION

This report presents the results of a confirmation soil investigation conducted by **Advanced Environmental Concepts, Inc. (AEC)** to evaluate the effectiveness of the vapor extraction system (VES) operating at the Baldwin Farm Facility, 3333 Engle Road, Bakersfield, California. The lead agency for this project is the Kern County Environmental Health Services Department (KCEHSD), represented by Mr. Brian Pitts, Hazardous Materials Specialist. The site location is presented on Figure 1.

Contained in this report is background information regarding existing site characteristics, regional geologic and local hydrogeological profiles, and the project history. Also included in the following sections are the objectives and scope of investigation, detailed investigative procedures, and subsequent findings. Finally, AEC provides an evaluation of said findings and makes related conclusions and recommendations. The report appendices contain project maps and figures (**Appendix A**), soil boring logs (**Appendix B**), and laboratory reports/chain-of-custody documents (**Appendix C**).

## 2.0 BACKGROUND

On November 26, 1991 Fortson Construction supervised the excavation, removal, and disposal of one (1) 500-gallon UST from the subject site. Very strong gasoline odors were noted in the soil during the excavation procedures. The analytical results of soil samples collected from below the removed UST are summarized in Table 1.

TABLE 1  
Analytical Results  
Tank Removal - 11/26/91  
(ppm)

Sample I.D.	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene
Baldwin Farms @ 2'	6,700	43	590	1240	170
Baldwin Farms @ 6'	3,900	1	16	434	21

Detection Limit: Various detection limits, refer to laboratory report, dated 12/03/92

ND: Non-detected

TPH-g: Total Petroleum Hydrocarbons as gasoline

After review of the laboratory results the County required that a site assessment evaluating the lateral and vertical extent of hydrocarbon impacted soil be performed.

A total of eight soil borings were advanced, two (B-1, B-2) on February 26, 1992 and six (MW1, MW2, MW3, VE1, VE2, VE3) on December 21-22, by AEC personnel at the subject site. The purpose of the activity was threefold: (1) to evaluate the lateral and vertical extent of hydrocarbon contamination in the soil beneath the former underground tank pit; (2) complete three soil borings as groundwater monitoring wells in order to evaluate groundwater quality beneath the site; and (3) complete three soil borings as vadose extraction wells to facilitate the implementation of a vapor extraction/remedial action system. The boring locations are plotted on Figure 2.



TABLE 2  
Analytical Results  
Soil Borings

Sample I.D.	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene
MW1-20	ND	ND	0.012	ND	ND
MW1-30	ND	ND	ND	ND	ND
MW1-40	ND	ND	ND	ND	ND
MW1-50	ND	ND	ND	ND	ND
MW1-60	ND	ND	ND	ND	ND
MW1-70	ND	ND	ND	ND	ND
MW1-75	ND	ND	ND	ND	ND
MW2-10	ND	ND	ND	ND	ND
MW2-20	ND	ND	ND	ND	ND
MW2-30	ND	ND	ND	ND	ND
MW2-40	ND	ND	ND	ND	ND
MW2-50	ND	ND	ND	ND	ND
MW2-60	ND	0.0080	0.028	0.032	ND
MW2-70	340	6.4	48	73	11
MW2-75	ND	0.024	0.064	0.016	0.016
MW2-80	35	0.44	3.6	3.7	1.6
MW3-20	ND	ND	ND	ND	ND
MW3-30	ND	ND	ND	ND	ND
MW3-40	ND	ND	ND	ND	ND
MW3-50	ND	ND	ND	ND	ND
MW3-60	ND	ND	ND	ND	ND
MW3-70	ND	0.26	0.42	0.54	0.077
MW3-75	ND	ND	ND	ND	ND
MW3-80	ND	0.19	0.024	0.096	0.028
B1 - 20	86	0.097	1.1	25	.59
B1 - 35	500	11	86	81	11
B1 - 50	4400	22	140	413	52
B1 - 65	4300	15	140	342	52
B1 - 75	950	14	100	137	20
B1 - 80	6.9	0.44	0.82	0.74	0.10
B1 - 85	61	2.2	3.6	5.9	0.9
B1 - 90	ND	ND	0.0063	ND	ND
B1 - 95	ND	0.012	0.013	0.063	0.023
B1 - 100	ND	ND	ND	ND	ND
B1 - 105	ND	ND	ND	0.0063	ND
B1 - 110	ND	ND	ND	0.0125	ND
B2 - 10	ND	ND	ND	ND	ND
B2 - 20	27	ND	0.015	0.143	0.0079

Project: AEC 92C-1255

2



TABLE 2 (continued)  
Analytical Results  
Soil Borings

Sample I.D.	TPH-g	Benzene	Toluene	Xylenes	Ethylbenzene
B2 - 30	630	14	90	102	16
B2 - 40	1.9	0.055	0.24	0.200	0.026
B2 - 50	1100	5.1	77	189	26
B2 - 60	12	0.0080	0.047	0.15	0.019
B2 - 70	37	0.84	2.9	6.1	0.92
Detection Limit ( $\mu\text{gm/gm}$ )	1.0	0.005	0.005	0.005	0.005

ND: Non-detected at indicated limit of detection

Upon review of the assessment results KCEHD required that remediation activities be undertaken to obtain acceptable hydrocarbon concentrations. Vapor extraction activities at the site began on October 10, 1993.

Because initial influent vapor concentrations were recorded as high as 100% of LEL it was decided to advance additional soil borings to allow a more accurate estimate of plume size and magnitude. On October 28, 1993 five additional soil borings were advanced, sampled, and completed as vadose wells. Analytical results indicated that hydrocarbon concentrations were greater than 30,000 ppm in soil and liquid phase gasoline was collected in two of the wells. The vadose wells were put on line and the liquid gasoline was removed during the vapor extraction process. The analytical results are summarized in Table 3.

TABLE 3  
Analytical Results - Soil Borings  
October, 1993  
(ppm)

Sample I.D.	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
B-4-40'	ND	ND	ND	ND	ND
B-4-50'	ND	ND	ND	ND	ND
B-4-60'	ND	ND	ND	ND	ND
B-4-70'	7.0	0.7	0.9	0.1	0.6
B-4-80'	ND	ND	ND	ND	ND
B-4-85'	ND	ND	ND	ND	ND
B-5-70'	38,700	168	1,911	920	3,188
B-5-80'	185	ND	7.8	3.3	19
B-6-50'	ND	ND	ND	ND	ND
B-6-70'	61	1.1	6.3	0.8	5.8



TABLE 3 (continued)  
Analytical Results - Soil Borings  
October, 1993  
(ppm)

Sample I.D.	TPH-g	Benzene	Toluene	Ethylbenzene	Xylenes
B-7-40'	7	0.02	0.04	0.01	0.05
B-7-60'	120	0.01	0.06	ND	0.06
B-7-70'	26,000	100	800	330	1,540
B-7-80'	14	0.7	2	0.15	
B-8-70'	ND	ND	ND	ND	ND
B-8-80'	ND	ND	ND	ND	ND
Detection Limit ( $\mu\text{gm/gm}$ )	1.0	0.005	0.005	0.005	0.005

Initial vapor concentrations were measured at 100% of the LEL and within 14 days dropped off to 63% of the LEL. After another fifty one days of operation vapor concentrations dropped off to 21% of the LEL. After allowing the formation to rest for 20 days the LEL returned to 49% then dropped off to 11% after 30 days and below 10% thereafter. Following the previous cycle the wells were isolated and it was determined that VE3 and B7 yielded the highest LEL measurements of 30% and 65%, respectively. For most of 1995 extraction activities have been concentrated on wells VE3 and B7. Both wells responded with increased LEL measurements after periodic rest-stress cycling. VE3 no longer exhibits increased LEL responses to cycling and measures approximately 7% of the LEL and B7 has an attenuated response. This pattern of LEL readings indicate that a reduction in hydrocarbons has occurred and that further remedial activities are no longer costeffective; therefore, AEC is proposing confirmation sampling.

### 3.0 SITE CHARACTERISTICS

The following sections summarize the project site features and conditions along with regional and local geological and hydrological characteristics.

#### 3.1 Site Description

The Baldwin Farm facility is located at the intersection of Engle Road and Wible Road approximately one mile south of the unincorporated area of Pumpkin Center. The general area is comprised of farm property and agriculture related services. The Baldwin Farm is at an average elevation of 341 feet above mean sea level with minimal topographic relief. The property consists of a residence, a barn, and a feed lot area.

#### 3.2 Regional Geology

The subject property is located in the Southern San Joaquin Valley (Valley) which is a part of the Central Valley of California. The Valley forms the southern two-thirds of the Central Valley and is characterized as a broad structural trough. It is bordered on the east by the







Sierra Nevada Range and on the west by the Coast Range (Diablo and Tumbler Mountains). The Valley extends 250 miles southeastward from the confluence of the San Joaquin and Sacramento Rivers to the Tehachapi and San Emigdio Mountains. The width ranges from 25 miles wide near the Kern River to approximately 55 miles wide near the Kings River, with an approximate average width of 40 miles.

Geology of the southern Valley consists of a Pre-Tertiary basement complex overlain by marine and non-marine sedimentary rocks of Tertiary age. These rocks are composed of consolidated sandstones, siltstones and shales which thicken from northeast to southwest. The Valley was once an inland sea of comparatively shallow depth that continued to subside due to the ever increasing load of sediments transported and deposited from higher elevations. These deposits consist of gravels, sands, silts and clays. The majority of the groundwater pumped from the Valley floor occurs within these relatively unconsolidated continental deposits.

### 3.3 Local Geology

The investigated property is located on alluvial deposits, created from sediments transported and deposited by local streams, and during flood stages of the Kern River. The site is situated in a low to moderate energy flood plain environment consisting of weakly consolidated to unconsolidated, poorly bedded sands and silts.

### 3.4 Hydrogeology

Ground and surface water in the central Bakersfield area is regulated by the Kern County Water Agency. According to the Kern County Water Agency "Water Supply Report-1994", depth to groundwater in unconfined and equivalent wells is estimated at ~~150 feet below~~ grade level (BGL) at the site. No perched water bearing zones are reported in the area. The water agency's map showing depth groundwater is presented on Figure 3.

## 4.0 EXTENT OF HYDROCARBON MIGRATION

### 4.1 Soil Plume

The original soil plume as depicted by the analytical results indicated that significant hydrocarbon concentrations extended to a depth of 75 feet BGL with the highest concentrations, in excess of 20,000 ppm, being detected in CB-2 at 55 feet BGL and in CB-1, B5 and B7 between 70 and 75 feet BGL. Maximum plume dimensions are approximately 75 feet deep by 60 feet wide by 150 feet long and forms an elongated, lobate, sub-conical mound that abruptly terminates north of the source (UST) and elongates (flows) south of the source. This lobate shaped plume was contained within a volume of soil that was estimated to be 11,000 cubic yards. The areal extent of the original hydrocarbon plume is shown on Figure 4 and a cross-sectional view is presented on Figure 5.







## 5.0 ASSESSMENT ACTIVITIES

### 5.1 Decontamination Procedures

Prior to initiating drilling operations, the augers and associated drilling equipment were thoroughly cleaned using a high-pressure steam-cleaner. In addition, the soil sampler and hand auger were washed in an Alconox solution and double-rinsed in clean, deionized water prior to initial use and between each sampling interval to minimize the possibility of cross-contamination between samples.

### 5.2 Soil Borings

On March 21, 1996 one soil borings (CB-1) was advanced through the center of the former hydrocarbon plume for the purpose of evaluating the effectiveness of the remedial actions carried out at the subject site. The boring was positioned to evaluate the area of the plume previously identified as having the highest hydrocarbon concentrations. The boring was advanced using a truck-mounted, Mobile B-53 drill rig equipped with 6-inch O.D. continuous-flight, hollow-stem augers. The boring location is plotted on Figure 6.

Soil samples were collected at 30, 40, 50, 60, 70, 75 and 80 feet BGL by driving a thin-walled steel sampler equipped with three 2-inch X 6-inch brass sleeves a minimum of 18 inches into previously undisturbed soil. The sampler was driven ahead of the augers using a 140-lb. slide hammer with a 30-inch vertical fall.

Following each sample drive, the sampler was withdrawn from the borehole and the three brass sleeves were removed. The bottom sleeve was retained for laboratory analysis and prepared by placing Teflon tape and plastic caps over each end, then securing the caps with tape. The samples were labeled, recorded on a chain-of-custody document and placed in an ice chest chilled with Blue Ice and block ice. Soil exposed at each end of the center brass sleeve, as well as the cuttings, were examined for lithological purposes and for any obvious evidence of hydrocarbons. Lithologic descriptions were logged according to the Unified Soils Classification System (USCS) (Appendix B). Chain-of-custody protocol was strictly followed to ensure sample integrity and traceability. Upon completion of the above-described procedures, the three borings were plugged with hydrated bentonite followed by a cement slurry to grade level.

#### 5.2.1 Soils Profile

The soil profile at the site consists of poorly graded sand (SP), well graded sands (SW), well graded sand w/silt (SW-SM), silty sand (SM), silt (ML), and clay (CL) to a total drilled depth of 80 feet BGL. The silty sands (SM) are commonly tan-brown, slightly to very compact, commonly friable, and slightly to moderately moist. The well graded sands (SW) are olive gray-buff, moderately dense, unconsolidated, and slightly moist. The poorly sorted sands (SP) commonly consist of olive-gray to white, moderately to very dense, unconsolidated to very consolidated, and slightly moist.



The sediments are typical of low to moderate energy fluvial deposits subjected to periodic reworking during flood stages. The strata were loosely compacted due to the shallow depth of burial.

## 6.0 ANALYTICAL RESULTS

### 6.1 Soil Analyses

Soil sample analyses were performed by SMC Laboratory, Inc., a California-certified laboratory, to determine the presence and concentration of total petroleum hydrocarbons as gasoline (TPH-g) and volatile aromatics (BTXE) by CA DHS and EPA method 8020. The analytical results are tabulated Table 4, and the laboratory reports are provided in Appendix C.

TABLE 4  
Analytical results - Confirmation Borings  
3/21/96  
(ppm)

Sample I.D.	TPH-g	Benzene	Toluene	Ethylbenzene	Xylene
CB-1-30'	ND	ND	ND	ND	ND
CB-1-40'	ND	ND	ND	ND	ND
CB-1-50'	ND	ND	ND	ND	ND
CB-1-60'	ND	ND	ND	ND	ND
CB-1-70'	ND	ND	ND	ND	ND
CB-1-75'	ND	ND	ND	ND	ND
CB-1-80'	17	ND	1.7	0.60	3.5
Detection Limit (mg/kg)	1.0	0.005	0.005	0.015	0.005

ND: Non detected

TPH-g: Total Petroleum Hydrocarbons as Gasoline

### 6.2 Residual Extent of Hydrocarbons

Analytical results recorded TPH-g concentrations below detectable limits for soil samples CB-30', 40', 50', 60', 70', and 75'. Soil sample CB-80' recorded concentrations of 17 ppm, below detectable limits, 1.7 ppm, 0.60 ppm, and 3.5 ppm for TPH-g and BTEX, respectively. These laboratory results portray a post treatment plume that has undergone a significant volumetric reduction and has the remaining hydrocarbon concentrations in isolated segments. The post treatment plume is shown in comparison to the pre treatment plume on Figure 7.

The highest recorded TPH-g concentrations in the untreated plume was above 30,000 ppm at depths of 55 and 70 feet BGL. A TPH-g concentration below detectable limits were recorded in soil samples CB-1-50', -60', -70', -75' which was collected from the post treatment plume at the same relative position within the plume.



The 80 foot interval which recorded 17 ppm TPH-g is represented by a silt and clayey silt layer which retard a downward fluid migration. Fine sand, silt and clay soil types have a residual capacity for gasoline of 7,500 ppm per cubic foot of soil (API 1989) which is about two and half orders of magnitude greater than the post treatment recorded high of 17 ppm TPH-g collected from this interval. Given the potential residual capacity of the silt layer, the recorded residual concentration and the absence of overlying contaminants it is highly unlikely that any further downward migration will occur or that the underlying groundwater located about 70 feet below the terminus of the residual plume will be impacted.

## 7.0 CONCLUSIONS

Based on the results of the soil and groundwater investigation AEC tenders the following findings:

- In 1989 one UST was removed from the Baldwin Farms facility;
- Analytical results for the soil samples collected during the tank removal activities indicated that an unauthorized release had occurred.
- After all assessment work was performed the hydrocarbon plume in the soil was estimated to extend to a depth of 75 feet BGL with the highest concentration, 38,700 ppm, being detected in CB-2 at 55 feet BGL. Plume dimensions, at their maximum, are approximately 75 feet deep by 60 feet wide by 150 feet long, and forms an elongated, lobate, sub-conical mound that abruptly terminates north of the source (UST) and elongates (flows) south of the source. This lobate shaped plume was contained within a volume of soil estimated to be 11,000 cubic yards.
- A vapor extraction system was installed and operated from October, 1993 to March 1996. Initial vapor concentrations were measured at 100% of the lower explosive limit (LEL) and after sixty one days of operation had dropped off to 21% of the LEL. After allowing the formation to rest for 20 days the LEL returned to 49% then dropped off to 11% after 30 days and below 10% thereafter. The next phase of vapor extraction was to isolate the vacuum on individual wells which returned the LEL measurements to 65%. The isolation process was performed during all of 1995.
- One confirmation boring was advanced through the center of the former hydrocarbon plume and analytical data collected indicate that a TPH-g concentration of 17 ppm was present in CB-1 at 80 feet BGL and below detectable limits for all other samples analyzed. This is a 99%+ (reduction) change from the previous recorded high concentration of 38,700 ppm.
- The distance between the remediated plume and underlying groundwater is approximately 70 feet and is separated by a fine grained soil matrix beginning at 80 feet BGL.







## 8.0 RECOMMENDATIONS

Based on the results of the confirmation sampling and the findings presented in this report AEC concludes that there has been a significant volumetric reduction of detectable hydrocarbons in the soil and that the soil only hydrocarbon plume is stable and poses no threat to the underlying groundwater. For these stated reasons, AEC recommends that no further remedial action be required and that final site closure be granted.

## 9.0 LIMITATIONS

This work has been performed in accordance with generally-accepted environmental science and engineering practices. The soil samples for this project were obtained as directed by the on-site regulatory agency representative, hence the analytical results are indicative of discrete samples and are not meant to be misconstrued or representative of unsampled subsurface areas. Conclusions and recommendations are based upon information collected and compiled during this investigation. No other warranty, expressed or implied, is given.

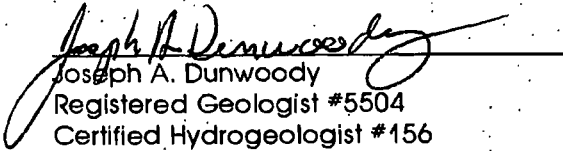


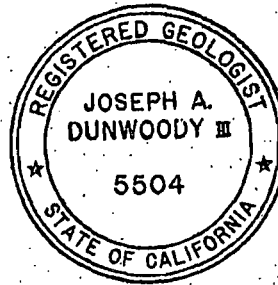
## 10.0 CLOSING

Advanced Environmental Concepts, Inc. appreciates the opportunity to be of service to Mr. Barrett Baldwin and Baldwin Farms on this project. If there should be any questions or additional information required regarding this report, please do not hesitate to contact our office at (805) 831-1646.

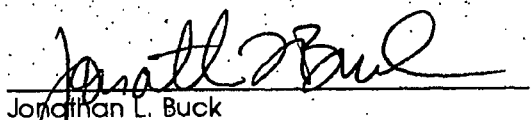
This Environmental Site Assessment has been prepared by:

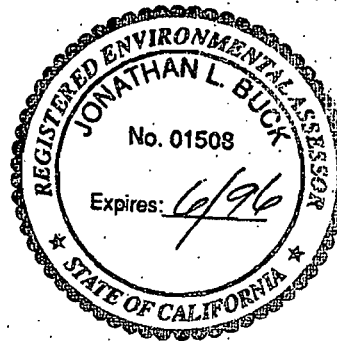
Advanced Environmental Concepts, Inc.

  
Joseph A. Dunwoody  
Registered Geologist #5504  
Certified Hydrogeologist #156



This Environmental Site Assessment has been reviewed by:

  
Jonathan L. Buck  
Senior Geologist  
Registered Environmental Assessor #1508



DOC22FU

Project: AEC 92C-1255

10



Advanced Environmental Concepts, Inc.

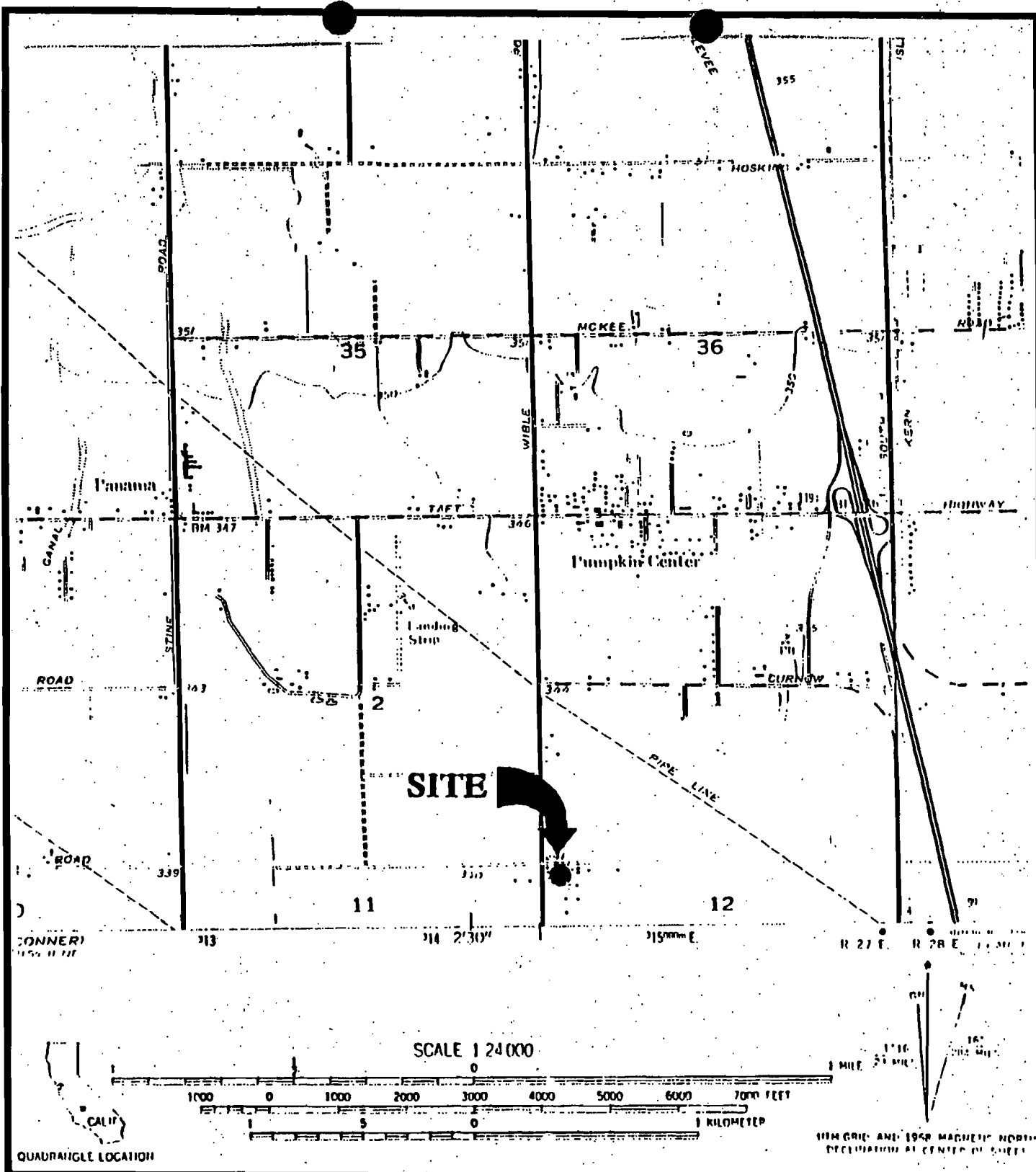
"Appendix A"

## PROJECT MAPS / FIGURES

• ENVIRONMENTAL CONCEPTS WITH DESIGN IN MIND •

4400 ASHE ROAD, #206 • BAKERSFIELD, CA 93313 • 805/831-1646 • FAX 805/831-1771



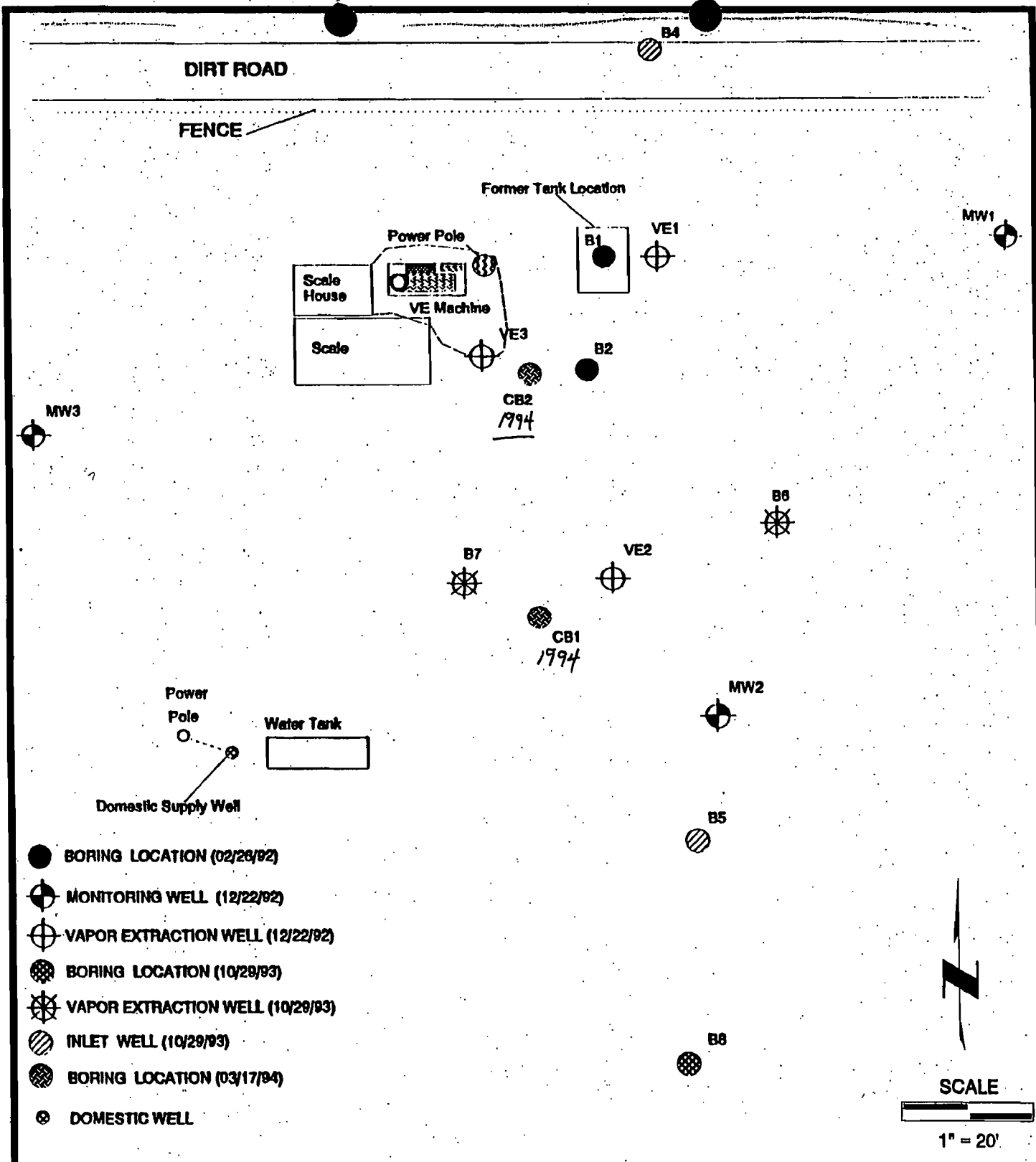


**AEC**  
 ADVANCED ENVIRONMENTAL CONCEPTS INC.  
 ADVANCED ENVIRONMENTAL CONCEPTS  
 P.O. BOX 40672 BAKERSFIELD, CA 93384

**- Site Location Map -**  
**Baldwin Farm**  
 3151 Engle Road  
 County of Kern • Bakersfield, California

**FIGURE**  
**1**



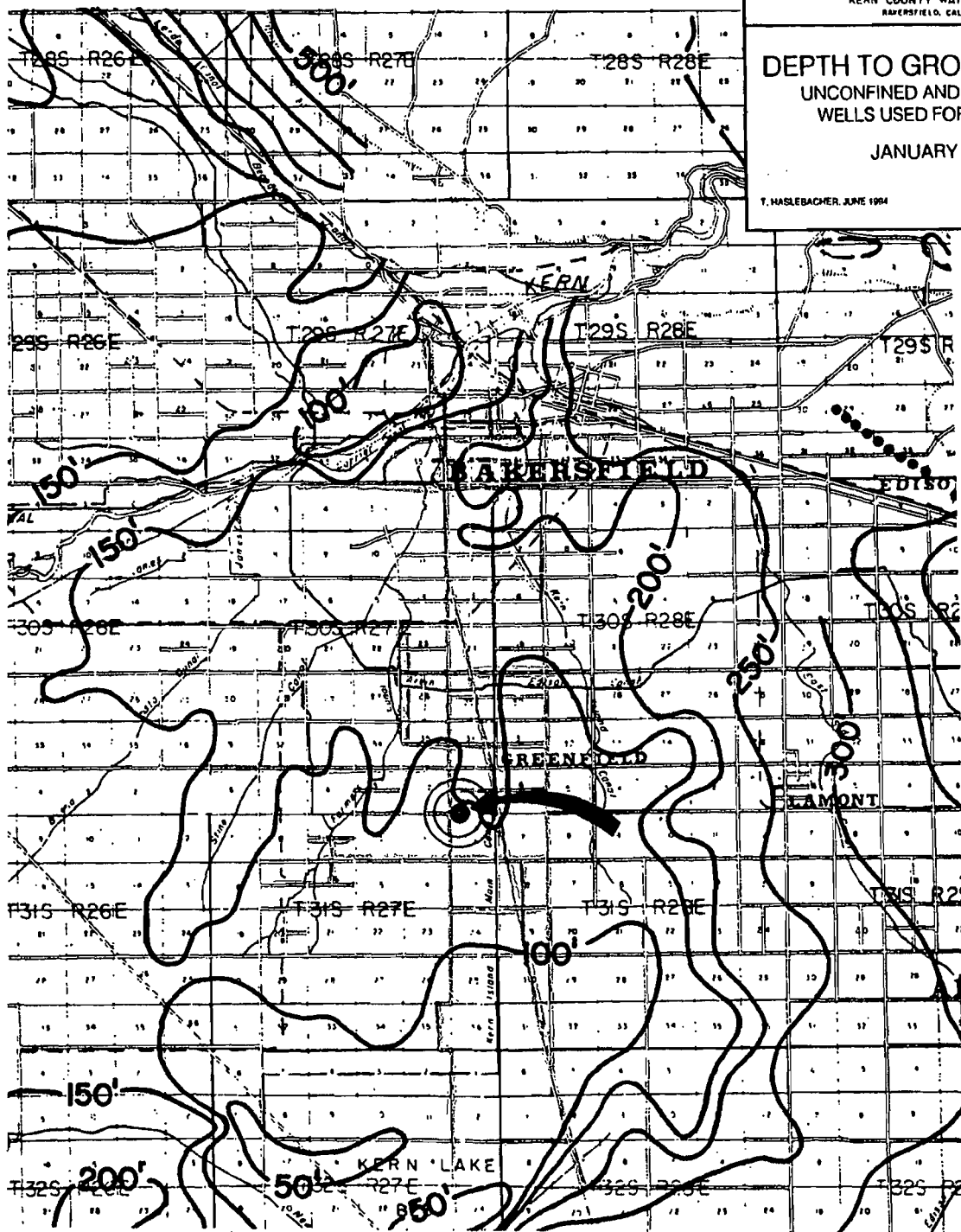


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 ADVANCED ENVIRONMENTAL CONCEPTS  
 P.O. BOX 40672 BAKERSFIELD, CA 93384

- Boring Location Map -  
 Baldwin Farm  
 3151 Engle Road  
 County of Kern • Bakersfield, California

FIGURE  
 2





KERN COUNTY WATER AGENCY  
BAKERSFIELD, CALIFORNIA

# DEPTH TO GROUNDWATER UNCONFINED AND EQUIVALENT WELLS USED FOR CONTROL

JANUARY 1994

T. HASLEBACHER, JUNE 1994

**AEC**  
ADVANCED ENVIRONMENTAL CONCEPTS INC.  
ADVANCED ENVIRONMENTAL CONCEPTS  
P.O. BOX 40672 BAKERSFIELD, CA 93384

- Depth to Groundwater-  
from the Kern County Water Agency

**Baldwin Farm**

3151 Engle Road  
County of Kern • Bakersfield, California

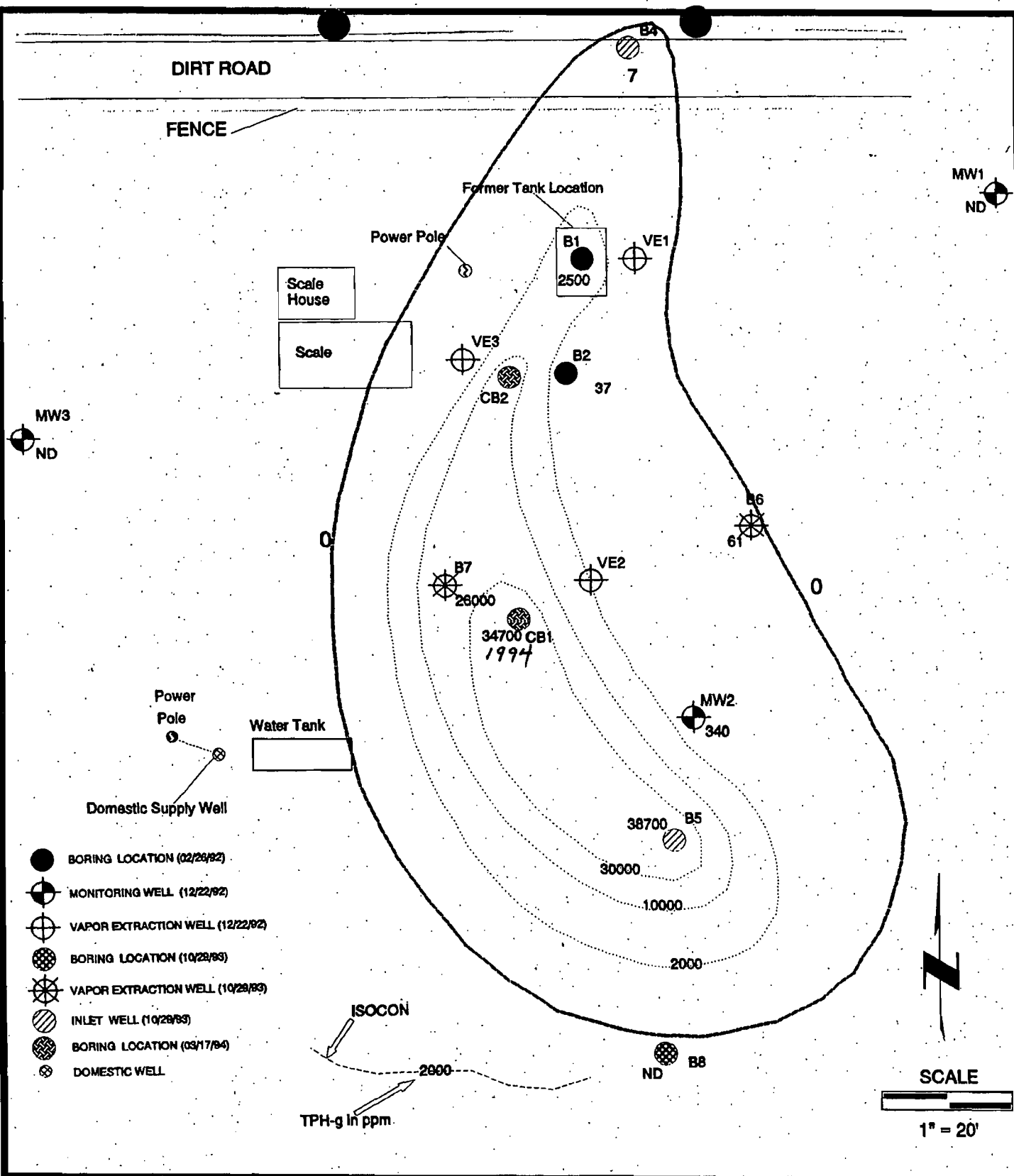
**FIGURE**

**3**









ADVANCED ENVIRONMENTAL CONCEPTS  
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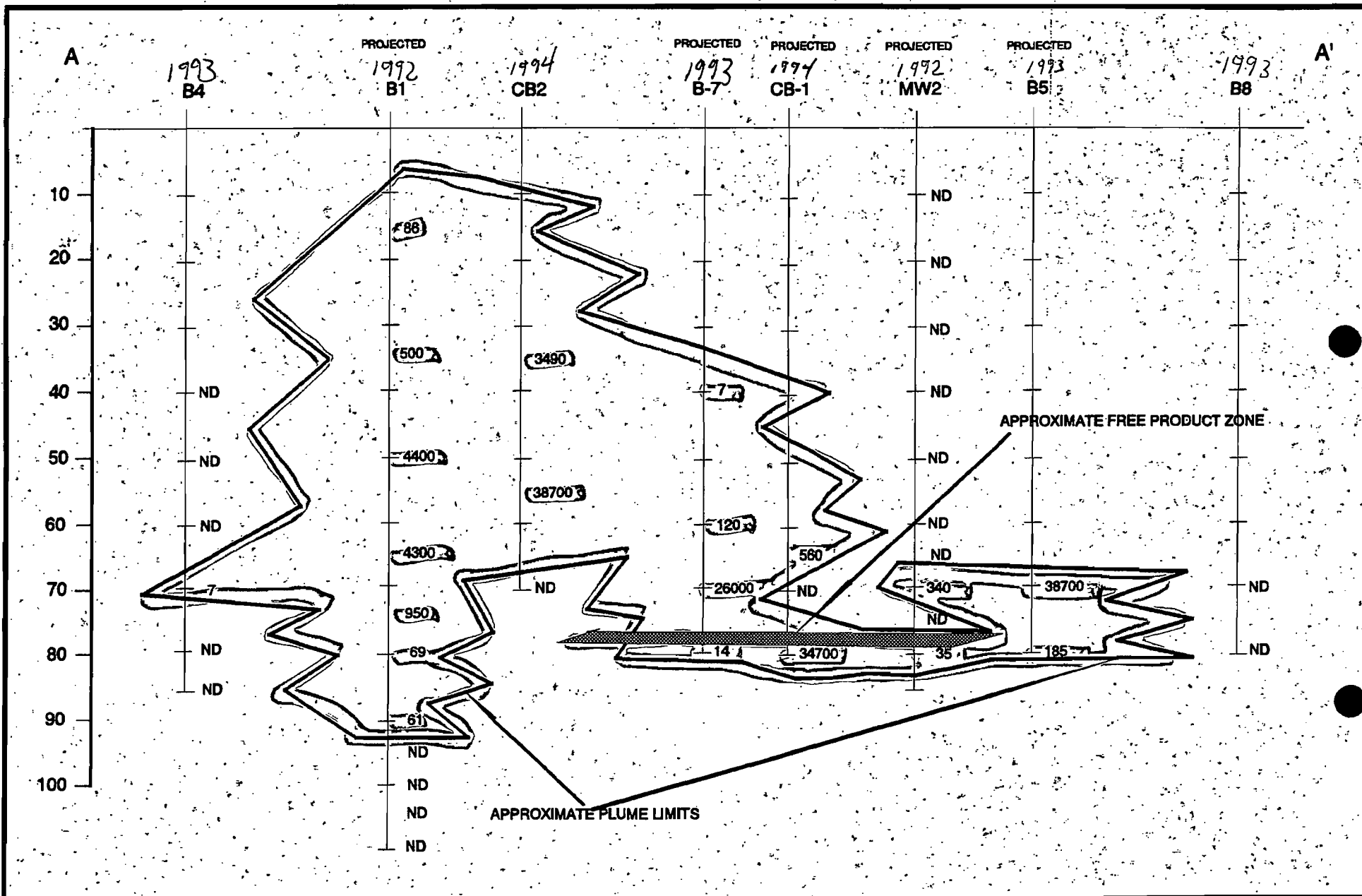
## - Areal Extent of Plume- Baldwin Farm

3151 Engle Road  
County of Kern • Bakersfield, California

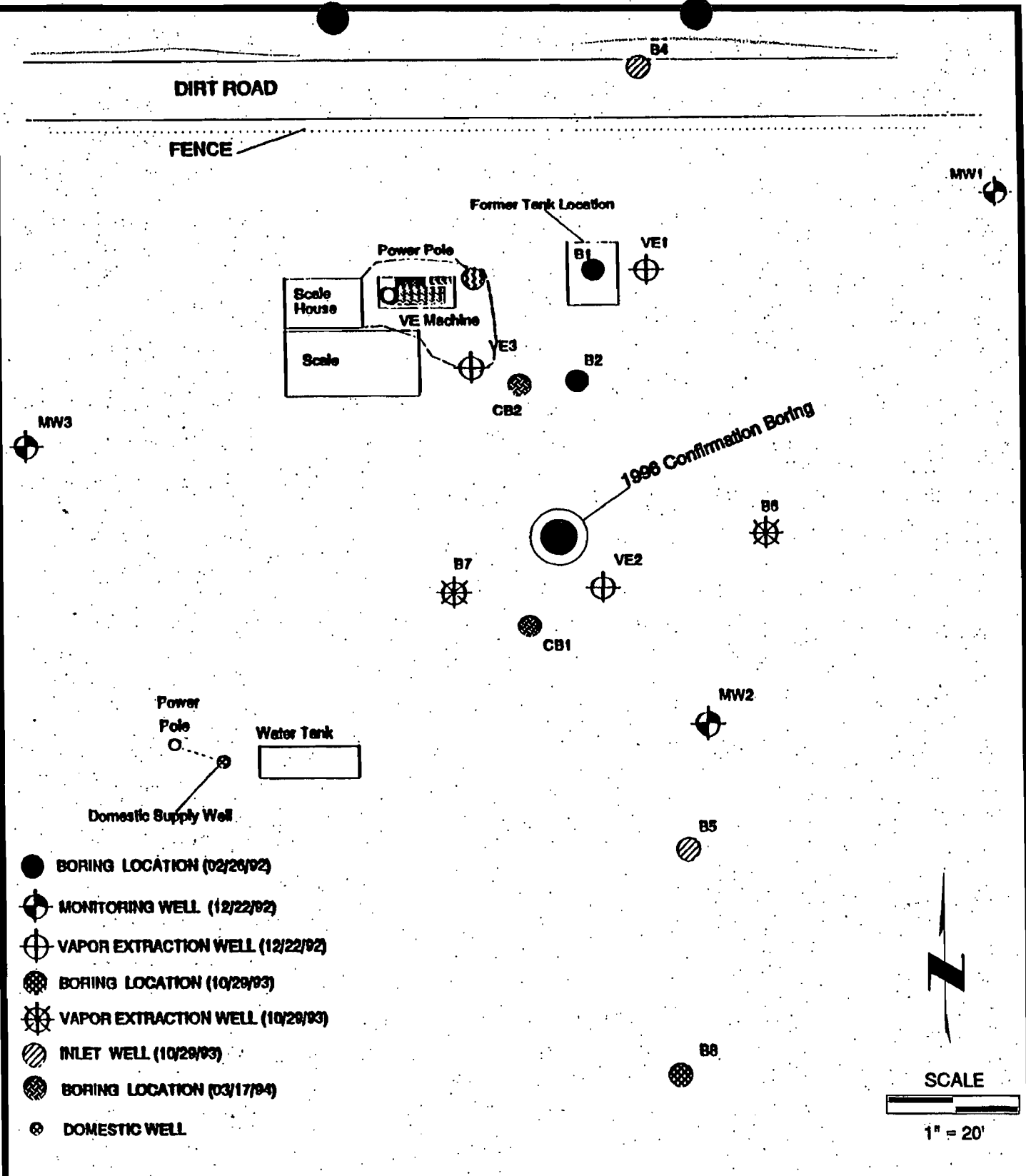
FIGURE  
ORIGINAL

4

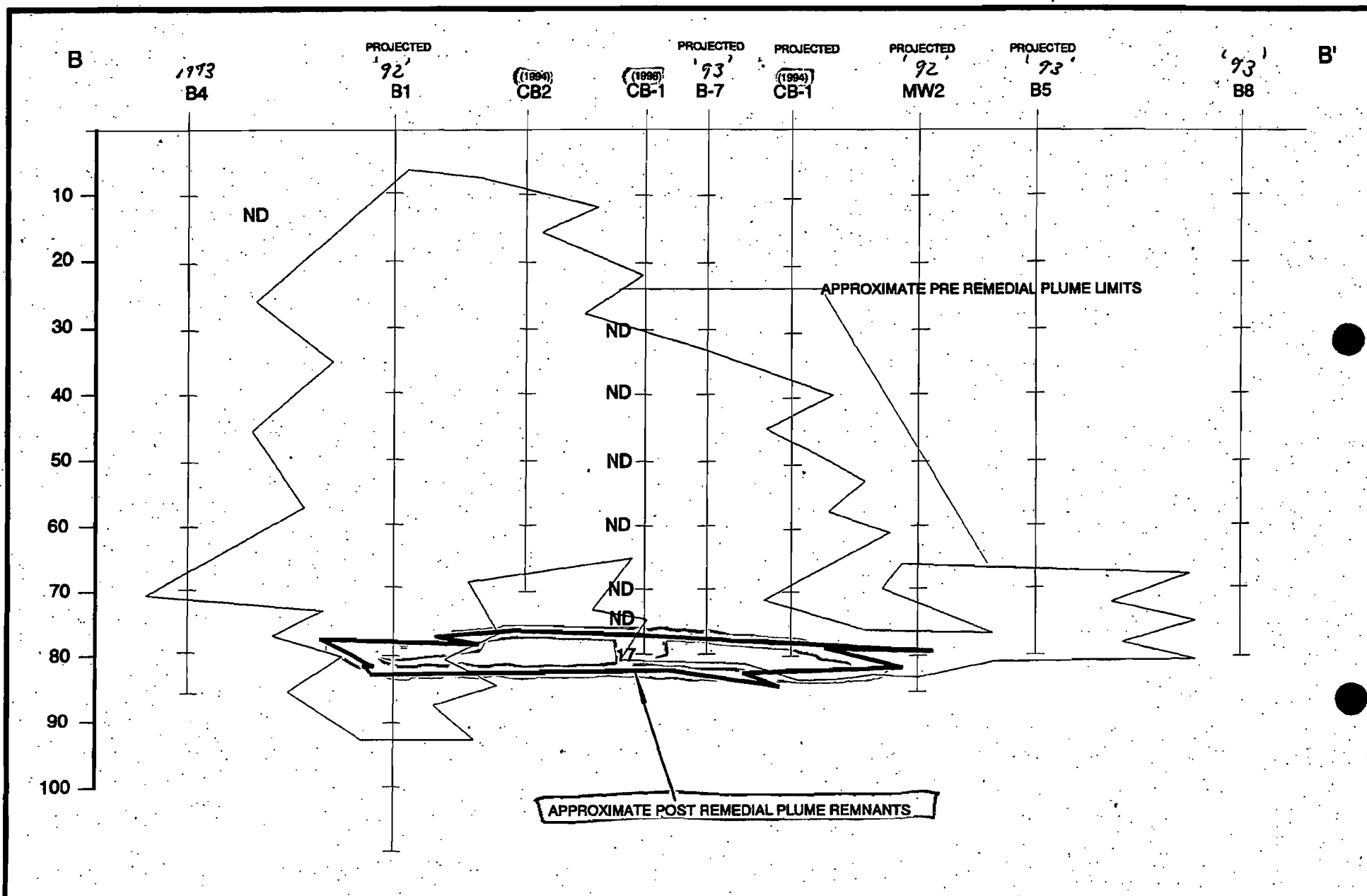














Advanced Environmental Concepts, Inc.

"Appendix B"

## BORING LOGS



WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL BLOWCOUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	5	0			
	10	0			
	15	0	12 15 19	SP	POORLY GRADED SAND (SP): Light to Yell brown, 10% silt, moderately dense, moist, tr mica, no odor, R dilatancy.
	20	0	28 35 49	ML	SILT (ML): Brown, slightly compact, clayey in part, moist, tr sand, no odor.
	25	0	18 25 39	SP	SAND (SP): Reddish-brown, moderately dense, unconsolidated, finegrained, slightly moist, no apparent hydrocarbon odor.
	30	0		SP	Same

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P.O. BOX 40672 BAKERSFIELD, CA 93384

## WELL/BORING LOG

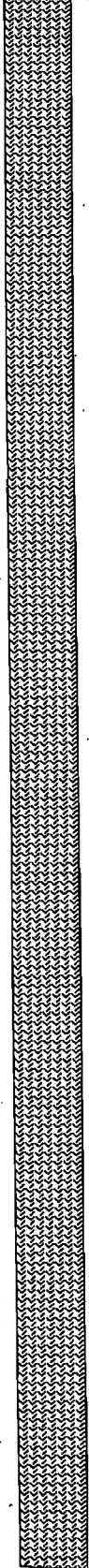
1 of 2

PROJECT <u>Baldwin Farms</u>		LOCATION <u>3151 Engle Road, Bakersfield, California</u>	
WELL/BORING NO. <u>CB-1</u>		SURFACE ELEVATION _____	
DATE DRILLED <u>3/21/96</u>		WELLHEAD ELEVATION <u>N/A</u>	
DRILLING COMPANY <u>Melton Drilling Company</u>		LOGGED BY <u>J. Dunwoody</u>	
DRILLER <u>Randy Jones</u>		REVIEWED BY <u>J. DUNWOODY</u>	
BORE HOLE DIAMETER <u>8 INCH</u>		METHOD <u>HOLLOW STEM AUGER</u>	
TOTAL DEPTH <u>75'</u>		DEPTH TO WATER: INITIAL <u>N/A</u> STATIC <u>N/A</u>	
CASING TYPE _____	DIAMETER _____	SCHEDULE _____	INTERVAL <u>N/A</u> TO <u>N/A</u>
SCREEN TYPE _____	DIAMETER _____	SLOT SIZE _____	INTERVAL <u>N/A</u> TO <u>N/A</u>
FILTER PACK TYPE _____		INTERVAL <u>N/A</u> TO <u>N/A</u>	
SURFACE SEAL TYPE _____		INTERVAL <u>N/A</u> TO <u>N/A</u>	
NOTES _____			







WELL DETAIL	DEPTH	PID (ppm)	SAMPLE ID INTERVAL BLOWCOUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	35	10	22 29 38	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, no odor.
	40	0	20 27 33	SP	SAND (SP): Yell-brown, sub ang - sub md, moderately dense, unconsolidated, 10% finegrained, moist, no odor.
	45	10	24 29 33	SM/ML	SILTY SAND/SILT (SM?ML): redbrown to yell brn, 50% sand, 50% silt, tr. clay, dense, stiff, moist, faint hydrocarbon odor.
	50	0	22 29 38	SP	SAND (SP): Yell to Reddish-brown, sub ang-sub md, moderately dense, unconsolidated, finegrained, moist, no apparent hydrocarbon odor.
	55	0	32 29 36	SP	SAME
	60	15	24 29 33	SW	WELL GRADED SAND (SW): Yell - lt brn, sub ang - sub md, tr fines, moist, rapid dilatancy, no odor.
	65		34 39 43	SW	SAME

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## WELL/BORING LOG

2 of 3


PROJECT Baldwin Farms

LOCATION 3151 Engle Road, Bakersfield, California

WELL/BORING NO.

CB-1



WELL DETAIL	DEPTH	PID (ppm)	PLE ID INTERVAL BLOWCOUNT	U.S.C.S. LOG	LITHOLOGIC DESCRIPTION
	70	10	28 33 41	SW	WELL GRADED SAND (SW): Yell - lt bm, sub ang - sub md, tr fines, moist, rapid dilatancy, no odor.
	75	60	35 39 48	ML	SILT (ML): Yell-brown to bm, dense, moist, tr sand, slight petroleum odor, FeOx staining.
	80				
	85				
	90				
	95				
	100				

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## WELL/BORING LOG

3 of 3

PROJECT Baldwin Farms

LOCATION 3151 Engle Road, Bakersfield, California

WELL/BORING NO.

**CB-1**



Advanced Environmental Concepts, Inc.

"Appendix C"

LABORATORY REPORTS /  
CHAIN-OF-CUSTODY DOCUMENTS

• ENVIRONMENTAL CONCEPTS WITH DESIGN IN MIND •

4400 ASHE ROAD, #206 • BAKERSFIELD, CA 93313 805/831-1646 • FAX 805/831-1771



Certificate #1049

Client Name: Advanced Environmental Concepts, Inc.  
Address : 4400 Ashe Road, #206  
Bakersfield, CA 93313

Attention : Jon Buck

Date samples collected: 3-21-96      Date analysis completed: 3-25-96  
Date samples received : 3-22-96      Date of report : 3-25-96

Project Site: Baldwin Farms

## RESULTS OF ANALYSIS:

# 504	ID: CB-30'	mG/kg	DLR, mG/kg
	Benzene	ND	0.005
	Ethylbenzene	ND	0.005
	Toluene	ND	0.005
	Xylenes	ND	0.005
	TPH (Gasoline)	ND	1.0
# 505	ID: CB-40'	mG/kg	DLR, mG/kg
	Benzene	ND	0.005
	Ethylbenzene	ND	0.005
	Toluene	ND	0.005
	Xylenes	ND	0.005
	TPH (Gasoline)	ND	1.0
# 506	ID: CB-50'	mG/kg	DLR, mG/kg
	Benzene	ND	0.005
	Ethylbenzene	ND	0.005
	Toluene	ND	0.005
	Xylenes	ND	0.005
	TPH (Gasoline)	ND	1.0

Matrix Type : Soil

Method of Analysis for BTEX : EPA 8020

Method of Analysis for TPH (Gasoline) : EPA 8015M

TPH : Total Petroleum Hydrocarbons

DLR : Detection Limit for Reporting

mG/kg : milligram per kilogram (ppm)

ND : None Detected

*Stan Comer*

Stan Comer, Sc.M.  
Analytical Chemist

211 Aviation Street • Shafter Airport • Shafter, CA 93263  
(805) 393-3597 • FAX (805) 393-3623



Project Site: Baldwin Farms

RESULTS OF ANALYSIS:

# 507	ID: CB-60'	mG/kg	DLR, mG/kg
	Benzene	ND	0.005
	Ethylbenzene	ND	0.005
	Toluene	ND	0.005
	Xylenes	ND	0.005
	TPH (Gasoline)	ND	1.0
# 508	ID: CB-70'	mG/kg	DLR, mG/kg
	Benzene	ND	0.005
	Ethylbenzene	ND	0.005
	Toluene	ND	0.005
	Xylenes	ND	0.005
	TPH (Gasoline)	ND	1.0
# 509	ID: CB-75'	mG/kg	DLR, mG/kg
	Benzene	ND	0.005
	Ethylbenzene	ND	0.005
	Toluene	ND	0.005
	Xylenes	ND	0.005
	TPH (Gasoline)	ND	1.0
# 510	ID: CB-80'	mG/kg	DLR, mG/kg
	Benzene	ND	0.005
	Ethylbenzene	0.60	0.005
	Toluene	1.7	0.005
	Xylenes	3.5	0.005
	TPH (Gasoline)	17	1.0

*Stan Comer*

Stan Comer, Sc.M.  
Analytical Chemist



# CHAIN-OF-CUSTODY RECORD

Client: <b>B. Baldwin</b>		Date: <b>3/21/96</b>		Analysis Requested										LAB Project #										
Project Name: <b>Baldwin FARMS</b>		Client Project #		<div style="display: flex; justify-content: space-between;"> <div style="width: 15%;">Laboratory Sample Number</div> <div style="width: 15%;">Sample Matrix: Solids (S) / Sludge (SL) / Aqueous (A)</div> <div style="width: 60%; text-align: center;"> <b>DPH-6</b>  <b>BTEX</b> </div> </div>										Page <b>1</b> of <b>1</b>										
Project Address: <b>Eagle Rd</b>		Turn Around Requested:												<input type="checkbox"/> 24-Hour-Rush <input type="checkbox"/> 48-Hour-Rush <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Mobile Lab		Lab Use Only. Sample Condition as received:  Chilled Yes / No Sealed Yes / No								
Sampler's Signature: <i>[Signature]</i>																								
Sample	Sample Location	Date	Time	Lab Sample Number	Matrix	S	SL	A	S	SL	A	S	SL	A	S	SL	A	S	SL	A	S	SL	A	Container / Comments
B-30	Intermittent Boring @ 30'	3/21/96				1	1																	
B-40	" " @ 40'					1	1																	
B-50	" " @ 50'					1	1																	
B-60	" " @ 60'					1	1																	
B-70	" " @ 70'					1	1																	
B-75	" " @ 75'					1	1																	
B-80	" " @ 80'					1	1																	
1 Relinquished by: (Signature) <i>[Signature]</i>		Date: <b>3/22/96</b>		2 Received by: (Signature) <i>[Signature]</i>										Date: <b>3/22/96</b>		Total Number of Containers: <b>7</b>								
Company: <b>AEC</b>		Time: <b>1:00</b>		Company: <b>SMC Lab</b>										Time: <b>1:50 PM</b>		<p><b>AEC</b> ADVANCED ENVIRONMENTAL CONCEPTS INC.</p> <p>805 / 831-1846      4400 ASHE ROAD #208 FAX 805 / 831-1771      BAKERSFIELD, CA 93313</p>								
3 Relinquished by: (Signature)		Date		4 Received by Laboratory: (Signature)										Date										
Company:		Time		Company:										Time										



## **INTRODUCTION**

This application package constitutes a Report of Waste Discharge (ROWD) pursuant to California Water Code Section 13260. Section 13260 states that persons discharging or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, shall file a ROWD containing information which may be required by the appropriate Regional Water Quality Control Board (RWQCB).

This package is to be used to start the application process for all waste discharge requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permits\* issued by a RWQCB except:

- a) Those landfill facilities that must use a joint Solid Waste Facility Permit Application Form, California Integrated Waste Management Board Form E-1-77; and
- b) General WDRs or general NPDES permits that use a Notice of Intent to comply or specify the use of an alternative application form designed for that permit.

### **This application package contains:**

- 1. Application/General Information Form for WDRs and NPDES Permits [Form 200 (10/97)].
- 2. Application/General Information Instructions.

## **Instructions**

Instructions are provided to assist you with completion of the application. If you are unable to find the answers to your questions or need assistance with the completion of the application package, please contact your RWQCB representative. *The RWQCBs strongly recommend that you make initial telephone or personal contact with RWQCB regulatory staff to discuss a proposed new discharge before submitting your application.* The RWQCB representative will be able to answer procedural and annual fee related questions that you may have. (See map and telephone numbers inside of application cover.)

All dischargers regulated under WDRs and NPDES permits must pay an annual fee, except dairies, which pay a filing fee only. The RWQCB will notify you of your annual fee based on an evaluation of your proposed discharge. Please do NOT submit a check for your first annual fee or filing fee until requested to do so by a RWQCB representative. Dischargers applying for reissuance (renewal) of an existing NPDES permit or update of an existing WDR will be billed through the annual fee billing system and are therefore requested NOT to submit a check with their application. Checks should be made payable to the State Water Resources Control Board.

## **Additional Information Requirements**

A RWQCB representative will notify you within 30 days of receipt of the application form and any supplemental documents whether your application is complete. If your application is incomplete, the RWQCB representative will send you a detailed list of discharge specific information necessary to complete the application process. The completion date of your application is normally the date when all required information, including the correct fee, is received by the RWQCB.

**\* NPDES PERMITS:** If you are applying for a permit to discharge to surface water, you will need an NPDES permit which is issued under both State and Federal law and may be required to complete one or more of the following Federal NPDES permit application forms: Short Form A, Standard Form A, Forms 1, 2B, 2C, 2D, 2E, and 2F. These forms may be obtained at a RWQCB office or can be ordered from the National Center for Environmental Publications and Information at (513) 891-6561.





# **APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT**



## **INSTRUCTIONS FOR COMPLETING THE APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR: WASTE DISCHARGE REQUIREMENTS/NPDES PERMIT**

If you have any questions on the completion of any part of the application, please contact your RWQCB representative. A map of RWQCB locations, addresses, and telephone numbers is located on the reverse side of the application cover.

### **I. FACILITY INFORMATION**

You must provide the factual information listed below for ALL owners, operators, and locations and, where appropriate, for ALL general partners and lease holders.

**A. FACILITY:**

Legal name, physical address including the county, person to contact, and phone number at the facility.  
(NO P.O. Box numbers! If no address exists, use street and nearest cross street.)

**B. FACILITY OWNER:**

Legal owner, address, person to contact, and phone number. Also include the owner's Federal Tax Identification Number.

**OWNER TYPE:**

Check the appropriate Owner Type. The legal owner will be named in the WDRs/NPDES permit.

**C. FACILITY OPERATOR (The agency or business, not the person):**

If applicable, the name, address, person to contact, and telephone number for the facility operator. Check the appropriate Operator Type. If identical to B. above, enter "same as owner".

**D. OWNER OF THE LAND:**

Legal owner of the land(s) where the facility is located, address, person to contact, and phone number. Check the appropriate Owner Type. If identical to B. above, enter "same as owner".

**E. ADDRESS WHERE LEGAL NOTICE MAY BE SERVED:**

Address where legal notice may be served, person to contact, and phone number. If identical to B. above, enter "same as owner".

**F. BILLING ADDRESS**

Address where annual fee invoices should be sent, person to contact, and phone number. If identical to B. above, enter "same as owner".





# APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT



## II. TYPE OF DISCHARGE

Check the appropriate box to describe whether the waste will be discharged to: A. Land, or B. Surface Water.

Check the appropriate box(es) which best describe the activities at your facility.

**Hazardous Waste - If you check the Hazardous Waste box, STOP and contact a representative of the RWQCB for further instructions.**

**Landfills - A separate form, APPLICATION FOR SOLID WASTE FACILITY PERMIT/WASTE DISCHARGE REQUIREMENTS, California Integrated Waste Management Board Form E-1-77, may be required. Contact a RWQCB representative to help determine the appropriate form for your discharge.**

## III. LOCATION OF THE FACILITY

1. Enter the Assessor's Parcel Number(s) (APN), which is located on the property tax bill. The number can also be obtained from the County Assessor's Office. Indicate the APN for both the facility and the discharge point.
2. Enter the Latitude of the entrance to the proposed/existing facility and of the discharge point. Latitude and longitude information can be obtained from a U.S. Geological Survey quadrangle topographic map. Other maps may also contain this information.
3. Enter the Longitude of the entrance to the proposed/existing facility and of the discharge point.

## IV. REASON FOR FILING

### **NEW DISCHARGE OR FACILITY:**

A discharge or facility that is proposed but does not now exist, or that does not yet have WDRs or an NPDES permit.

### **CHANGE IN DESIGN OR OPERATION:**

A material change in design or operation from existing discharge requirements. Final determination of whether the reported change is material will be made by the RWQCB.

### **CHANGE IN QUANTITY/TYPE OF DISCHARGE:**

A material change in characteristics of the waste from existing discharge requirements. Final determination of whether the reported change would have a significant effect will be made by the RWQCB.

### **CHANGE IN OWNERSHIP/OPERATOR:**

Change of legal owner of the facility. Complete Parts I, III, and IV only and contact the RWQCB to determine if additional information is required.

### **WASTE DISCHARGE REQUIREMENTS UPDATE OR NPDES PERMIT REISSUANCE:**

WDRs must be updated periodically to reflect changing technology standards and conditions. A new application is required to reissue an NPDES permit which has expired.

### **OTHER:**

If there is a reason other than the ones listed, please describe the reason on the space provided. (If more space is needed, attach a separate sheet.)





# APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT



## V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

It should be emphasized that communication with the appropriate RWQCB staff is vital before starting the CEQA documentation, and is recommended before completing this application. There are Basin Plan issues which may complicate the CEQA effort, and RWQCB staff may be able to help in providing the needed information to complete the CEQA documentation.

Name the Lead Agency responsible for completion of CEQA requirements for the project, i.e., completion and certification of CEQA documentation.

Check YES or NO. Has a public agency determined that the proposed project is exempt from CEQA?

If the answer is YES, state the basis for the exemption and the name of the agency supplying the exemption on the space provided. (Remember that, if extra space is needed, use an extra sheet of paper, but be sure to indicate the attached sheet under Section VII. Other.)

Check YES or NO. Has the "Notice of Determination" been filed under CEQA? If YES, give the date the notice was filed and enclose a copy of the Notice of Determination and the Initial Study, Environmental Impact Report, or Negative Declaration. If NO, check the box of the expected type of CEQA document for this project, and include the expected date of completion using the timelines given under CEQA. The date of completion should be taken as the date that the Notice of Determination will be submitted. (If not known, write "Unknown")

## VI. OTHER REQUIRED INFORMATION

To be approved, your application MUST include a COMPLETE characterization of the discharge. If the characterization is found to be incomplete, RWQCB staff will contact you and request that additional specific information be submitted.

This application MUST be accompanied by a site map. A USGS 7.5' Quadrangle map or a street map, if more appropriate, is sufficient for most applications.

## VII. OTHER

If any of the answers on your application form need further explanation, attach a separate sheet. Please list any attachments with the titles and dates on the space provided.

## VIII. CERTIFICATION

Certification by the owner of the facility or the operator of the facility, if the operator is different from the owner, is required. The appropriate person must sign the application form.

Acceptable signatures are:

1. **for a corporation**, a principal executive officer of at least the level of senior vice-president;
2. **for a partnership or individual (sole proprietorship)**, a general partner or the proprietor;
3. **for a governmental or public agency**, either a principal executive officer or ranking elected/appointed official.

## DISCHARGE SPECIFIC INFORMATION

In most cases, a request to supply additional discharge specific information will be sent to you by a representative of the RWQCB. If the RWQCB determines that additional discharge specific information is not needed to process your application, you will be so notified.



**CALIFORNIA ENVIRONMENTAL  
PROTECTION AGENCY**


State of California  
Regional Water Quality Control Board

**APPLICATION/REPORT OF WASTE DISCHARGE  
GENERAL INFORMATION FORM FOR  
WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT**



**I. FACILITY INFORMATION**

**A. Facility:**

Name: Oldenkamp Trucking, Inc.			
Address: 11314 Wible Road			
City: Bakersfield	County: Kern	State: CA	Zip Code: 93313
Contact Person: Nathan Oldenkamp		Telephone Number: 661-833-3400	

**B. Facility Owner:**

Name: Oldenkamp			<b>Owner Type (Check One)</b> 1. <input type="checkbox"/> Individual    2. <input type="checkbox"/> Corporation 3. <input type="checkbox"/> Governmental Agency    4. <input type="checkbox"/> Partnership 5. <input checked="" type="checkbox"/> Other: <u>Familv</u>	
Address: Mailing address: 13535 S. Union Ave. 93307				
City: Bakersfield	State: CA	Zip Code: 93307		
Contact Person: Nathan Oldenkamp		Telephone Number: 661-833-3400	Federal Tax ID:	

**C. Facility Operator (The agency or business, not the person):**

Name: Same			<b>Operator Type (Check One)</b> 1. <input type="checkbox"/> Individual    2. <input type="checkbox"/> Corporation 3. <input type="checkbox"/> Governmental Agency    4. <input type="checkbox"/> Partnership 5. <input type="checkbox"/> Other: _____	
Address:				
City:	State:	Zip Code:		
Contact Person:		Telephone Number:		

**D. Owner of the Land:**

Name: Same			<b>Owner Type (Check One)</b> 1. <input type="checkbox"/> Individual    2. <input type="checkbox"/> Corporation 3. <input type="checkbox"/> Governmental Agency    4. <input type="checkbox"/> Partnership 5. <input type="checkbox"/> Other: _____	
Address:				
City:	State:	Zip Code:		
Contact Person:		Telephone Number:		

**E. Address Where Legal Notice May Be Served:**

Address: 13535 S. Union Ave. 93307			
City: Bakersfield	State: CA	Zip Code: 93307	
Contact Person: John Oldenkamp		Telephone Number: 661-833-3400	

**F. Billing Address:**

Address: Same as above		
City:	State:	Zip Code:
Contact Person:		Telephone Number:





# APPLICATION/REPORT OF WASTE DISCHARGE GENERAL INFORMATION FORM FOR WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT



## II. TYPE OF DISCHARGE

Check Type of Discharge(s) Described in this Application (A or B):

☒ A. WASTE DISCHARGE TO LAND

☐ B. WASTE DISCHARGE TO SURFACE WATER

Check all that apply:

- ☐ Domestic/Municipal Wastewater Treatment and Disposal  
☐ Cooling Water  
☐ Mining  
☐ Waste Pile  
☐ Wastewater Reclamation

- ☐ Animal Waste Solids  
☐ Land Treatment Unit  
☐ Dredge Material Disposal  
☐ Surface Impoundment  
☐ Industrial Process Wastewater

- ☒ Animal or Aquacultural Wastewater  
☐ Biosolids/Residual  
☐ Hazardous Waste (see instructions)  
☐ Landfill (see instructions)  
☐ Storm Water

☒ Other, please describe: Food grade cleaning products

## III. LOCATION OF THE FACILITY

Describe the physical location of the facility.

1. Assessor's Parcel Number(s)

Facility: 184-150-42

Discharge Point:

2. Latitude

Facility: 35°15'06.32"N

Discharge Point:

3. Longitude

Facility: 119°02'16.58"W

Discharge Point:

## IV. REASON FOR FILING

☒ New Discharge or Facility

☐ Changes in Ownership/Operator (see instructions)

☐ Change in Design or Operation

☐ Waste Discharge Requirements Update or NPDES Permit Reissuance

☐ Change in Quantity/Type of Discharge

☐ Other: \_\_\_\_\_

## V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Name of Lead Agency: Central Valley Regional Water Quality Control Board (CVRWQCB)

Has a public agency determined that the proposed project is exempt from CEQA? ☐ Yes ☒ No

If Yes, state the basis for the exemption and the name of the agency supplying the exemption on the line below.

Basis for Exemption/Agency: \_\_\_\_\_

Has a "Notice of Determination" been filed under CEQA? ☐ Yes ☒ No

If Yes, enclose a copy of the CEQA document, Environmental Impact Report, or Negative Declaration. If no, identify the expected type of CEQA document and expected date of completion.

Expected CEQA Documents:

☐ EIR

☐ Negative Declaration

Expected CEQA Completion Date: \_\_\_\_\_



CALIFORNIA ENVIRONMENTAL  
PROTECTION AGENCY



State of California  
Regional Water Quality Control Board

**APPLICATION/REPORT OF WASTE DISCHARGE  
GENERAL INFORMATION FORM FOR  
WASTE DISCHARGE REQUIREMENTS OR NPDES PERMIT**



**VI. OTHER REQUIRED INFORMATION**

Please provide a COMPLETE characterization of your discharge. A complete characterization includes, but is not limited to, design and actual flows, a list of constituents and the discharge concentration of each constituent, a list of other appropriate waste discharge characteristics, a description and schematic drawing of all treatment processes, a description of any Best Management Practices (BMPs) used, and a description of disposal methods.

Also include a site map showing the location of the facility and, if you are submitting this application for an NPDES permit, identify the surface water to which you propose to discharge. Please try to limit your maps to a scale of 1:24,000 (7.5' USGS Quadrangle) or a street map, if more appropriate.

**VII. OTHER**

Attach additional sheets to explain any responses which need clarification. List attachments with titles and dates below:

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You will be notified by a representative of the RWQCB within 30 days of receipt of your application. The notice will state if your application is complete or if there is additional information you must submit to complete your Application/Report of Waste Discharge, pursuant to Division 7, Section 13260 of the California Water Code.

**VIII. CERTIFICATION**

"I certify under penalty of law that this document, including all attachments and supplemental information, were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Print Name: DANA L. Oldenkamp

Title: VP/CRD/SEC

Signature: Dana Oldenkamp

Date: 11-3-16

**FOR OFFICE USE ONLY**

Date Form 200 Received:	Letter to Discharger:	Fee Amount Received:	Check #:
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# **California Environmental Protection Agency**

## **Bill of Rights for Environmental Permit Applicants**

California Environmental Protection Agency (Cal/EPA) recognizes that many complex issues must be addressed when pursuing reforms of environmental permits and that significant challenges remain. We have initiated reforms and intend to continue the effort to make environmental permitting more efficient, less costly, and to ensure that those seeking permits receive timely responses from the boards and departments of the Cal/EPA. To further this goal, Cal/EPA endorses the following precepts that form the basis of a permit applicant's "Bill of Rights."

1. Permit applicants have the right to assistance in understanding regulatory and permit requirements. All Cal/EPA programs maintain an Ombudsman to work directly with applicants. Permit Assistance Centers located throughout California have permit specialists from all the State, regional, and local agencies to identify permit requirements and assist in permit processing.
2. Permit applicants have the right to know the projected fees for review of applications, how any costs will be determined and billed, and procedures for resolving any disputes over fee billings.
3. Permit applicants have the right of access to complete and clearly written guidance documents that explain the regulatory requirements. Agencies must publish a list of all information required in a permit application and of criteria used to determine whether the submitted information is adequate.
4. Permit applicants have the right of timely completeness determinations for their applications. In general, agencies notify the applicant within 30 days of any deficiencies or determine that the application is complete. California Environmental Quality Act (CEQA) and public hearing requests may require additional information.
5. Permit applicants have the right to know exactly how their applications are deficient and what further information is needed to make their applications complete. Pursuant to California Government code Section 65944, after an application is accepted as complete, an agency may not request any new or additional information that was not specified in the original application.
6. Permit applicants have the right of a timely decision on their permit application. The agencies are required to establish time limits for permit reviews.
7. Permit applicants have the right to appeal permit review time limits by statute or administratively that have been violated without good cause. For state environmental agencies, appeals are made directly to the Cal/EPA Secretary or to a specific board. For local environmental agencies, appeals are generally made to the local governing board or, under certain circumstances, to Cal/EPA. Through this appeal, applicants may obtain a set date for a decision on their permit and, in some cases, a refund of all application fees (ask boards and departments for details).
8. Permit applicants have the right to work with a single lead agency where multiple environmental approvals are needed. For multiple permits, all agency actions can be consolidated under a lead agency. For site remediation, all applicable laws can be administered through a single agency.
9. Permit applicants have the right to know who will be reviewing their application and the time required to complete the full review process.





## **Oldenkamp Trucking, Inc. Report of Waste Discharge (RWD)**

*November 2016*

***Submitted to:***  
Oldenkamp Trucking, Inc.  
11314 Wible Road  
Bakersfield, CA 93313  
Mailing Address: 13535 S. Union Ave. 93307

***Prepared by:***  
WZI Inc.  
1717 28th Street  
Bakersfield, CA 93301



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**EXHIBITS**

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Exhibit 2	Land Use Map
Exhibit 3	Zoning Map
Exhibit 4	100-YR, 24-Hr Isohyetal Map
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**APPENDICES**

Appendix 1	Notice of Violation and Wastewater Lab Analysis
Appendix 2	Evaporation Rate
Appendix 3	Material Safety Data Sheet
Appendix 4	Source Water Quality Data
Appendix 5	Spill Prevention Control and Countermeasures and Dust Control Plan



**Report of Waste Discharge for Wible LLC, Oldenkamp Trucking**

Oldenkamp Trucking, Inc.  
11314 Wible Road  
Bakersfield, CA 93313  
Mailing Address: 13535 S. Union Ave. 93307

**Original Date of Plan:** NA

**Previous Revision:** NA

**Designated person accountable for spill prevention:**

Nathan Oldenkamp

**Certification**

I hereby certify that I have examined the facility, and being familiar with the provisions of Title 27, CCR Section 20005 et seq. attest that this Report of Waste Discharge has been prepared in accordance with good engineering practices.

**Engineer:** Richard Wilson

**Registration Number:** 84164

**State:** California

**Signature:** \_\_\_\_\_

**Date:** 11/4/10





## I. Executive Summary

WZI Inc. (WZI) was asked on behalf of the Wible Ave, LLC (Oldenkamp Trucking facility) to prepare a Report of Waste Discharge (RWD) required by The Central Valley Regional Water Quality Control Board. This assessment examines the potential impact of discharged water from the project located south of the city limits of Bakersfield in Kern County, California. This document was prepared in accordance with the California Environmental Protection Agency State Water Resources Control Board.

The project is located just south, of Hwy 119, at 11314 Wible Road in Kern County, California. Specifically the site is the west half of the northwest quarter of the northwest quarter of Section 12, Township 31 South, Range 27 East MDBM, (**Exhibit 1 “Facility Location Map”**). The current land use designation is R-IA (Intensive Agriculture) and the zoning is A (Agricultural). Current land use and zoning of the project site are shown on **Exhibit 2 “Land Use Map”** and **Exhibit 3 “Zoning Map.”** The project is in compliance with Kern County’s general plan and zoning code.

## II. Introduction

The facility is located at the south side of Engle Road and the east side of Wible Road, in Kern County, California. It is more specifically identified as approximately 19.09 acres of land located in the northwest quarter of Section 12, Township 31 South, Range 27 East, Mount Diablo Base & Meridian, in Kern County, California, Assessor Parcel Number (APN): 184-150-42, and Latitude & longitude of 35°15’06.32”N 119°02’16.58”W (See **Exhibit 1 “Project Location Map”**). The current land use designation and the surrounding land is R-IA (Intensive Agriculture) and the zoning is A (Exclusive Agriculture), **Exhibit 3 “Zoning Map.”**

## III. Facility Description/Background

The facility is comprised of 19.09 acres that includes 10.41 acres for truck facility and 8.68 acres of fallow farmland. The facility consists of an office, a minor repair facility, a fuel tank and parking. Wible Ave, LLC operates a trucking business including 96 food grade tankers. Trucks enter and leave the facility at all times during the day, 7 days per week. Minor repairs are done on site by five mechanics. The site also has a clean-in-place (CIP) wash system for the milk tanks. The rinse water is used for the dust control plan requirements and irrigation on site. This RWD has been prepared in order to obtain approval for using industrial process wastewater, produced through the cleaning of milk tankers, as a means of dust suppressant. This RWD will apply only to areas where wastewater is used.

## IV. Wastewater Characteristics

The facility uses water supplied by an onsite well in the Kern Delta Water District for the cleaning process. The wastewater is produced through the cleaning out of milk containers. Dairy-Cycle-3 extra strength chlorinated liquid clean-in-place (CIP) and pipeline bulk tank cleaner/detergent (Dairy-Cycle-3) are used in the process. A portion of this water is used as dust suppressant to adhere to the dust control plan requirements. The wastewater is transferred from the milk-tankers to a 2,500 gallon storage tank. When dust suppressant is required the wastewater is transferred to a mobile 6,000 gallon water spreading trailer. Below is the volume of wastewater generated on site:



**TABLE 1**  
**Wastewater Generated**

<b>Source</b>	<b>Daily</b>	<b>Monthly</b>	<b>Yearly</b>
CIP Wastewater	4,000 gal	120,000 gal	1,460,000 gal

The Central Valley Water Quality Control Board inspected the site on June 8<sup>th</sup>, 2016, and sampled both the soil and the wastewater. The wastewater exceeded the Water Quality Control Plan for The Tulare Lake Basin's allowable limits for certain constituents in wastewater discharged to land and surface water. The effluent discharge (E) or wastewater (Sample location 1) was characterized for the following constituents:

**TABLE 2**  
**Minimum Recommended Characterization Data**

<b>Constituent</b>	<b>Units</b>	<b>Minimum Recommended Characterization Data</b>
		<b>Other Industry</b>
Biochemical Oxygen Demand	mg/L	N/A
Chemical Oxygen Demand	mg/L	N/A
Settleable Matter	ml/L	N/A
Total Suspended Solids	mg/L	N/A
Total Dissolved Solids	mg/L	750
Fixed Dissolved Solids	mg/L	N/A
Electrical Conductivity	umhos/cm	1100
Total Kjeldahl Nitrogen as N	mg/L	N/A
Ammonia Nitrogen as N	mg/L	N/A
Nitrate Nitrogen as N	mg/L	3.6
pH	pH Units	8.8
General Minerals		
Alkalinity <sup>1</sup>	mg/L	350
Hardness	mg/L	N/A
Bicarbonate	mg/L	380
Carbonate	mg/L	21
Calcium	mg/L	6.2
Magnesium	mg/L	3.0
Chloride	mg/L	N/A



Potassium	mg/L	1.9
Sodium	mg/L	230
Sulfate	mg/L	N/A
Metals <sup>3</sup>		
Aluminum	ug/L	N/A
Arsenic	ug/L	N/A
Copper	ug/L	N/A
Iron	ug/L	ND
Lead	ug/L	N/A
Mercury	ug/L	N/A
Manganese	ug/L	0.0085
Zinc	ug/L	N/A

<sup>1</sup> Total Alkalinity as CaCO<sub>3</sub>

The full characterization of Wible Ave, LLC, Oldenkamp Trucking Inc. wastewater laboratory reports and sample locations are contained in the **Appendix 1, “NOV and Wastewater Lab Analysis.”** The limits for electrical conductivity (EC), chloride, and boron were exceeded. The table below details:

**TABLE 3**  
**Wible Ave, LLC (Oldenkamp): Wastewater Laboratory Analysis**

Source	EC (μmhos/cm)	Chloride (mg/l)	Boron (mg/l)
CIP Wastewater (Maximum Detected)	3,900	320	1.3
Tulare Lake Basin Limit	1000	175	1

Pursuant to Water Code section 13260 and 13267, a RWD for current and proposed industrial wastewater discharge from the facility is required.

#### **V. Solids Handling**

Solids are not generated from tank clean outs.

Trash is removed by an authorized solid waste company.



## VI. Chemical Usage

The following table details the purpose and amount of each chemical used for production of wastewater:

**TABLE 4**  
**Chemicals Used For Tanker Cleaning**

Product	Purpose	Chemicals Contained	Quantity Used per day (gallons)	Quantity On Site (gallons)
Elite	Industrial Cleaner	Sodium hydroxide & Sodium hypochlorite	12	275
FC-298	Acid Based Cleaner	Phosphoric acid & Sulfuric acid	5	110 (2) 55 gal drums

The material safety data sheets (MSDS) are provided in **Appendix 3, "MSDS."**

## VII. Climatology

The San Joaquin Valley lies in the central region of the State of California; it is bounded to the east by the Sierra Nevada Mountain Range, bounded to the west by the Range and to the south by the Tehachapi Mountains. The proposed project site is located in the southern portion of the valley.

The climate of the southern San Joaquin Valley is classified as a Dry–Summer Subtropical type, and is characterized by hot summers, mild winters, and small amounts of precipitation. The major climatic controls in the San Joaquin Valley Air Basin are the surrounding mountains and the Pacific High pressure system over the ocean. The Great Basin High pressure system to the east also affects the valley, primarily during winter months. These influences result in distinct seasonal weather characteristics.

The Pacific High is a semi–permanent, subtropical, high–pressure system located off the Pacific Coast. The Pacific High tends to migrate seasonally. During the summer, it moves northward and dominates the regional climate. This high produces persistent temperature inversions and a predominantly northwest airflow. Clear skies, high temperature, low humidity, and relatively good air circulation characterize this season. The Pacific High blocks migrating extra-tropical storms, therefore very little precipitation occurs in the summer months. Occasionally, tropical air moves into the area and thunderstorms may occur over the adjacent mountains.

As the Pacific High shifts southward during the fall, its dominance is diminished in the San Joaquin Valley. During this transition period, the storm belt and zone of strong westerly winds also shifts southward, into California. Three weather regimes generally prevail during winter: (1) storm periods which are usually characterized by cloudiness, precipitation, and shifting, gusty winds; (2) clear weather associated with either a buildup of pressure through the interior of California following these storms or the influence of a well–developed Great Basin High pressure system; and (3) persistent fog or stratus clouds and temperature inversions associated with a weak influence of the Great Basin High trapping a layer of cool, moist air in the San Joaquin Valley. Thus sky, temperature, and humidity conditions are much more variable during



winter. Air movement is also variable, with stagnant conditions occurring more frequently than during summer.

The nearby Temblor Range to the west and its foothills modify the local climate of the project area. Radiative cooling at night, especially during clear conditions, results in a distinct down slope drainage flow. Thus, the mountains provide a distinct diurnal wind pattern of generally northerly winds during the day and a westerly drainage flow at night.

The western side of the San Joaquin Valley experiences fewer days of fog and less dense fog than does the eastern side at comparable elevations. Thunderstorms tend to be less frequent, probably averaging less than one per year.

Diurnal wind regimes markedly affect the horizontal transport of air in the project area. During the summer, northeast winds dominate the daytime regime. These winds, generated by the Pacific High offshore, are enhanced by the San Joaquin Valley orientation and by the thermal low that develops in the central valley during this season. In response to this thermal low, air moves inland through passes in the coastal ranges, principally the Carquinez Strait near San Francisco, and flows to the south in the San Joaquin Valley as an up-valley northwesterly wind. This general northwest flow in the San Joaquin Valley is expressed locally as a more northeasterly wind under the influence of local terrain on the west-side of the valley.

Dominant nighttime wind directions during summer are markedly different from those of the daytime. Winds with a northerly component have a low frequency of occurrence at night. The high frequency of west to southwest winds at night is due primarily to down slope drainage flow.

During the winter months, northerly to northeasterly winds remain dominant in the daytime. However, winds are more variable than during summer, due in part to: (1) the southward migration of the Pacific High and resultant storm passages; (2) the absence of a strong thermal trough; and (3) the varied influence of the Great Basin High. As in summer, winds during winter nights are predominantly from the west to southwest and are associated with drainage flow. Wind speeds are generally higher in summer than in winter in the project area. Calm conditions occur most often in winter but are relatively infrequent during either season.

The mountains to the east, south and west essentially block the region from transport of very cold air from the mid-continent in winter, and the relatively cool, marine air from the Pacific Ocean during summer. Transport of marine air through the Carquinez Strait during summer has a moderating effect on northern portions of the San Joaquin Valley, but this effect is not great in the southern portion of the valley. In this area, temperature regimes are influenced primarily by topography, the higher elevations generally experiencing cooler temperatures.

About 90 percent of the precipitation in the San Joaquin Valley occurs from November through April, generally in association with storms that move eastward from the Pacific Ocean during this period. Precipitation is low because the mountains to the west and south produce a rain shadow effect by intercepting prefrontal, moisture-laden west and south winds. The southern San Joaquin Valley receives precipitation primarily from cold, unstable, northwesterly flow that usually follows a frontal passage. Table 4 presents climate data representative of the project area.



**TABLE 5**  
**Representative Temperature, Relative Humidity and Precipitation Data; Bakersfield, California**

Month	Average Daily Temperature (°F)		Relative Humidity (%)		Average Rainfall (in)
	Minimum	Maximum	Morning	Afternoon	
January	20	82	81	60	1.16
February	25	87	76	51	1.24
March	31	94	71	41	1.21
April	33	101	64	33	0.52
May	37	107	55	26	0.18
June	44	114	49	23	0.08
July	52	115	46	21	0
August	52	112	50	23	0.04
September	45	112	53	27	0.08
October	29	103	59	34	0.3
November	28	94	73	50	0.64
December	19	83	79	60	1.02
Annual	19	115	63	37	6.47

Source: National Centers for Environmental Information, Comparative Climatic Data. Accessed October 2016. <https://www.ncdc.noaa.gov/ghcn/comparative-climatic-data>

### **Isohyetal Map**

Isohyets are lines which join points of equal precipitation on a map. The Kern County Hydrology Manual details precipitation data for the area in which the facility is located (**Exhibit 4, "100-YR, 24-Hr Isohyetal Map."**) The 100-year, 24-hour event map shows precipitation in the area of the site to be roughly 2 inches.



## Evapotranspiration

Evapotranspiration (ET) is the combination of transpiration (precipitation loss to the atmosphere through plant surfaces) and evaporation. In agricultural operations, accurate estimates of evapotranspiration are often needed for irrigation schedules, system design, and other matters relating to water.

Temperature, humidity, wind speed, soil parameters and plant factors all affect ET. While ET can be accurately measured using lysimeters and other similar equipment, estimating ET (utilizing analytical and empirical equations) is far more common because measurement methods are often expensive and time consuming.

Formulating an equation for ET is difficult as there are so many factors to include. It is complicated to formulate an equation that can produce estimates of ET under so many different sets of conditions; therefore, the idea of reference crop evapotranspiration (ET<sub>o</sub>) was developed by researchers. Reference ET is the ET rate of a reference crop expressed in inches or millimeters.

The California Irrigation Management Information System (CIMIS), governed by the State of California Department of Water Resources, has created a Reference “**Evapotranspiration Map,**” (**Exhibit 5**) for California dividing the state up into different zones. Wible LLC Oldenkamp Trucking falls into Zone 15 which is described as: Northern & Southern San Joaquin Valley, slightly lower winter ET<sub>o</sub> due to fog and slightly higher summer ET<sub>o</sub> than zones 12 (east side Sacramento-San Joaquin Valley) and 14 (Mid-Central Valley, Southern Sierra Nevada, Tehachapi & High Desert Mountains). Zone 15 Average Evapotranspiration, by month, is shown on Table 5:

**TABLE 6**  
**Monthly Average Reference Evapotranspiration**

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
15	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.9

*Values given are in inches/month*

*Source: DWR, California Irrigation Management Information System (CIMIS) Reference Evapotranspiration Map, 1999.*

## Wind Rose

The appropriate “**Wind Rose Diagram**” is included as **Exhibit 6**. This Wind Rose Diagram is a visual depiction of wind patterns at a particular site. This diagram depicts winds blowing from a direction to the weather station. Meteorological data obtained from a station in Bakersfield, CA shows wind speeds, direction and frequency. Winds originate predominantly from the northwest with a greater frequency of higher winds than from any other direction. Winds out of the southeast also make up a large portion of wind frequency in the area but at lower wind-speeds.



## VIII. Surface Water

Drainages within the study area are ephemeral. Blue-line streams do not cross the study area; the closest stream is roughly two miles to the east as shown on the **“Flood Zone and Drainage Map”, Exhibit 7**. The west-side streams drain areas of low precipitation in the San Emigdio Mountains and the Temblor Range that are underlain chiefly by sedimentary rocks. The waters are highly mineralized and are characteristically sulfate waters of intermediate cation composition (Wood and Dale, 1964). Because of the low precipitation yields and short bursts of discharge from streams in these areas, boron was most likely concentrated in the alluvial deposits by evaporation following leaching from fine-grained marine sedimentary rocks in the Temblor Range (Wood and Dale, 1964). The Kern Island Canal runs north-south 1 mile east of the facility. The facility is located in zone X, areas determined to be outside the 0.2% annual chance floodplain, as shown in **Exhibit 7, “Flood Zone and drainage Map.”**

## IX. Groundwater Characteristics

The study area is situated within the western edge of the Tulare Lake Hydrologic Region within the Kern County Basin. The western basin edge approximately coincides with the surface exposure of the Tulare Formation. Significant geographic features of the Kern County Basin include the southern portion of the San Joaquin Valley, the Temblor Range to the west, the Tehachapi Mountains to the south, and the southern Sierra Nevada to the east. Groundwater on the west-side has a high total dissolved solids (TDS) content attributed to recharge of stream flow originating from marine sediments of older coalescing alluvial fans in the Coast Range (DWR, 2003 and Wood and Dale, 1964).

The study area is located within the Kern Delta Water District (KDWD) which supplies potable water to this area for residential, commercial, agricultural, and industrial uses. Based on a review of the Kern County Water Agency (KCWA), Kern County Environmental Health Services (KCEH), and the California Department of Water Resources (DWR), files one water wells at the facility and 13 other water wells are located within section 12. A 150 acre recharge area is located roughly one half mile south east of the facility. KDWD water supply is derived from ground water wells and gravity conveyance systems consisting of five main canals and laterals (Todd Engineers, 2013). Water is also obtained from the State Water Project via the California aqueduct for groundwater recharge and is delivered directly to industrial users. Cal Water presently operates twelve groundwater wells within KDWD and more than 1,000 wells have been drilled within the district boundary. The aquifers beneath the KDWD area are comprised of Tertiary- and Quaternary-age continental sediments extending to depths of below 1,000 feet in the subsurface, with fresh water mapped to more than 3,000 feet. The north and central portions of KDWD are composed locally of sands and gravels deposited on the Kern River alluvial fan. These sands are considered to be one continuous aquifer system, comprised of Upper, Middle, and Lower zones. As stated by Todd Engineers in the Groundwater Management Plan Update, “In general, the Upper Zone refers to the alluvial deposits from the ground surface to a depth between 200 and 300 feet. The Middle Zone extends from the base of the Upper Zone to between about 600 and 800 feet, and the Lower Zone is defined by the alluvial deposits below the Middle Zone.” The water well closest to the facility, within a mile of the same section, had a 2015 spring water depth of 146 feet and a fall 2015 water depth of 171 feet. Ground water depth contours place the facility at 170 feet in the spring and 180 feet in the fall (California DWR) as shown on **Exhibit 8 “Depth to Groundwater”** and the groundwater elevations are shown on



**Exhibit 9 “Groundwater Surface Elevations.”** In General, the ground water gradient flows from north to south and is influenced by recharge from the Kern River. This is true for the site as well, as shown in **Exhibit 10, “Topographic Map.”**

The characterization of the source water constituents for wells in section 12 are listed below. The full water quality analysis is shown in **Appendix 4, “Source Water Quality Data.”**

**TABLE 7**  
**Source Water Quality in KDWD**

Constituent	Units	Minimum Recommended Characterization Data
		Other Industry
Total Kjeldahl Nitrogen as N	mg/L	N/A
Ammonia Nitrogen as N	mg/L	N/A
Nitrate Nitrogen as N	mg/L	N/A
pH	pH Units	8.05
General Minerals <sup>2</sup>		
Alkalinity	mg/L	N/A
Hardness	mg/L	N/A
Bicarbonate	mg/L	208
Carbonate	mg/L	N/A
Calcium	mg/L	50.2
Magnesium	mg/L	5.06
Chloride	mg/L	13
Potassium	mg/L	1.44
Sodium	mg/L	48
Sulfate	mg/L	52.8
Metals		
Arsenic	ug/L	52.8
Iron	ug/L	10.12
Manganese	ug/L	N/A

Note: Characterization data has been averaged.



## **X. Geology/Stratigraphy**

The subject property lies in the southern portion of the Great Valley geomorphic province within the southern area of the San Joaquin Valley. The San Joaquin Valley comprises the southern half of the Great Valley extending approximately 220 miles from the Stockton Arch to its terminus at the northern Transverse Ranges. The San Joaquin Valley varies from approximately 50 to 70 miles in width and is bounded the east by the Sierra Nevada Mountains and to the west by the Coast Ranges and San Andreas Fault.

The southern San Joaquin Valley forms the southern portion of a northwest trending, asymmetrical structural trough that is filled with more than 30,000 feet of marine and continental sediments that range in age from Cretaceous to recent. Bedrock along the eastern side of the San Joaquin Valley associated with the Sierra Nevada Mountains is composed primarily of pre-Tertiary granitic rocks. Bedrock beneath the Coast Ranges, which border the western side of the valley, consist of a Franciscan assemblage of late Jurassic to late Cretaceous or Paleocene age and Mesozoic ultramafic rocks (United States Geological Survey, 1998).

The subject property is located within the southern area of the San Joaquin Valley. The surface elevation of the property is approximately 340 feet above mean sea level. Topographically, the property is essentially flat with a slight dip to the south of approximately 6 feet per mile. The property is immediately underlain by approximately 7,000 feet of Recent Age alluvium and non-marine sands, silts and clays of the Pleistocene Age Kern River Formation and Pliocene Age Etchegoin and Chanac Formations. Older marine sediments which range from Miocene to Cretaceous in age are present beneath the Etchegoin Formation and consist of more than 8,000 feet of marine sands, silty sands, and shales (California Division of Oil and Gas, 1985).

The facility has no active faults on site. The nearest fault is roughly 10 miles south called the White Wolf Fault see **Exhibit 12, "Regional Fault Map."**

## **XI. Planned Changes in Facility Discharge**

The purpose of this report is to show that utilizing waste water from the cleaning of the tankers within the facility for the primary purpose of dust control on unpaved roads can be an effective substitute for potable water and will not impact groundwater or surface water. The extreme drought conditions and lack of sufficient water supply to the area are the basis for this plan. Based on data from the DWR, average evaporation rates have been tabulated (see Table 2). Given the measured area designated for cleaning, and the evaporation rate, an application volume was calculated.

Within the cleaning areas there are 10.41 acres of unpaved truck parking as shown in **Exhibit 13, "Site Plan."** The average evaporation rate is 0.158 inches/day. Wible LLC.-Oldenkamp Trucking proposes applying 75% of this evaporation rate and maintain groomed parking to prevent pooling or runoff. Drivers of the water spreading trailer truck will be instructed to prevent the possibility of water-pooling anywhere water is applied for dust control. Proposed application would be a maximum average 0.119 inches/day of water application depth. Waste water application is not being proposed on days when it rains. The following table shows the maximum allowable gallons of water that can be applied to the facility for dust control per month:



**TABLE 8**  
**Application of Dust Suppressant Monthly**  
**(Maximum gal/day)**

Month	Allowable gal/day
January	8,480
February	16,961
March	25,441
April	40,28
May	50,882
June	57,242
July	59,362
August	53,002
September	40,281
October	27,561
November	14,841
December	8,480

	Cubic Feet	Gallons/day
Maximum Average Volume of Water	4,487	33,568

Wible LLC.-Oldenkamp Trucking proposes to use waste water from cleaning milk tankers for dust control purposes. The waste water being applied to the unpaved parking is measured so that all of it will evaporate when applied and no percolation will result, therefore, groundwater will not be affected. The tank that distributes the wastewater has a 6,000 gallon capacity. If the water spreader tanker, at full capacity, is used only once per day it will never exceed the allowable gallons per day. Because not all of the unpaved parking is used every day, only those areas which are utilized for purposes of the facility will receive water application.

The maximum area of unpaved parking that could possibly be utilized is approximately 10.41 acres. This equates to approximately 33,568 gallons of waste water applied for dust control. With an application depth that is 25% less than the daily evaporation rate, there will be no percolation of waste water to reach groundwater.

Preventative and contingency measures for controlling spills and accidental discharges are in **Appendix 5, "SPCC and Dust Control Plan."**



**XII. Contacts**

Name of Operator	Wible LLC
Name of Facilities	Oldenkamp Trucking
Phone Numbers	(661) 833-3400
Current Operations	Food grade trucking (Milk)
Primary Contact	Nathan Oldenkamp: (661) 833-3400 (office), (661) 858-8013 (cell)
Secondary Contact	Dana Oldenkamp: (661) 833-3400
Correspondence Contact	Nathan Oldenkamp 11314 Wible Road Bakersfield, CA 93313 Mailing Address: 13535 S. Union Ave. 93307



### XIII. References

California Irrigation Management Information System, Reference EvapoTranspiration (ETo) Zones, State of California Department of Water Resources.

[http://www.cimis.water.ca.gov/App\\_Themes/images/etozonemap.jpg](http://www.cimis.water.ca.gov/App_Themes/images/etozonemap.jpg) Accessed September 2016.

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California Division of Oil and Gas, Volume I, 1998. California Oil & Gas Fields, [ftp://ftp.consrv.ca.gov/pub/oil/publications/Datasheets/Dtasheet\\_vol\\_1.pdf](ftp://ftp.consrv.ca.gov/pub/oil/publications/Datasheets/Dtasheet_vol_1.pdf), accessed October 2016.

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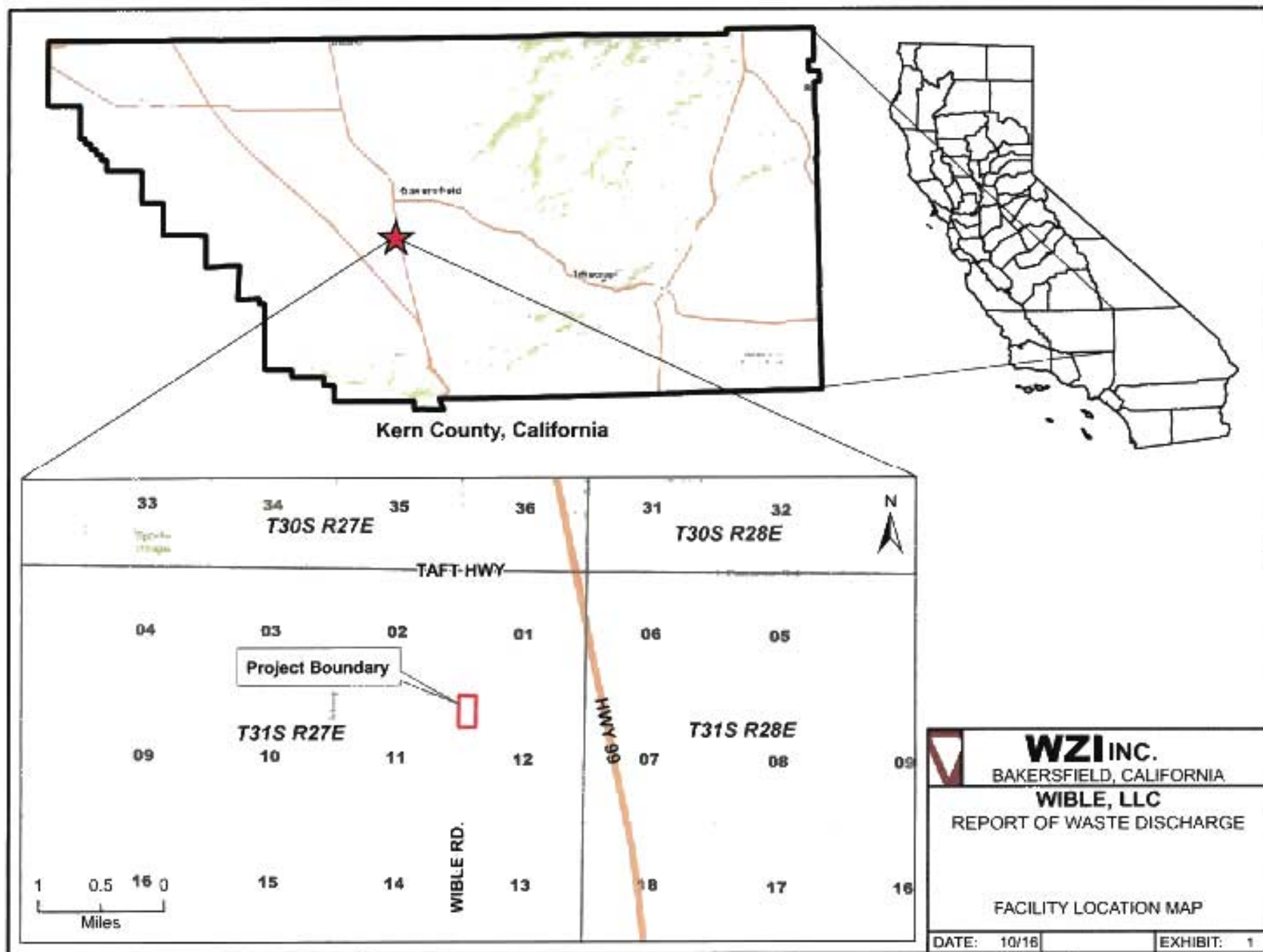
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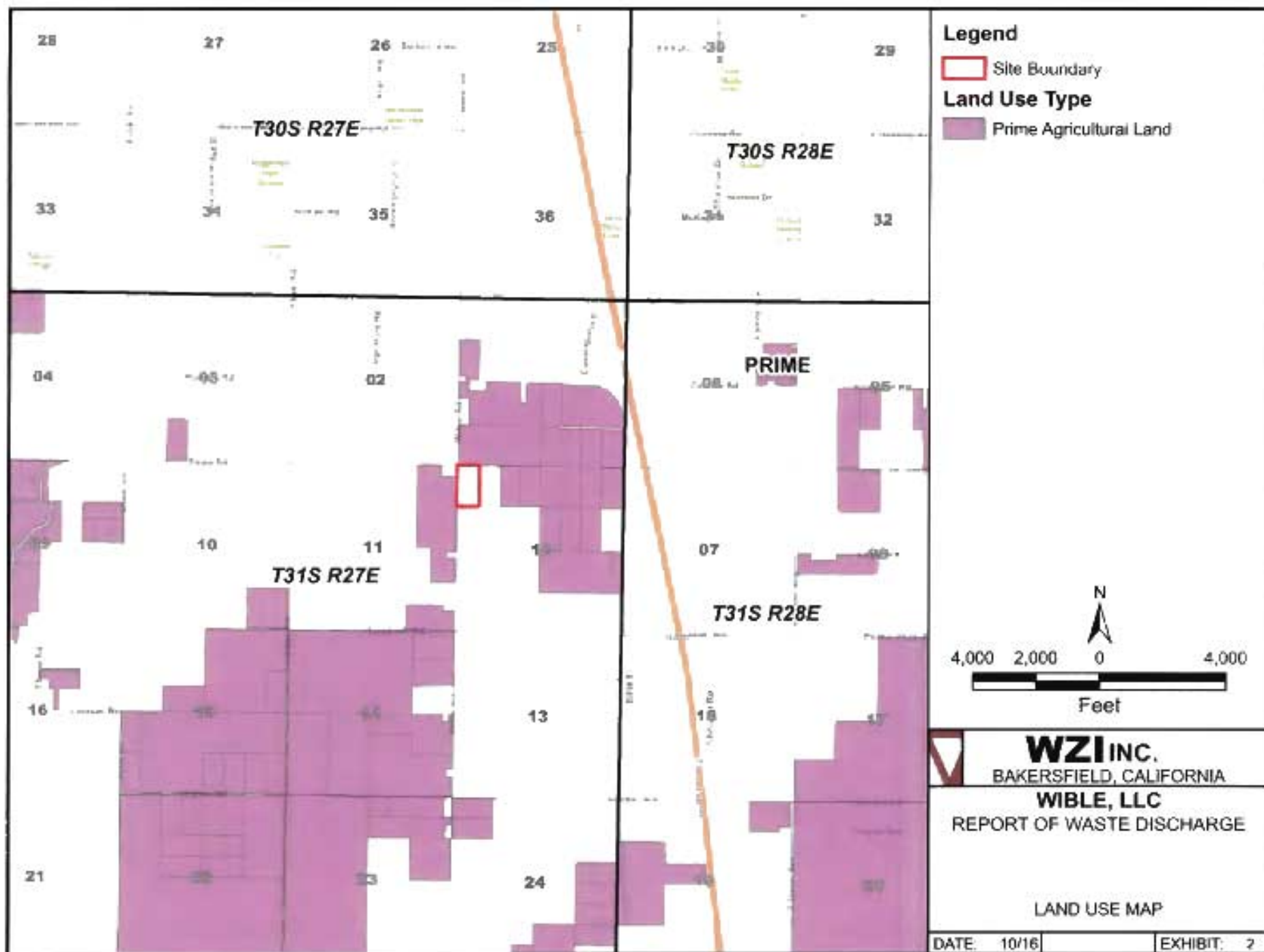
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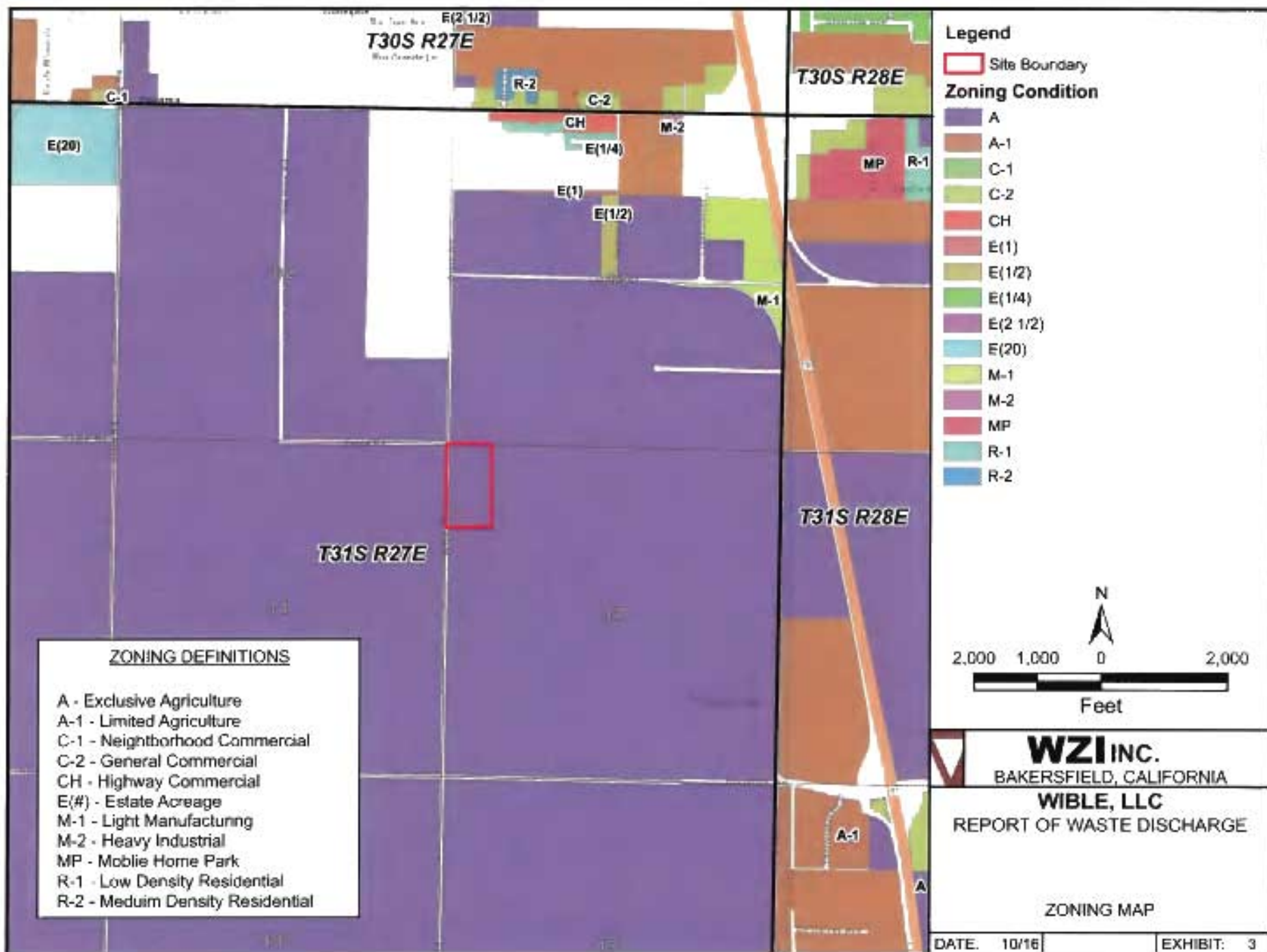




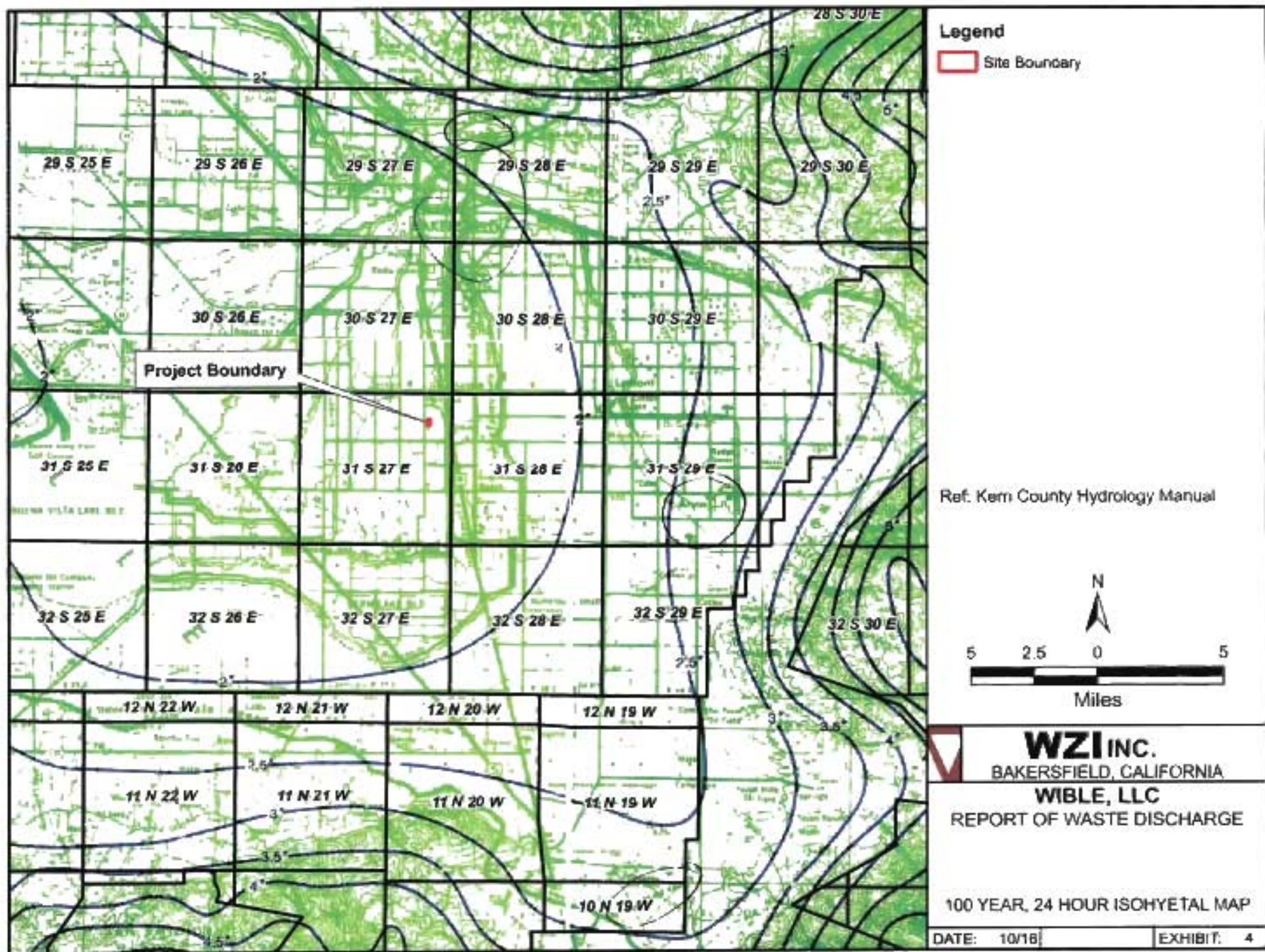




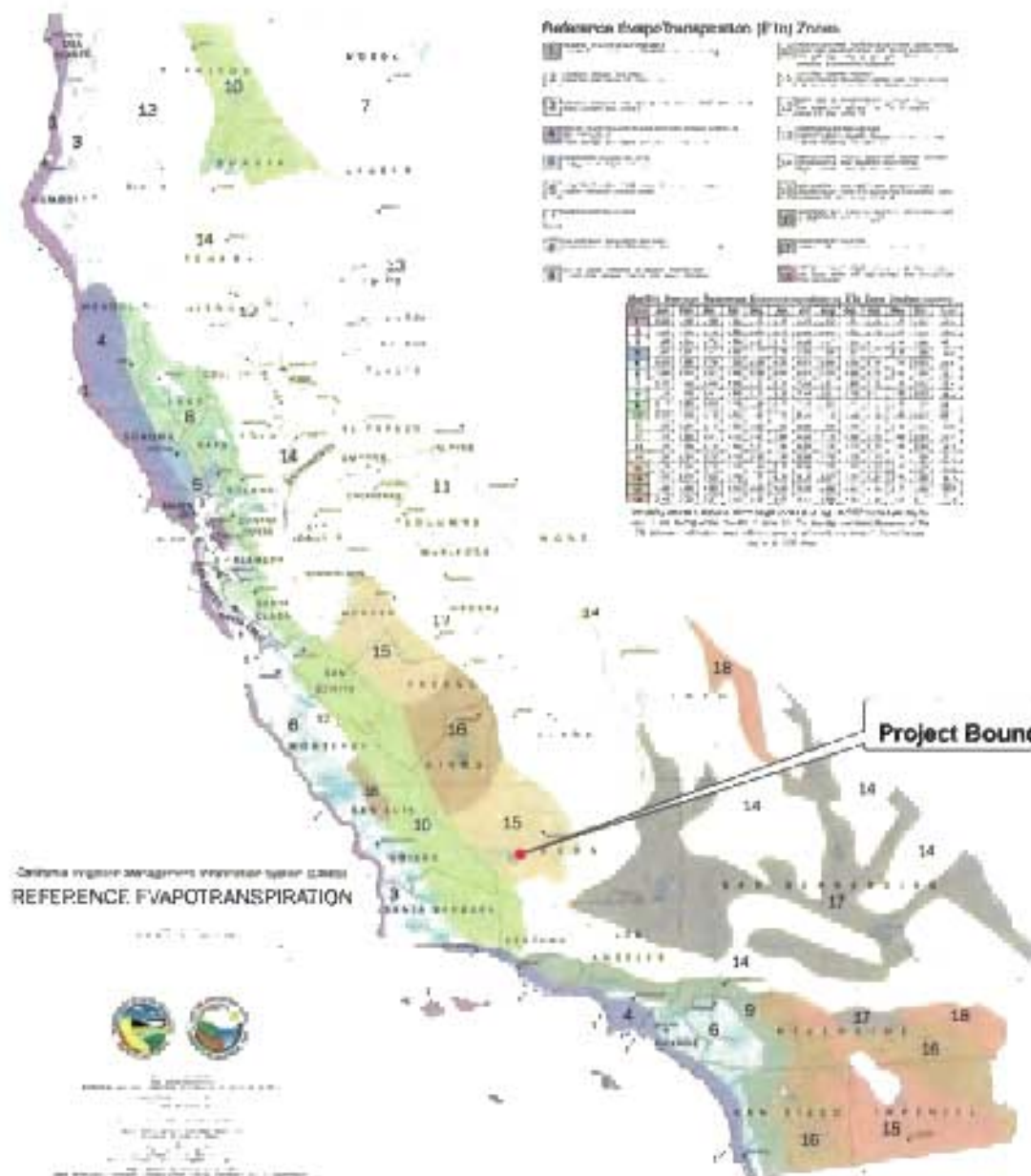








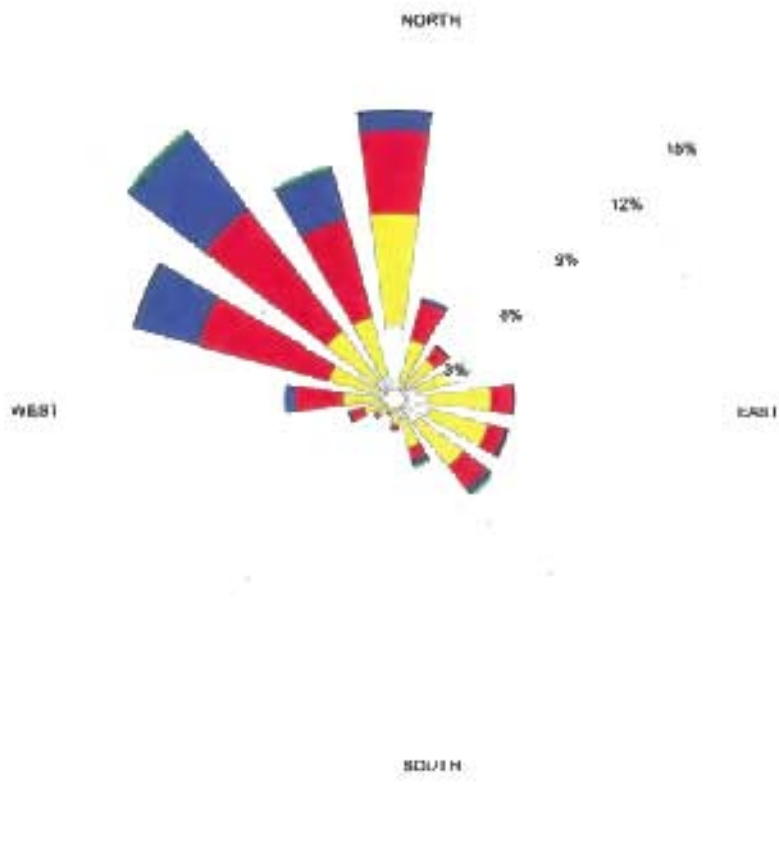






WIND ROSE PLT 01  
Bakersfield Station

DISPLAY  
Wind Speed  
Direction (blowing from)



COMMENTS

DATA PERIOD

COMPANY NAME

2005-2009  
Jan 1 - Dec 31  
00:00 - 23:00

WZi Inc.

MODELER

Yi Lu

TOTAL COUNT

43711 hrs.

DATE

3/8/2011

PROJECT NO

Direct Winds

21.48%

Avg Wind Speed

5.54 Knots

WZiPlot View - Lakes Environmental Software



**WZi INC.**  
BAKERSFIELD, CALIFORNIA

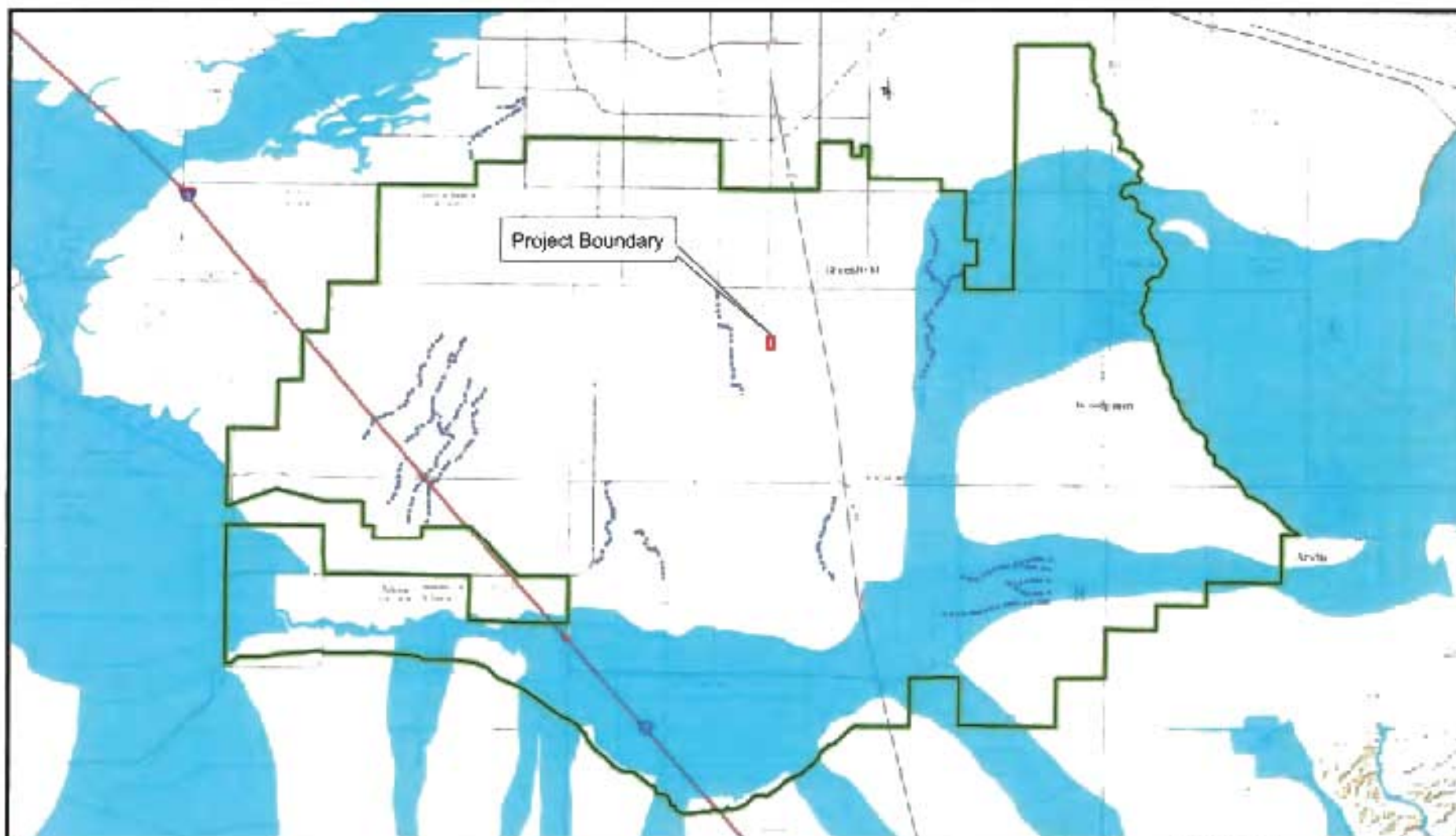
**WIBLE, LLC**  
REPORT OF WASTE DISCHARGE

WIND ROSE DIAGRAM

DATE: 10/16

EXHIBIT: 5

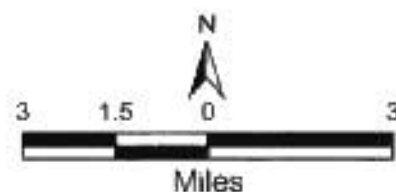




# Legend

- Drainage
- Site Boundary
- Kern Delta Water District
- 100 Year Flood Zones

Ref: <http://www.arcgis.com/home/item.html?id=e9aa2179f31b4b9cbe5c7f8b1b91cea3>



**WZI INC.**

BAKERSFIELD, CALIFORNIA

**WIBLE, LLC**

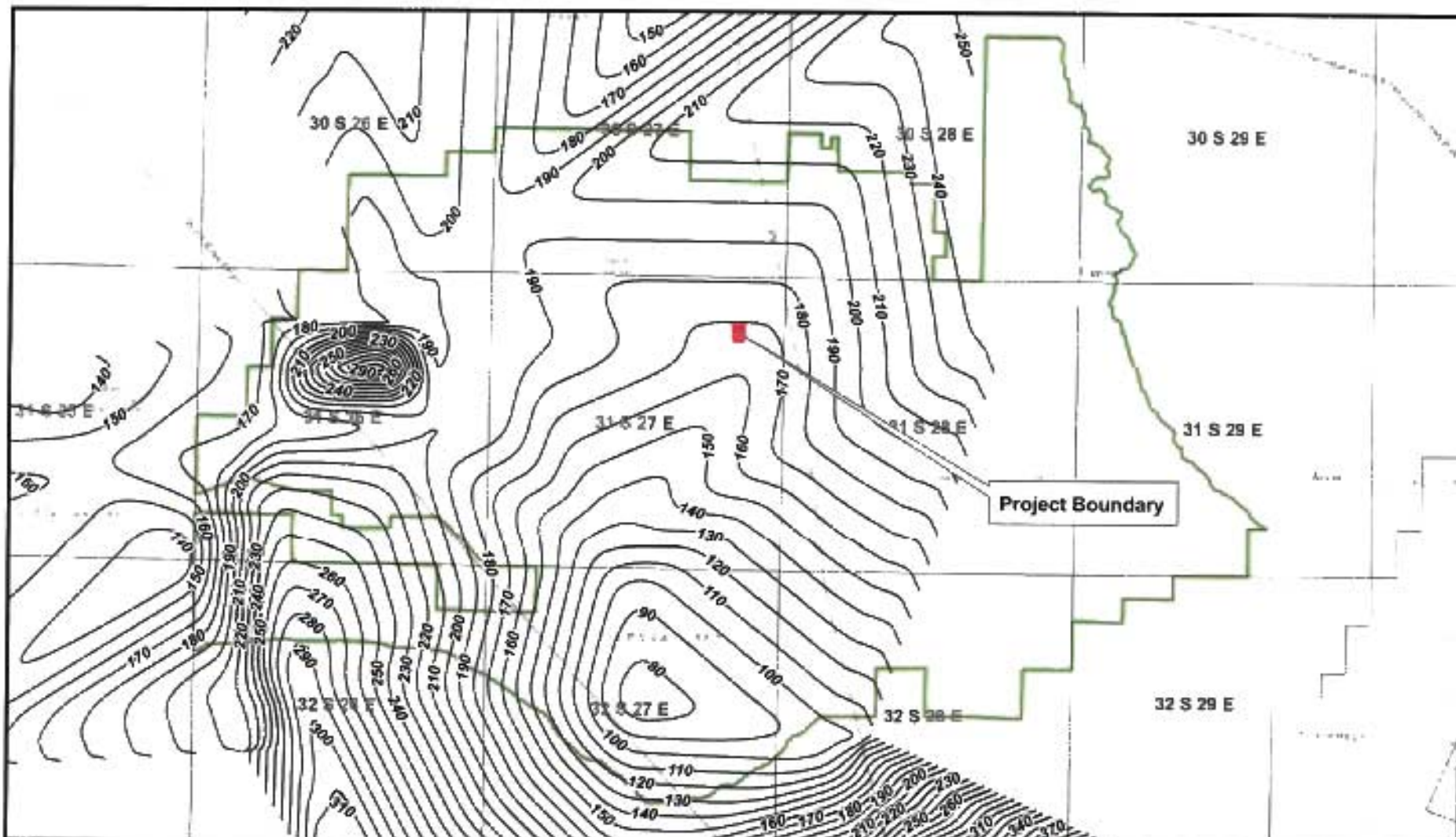
REPORT OF WASTE DISCHARGE

FLOOD ZONE AND DRAINAGE MAP

DATE: 10/16

EXHIBIT: 7

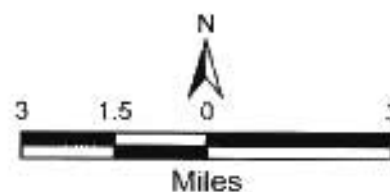





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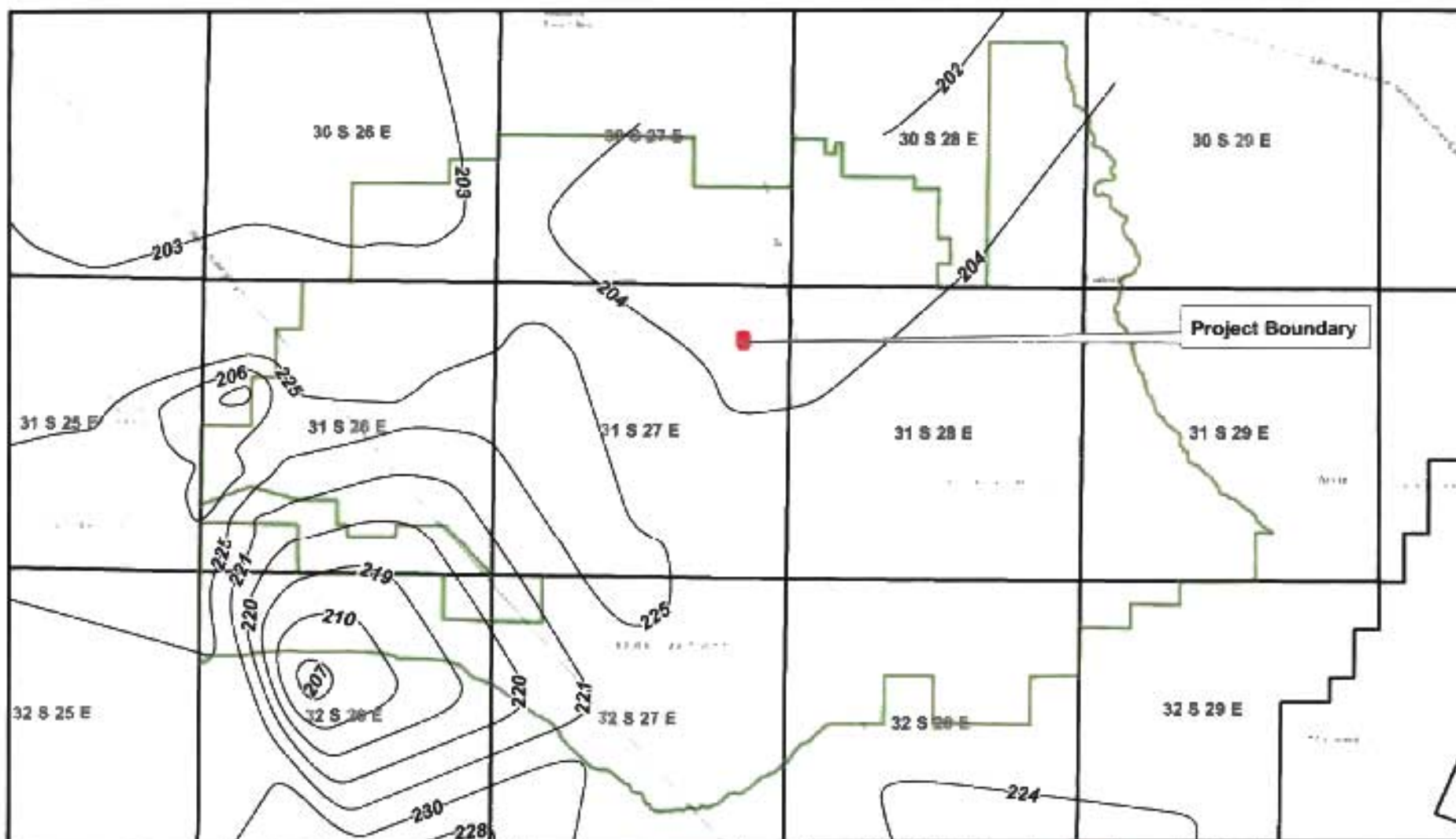
- Depth Below Ground Surface Contours
- Kern Delta Water District
- Site Boundary

REF: [http://www.water.ca.gov/groundwater/MAP\\_APP/index.cfm](http://www.water.ca.gov/groundwater/MAP_APP/index.cfm)



 <b>WZI INC.</b> BAKERSFIELD, CALIFORNIA <b>WIBLE, LLC</b> REPORT OF WASTE DISCHARGE  DEPTH TO GROUNDWATER DATE: 10/16 EXHIBIT: 8
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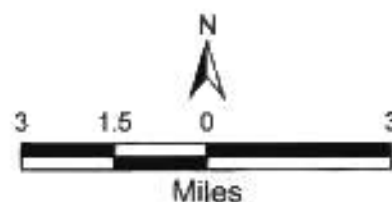




# Legend

- Groundwater Elevation Contours
- Kern Delta Water District
- Site Boundary

REF: [http://www.water.ca.gov/groundwater/MAP\\_APP/index.cfm](http://www.water.ca.gov/groundwater/MAP_APP/index.cfm)



**WZI INC.**

BAKERSFIELD, CALIFORNIA

**WIBLE, LLC**

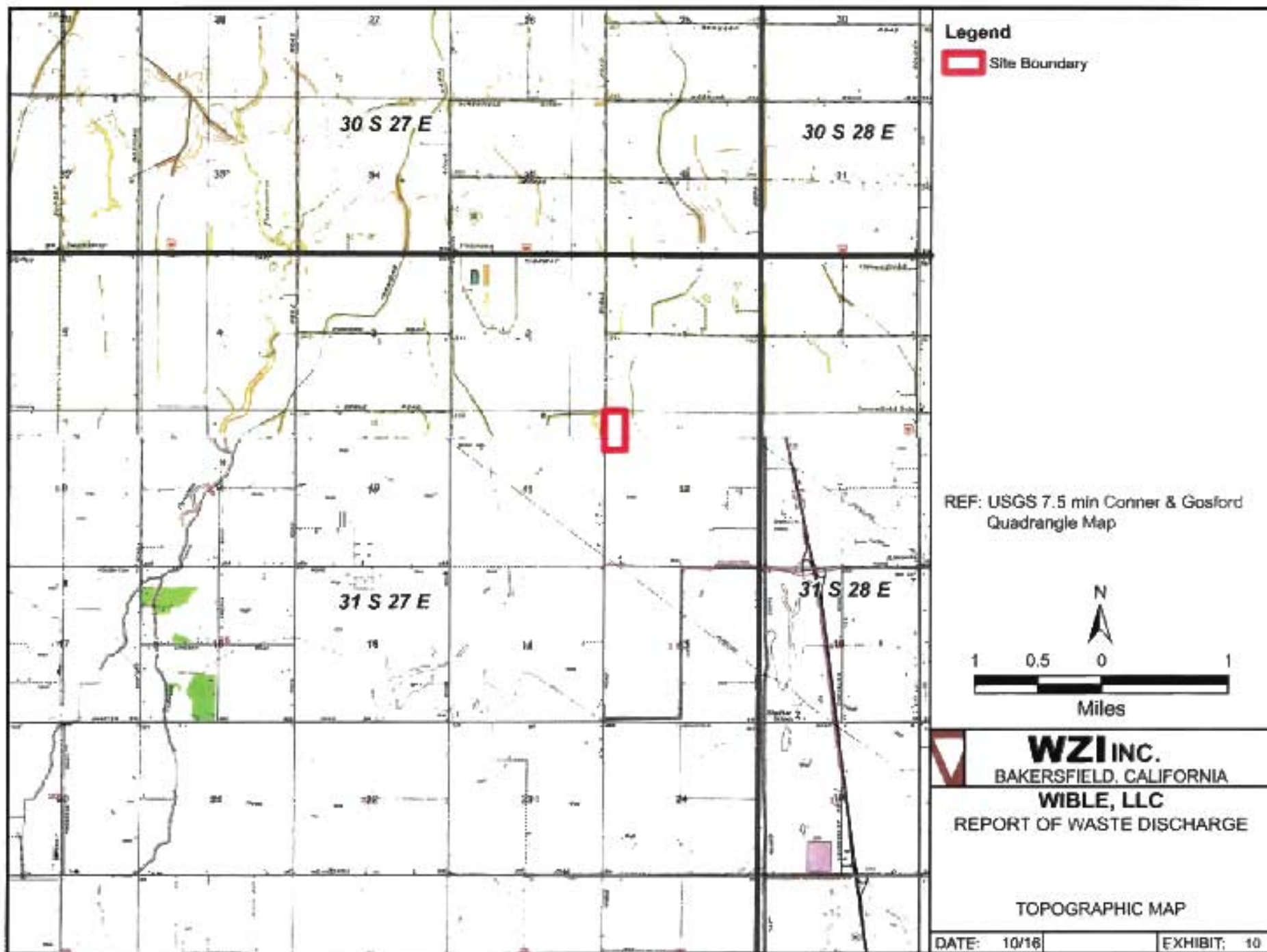
REPORT OF WASTE DISCHARGE

GROUNDWATER SURFACE  
ELEVATION MAP

DATE: 10/16

EXHIBIT: 9







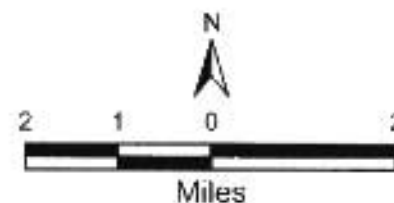


# Legend

Site Boundary

- Qs Thine sand
- Qa Alluvium
- Qal Stream channel deposits
- Qf Fan deposits
- Qb Basin deposits
- Qst Salt deposits
- Ql Quaternary lake deposits
- Qg Glacial deposits
- Qn Quaternary nonmarine terrace deposits

REF: Smith, Arthur (1964)



**WZI INC.**

BAKERSFIELD, CALIFORNIA

**WIBLE, LLC**

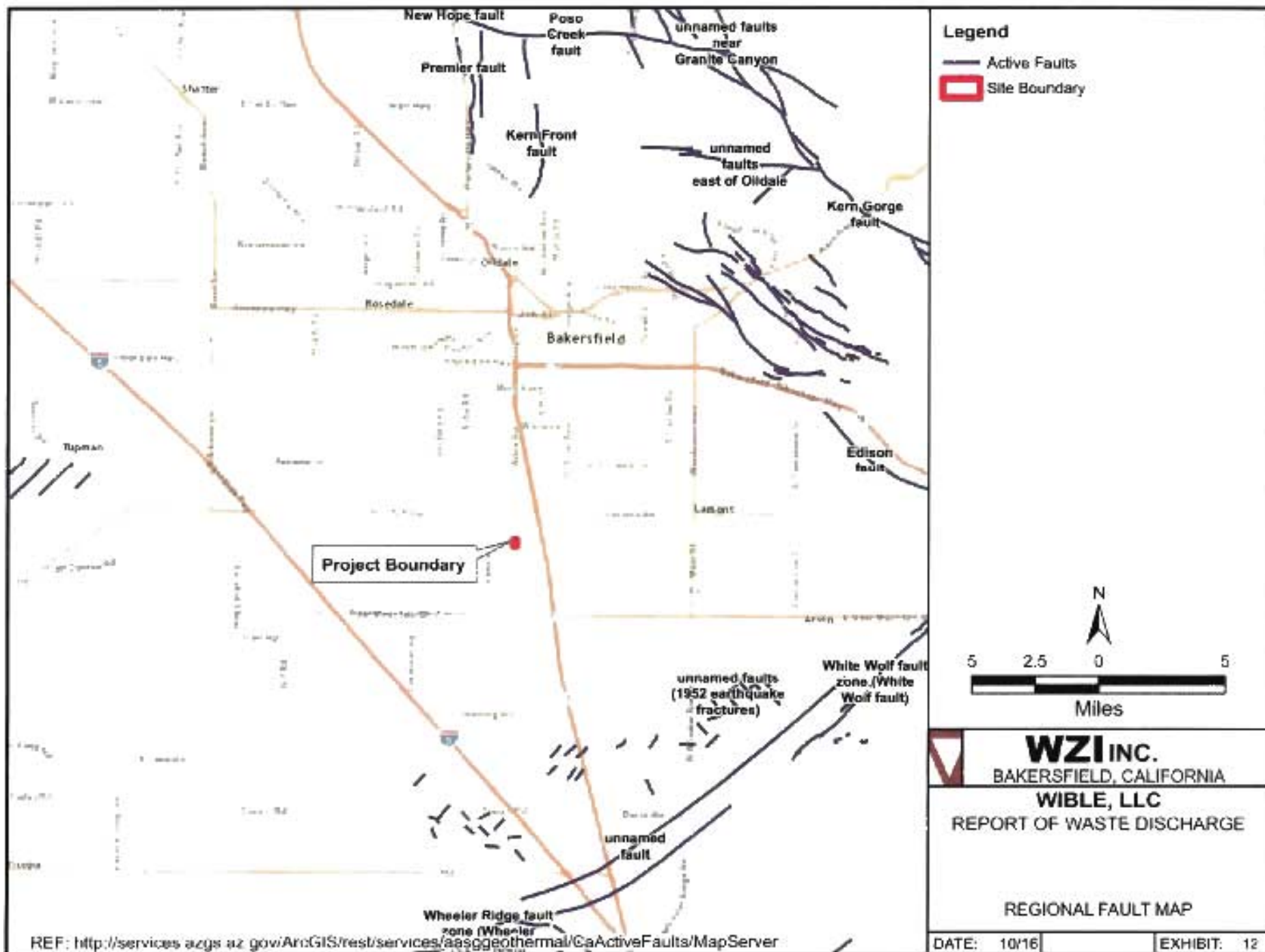
REPORT OF WASTE DISCHARGE

SURFACE GEOLOGY MAP

DATE: 10/16

EXHIBIT 11







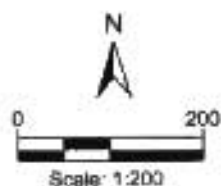
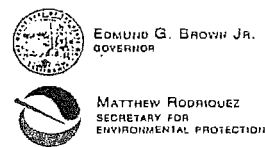


EXHIBIT 13



## **APPENDIX 1**





## Central Valley Regional Water Quality Control Board

8 September 2016

### NOTICE OF VIOLATION

Nathan Oldenkamp, Shop Manager  
Oldenkamp Trucking, Inc.  
11314 Wible Road  
Bakersfield, CA 93313

**CERTIFIED MAIL**  
**7015 1520 0000 9052 6142**

**NOTICE OF VIOLATION FOR DISCHARGE OF WASTEWATER IN VIOLATION OF CALIFORNIA WATER CODE SECTIONS 13260 AND 13264, REQUEST FOR TECHNICAL REPORT PURSUANT TO WATER CODE SECTION 13267, OLDENKAMP TRUCKING, INC., 11314 WIBLE ROAD, BAKERSFIELD, KERN COUNTY**

**You are legally required to respond to this letter. Please read this letter carefully.**

Oldenkamp Trucking, Inc., operates a trucking business including 96 food grade tankers at 11314 Wible Road south of Bakersfield in Kern County (Facility). The operation includes washout of milk tankers with discharge of wastewater to land. In response to a 21 May 2016 complaint of offensive odors emanating from the Facility, an 8 June 2016 Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff inspection revealed that discharges of industrial process wastewater to land are occurring/have occurred, without a permit, potentially threatening to degrade groundwater. Central Valley Water Board staff has not received a report of waste discharge (RWD) to facilitate assessment of the conditions or necessity for a permit to discharge waste to land. The Facility's discharge of such industrial process wastewater without a permit or submittal of an RWD is in a violation of California Water Code Sections 13260 and 13264.

This Order requires that Oldenkamp Trucking, Inc., submit certain information in response to the above allegations. Staff is available to discuss the matter with you if you desire.

#### **BACKGROUND**

##### **Discharger Activities and Facilities**

Water Board staff understands that Oldenkamp Trucking, Inc., discharged industrial process wastewater to land in areas of the Facility to the extent that the wastewater ponded on the ground surface. The wastewater was produced through the cleaning out of milk tankers. Dairy-Cycle-3 extra strength chlorinated liquid clean-in-place (CIP) and pipeline bulk tank cleaner/detergent (Dairy-Cycle-3) is used in the process. No safety data sheets were provided, but based on Internet research, Dairy Cycle 3 appears to be an industrial grade chlorinated (sodium hypochlorite) alkaline (sodium hydroxide) detergent. Acid-based cleaners; often employing nitric, phosphoric, and/or sulfuric acid; are commonly utilized in conjunction with alkaline cleaners for CIP purposes, but no acid-based cleaner appears to have been named thus far as having been used at the Facility. Additionally, a portion of the wastewater is reportedly applied to the Facility for dust control.

KARL E. LONGLEY SCD, P.E., CHAIR | PAMELA C. CREEDON P.E., BCEE, EXECUTIVE OFFICER

1685 E Street, Fresno, CA 93706 | [www.waterboards.ca.gov/centralvalley](http://www.waterboards.ca.gov/centralvalley)



Central Valley Water Board staff inspected the site on 8 June 2016 and observed wastewater discharges to land in two locations and collected both soil and wastewater samples. The Inspection Report and results of analytical testing of the soil and water samples collected during the inspection are enclosed.

### **REGULATORY CLIMATE**

The Water Quality Control Plan for The Tulare Lake Basin, Second Edition, establishes allowable limits for certain constituents in wastewater to be discharged to land and surface water. The limit for electrical conductivity (EC), chloride, and boron are 1,000  $\mu\text{mhos/cm}$ , 175 mg/L, and 1 mg/L, respectively. The maximum EC, chloride, and boron detected in the wastewater were 3900  $\mu\text{mhos/cm}$ , 320 mg/L, and 1.3 mg/L, respectively. Even the lowest EC concentrations, detected in Sample 1 and Sample 7, collected near the discharge points, exceeded the Basin Plan limits.

Water Code section 13260 states:

"Each of the following persons shall file with the appropriate regional board a report of the discharge, containing the information that may be required by the regional board ... [a] person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state..."

Pursuant to Water Code section 13261, any person who fails to furnish a RWD when so requested by the Board is guilty of a misdemeanor and the Board may impose civil liability of up to one thousand dollars (\$1,000) for each day in which the violation occurs.

Water Code section 13264 identifies the prerequisites for discharge, and states:

"No person shall initiate any new discharge of waste or make any material changes in any discharge, or initiate a discharge to, make any material changes in a discharge to, or construct, an injection well, prior to the filing of the report required by Section 13260 and no person shall take any of these actions after filing the report but before whichever of the following occurs first:

(1) The issuance of waste discharge requirements pursuant to Section 13263...."

Pursuant to Water Code section 13265, any person discharging waste in violation of Section 13264, after such violation has been called to his attention in writing by the regional board, is guilty of a misdemeanor and the Board may impose civil liability of up to one thousand dollars (\$1,000) for each day in which the violation occurs.

Oldenkamp Trucking, Inc., is hereby notified that discharge of waste is occurring in violation of Water Code sections 13260 and 13264. Each day that the Facility continues to discharge wastewater to land without a permit constitutes a separate violation.

### **ORDER CONDITIONS**

**By 7 November 2016**, Oldenkamp Trucking, Inc., is required to submit either:

1. Pursuant to California Water Code sections 13260 and 13267, a RWD for current and proposed industrial wastewater discharges from the Facility;
- or
2. Pursuant to California Water Code section 13267, a technical report documenting that the discharge has ceased and summarizing the historical nature of the discharge.



### **Report of Waste Discharge**

The enclosed *Information Needs for Liquid Waste Disposal to Land* describes in further detail the information to be included in the RWD. At a minimum, the RWD must include a properly signed Form 200 and technical report with the following information:

1. A detailed description of the various waste streams and wastewater disposal practices;
2. The volume of wastewater generated on a daily, monthly, and annual basis;
3. The quantity and types of solid waste generated, if any, and how it is disposed of;
4. Analytical data for the source water for pH, electrical conductivity, total chromium, hexavalent chromium, and general minerals (including: bicarbonate (as  $\text{CaCO}_3$ ), carbonate (as  $\text{CaCO}_3$ ), calcium, chloride, magnesium, nitrate, potassium, sodium, and sulfate); and
5. A full characterization of the Oldenkamp Trucking, Inc., wastewater. The wastewater characterization should include analyses for pH, biochemical oxygen demand, electrical conductivity, total dissolved solids, fixed dissolved solids, bicarbonate (as  $\text{CaCO}_3$ ), carbonate (as  $\text{CaCO}_3$ ), calcium, chloride, total chromium, hexavalent chromium, magnesium, nitrate, potassium, sodium, sulfate, ammonia, total nitrogen, and total Kjeldahl nitrogen.

In addition, the RWD also needs to address how future discharges will comply with the State Water Resources Control Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Antidegradation Policy). The Antidegradation Policy proscribes the degradation of high quality receiving waters unless it has been shown that:

1. The degradation will not unreasonably affect present or anticipated beneficial uses;
2. The degradation does not result in water quality less than that prescribed in State and regional polices, including violation of one or more water quality objectives;
3. The discharger employs best practicable treatment or control to minimize degradation; and
4. The degradation is consistent with the maximum benefit to the people of the State.

The Central Valley Water Board will evaluate the RWD to assess whether Waste Discharge Requirements are necessary.

### **Cessation of Discharge**

Should Oldenkamp Trucking, Inc., decide to cease onsite discharge of wastewater, or has ceased the discharge, either through eliminating the wastewater stream or discharging the wastewater to a properly permitted facility, pursuant to Water Code Section 13267, Oldenkamp Trucking, Inc., is required to submit a technical report of the historical nature of the discharge and, if applicable, the identification of the permitted licensed facility where the wastewater will be discharged. The report should contain, at a minimum, a complete description of the wastewater composition, including product hauled, chemicals/cleaners used in the cleaning process (current and historic), safety data sheets for all such chemicals/cleaners, the length of time the discharge occurred, (including an explanation for the industrial discharges back to March 2008 [as is observed in Google Earth aerial photographs], as far as is known), a best estimate of the quantity of the wastewater discharged per year, and hydrogeological conditions in the area including the depth to groundwater.

### **CLOSING STATEMENTS**

As technical information in the RWD and/or the technical report to cease the wastewater discharge involve investigation, evaluation, design, or other work requiring interpretation and proper application of engineering or geologic sciences, it is necessary that this information be prepared by or under the direction of person(s) registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance



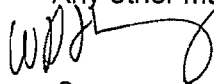
with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

Any person aggrieved by this action may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the 30th day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: [http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality) or will be provided upon request.

If you have questions about the above requirements, please contact the following:

Report of Waste Discharge requirements: Scott Hatton [scott.hatton@waterboards.ca.gov](mailto:scott.hatton@waterboards.ca.gov) or (559) 444-2502.

Any other matters: Jeff Hannel at [jhannel@waterboards.ca.gov](mailto:jhannel@waterboards.ca.gov) or (559) 445-6193

  
- for -

CLAY RODGERS  
Assistant Executive Officer

Enclosure: Facilities Inspection Report  
Laboratory Analytical Report  
Information Needs for Liquid Waste Disposal to Land

cc: Dan Starkey, Kern County Public Health Services Department  
Rich Wilson, WZI Inc., Bakersfield

e-copy: Julie Macedo, Office of Enforcement, Sacramento



NA  
WQDES  
Non-15  
PROGRAM

NA  
ORDER NO  
NA  
NPDES PERMIT NO

## FACILITIES INSPECTION REPORT

NA  
REG MEASURE ID  
526310  
PARTY ID

1/5  
PAGE NO  
764609  
PAGE ID

<u>Oldenkamp Trucking, Inc</u> <small>DISCHARGER NAME</small> <u>11314 Wible Road</u> <small>STREET ADDRESS</small> <u>Bakersfield, CA 93313</u> <small>CITY STATE ZIP CODE</small> <u>Nathan Oldenkamp, Shop Manager</u> <small>DISCHARGER CONTACT PERSON</small> <u>661 833 3400</u> <u>nathanoldenkamp@gmail.com</u> <small>TELEPHONE NO</small> <small>E-MAIL ADDRESS</small>	<u>Bakersfield Facility</u> <small>FACILITY NAME</small>  <u>Same</u> <small>STREET ADDRESS</small>  <u>Same</u> <small>CITY STATE ZIP CODE</small>  <u>Same</u> <small>FACILITY CONTACT PERSON</small>   <small>TELEPHONE NO</small> <small>E-MAIL ADDRESS</small>
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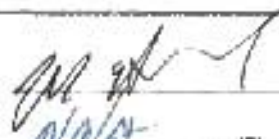
### GENERAL INSPECTION INFORMATION

Inspection Type: <u>Special</u>		Lead Inspector: <u>Jeff Hannel</u>	
<u>6/8/2016</u> to <u>6/8/2016</u>	<u>1000 - 1300</u>	<u>Clear, warm, and sunny</u>	
<small>INSPECTION DATE(S)</small>	<small>INSPECTION TIME</small>	<small>GENERAL WEATHER CONDITIONS</small>	

<small>INSPECTION ATTENDEE(S)</small>			
<u>Nathan Oldenkamp</u>	<u>Oldenkamp Trucking, Inc.</u>	<u>661 833 3400</u>	<u>See above</u>
<small>NAME</small>	<small>COMPANY/AGENCY</small>	<small>TELEPHONE NO</small>	<small>E-MAIL ADDRESS</small>
<u>Rich Wilson</u>	<u>WZI, Inc.</u>	<u>661 328 1112</u>	<u>rwilson@wziinc.com</u>
<small>NAME</small>	<small>COMPANY/AGENCY</small>	<small>TELEPHONE NO</small>	<small>E-MAIL ADDRESS</small>
<u>Dan Starkey</u>	<u>Kern County</u>	<u>661-862 8757</u>	<u>dans@co.kern.ca.us</u>
<small>NAME</small>	<small>COMPANY/AGENCY</small>	<small>TELEPHONE NO</small>	<small>E-MAIL ADDRESS</small>

### INSPECTION SUMMARY (for CIWQS entry - 500 character maximum)

Not a permitted facility. Inspection completed to assess a complaint of offensive odors. The facility washes out milk tankers and discharges the wastewater to the ground. Offensive odors were not noted, but unpermitted industrial discharge to ground was observed. Wastewater samples were collected and the maximum EC, chloride, and boron detected in the wastewater were 3900  $\mu\text{mhos/cm}$ , 320 mg/L, and 1.3 mg/L, respectively, above the allowable limits in the Tulare Lake Basin Plan

Lead Inspector ID: <u>Jeff Hannel</u>	Signature: 	Date: <u>9/6/16</u>
Inspection Tracking Information	Reviewed by: (1) <u>N/A</u> (2) <u>[Signature]</u> (3) <u>ALT</u>	<small>CIWQS Coordinator</small>
Filename: <u>Oldenkamp</u>	CIWQS Entry Date: <u>09/02/2016</u>	CIWQS Inspection ID: <u>25679133</u>

### FACILITY INFORMATION

<u>Milk tanker truck maintenance and cleaning</u> <small>FACILITY DESCRIPTION</small> <u>None</u> <small>TREATMENT DESCRIPTION</small> <u>Wastewater is discharged directly to the ground without containment</u> <small>DISPOSAL DESCRIPTION (e.g. disposal ponds, spreading basins, leachfields, land application area, etc.)</small> <u>NA</u> <small>SLUDGE HANDLING AND STORAGE DESCRIPTION</small>	<u>NA</u> <small>DISCHARGE FLOW LIMIT (S)</small>  <small>FACILITY CLASSIFICATION (POTW Only)</small>
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## **BACKGROUND**

This is not a currently permitted facility, and until an offensive odor complaint was received the existence of the Facility was unknown to Central Valley Water Board staff. Kern County Public Health Services Department (KCPHSD) personnel had performed an Aboveground Petroleum Storage Act inspection and a Hazardous Materials Business Plan Inspection on 13 May 2016 but did not note the wastewater discharge. The presence of tanker trucks and evidence of wastewater discharge from the main site building extends back to 2008, according to historical photographs on Google Earth. The purpose of the inspection was to collect information to develop an opinion on the threat to water quality (surface and groundwater) and nuisance conditions posed by facility operation.

## **INSPECTION OBSERVATIONS AND FINDINGS**

Scott Yuen and I arrived at Oldenkamp Trucking, Inc., 11314 Wible Road, Bakersfield (Facility) at 1000 on 8 June 2016 and met Dan Starkey, Hazardous Materials Specialist with the KCPHSD. The site inspection was in response to an offensive odor complaint registered by Cal OES on 21 May 2016. Upon arriving we did not notice any offensive odors. We went in the office and spoke with Monica. Monica contacted Nathan Oldenkamp, the shop manager, who arrived about ½ hour later. Nathan contacted Rich Wilson, an engineer with WZI Inc. who arrived shortly thereafter. We inspected the Facility, which consisted of a steel structure used for washing milk trucks and vehicle repair, and a separate office building (See Figure 1). We were informed that previously the Facility had been a dairy. The Facility is in a rural area and pistachios are grown in the southern portion of the parcel on which the Facility is situated. The Oldenkamp family trust owns the parcel to the east of the Facility. With the exception of the structures, the Facility was flat with a soil surface that appeared to have been recently graded.

Nathan explained that they owned 96 trucks used for hauling milk and have been in operation for about 2 years. They perform clean in place (CIP) services for milk trucks. Trucks are typically cleaned off-site at the point of milk discharge but some trucks need to be cleaned at the Facility because the point of milk discharge does not have the capability to wash the trucks. They wash 6 to 18 trucks per day onsite, which generates 2,000 to 3,000 gallons of wastewater per day.

According to Nathan, the tanker washout station utilizes Dairy-Cycle-3 extra strength chlorinated liquid clean-in-place (CIP) and pipeline bulk tank cleaner/detergent. Some of the wastewater is discharged to the ground surface adjacent to where the trucks are washed (see photos 1 and 2). Some of the water is piped about 400 feet south to an old milk tanker for temporary storage and is then discharged to the ground (see photos 3, 4, and 5). In both areas the wastewater flows to the east after discharge. Wastewater was visible ponded at the surface for several hundred feet east of the discharge points. Nathan explained that some of the wastewater is used for dust control at the Facility. Puddles were visible outside the discharge areas which would support Nathan's statement about the use of wastewater for dust control.

I collected five soil samples and three wastewater samples for laboratory analyses. The locations are shown on Figure 1. Sample 1 is wastewater collected from a discharge pipe adjacent to the old milk tanker and Sample 2 is wastewater ponded on the ground surface east of the old milk tanker. Sample 3 is surface soil collected next to the old milk tanker and Sample 4 is surface soil collected east of the old milk tanker. Sample 5 is a surface soil sample collected next to the tanker wash area and Sample 6 is a surface soil sample collected east of the tanker wash area. Soil Samples 4 and 6 were collected to see if there was variation in the chemistry of the soil at a distance from the point of discharge; Samples 3 through 6 were collected from saturated soil (silty sand) adjacent to the edge of the ponded water. The soil was collected using a plastic scoop and in some cases the water content in the soil was sufficient that the sample had characteristics of a viscous thick liquid and flowed from the plastic scoop into the sample container. Sample 7 is wastewater that was ponded on the soil surface and was collected near the tanker wash area. Sample 8 is a dry silty sand sample collected from near surface soil at the southwest corner of the Facility intended to serve as a background sample. The soil samples were collected from a depth of approximately zero to six-inches. Copies of the laboratory reports are attached.

Nathan Oldenkamp and Rich Wilson thought the depth to water was 300 to 400 feet below ground surface.

## **SUMMARY**

The depth of penetration of wastewater is unknown. Data at the California Department of Water Resources website



**FACILITIES INSPECTION REPORT**  
CENTRAL VALLEY WATER BOARD  
OLDENKAMP TRUCKING, INC., KERN COUNTY

3/5

indicates that the depth to water in a well about 2,500 feet southeast of the Facility in 2016 was about 160 feet below ground surface.

The Water Quality Control Plan for The Tulare Lake Basin Second Edition establishes allowable limits for certain constituents in wastewater to be discharged to land and surface water. The limit for electrical conductivity (EC), chloride, and boron are 1,000  $\mu\text{mhos/cm}$ , 175 mg/L, and 1 mg/L, respectively. The maximum EC, chloride, and boron detected in the wastewater were 3900  $\mu\text{mhos/cm}$ , 320 mg/L, and 1.3 mg/L, respectively. Even the lowest EC concentrations detected in Sample 1 and Sample 7, collected near the discharge points, exceeded the Basin Plan limits.

Wastewater Sample 2, taken 200 feet from the discharge from the old milk tanker, had higher concentrations of almost all constituents than the wastewater samples collected from the wastewater discharge points. This may be due to evaporation which concentrates the salts in the wastewater; but may also be due to a longer exposure time to the soil surface thereby giving the salts in the soil a longer time to go into solution.

Sample 8, intended to represent background soil, had higher EC and chloride concentrations than the other soil samples. It is unclear whether Sample 8 represents background or if the soil in that area had been influenced by the use of the wastewater for dust control, or perhaps influenced by other anthropogenic activities.

Other than an engineered pond in the parcel east of the Facility, there is no surface water in the vicinity of the Facility.



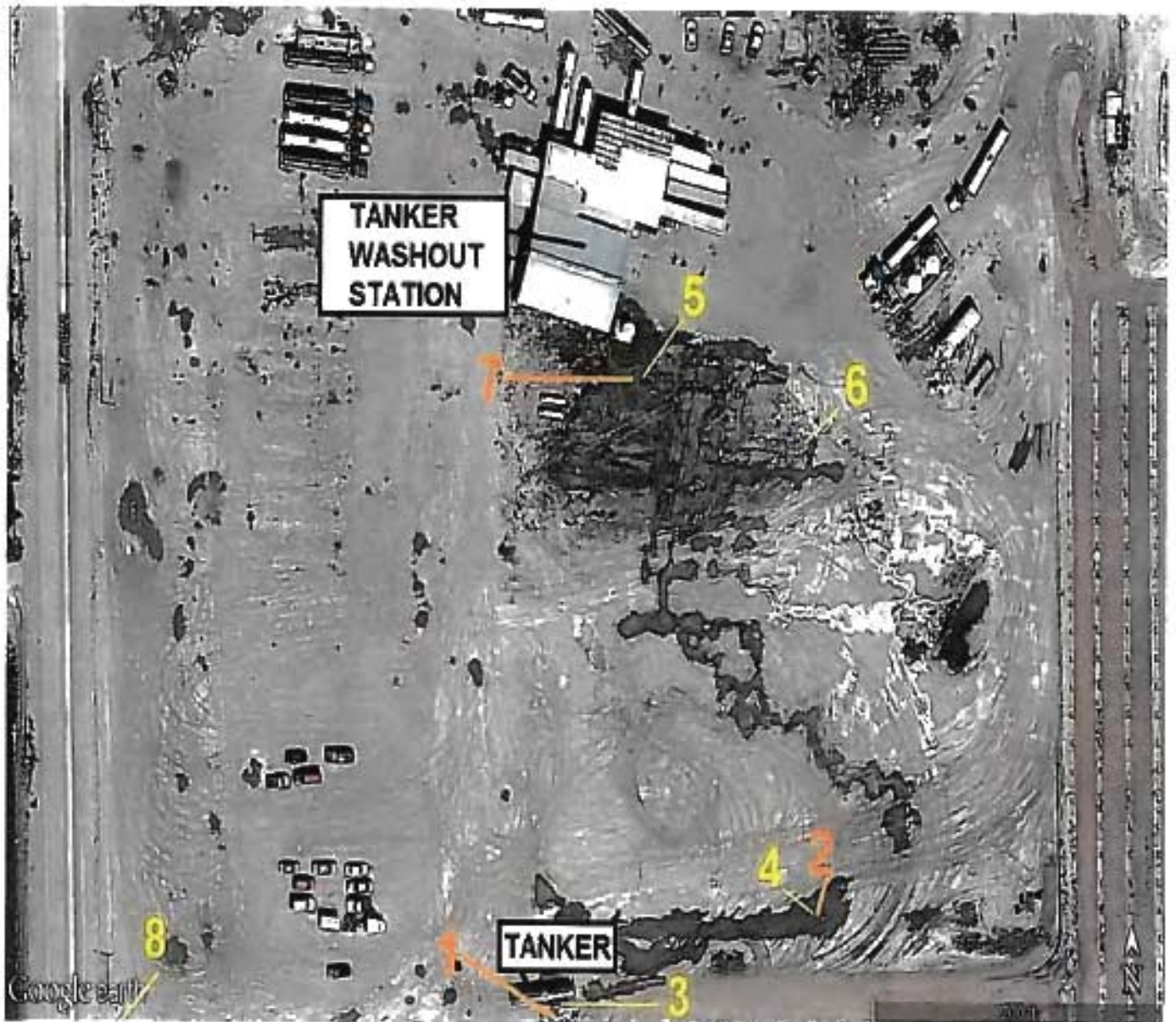


Figure 1

Site layout. Wastewater sample locations are orange and the soil sample locations are yellow.  
(No Scale)



## PHOTOGRAPHS



Photo 1 Tanker washout with ponded wastewater



Photo 2. Ponded wastewater from tanker washout. View east



Photo 3. Old milk tanker used for storage of wastewater. View south from tanker washout area.



Photo 4 Old milk tanker used for temporary wastewater storage



Photo 5. Ponded water from old milk tanker. View west



## TECHNICAL INFORMATION FOR A REPORT OF WASTE DISCHARGE

For

### Discharges to Land in the WDR (Non 15<sup>1</sup>) Program (Individual WDRs Only)

This document provides guidance for applying for individual waste discharge requirements only. If you believe that your discharge would be appropriately regulated under general waste discharge requirements or general waiver, please see the links below and contact Central Valley Water Board staff for guidance.

General WDRs: [http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/#General](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/#General)  
Waivers: [http://www.waterboards.ca.gov/centralvalley/board\\_decisions/adopted\\_orders/#Waivers](http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/#Waivers)

#### What is a Report of Waste Discharge?

A Report of Waste Discharge (ROWD) is an application for waste discharge requirements. A ROWD consists of the following:

1. A completed and signed Form 200, which can be down loaded from the internet at [http://www.waterboards.ca.gov/publications\\_forms/forms/docs/form200.pdf](http://www.waterboards.ca.gov/publications_forms/forms/docs/form200.pdf).
2. A technical report prepared by a California registered Civil Engineer that presents the information listed in the table below.
3. For a new or previously unpermitted discharges, a check for the first annual fee made payable to the *State Water Resources Control Board*. Consult with staff to determine the required fee. There is no fee if you are applying for revised or updated WDRs because you are already subject to an annual permit fee. The current fee schedule can be viewed at the following link: <http://www.waterboards.ca.gov/resources/fees/index.shtml#wdr>

#### Compliance with the California Environmental Quality Act (CEQA)

Although not required as part of the ROWD, for new, previously unpermitted, or expanding/changing discharges, you must also submit a copy of any draft and final environmental review documents prepared to comply with the California Environmental Quality Act (CEQA).

If the local planning agency (city or county, as applicable) or another public agency has determined that the project (or expansion, changes, etc.) does not require any discretionary action by that agency, the Central Valley Water Board may be the lead agency for the purposes of CEQA, and you will be required to submit an Initial Study and pay all fees and other costs associated with the CEQA process unless the Board determines that the action falls within the scope of a categorical or statutory exemption. Fees associated with the filing of an Initial Study may include a California Department of Fish and Game fee, County Clerk recording fees, and costs for publishing the CEQA Notice of Intent in a local newspaper. Consult with your local planning agency and Central Valley Water Board staff if you

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<sup>1</sup> The Non 15 Program regulates discharges to land that are exempt from Title 27 of the California Code of Regulations. See the following link for a brief explanation of Title 27 and exemptions that may be used: [http://www.waterboards.ca.gov/water\\_issues/programs/land\\_disposal/waste\\_discharge\\_requirements.shtml](http://www.waterboards.ca.gov/water_issues/programs/land_disposal/waste_discharge_requirements.shtml)



have any questions about CEQA. Additional information about CEQA is also available at the following link: [http://opr.ca.gov/m\\_ceqa.php](http://opr.ca.gov/m_ceqa.php).

### What is Required for the ROWD Technical Report?

Please note the following tips to expedite the ROWD review and waste discharge requirements development:

- Providing the information in the same order as the list below will help to expedite the ROWD review. Staff will use this as a checklist.
- If any of the information is missing or incomplete, the ROWD will be deemed incomplete and the process (and your project) will be delayed until all of the required information is submitted. You will be notified in writing of the ROWD status after it has been reviewed. If the ROWD is incomplete, we will specify the additional information that is required to complete the ROWD.
- All numerical data presented in tables and calculations performed using spreadsheets should be provided in digital form (MS Excel compatible spreadsheet) as well as hard copy.
- If some of the information listed below can be found in a previous technical report prepared by a registered professional, the ROWD can incorporate the report as an appendix, but the ROWD text must specify where in the report the required information can be found. However, if appended reports contain information that conflicts with the body of the ROWD, it may cause further delays.

<b>A. General Information</b>
1. Is this a new/proposed or existing facility?
2. If this is an existing facility, is the discharge currently regulated under Waste Discharge Requirements (WDRs) issued by the Central Valley Water Board?
a. If so, provide the WDRs order number.
b. If not, provide the name of the local agency that issued the current permit.
3. Provide a copy of any other permits that reference or relate to the wastewater disposal system. This includes Use Permits and Surface Mining and Reclamation Act (SMARA) reclamation plans, etc.
4. Provide the following for the facility that generates the waste and the site where the waste is discharged:
a. Street address (provide street name and distance from nearest cross street if there is no street number).
b. The approximate latitude and longitude of the facility that generates the wastewater, wastewater treatment facilities, and wastewater land disposal areas.
c. Township, Range, and Section.
d. Assessor's parcel numbers.



<b>B. Wastewater Facility and Discharge</b> Complete this section for both new/proposed facilities and existing facilities.	
1.	A description of the sources and types of wastewater flowing into the system from:
	a. residential (population served and number of connections or equivalent dwelling units).
	b. commercial (number of connections by type).
	c. industrial (number of connections by type).
2.	Design influent flow rates (average daily, dry weather daily, peak hour, peak day, and peak month), and the design treatment capacity of the system with respect to each of these. For new/proposed facilities, provide the methods used to estimate these design parameters and copies of all calculations.
3.	For existing facilities, a summary table of monthly influent flow totals and monthly precipitation totals for the last five years. Explain any data gaps, outliers, and/or unusual circumstances that might affect measured flow rates. If sewer inflow and infiltration (I/I) contributes significantly to influent flow, provide an I/I analysis to project I/I as a function of total annual precipitation and/or groundwater level as appropriate.
4.	A detailed description of the facilities that generate wastewater, and all wastewater conveyance, treatment, and disposal systems. Use site plans and conceptual drawings as appropriate to illustrate locations and typical construction. Include all treatment processes. The following maps, plans, and illustrations are needed:
	a. A facility location map showing local topography, the facility location and/or boundaries, streets, and surface waters (including storm water drainage ditches, irrigation canals, and irrigation/tailwater ditches).
	b. A process flow schematic for the entire treatment and disposal system. Include existing and proposed flow monitoring devices and sampling locations proposed to determine compliance with the WDRs.
	c. A scaled treatment plant site plan.
	d. A scaled map showing the limits of all proposed wastewater treatment, storage and disposal areas.
5.	Characterization of the source water (the community or process water supply), influent wastewater quality (prior to treatment or discharge), and treated effluent quality. See Table 1 for a minimum list of constituents to be analyzed.
6.	<p>For POTWs and domestic wastewater facilities, a description of the sewer system, sewer materials and age, and lift station details (type, location, capacity, backup systems, and alarm features). Discuss potential inflow and infiltration (I/I) rates in light of local groundwater conditions and sewer system materials/design.</p> <p>For industrial facilities, a description of the industrial wastewater collection and conveyance system.</p>
7.	A description of proposed alarm systems, emergency wastewater storage facilities, and other means of preventing treatment system bypass or failure during reasonably foreseeable overload conditions (e.g., peak flows, power failure, sewer blockage). Consider both potential problems at the treatment system and within the conveyance system.



8.	Preventive and contingency measures for controlling spills and accidental discharges.
9.	Flood and frost protection measures (structural and operational) employed at the facility.
10.	For debris, grit and screenings, sludge, and biosolids the following:
a.	A description of solids generation rates, on-site treatment and handling systems, and short-term storage procedures.
b.	A description of solids disposal practices.
c.	For facilities that do not have continuous sludge wasting systems (i.e., where sludge accumulates in treatment and/or storage ponds), the frequency of assessing accumulated sludge volume, the date of the last sludge volume assessment, the date of the last sludge cleanout, and expected frequency of future sludge cleanout activities
11.	For each wastewater treatment, storage, or disposal pond and containment structure, provide the following information:
a.	Identification (name) and function of the pond.
b.	Surface area, depth, and volumetric capacity at two feet of freeboard.
c.	Height (relative to surrounding grade), crest width, interior slope, and exterior slope of each berm or levee.
d.	Materials used to construct each berm or levee.
e.	Description of engineered liner, if any. Include a copy of the Construction Quality Assurance (CQA) Report if one was prepared.
f.	Estimated steady state percolation rate for each unlined pond.
g.	Depth to shallow groundwater below the base and pond inverts.
h.	Overfilling/overflow prevention features.
i.	Operation and maintenance procedures.
12.	For subsurface disposal systems, provide the design basis and documentation demonstrating that the system has been designed in accordance with applicable regulations, codes, ordinances, and guidelines. If the design deviates from these requirements, provide justification in terms of system longevity, maintainability, and groundwater protection.
13.	If treated domestic effluent will be recycled for beneficial reuse or if wastewater will reused or land-applied <sup>2</sup> , provide a complete description of the following:
a.	Ownership and contact information for each landowner <sup>3</sup> .
b.	Effluent disinfection system.
c.	Effluent conveyance systems.

<sup>2</sup> Uses of recycled water that are limited to landscape irrigation (including golf courses) can be regulated under General WDRs issued by the State Water Board. See this webpage for more information: [http://www.waterboards.ca.gov/water\\_issues/programs/water\\_recycling\\_policy/landscape\\_irrigation\\_general\\_permit.shtml](http://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/landscape_irrigation_general_permit.shtml).

<sup>3</sup> Landowners are typically named in WDRs as co-dischargers, and the WDRs may include separate requirements with which co-dischargers must comply.



d.	Water recycling/Land application areas (LAA) areas.
e.	Cropping plans.
f.	Planned operations (planting and harvest, irrigation method, irrigation frequency, irrigation amounts).
g.	Expected nutrient loadings (pounds per acre per year total nitrogen).
h.	Expected salt loadings (pounds per acre per year total dissolved solids).
i.	Tailwater management methods.
j.	Storm water runoff management methods.
k.	Setback distances from the edge of each recycling/land application area from the property boundary, public streets, occupied structures owned by others, and surface waters/surface water conveyances.
l.	Plans that illustrate items c, d, i, j, and k above
14.	If wastewater effluent will be recycled pursuant to Title 22 of the California Code of Regulations (e.g., if domestic wastewater is recycled to grow crops, irrigate landscaping, provide pasture for livestock, or for landscape or recreational impoundments, including reclamation sites owned by a POTWs, unless water is recycled solely for irrigation of landscaping at the POTW site) a Title 22 Engineering Report must be submitted to both the Central Valley Water board and California Department of Public Health <sup>4</sup> .
15.	Projected monthly water balances demonstrating adequate containment capacity for both the average rainfall year and the 100-year return period total annual precipitation, including consideration of at least the following:
a.	For POTWs and private domestic wastewater facilities, initial baseline influent and I/I flows as well as baseline influent and I/I flows at full build out with an aging sewer system.
b.	A minimum of two feet of freeboard in each pond at all times (unless a registered civil engineer determines that a lower freeboard level will not cause overtopping or berm failure).
c.	Historical local evapotranspiration, pan evaporation, and lake evaporation data (monthly average values).
d.	Local precipitation data with the 100-year return period annual total distributed monthly in accordance with mean monthly precipitation patterns.
e.	Proposed recycling area/land application area/disposal system hydraulic loading rates distributed monthly in accordance with expected seasonal variations based on crop evapotranspiration rates.
f.	Projected long-term percolation rates (including consideration of percolation from unlined ponds and the effects of solids plugging on all ponds).
16.	Proposed flow limits and basis for the limits. Consider dry weather flows vs. peak flows and seasonal variations. Include the technical basis for the proposed flow limit (e.g., design

<sup>4</sup> To the extent this information is already presented in the Title 22 Engineering Report, the RWD may incorporate that report by reference. The Title 22 Engineering Report must also be submitted to the California Department of Public Health for review and approval.



	treatment capacity; hydraulic capacity of a main lift station, headworks, or other system element; and demonstrated effluent storage/disposal capacity).
	17. A narrative description of treatment system operation and maintenance procedures to be employed, including those associated with effluent storage and disposal.
	18. For POTWs, the level of operator certification and staffing; the names and grade levels of all certified operators, and the hours that the facility is manned.
	19. For privately owned domestic wastewater treatment facilities, the names and grade levels of all certified operators, and the hours that the facility is manned. If the facility does not have a certified operator, provide justification for not retaining one.
	<b>C. Planned Changes in the Facility and Discharge (for existing facilities only)</b>
	1. Describe in detail any and all planned changes in the facility or discharge, addressing each of items listed in Section B above.
	<b>D. Local and Site-Specific Conditions (Illustrate with maps as appropriate)</b>
	1. Neighboring land uses.
	2. Typical crops grown (if agricultural area).
	3. Irrigation water source(s) and volume and quality data (if agricultural area).
	4. Terrain and site drainage features.
	5. Nearest surface water drainage course.
	6. FEMA floodplain designation(s).
	7. Average Annual precipitation (inches)
	8. 100-year 365-day precipitation (inches)
	9. Reference evapotranspiration (monthly and annual total)
	10. Pan evaporation (monthly and annual total)
	11. A description of the types and depths of soil underlying ponds and/or effluent disposal areas (include a copy of the geotechnical report and/or NRCS soil report). Include at least the following:
	a. Depth of unsaturated soil when groundwater is closest to the surface.
	b. Soil types based on site-specific information, sampling locations (accurately measured and recorded), description and results of percolation tests or other tests used to estimate soil long-term infiltration rates. Include depth, thickness, and soil horizons. Soils must be described at a minimum of five feet below the bottom of any disposal unit.
	c. Bedrock type and condition encountered in disposal area, if any.
	d. A scaled map depicting soil/rock types and test locations.
	12. Provide the following information about hydrogeology and groundwater:
	a. Stratigraphy, groundwater elevation and gradient, transmissivity, and influence of all recharge and pumping sources (site conceptual model).
	b. Elevation and gradient of first groundwater at the facility
	c. Depth to highest anticipated groundwater based upon onsite measurements taken



	during wet season.
	d. Shallow groundwater quality for typical waste constituents, up/down gradient. (See Table 1)
	e. Information on monitoring well locations, construction details, and locations of any geological features (e.g. aquitards, subterranean channels, faults) and aquifer characteristics.
	f. Summary of historical groundwater monitoring results (last 5 years for existing facilities, 2 years for new/planned facilities).
	<b>E. Antidegradation Analysis</b>
	<p>The State Water Resources Control Board Resolution No. 68-16 (the Antidegradation Policy) requires that the Central Valley Water Board maintain the high quality of waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not result in exceedances of one or more water quality objectives. If a discharge will degrade groundwater quality but will not cause an exceedance of one or more water quality objectives, the discharger must demonstrate that all practicable treatment or control measures have been implemented or will be implemented such that the Board can consider these measures to represent the "best practicable treatment or control" (BPTC) of the constituents of concern. Demonstrating that BPTC has been, or will be, implemented at the site can provide justification for the Board to allow the current level of degradation to continue or increase (as applicable), or for the Board to allow any degradation in the case of a new discharge. The Antidegradation Policy is incorporated into our Basin Plans, which also include implementation plans that we follow. See the following link for the Basin Plans and other important policy documents:</p> <p><a href="http://www.waterboards.ca.gov/centralvalley/plans_policies/">http://www.waterboards.ca.gov/centralvalley/plans_policies/</a></p>
	The Antidegradation Analysis must include the following:
	1. For existing facilities, whether the discharge has caused degradation. If so, for which constituents, to what degree, and whether the discharge has caused exceedance of a water quality objective.
	2. The potential for the discharge to degrade groundwater quality (for new discharges) or further degrade groundwater quality (for existing discharges, whether or not the discharge is expanding).
	The assessment must be made based on site-specific data and shall include the following items for each constituent listed in the effluent category on Table 1:
	a. Characterization of all waste constituents to be discharged that have the potential to degrade groundwater quality;
	b. Characterization of shallow groundwater quality (i.e., the uppermost layer of the uppermost aquifer) for typical waste constituents <sup>5</sup> upgradient and downgradient of the site and

<sup>5</sup> Include analyses for the following: total coliform organisms, total dissolved solids, fixed dissolved solids, electrical conductivity, nitrate nitrogen, total nitrogen, and major anions and cations.



	comparison to established water quality objectives <sup>6</sup> (include tabulated historical groundwater monitoring data and groundwater elevation contour maps for the last eight monitoring events);
	c. A description of the geology and hydrogeologic conditions of the site including groundwater elevation and gradient, transmissivity, influence of all known recharge and pumping sources, and subsurface conditions at the facility, including any proposed new disposal site or storage ponds;
	d. Groundwater degradation , if any, that has resulted from existing operations, other nearby discharges, or natural occurrences;
	e. The areal extent that the discharge has impacted or will impact the quality of the shallow groundwater, if any;
	f. The concentration found and/or expected increase in concentration in shallow groundwater for each constituent.
	g. If degradation has occurred or is expected to occur describe the following:
	i. Any facility design features and operational practices that reduce the potential for groundwater degradation (treatment or control). Such features might include salinity source control, other pollutant source control, advanced treatment, disinfection, concrete treatment structures, and pond lining systems, etc.
	ii. Additional treatment or control measures that could be implemented and a preliminary capital and annual operations and maintenance cost estimate for each.
	iii. How current treatment and control measures are justified as BPTC (i.e., what justifies not implementing additional measures);
	iv. How no water quality objectives will be exceeded; and
	v. Why allowing existing and/or anticipated degradation is in the best interest of the people of the state.
	<b>F. Industrial Storm Water Permit</b>
	<p>The State Water Resources Control Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. Many industrial facilities and some domestic wastewater treatment facilities are required to obtain coverage under this permit. Provide evidence that the facility is exempt or has applied for coverage under the Industrial Storm Water Permit.</p> <p>See the following link for more information:</p> <p><a href="http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/">http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/</a></p>
	<b>G. General WDRs for Sanitary Sewer Systems.</b>

<sup>6</sup> Compare to Basin Plan water quality objectives, including drinking water standards, agricultural water quality goals, etc.



The State Water Resources Control Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order 2006-0003-DWQ). The permit requires all public agencies that own or operate sanitary sewer systems greater than one mile in length to obtain coverage. Provide evidence that the facility is exempt or has applied for coverage under the General WDRs for Sanitary Sewer Systems.

See the following link for more information:

[http://www.waterboards.ca.gov/water\\_issues/programs/ssso/index.shtml](http://www.waterboards.ca.gov/water_issues/programs/ssso/index.shtml)

#### **H. Department of Water Resources Well Standards**

The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the State or county pursuant to Water Code section 13801, apply to all monitoring wells. Discuss whether existing monitoring wells at the facility were constructed in accordance with the Department of Water Resources Well Standards.

See the following link for more information:

[http://www.dpl.water.ca.gov/sd/groundwater/california\\_well\\_standards/well\\_standards\\_content.html](http://www.dpl.water.ca.gov/sd/groundwater/california_well_standards/well_standards_content.html)



**Table 1**

The Report of Waste Discharge must characterize the groundwater (G), source water (S), treatment system influent (I), and effluent discharge (E) for, at minimum, the constituents indicated in the list below. The characterization must be based on a statistically significant number of representative samples as determined by an appropriately registered and/or licensed professional. All media must also be characterized for all additional waste constituents that may be in the discharge based on the facility processes employed but not listed below.

Constituent <sup>1</sup>	Units	Minimum Recommended Characterization Data			
		POTW/ Domestic	Food Processor	Sand and Gravel	Other Industry
Biochemical Oxygen Demand	mg/L	I, E	I, E		E
Chemical Oxygen Demand	mg/L	G, E	I, E		E
Settleable Matter	ml/L	E	E		E
Total Suspended Solids	mg/L	I, E	I, E		E
Total Dissolved Solids	mg/L	G, S, I, E	G, S, E	G	G, S, E
Fixed Dissolved Solids	mg/L		E		G, S, E
Electrical Conductivity	umhos/cm	G, S, I, E	G, S, I, E	G, S, I, E	G, S, I, E
Total Kjeldahl Nitrogen as N	mg/L	G, S, E	G, S, E		G, S, E
Ammonia Nitrogen as N	mg/L	G, S, E	G, S, E		G, S, E
Nitrate Nitrogen as N	mg/L	G, S, E	G, S, E		G, S, E
pH	pH Units	G, S, I, E	G, S, E	G, S, I, E	G, S, I, E
General Minerals <sup>2</sup>					
Alkalinity	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Hardness	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Bicarbonate	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Carbonate	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Calcium	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Magnesium	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Chloride	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Potassium	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Sodium	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Sulfate	mg/L	G, S, E	G, S, E	G, S, E	G, S, E
Metals <sup>3</sup>					
Aluminum	ug/L	E			E
Antimony	ug/L			S, E	



Constituent <sup>1</sup>	Units	Minimum Recommended Characterization Data			
		POTW/ Domestic	Food Processor	Sand and Gravel	Other Industry
Arsenic	ug/L	G, S, E	G, S, E	G, S, E	G, S, E
Barium	ug/L			S, E	
Beryllium	ug/L			S, E	
Boron	ug/L	G	G	G, S, E	G
Cadmium	ug/L			S, E	
Chromium (IV)	ug/L			S, E	
Chromium (III)	ug/L			S, E	
Total Chromium	ug/L	G	G	G, S, E	G
Cobalt	ug/L			S, E	
Copper	ug/L	E	E	S, E	E
Fluoride	ug/L			S, E	
Iron	ug/L	G, S, E	G, S, E	G, S, E	G, S, E
Lead	ug/L	E		S, E	E
Mercury	ug/L	E		S, E	E
Manganese	ug/L	G, S, E	G, S, E	G, S, E	G, S, E
Molybdenum	ug/L			S, E	
Nickel	ug/L			S, E	
Selenium	ug/L			S, E	
Silver	ug/L			S, E	
Thallium	ug/L			S, E	
Vanadium	ug/L			S, E	
Zinc	ug/L	E		S, E	E
Disinfection By-Products <sup>4</sup>	ug/L	G, E	E		E
Formaldehyde <sup>5</sup>	ug/L	G, E	E		E
Phenols <sup>5</sup>	ug/L	G, E			E
Priority Pollutants <sup>6</sup>	Various	G, E			E

<sup>1</sup> With the exception of wastewater samples, samples for metals analysis must first be filtered using a 0.45-micron filter. If filtering in the field is not feasible, samples shall be collected in unpreserved containers and submitted to the laboratory within 24 hours with a request (on the chain of custody form) to immediately filter then preserve the sample.

<sup>2</sup> General minerals analyses shall be accompanied by a cation/anion balance demonstrating complete analyses.



- <sup>3</sup> Where constituents are analyzed as part of other suites of constituents, the results may be substituted to avoid redundant analyses (i.e., arsenic results collected to fulfill the metals suite requirements may also be used to fill the Priority Pollutant suite requirements provided appropriate detection limits are used.).
- <sup>4</sup> If wastewater is disinfected using chlorination or chlorination is used in internal disinfection processes.
- <sup>5</sup> If the facility accepts holding tank waste from RVs, boats, or portable toilets.
- <sup>6</sup> The Discharger must determine which priority pollutants, if any, are likely to be present in the discharge at concentrations that might degrade groundwater quality, and must provide characterization data for those constituents.





California ELAP Certificate #1371

2527 Fresno Street  
Fresno, CA 93721  
(559) 268-7021 Phone  
(559) 268-0740 Fax

June 23, 2016

Work Order #: CF08063

Anthony Toto  
RWQCB - Fresno  
1685 E Street  
Fresno, CA 93706-2007

RE: 15-011-150

Enclosed are the analytical results for samples received by our laboratory on 06/08/16 . For your reference, these analyses have been assigned laboratory work order number CF08063 .

All analyses have been performed according to our laboratory's quality assurance program. All results are intended to be considered in their entirety, Moore Twining Associates, Inc. (MTA) is not responsible for use of less than complete reports. Results apply only to samples analyzed.

If you have any questions, please feel free to contact us at the number listed above.

Sincerely,

Moore Twining Associates, Inc.

Lisa Montijo  
Client Services Representative





California ELAP Certificate #1371

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(559) 268-0740 Fax

RWQCB - Fresno  
1685 E Street  
Fresno CA, 93706-2007

Project 15-011-150  
Project Number Oldenkamp  
Project Manager Anthony Toto

Reported:  
6/23/2016

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
JWH160608-1	CF08063-01	Waste Water	06/08/16 11:35	06/08/16 16:20
JWH160608-2	CF08063-02	Waste Water	06/08/16 11:45	06/08/16 16:20
JWH160608-3	CF08063-03	Soil	06/08/16 11:55	06/08/16 16:20
JWH160608-4	CF08063-04	Soil	06/08/16 12:05	06/08/16 16:20
JWH160608-5	CF08063-05	Soil	06/08/16 12:20	06/08/16 16:20
JWH160608-6	CF08063-06	Soil	06/08/16 12:25	06/08/16 16:20
JWH160608-7	CF08063-07	Waste Water	06/08/16 12:30	06/08/16 16:20
JWH160608-8	CF08063-08	Soil	06/08/16 12:40	06/08/16 16:20





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RWQCB - Fresno	Project: 15-011-150	Reported:
1685 E Street	Project Number: Oldenkamp	6/23/2016
Fresno CA, 93706-2007	Project Manager: Anthony Toto	

**JWH160608-1**

CF08063-01 (Waste Water)

Sampled:06/08/16 11:35

Analyte	Flag	Result	Reporting Limit	MDL	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Method
<b>Inorganics</b>											
Total Alkalinity as CaCO <sub>3</sub>		350	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:34	SM2320B
Bicarbonate Alkalinity as HCO <sub>3</sub>		380	1.3	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:34	SM2320B
Carbonate Alkalinity as CO <sub>3</sub>		21	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:34	SM2320B
Hydroxide Alkalinity as OH		ND	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:34	SM2320B
Cation/Anion Balance (% Difference)		2.5			%	1	U6F2004	MCM	6/20/16 8:45	6/20/16 9:51	SM 1030F
Chloride		58	4.0	0.037	mg/L	2	U6F0824	ETH	6/8/16 18:25	6/9/16 4:02	EPA 300.0
Specific Conductance (EC)		1100	1.0	0.26	µS/cm	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:34	SM2510B
Hardness (Dissolved)		28	0.66		mg equiv. CaCO <sub>3</sub> /L	1	[CALC]	DAR	6/13/16 23:33	6/13/16 23:33	CALC
Nitrate as N		3.6	0.90	0.0080	mg/L	2	U6F0824	ETH	6/8/16 18:25	6/9/16 4:02	EPA 300.0
Nitrite as N		ND	0.60	0.021	mg/L	2	U6F0824	ETH	6/8/16 18:25	6/9/16 4:02	EPA 300.0
Orthophosphate as P		45	2.5	0.028	mg/L	10	U6F0824	ETH	6/8/16 18:25	6/10/16 8:16	EPA 300.0
pH		8.8	0.10	0.10	pH Units	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:34	SM4500-H B
Sulfate as SO <sub>4</sub>		61	4.0	0.019	mg/L	2	U6F0824	ETH	6/8/16 18:25	6/9/16 4:02	EPA 300.0
Total Dissolved Solids		750	10	8.1	mg/L	1	U6F1306	ACY	6/13/16 9:21	6/14/16 10:10	SM 2540C
<b>Metals - Dissolved</b>											
Boron		0.31	0.050	0.00083	mg/L	1	U6F0712	DAR	6/13/16 9:20	6/13/16 23:33	EPA 200.7
Calcium		6.2	0.10	0.0076	mg/L	1	U6F0712	DAR	6/13/16 9:20	6/13/16 23:33	EPA 200.7
Iron		ND	0.10	0.017	mg/L	1	U6F0712	DAR	6/13/16 9:20	6/13/16 23:33	EPA 200.7
Magnesium		3.0	0.10	0.0091	mg/L	1	U6F0712	DAR	6/13/16 9:20	6/13/16 23:33	EPA 200.7
Manganese		0.0085	0.0050	0.00017	mg/L	1	U6F0712	DAR	6/13/16 9:20	6/13/16 23:33	EPA 200.7
Potassium		1.9	1.0	0.077	mg/L	1	U6F0712	DAR	6/13/16 9:20	6/13/16 23:33	EPA 200.7
Sodium		230	1.0	0.26	mg/L	1	U6F0712	DAR	6/13/16 9:20	6/13/16 23:33	EPA 200.7





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California ELAP Certificate #1371

RWQCB - Fresno	Project: 15-011-150	Reported:
1685 E Street	Project Number: Oldenkamp	6/23/2016
Fresno CA, 93706-2007	Project Manager: Anthony Toto	

**JWH160608-2**

CF08063-02 (Waste Water)

Sampled: 06/08/16 11:45

Analyte	Flag	Result	Reporting Limit	MDL	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Method
<b>Inorganics</b>											
Total Alkalinity as CaCO <sub>3</sub>		1400	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:42	SM2320B
Bicarbonate Alkalinity as HCO <sub>3</sub>		1100	1.3	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:42	SM2320B
Carbonate Alkalinity as CO <sub>3</sub>		260	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:42	SM2320B
Hydroxide Alkalinity as OH		ND	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:42	SM2320B
Cation/Anion Balance (% Difference)		4.5			%	1	U6F2004	MCM	6/20/16 8:45	6/20/16 9:51	SM1030F
Chloride		320	16	0.15	mg/L	8	U6F0824	ETH	6/8/16 18:25	6/9/16 4:18	EPA 300.0
Specific Conductance (EC)		3900	1.0	0.26	µS/cm	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:42	SM2510B
Hardness (Dissolved)		55	1.7		mg equiv. CaCO <sub>3</sub> /L	2	[CALC]	DAR	6/15/16 23:03	6/15/16 23:03	CALC
Nitrate as N		ND	3.6	0.032	mg/L	8	U6F0824	ETH	6/8/16 18:25	6/9/16 4:18	EPA 300.0
Nitrite as N		ND	2.4	0.085	mg/L	8	U6F0824	ETH	6/8/16 18:25	6/9/16 4:18	EPA 300.0
Orthophosphate as P		130	8.0	0.090	mg/L	32	U6F0824	ETH	6/8/16 18:25	6/10/16 8:32	EPA 300.0
pH		9.5	0.10	0.10	pH Units	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:42	SM4500-H B
Sulfate as SO <sub>4</sub>		250	16	0.075	mg/L	8	U6F0824	ETH	6/8/16 18:25	6/9/16 4:18	EPA 300.0
Total Dissolved Solids		3400	20	16	mg/L	2	U6F1306	ACY	6/13/16 9:21	6/14/16 10:10	SM 2540C
<b>Metals - Dissolved</b>											
Boron		1.3	0.12	0.0021	mg/L	2.5	U6F0712	DAR	6/13/16 9:20	6/15/16 23:03	EPA 200.7
Calcium		14	0.25	0.019	mg/L	2.5	U6F0712	DAR	6/13/16 9:20	6/15/16 23:03	EPA 200.7
Iron		5.0	0.25	0.042	mg/L	2.5	U6F0712	DAR	6/13/16 9:20	6/15/16 23:03	EPA 200.7
Magnesium		4.7	0.25	0.023	mg/L	2.5	U6F0712	DAR	6/13/16 9:20	6/15/16 23:03	EPA 200.7
Manganese		0.086	0.012	0.00044	mg/L	2.5	U6F0712	DAR	6/13/16 9:20	6/15/16 23:03	EPA 200.7
Potassium		41	2.5	0.19	mg/L	2.5	U6F0712	DAR	6/13/16 9:20	6/15/16 23:03	EPA 200.7
Sodium		980	2.5	0.64	mg/L	2.5	U6F0712	DAR	6/13/16 9:20	6/15/16 23:03	EPA 200.7

Moore Twining Associates, Inc.

Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





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California ELAP Certificate #1371

RWQCB - Fresno  
1685 E Street  
Fresno CA, 93706-2007

Project 15-011-150  
Project Number Oldenkamp  
Project Manager Anthony Toto

Reported:  
6/23/2016

JWH160608-3

CF08063-03 (Soil)

Sampled:06/08/16 11:55

Analyte	Flag	Result	Reporting Limit	MDL	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Method
<b>Inorganics</b>											
Total Alkalinity as CaCO <sub>3</sub>		920	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:05	SM2320B
Bicarbonate Alkalinity as HCO <sub>3</sub>		1100	1.3		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:05	SM2320B
Carbonate Alkalinity as CO <sub>3</sub>		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:05	SM2320B
Hydroxide Alkalinity as OH		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:05	SM2320B
Chloride		92	6.0	0.45	mg/kg	3	U6F1005	ETH	6/10/16 9:50	6/11/16 0:09	EPA 300.0
Specific Conductance (EC)		1400	1.0	0.26	µS/cm	1	U6F0912	CMG	6/9/16 12:09	6/14/16 23:22	WREP 125 (S-2.30)
Nitrate as N	J	0.14	1.4	0.012	mg/kg	3	U6F1005	ETH	6/10/16 9:50	6/11/16 0:09	EPA 300.0
Nitrite as N		ND	0.90	0.25	mg/kg	3	U6F1005	ETH	6/10/16 9:50	6/11/16 0:09	EPA 300.0
Orthophosphate as P		51	1.5	0.88	mg/kg	6	U6F1005	ETH	6/10/16 9:50	6/13/16 12:11	EPA 300.0
pH		8.2	0.10		pH Units	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:05	EPA 9045C
Sulfate as SO <sub>4</sub>		60	6.0	0.88	mg/kg	3	U6F1005	ETH	6/10/16 9:50	6/11/16 0:09	EPA 300.0
Total Dissolved Solids		2100	22	4.4	mg/kg	2.22	U6F1407	ACY	6/14/16 12:07	6/15/16 12:10	EPA 160.1(M)
<b>Metals - Totals</b>											
Boron	J	7.2	10	0.51	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:49	EPA 6010B
Calcium		11000	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:49	EPA 6010B
Iron		17000	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:49	EPA 6010B
Magnesium		6400	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:49	EPA 6010B
Manganese		270	1.0	0.060	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:49	EPA 6010B
Potassium		6000	100	2.6	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:49	EPA 6010B
Sodium		1400	10	1.1	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:49	EPA 6010B

Moore Twining Associates, Inc.

Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





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California ELAP Certificate #1371

RWQCB - Fresno	Project 15-011-150	
1685 E Street	Project Number Oldenkamp	Reported:
Fresno CA, 93706-2007	Project Manager Anthony Toto	6/23/2016

JWH160608-4

CF08063-04 (Soil)

Sampled:06/08/16 12:05

Analyte	Flag	Result	Reporting Limit	MDL	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Method
<b>Inorganics</b>											
Total Alkalinity as CaCO <sub>3</sub>		1600	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:22	SM2320B
Bicarbonate Alkalinity as HCO <sub>3</sub>		1900	1.3		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:22	SM2320B
Carbonate Alkalinity as CO <sub>3</sub>		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:22	SM2320B
Hydroxide Alkalinity as OH		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:22	SM2320B
Chloride		190	8.0	0.60	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 0:57	EPA 300.0
Specific Conductance (EC)		2500	1.0	0.26	µS/cm	1	U6F0912	CMG	6/9/16 12:09	6/14/16 23:39	WREP 125 (S-2.30)
Nitrate as N	J	0.080	1.8	0.016	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 0:57	EPA 300.0
Nitrite as N		2.1	1.2	0.34	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 0:57	EPA 300.0
Orthophosphate as P		89	4.0	2.3	mg/kg	16	U6F1005	ETH	6/10/16 9:50	6/13/16 12:27	EPA 300.0
pH		8.2	0.10		pH Units	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:22	EPA 9045C
Sulfate as SO <sub>4</sub>		100	8.0	1.2	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 0:57	EPA 300.0
Total Dissolved Solids		3300	20	4.0	mg/kg	2	U6F1407	ACY	6/14/16 12:07	6/15/16 12:10	EPA 160.1(M)
<b>Metals - Totals</b>											
Boron	J	6.8	10	0.51	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:59	EPA 6010B
Calcium		11000	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:59	EPA 6010B
Iron		15000	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:59	EPA 6010B
Magnesium		5700	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:59	EPA 6010B
Manganese		210	1.0	0.060	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:59	EPA 6010B
Potassium		5000	100	2.6	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:59	EPA 6010B
Sodium		2200	10	1.1	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 3:59	EPA 6010B





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RWQCB - Fresno	Project 15-011-150	
1685 E Street	Project Number Oldenkamp	Reported:
Fresno CA, 93706-2007	Project Manager: Anthony Toto	6/23/2016

JWH160608-5

CF08063-05 (Soil)

Sampled:06/08/16 12:20

Analyte	Flag	Result	Reporting Limit	MDL	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Method
<b>Inorganics</b>											
Total Alkalinity as CaCO <sub>3</sub>		1600	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 23:57	SM2320B
Bicarbonate Alkalinity as HCO <sub>3</sub>		1900	1.3		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 23:57	SM2320B
Carbonate Alkalinity as CO <sub>3</sub>		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 23:57	SM2320B
Hydroxide Alkalinity as OH		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 23:57	SM2320B
Chloride		230	8.0	0.60	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 1:13	EPA 300.0
Specific Conductance (EC)		3000	1.0	0.26	µS/cm	1	U6F0912	CMG	6/9/16 12:09	6/17/16 23:57	WREP 125 (S-2.30)
Nitrate as N	J	0.34	1.8	0.016	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 1:13	EPA 300.0
Nitrite as N		ND	1.2	0.34	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 1:13	EPA 300.0
Orthophosphate as P		140	5.0	2.9	mg/kg	20	U6F1005	ETH	6/10/16 9:50	6/13/16 12:43	EPA 300.0
pH		6.7	0.10		pH Units	1	U6F0912	CMG	6/9/16 12:09	6/17/16 23:57	EPA 9045C
Sulfate as SO <sub>4</sub>		36	8.0	1.2	mg/kg	4	U6F1005	ETH	6/10/16 9:50	6/11/16 1:13	EPA 300.0
Total Dissolved Solids		2500	100	20	mg/kg	10	U6F1407	ACY	6/14/16 12:07	6/15/16 12:10	EPA 160.1(M)
<b>Metals - Totals</b>											
Boron	J	3.2	10	0.51	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:10	EPA 6010B
Calcium		6200	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:10	EPA 6010B
Iron		3500	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:10	EPA 6010B
Magnesium		1400	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:10	EPA 6010B
Manganese		41	1.0	0.060	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:10	EPA 6010B
Potassium		1400	100	2.6	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:10	EPA 6010B
Sodium		960	10	1.1	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:10	EPA 6010B





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RWQCB - Fresno  
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Fresno CA, 93706-2007

Project: 15-011-150  
Project Number: Oldenkamp  
Project Manager: Anthony Toto

Reported:  
6/23/2016

**JWH160608-6**

CF08063-06 (Soil)

Sampled:06/08/16 12:25

Analyte	Flag	Result	Reporting Limit	MDL	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Method
<b>Inorganics</b>											
Total Alkalinity as CaCO <sub>3</sub>		1600	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:32	SM2320B
Bicarbonate Alkalinity as HCO <sub>3</sub>		1900	1.3		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:32	SM2320B
Carbonate Alkalinity as CO <sub>3</sub>		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:32	SM2320B
Hydroxide Alkalinity as OH		ND	1.0		mg/kg	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:32	SM2320B
Chloride		180	10	0.75	mg/kg	5	U6F1005	ETH	6/10/16 9:50	6/11/16 1:29	EPA 300.0
Specific Conductance (EC)		2700	1.0	0.26	µS/cm	1	U6F0912	CMG	6/9/16 12:09	6/14/16 23:50	WREP 125 (S-2.30)
Nitrate as N		ND	2.2	0.020	mg/kg	5	U6F1005	ETH	6/10/16 9:50	6/11/16 1:29	EPA 300.0
Nitrite as N		ND	1.5	0.42	mg/kg	5	U6F1005	ETH	6/10/16 9:50	6/11/16 1:29	EPA 300.0
Orthophosphate as P		47	1.2	0.73	mg/kg	5	U6F1005	ETH	6/10/16 9:50	6/11/16 1:29	EPA 300.0
pH		8.0	0.10		pH Units	1	U6F0912	CMG	6/9/16 12:09	6/17/16 22:32	EPA 9045C
Sulfate as SO <sub>4</sub>		51	10	1.5	mg/kg	5	U6F1005	ETH	6/10/16 9:50	6/11/16 1:29	EPA 300.0
Total Dissolved Solids		2200	20	4.0	mg/kg	2	U6F1407	ACY	6/14/16 12:07	6/15/16 12:10	EPA 160.1(M)
<b>Metals - Totals</b>											
Boron		12	10	0.51	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:14	EPA 6010B
Calcium		6500	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:14	EPA 6010B
Iron		9800	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:14	EPA 6010B
Magnesium		3700	10	1.4	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:14	EPA 6010B
Manganese		150	1.0	0.060	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:14	EPA 6010B
Potassium		3800	100	2.6	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:14	EPA 6010B
Sodium		2700	10	1.1	mg/kg	1	U6F1003	DAR	6/13/16 8:30	6/16/16 4:14	EPA 6010B





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RWQCB - Fresno	Project: 15-011-150	
1685 E Street	Project Number: Oldenkamp	Reported:
Fresno CA, 93706-2007	Project Manager: Anthony Toto	6/23/2016

**JWH160608-7**

CF08063-07 (Waste Water)

Sampled:06/08/16 12:30

Analyte	Flag	Result	Reporting Limit	MDL	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Method
<b>Inorganics</b>											
Total Alkalinity as CaCO <sub>3</sub>		350	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:48	SM2320B
Bicarbonate Alkalinity as HCO <sub>3</sub>		430	1.3	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:48	SM2320B
Carbonate Alkalinity as CO <sub>3</sub>		ND	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:48	SM2320B
Hydroxide Alkalinity as OH		ND	1.0	0.23	mg/L	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:48	SM2320B
Cation/Anion Balance (% Difference)		2.2			%	1	U6F2004	MCM	6/20/16 8:45	6/20/16 9:51	SM 1030F
Chloride		45	6.0	0.055	mg/L	3	U6F0825	ETH	6/8/16 18:29	6/9/16 6:10	EPA 300.0
Specific Conductance (EC)		1200	1.0	0.26	µS/cm	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:48	SM2510B
Hardness (Dissolved)		310	0.66		mg equiv. CaCO <sub>3</sub> /L	1	[CALC]	DAR	6/15/16 20:26	6/15/16 20:26	CALC
Nitrate as N		ND	1.4	0.012	mg/L	3	U6F0825	ETH	6/8/16 18:29	6/9/16 6:10	EPA 300.0
Nitrite as N		ND	0.90	0.032	mg/L	3	U6F0825	ETH	6/8/16 18:29	6/9/16 6:10	EPA 300.0
Orthophosphate as P		40	2.2	0.025	mg/L	9	U6F0825	ETH	6/8/16 18:29	6/10/16 8:48	EPA 300.0
pH		6.7	0.10	0.10	pH Units	1	U6F0821	CMG	6/8/16 18:15	6/9/16 0:48	SM4500-H B
Sulfate as SO <sub>4</sub>		54	6.0	0.028	mg/L	3	U6F0825	ETH	6/8/16 18:29	6/9/16 6:10	EPA 300.0
Total Dissolved Solids		1200	10	8.1	mg/L	1	U6F1306	ACY	6/13/16 9:21	6/14/16 10:10	SM 2540C
<b>Metals - Dissolved</b>											
Boron		0.64	0.050	0.00083	mg/L	1	U6F1014	DAR	6/14/16 12:20	6/15/16 20:26	EPA 200.7
Calcium		97	0.10	0.0076	mg/L	1	U6F1014	DAR	6/14/16 12:20	6/15/16 20:26	EPA 200.7
Iron		3.6	0.10	0.017	mg/L	1	U6F1014	DAR	6/14/16 12:20	6/15/16 20:26	EPA 200.7
Magnesium		16	0.10	0.0091	mg/L	1	U6F1014	DAR	6/14/16 12:20	6/15/16 20:26	EPA 200.7
Manganese		0.23	0.0050	0.00017	mg/L	1	U6F1014	DAR	6/14/16 12:20	6/15/16 20:26	EPA 200.7
Potassium		43	1.0	0.077	mg/L	1	U6F1014	DAR	6/14/16 12:20	6/15/16 20:26	EPA 200.7
Sodium		140	1.0	0.26	mg/L	1	U6F1014	DAR	6/14/16 12:20	6/15/16 20:26	EPA 200.7



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1685 E Street  
Fresno CA, 93706-2007Project 15-011-150  
Project Number Oldenkamp  
Project Manager Anthony TotoReported:  
6/23/2016**Inorganics - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch U6F0821 - SM2320B</b>										
<b>Blank (U6F0821-BLK1)</b>				Prepared & Analyzed: 06/08/16						
Total Alkalinity as CaCO <sub>3</sub>	0.230	1.0	mg/L							J
Specific Conductance (EC)	ND	1.0	µS/cm							
Bicarbonate Alkalinity as HCO <sub>3</sub>	0.280	1.3	mg/L							J
Carbonate Alkalinity as CO <sub>3</sub>	ND	1.0	mg/L							
Hydroxide Alkalinity as OH	ND	1.0	mg/L							
<b>LCS (U6F0821-BS1)</b>				Prepared & Analyzed: 06/08/16						
Specific Conductance (EC)	515	1.0	µS/cm	500		103	80-120		20	
<b>LCS (U6F0821-BS2)</b>				Prepared & Analyzed: 06/08/16						
pH	7.02	0.10	pH Units	7.00		100	97-103		20	
<b>LCS (U6F0821-BS3)</b>				Prepared & Analyzed: 06/08/16						
Total Alkalinity as CaCO <sub>3</sub>	246	1.0	mg/L	250		98.2	80-120		20	
<b>LCS Dup (U6F0821-BSD1)</b>				Prepared & Analyzed: 06/08/16						
Specific Conductance (EC)	513	1.0	µS/cm	500		103	80-120	0.395	20	
<b>LCS Dup (U6F0821-BSD2)</b>				Prepared & Analyzed: 06/08/16						
pH	7.02	0.10	pH Units	7.00		100	97-103	0.00	20	
<b>LCS Dup (U6F0821-BSD3)</b>				Prepared & Analyzed: 06/08/16						
Total Alkalinity as CaCO <sub>3</sub>	246	1.0	mg/L	250		98.3	80-120	0.118	20	
<b>Duplicate (U6F0821-DUP1)</b>		Source: CF07062-03		Prepared & Analyzed: 06/08/16						
Specific Conductance (EC)	1350	1.0	µS/cm		1340			0.151	20	
Total Alkalinity as CaCO <sub>3</sub>	102	1.0	mg/L		102			0.774	20	
pH	7.43	0.10	pH Units		7.47			0.537	20	
Bicarbonate Alkalinity as HCO <sub>3</sub>	125	1.3	mg/L		124			0.779	20	
Carbonate Alkalinity as CO <sub>3</sub>	ND	1.0	mg/L		ND				20	
Hydroxide Alkalinity as OH	ND	1.0	mg/L		ND				20	
<b>Duplicate (U6F0821-DUP2)</b>		Source: CF08062-01		Prepared: 06/08/16 Analyzed: 06/09/16						
Specific Conductance (EC)	1620	1.0	µS/cm		1610			0.587	20	
pH	8.00	0.10	pH Units		7.94			0.753	20	
Total Alkalinity as CaCO <sub>3</sub>	543	1.0	mg/L		532			2.05	20	
Bicarbonate Alkalinity as HCO <sub>3</sub>	662	1.3	mg/L		649			2.05	20	
Carbonate Alkalinity as CO <sub>3</sub>	ND	1.0	mg/L		ND				20	
Hydroxide Alkalinity as OH	ND	1.0	mg/L		ND				20	
<b>Batch U6F0824 - EPA 300.0</b>										

Moore Twining Associates, Inc.

Juliane Adams, Director of Analytical Chemistry

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RWQCB - Fresno  
1685 E Street  
Fresno CA, 93706-2007

Project: 15-011-150  
Project Number: Oldenkamp  
Project Manager: Anthony Toto

Reported:  
6/23/2016

### Inorganics - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Blank (U6F0824-BLK1)</b>				Prepared & Analyzed: 06/08/16						
Nitrate as N	ND	0.45	mg/L							
Orthophosphate as P	ND	0.25	mg/L							
Chloride	ND	2.0	mg/L							
Nitrite as N	ND	0.30	mg/L							
Sulfate as SO <sub>4</sub>	ND	2.0	mg/L							
<b>LCS (U6F0824-BS1)</b>				Prepared & Analyzed: 06/08/16						
Nitrate as N	11.0	0.45	mg/L	11.3		97.4	90-110		20	
Chloride	50.2	2.0	mg/L	50.0		100	90-110		20	
Orthophosphate as P	4.94	0.25	mg/L	5.00		98.7	90-110		20	
Nitrite as N	4.98	0.30	mg/L	5.00		99.6	90-110		20	
Sulfate as SO <sub>4</sub>	49.5	2.0	mg/L	50.0		99.1	90-110		20	
<b>LCS Dup (U6F0824-BSD1)</b>				Prepared & Analyzed: 06/08/16						
Nitrate as N	11.6	0.45	mg/L	11.3		103	90-110	5.29	20	
Orthophosphate as P	5.39	0.25	mg/L	5.00		108	90-110	8.72	20	
Nitrite as N	5.25	0.30	mg/L	5.00		105	90-110	5.29	20	
Chloride	52.8	2.0	mg/L	50.0		106	90-110	5.03	20	
Sulfate as SO <sub>4</sub>	52.2	2.0	mg/L	50.0		104	90-110	5.22	20	
<b>Matrix Spike (U6F0824-MS1)</b>				Source: CF08003-01		Prepared & Analyzed: 06/08/16				
Nitrate as N	25.3	0.90	mg/L	22.6	3.64	95.7	80-120		20	
Orthophosphate as P	9.25	0.50	mg/L	10.0	ND	92.5	80-120		20	
Nitrite as N	10.0	0.60	mg/L	10.0	ND	100	80-120		20	
Chloride	111	4.0	mg/L	100	9.64	101	48-147		15	
Sulfate as SO <sub>4</sub>	114	4.0	mg/L	100	16.0	98.0	70-130		20	
<b>Matrix Spike (U6F0824-MS2)</b>				Source: CF08054-03		Prepared: 06/08/16 Analyzed: 06/09/16				
Nitrate as N	21.9	0.90	mg/L	22.6	ND	97.0	80-120		20	
Chloride	118	4.0	mg/L	100	18.8	99.4	48-147		15	
Nitrite as N	9.90	0.60	mg/L	10.0	ND	99.0	80-120		20	
Orthophosphate as P	9.63	0.50	mg/L	10.0	ND	96.3	80-120		20	
Sulfate as SO <sub>4</sub>	101	4.0	mg/L	100	3.19	97.8	70-130		20	
<b>Matrix Spike Dup (U6F0824-MSD1)</b>				Source: CF08003-01		Prepared & Analyzed: 06/08/16				
Nitrate as N	24.9	0.90	mg/L	22.6	3.64	94.1	80-120	1.43	20	
Orthophosphate as P	9.32	0.50	mg/L	10.0	ND	93.2	80-120	0.704	20	
Nitrite as N	9.83	0.60	mg/L	10.0	ND	98.3	80-120	1.78	20	
Chloride	108	4.0	mg/L	100	9.64	98.8	48-147	2.21	15	
Sulfate as SO <sub>4</sub>	112	4.0	mg/L	100	16.0	96.2	70-130	1.59	20	

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RWQCB - Fresno	Project: 15-011-150	
1685 E Street	Project Number: Oldenkamp	Reported:
Fresno CA. 93706-2007	Project Manager: Anthony Toto	6/23/2016

### Inorganics - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch U6F0824 - EPA 300.0

Matrix Spike Dup (U6F0824-MSD2) Source: CF08054-03 Prepared: 06/08/16 Analyzed: 06/09/16

Nitrate as N	22.4	0.90	mg/L	22.6	ND	99.3	80-120	2.33	20	
Orthophosphate as P	10.1	0.50	mg/L	10.0	ND	101	80-120	5.01	20	
Nitrite as N	10.2	0.60	mg/L	10.0	ND	102	80-120	3.16	20	
Chloride	122	4.0	mg/L	100	18.8	103	48-147	3.12	15	
Sulfate as SO4	104	4.0	mg/L	100	3.19	101	70-130	3.36	20	

#### Batch U6F0825 - EPA 300.0

Blank (U6F0825-BLK1) Prepared: 06/08/16 Analyzed: 06/09/16

Nitrate as N	ND	0.45	mg/L							
Chloride	0.123	2.0	mg/L							J
Orthophosphate as P	ND	0.25	mg/L							
Nitrite as N	ND	0.30	mg/L							
Sulfate as SO4	ND	2.0	mg/L							

LCS (U6F0825-BS1) Prepared: 06/08/16 Analyzed: 06/09/16

Nitrate as N	11.4	0.45	mg/L	11.3		101	90-110		20	
Orthophosphate as P	5.17	0.25	mg/L	5.00		103	90-110		20	
Nitrite as N	5.15	0.30	mg/L	5.00		103	90-110		20	
Chloride	51.9	2.0	mg/L	50.0		104	90-110		20	
Sulfate as SO4	51.0	2.0	mg/L	50.0		102	90-110		20	

LCS Dup (U6F0825-BS1) Prepared: 06/08/16 Analyzed: 06/09/16

Nitrate as N	10.8	0.45	mg/L	11.3		95.2	90-110	5.56	20	
Chloride	49.0	2.0	mg/L	50.0		98.0	90-110	5.77	20	
Orthophosphate as P	4.75	0.25	mg/L	5.00		95.0	90-110	8.45	20	
Nitrite as N	4.85	0.30	mg/L	5.00		97.1	90-110	5.94	20	
Sulfate as SO4	48.2	2.0	mg/L	50.0		96.5	90-110	5.65	20	

Matrix Spike (U6F0825-MS1) Source: CF08063-07 Prepared: 06/08/16 Analyzed: 06/09/16

Nitrate as N	66.0	2.7	mg/L	67.8	ND	97.3	80-120		20	
Chloride	347	12	mg/L	300	45.0	101	48-147		15	
Orthophosphate as P	63.9	1.5	mg/L	30.0	39.7	80.9	80-120		20	
Nitrite as N	30.2	1.8	mg/L	30.0	ND	101	80-120		20	
Sulfate as SO4	345	12	mg/L	300	54.2	97.0	70-130		20	

Matrix Spike Dup (U6F0825-MSD1) Source: CF08063-07 Prepared: 06/08/16 Analyzed: 06/09/16

Nitrate as N	64.6	2.7	mg/L	67.8	ND	95.4	80-120	2.02	20	
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California ELAP Certificate #1371

RWQCB - Fresno	Project 15-011-150	Reported:
1685 E Street	Project Number Oldenkamp	6/23/2016
Fresno CA, 93706-2007	Project Manager Anthony Toto	

### Inorganics - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch U6F0825 - EPA 300.0

Matrix Spike Dup (U6F0825-MSD1)		Source: CF08063-07		Prepared: 06/08/16 Analyzed: 06/09/16						
Orthophosphate as P	66.7	1.5	mg/L	30.0	39.7	90.3	80-120	4.29	20	
Nitrite as N	29.4	1.8	mg/L	30.0	ND	98.1	80-120	2.66	20	
Chloride	337	12	mg/L	300	45.0	97.4	48-147	3.04	15	
Sulfate as SO4	335	12	mg/L	300	54.2	93.7	70-130	2.85	20	

#### Batch U6F0912 - WREP 125 (S-2.30)

Blank (U6F0912-BLK1)		Prepared: 06/09/16 Analyzed: 06/14/16								
Specific Conductance (EC)	ND	1.0	µS/cm							
Total Alkalinity as CaCO3	0.0900	1.0	mg/kg							J
Bicarbonate Alkalinity as HCO3	0.110	1.3	mg/kg							J
Carbonate Alkalinity as CO3	ND	1.0	mg/kg							
Hydroxide Alkalinity as OH	ND	1.0	mg/kg							
LCS (U6F0912-BS1)		Prepared: 06/09/16 Analyzed: 06/14/16								
Specific Conductance (EC)	510	1.0	µS/cm	500		103	80-120		20	
LCS (U6F0912-BS2)		Prepared: 06/09/16 Analyzed: 06/17/16								
pH	7.02	0.10	pH Units	7.00		100	80-120		20	
LCS (U6F0912-BS3)		Prepared: 06/09/16 Analyzed: 06/17/16								
Total Alkalinity as CaCO3	240	1.0	mg/kg	250		95.8	80-120		20	
LCS Dup (U6F0912-BSD1)		Prepared: 06/09/16 Analyzed: 06/14/16								
Specific Conductance (EC)	520	1.0	µS/cm	500		103	80-120	0.394	20	
LCS Dup (U6F0912-BSD2)		Prepared: 06/09/16 Analyzed: 06/17/16								
pH	7.02	0.10	pH Units	7.00		100	80-120	0.00	20	
LCS Dup (U6F0912-BSD3)		Prepared: 06/09/16 Analyzed: 06/17/16								
Total Alkalinity as CaCO3	240	1.0	mg/kg	250		95.9	80-120	0.129	20	
Duplicate (U6F0912-DUP1)		Source: CF08063-03		Prepared: 06/09/16 Analyzed: 06/17/16						
pH	8.22	0.10	pH Units		8.21			0.122	20	
Total Alkalinity as CaCO3	1060	1.0	mg/kg		916			14.6	20	
Specific Conductance (EC)	1600	1.0	µS/cm		1400			14.8	20	
Bicarbonate Alkalinity as HCO3	1290	1.3	mg/kg		1120			14.6	20	
Carbonate Alkalinity as CO3	ND	1.0	mg/kg		0.00				20	
Hydroxide Alkalinity as OH	ND	1.0	mg/kg		0.00				20	
Duplicate (U6F0912-DUP2)		Source: CF09049-06		Prepared: 06/09/16 Analyzed: 06/17/16						

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RWQCB - Fresno	Project: 15-011-150	
1685 E Street	Project Number: Oldenkamp	Reported:
Fresno CA, 93706-2007	Project Manager: Anthony Toto	6/23/2016

### Inorganics - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch U6F0912 - SM2320B</b>										

<b>Duplicate (U6F0912-DUP2)</b>		Source: CF09049-06			Prepared: 06/09/16 Analyzed: 06/17/16					
Total Alkalinity as CaCO <sub>3</sub>	78.0	1.0	mg/kg		117			40.0	20	DUP1
pH	7.43	0.10	pH Units		7.63			2.66	20	
Specific Conductance (EC)	720	1.0	µS/cm		870			19.9	20	
Bicarbonate Alkalinity as HCO <sub>3</sub>	95.2	1.3	mg/kg		143			40.0	20	DUP1
Carbonate Alkalinity as CO <sub>3</sub>	ND	1.0	mg/kg		0.00				20	
Hydroxide Alkalinity as OH	ND	1.0	mg/kg		0.00				20	

<b>Batch U6F1005 - EPA 300.0</b>										
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<b>Blank (U6F1005-BLK1)</b>		Prepared & Analyzed: 06/10/16								
Nitrate as N	ND	0.45	mg/kg							
Nitrite as N	ND	0.30	mg/kg							
Orthophosphate as P	ND	0.25	mg/kg							
Chloride	ND	2.0	mg/kg							
Sulfate as SO <sub>4</sub>	ND	2.0	mg/kg							

<b>LCS (U6F1005-BS1)</b>		Prepared & Analyzed: 06/10/16								
Nitrate as N	10.9	0.45	mg/kg	11.3		96.1	90-110		20	
Nitrite as N	4.87	0.30	mg/kg	5.00		97.4	0-200		200	
Chloride	48.9	2.0	mg/kg	50.0		97.8	90-110		20	
Orthophosphate as P	4.80	0.25	mg/kg	5.00		96.0	90-110		20	
Sulfate as SO <sub>4</sub>	48.4	2.0	mg/kg	50.0		96.8	90-110		20	

<b>LCS Dup (U6F1005-BSD1)</b>		Prepared & Analyzed: 06/10/16								
Nitrate as N	11.1	0.45	mg/kg	11.3		98.3	90-110	2.22	20	
Chloride	50.5	2.0	mg/kg	50.0		101	90-110	3.18	20	
Nitrite as N	5.00	0.30	mg/kg	5.00		100	0-200	2.58	200	
Orthophosphate as P	5.02	0.25	mg/kg	5.00		100	90-110	4.51	20	
Sulfate as SO <sub>4</sub>	49.7	2.0	mg/kg	50.0		99.5	90-110	2.74	20	

<b>Matrix Spike (U6F1005-MS1)</b>		Source: CF08063-03			Prepared: 06/10/16 Analyzed: 06/11/16					
Nitrate as N	65.1	2.7	mg/kg	67.8	0.141	95.8	80-120		20	
Chloride	388	12	mg/kg	300	92.2	98.8	80-120		20	
Nitrite as N	29.4	1.8	mg/kg	30.0	ND	98.1	0-200		200	
Sulfate as SO <sub>4</sub>	346	12	mg/kg	300	59.5	95.6	80-120		20	

<b>Matrix Spike Dup (U6F1005-MSD1)</b>		Source: CF08063-03			Prepared: 06/10/16 Analyzed: 06/11/16					
Nitrate as N	65.7	2.7	mg/kg	67.8	0.141	96.6	80-120	0.845	20	

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RWQCB - Fresno	Project: 15-011-150	Reported:
1685 E Street	Project Number: Oldenkamp	6/23/2016
Fresno CA, 93706-2007	Project Manager: Anthony Tolo	

### Inorganics - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch U6F1005 - EPA 300.0

Matrix Spike Dup (U6F1005-MSD1)	Source: CF08063-03		Prepared: 06/10/16 Analyzed: 06/11/16							
Chloride	388	12	mg/kg	300	92.2	98.5	80-120	0.165	20	
Nitrite as N	29.5	1.8	mg/kg	30.0	ND	98.5	0-200	0.397	200	
Sulfate as SO <sub>4</sub>	348	12	mg/kg	300	59.5	96.1	80-120	0.384	20	

#### Batch U6F1306 - SM 2540C

Blank (U6F1306-BLK1)	Prepared: 06/13/16 Analyzed: 06/14/16									
Total Dissolved Solids	ND	10	mg/L							
LCS (U6F1306-BS1)	Prepared: 06/13/16 Analyzed: 06/14/16									
Total Dissolved Solids	246	10	mg/L	240		102	80-120		20	
LCS Dup (U6F1306-BSD1)	Prepared: 06/13/16 Analyzed: 06/14/16									
Total Dissolved Solids	246	10	mg/L	240		102	80-120	0.203	20	
Duplicate (U6F1306-DUP1)	Source: CF08028-06		Prepared: 06/13/16 Analyzed: 06/14/16							
Total Dissolved Solids	761	10	mg/L		746			1.92	20	
Duplicate (U6F1306-DUP2)	Source: CF08063-07		Prepared: 06/13/16 Analyzed: 06/14/16							
Total Dissolved Solids	1300	10	mg/L		1240			4.73	20	

#### Batch U6F1407 - EPA 160.1(M)

Blank (U6F1407-BLK1)	Prepared: 06/14/16 Analyzed: 06/15/16									
Total Dissolved Solids	3.00	10	mg/kg							J
LCS (U6F1407-BS1)	Prepared: 06/14/16 Analyzed: 06/15/16									
Total Dissolved Solids	247	10	mg/kg	240		103	80-120		20	
LCS Dup (U6F1407-BSD1)	Prepared: 06/14/16 Analyzed: 06/15/16									
Total Dissolved Solids	248	10	mg/kg	240		104	80-120	0.605	20	
Duplicate (U6F1407-DUP1)	Source: CF08063-03		Prepared: 06/14/16 Analyzed: 06/15/16							
Total Dissolved Solids	2140	22	mg/kg		2150			0.207	20	





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### Metals - Totals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	%REC Limits	RPD	RPD Limit	Notes
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#### Batch U6F1003 - EPA 6010B

Blank (U6F1003-BLK1) Prepared: 06/13/16 Analyzed: 06/16/16

Potassium	ND	100	mg/kg							
Boron	3.76	10	mg/kg							J
Calcium	ND	10	mg/kg							
Magnesium	ND	10	mg/kg							
Manganese	ND	1.0	mg/kg							
Iron	ND	10	mg/kg							
Sodium	12.0	10	mg/kg							BLK02

LCS (U6F1003-BS1) Prepared: 06/13/16 Analyzed: 06/16/16

Magnesium	409	10	mg/kg	400		102	85-115		20	
Sodium	418	10	mg/kg	400		105	75-125		20	
Calcium	223	10	mg/kg	200		111	85-115		20	
Potassium	412	100	mg/kg	400		103	75-125		20	
Iron	413	10	mg/kg	400		103	85-115		20	
Boron	192	10	mg/kg	200		96.2	75-125		20	
Manganese	20.6	1.0	mg/kg	20.0		103	85-115		20	

LCS Dup (U6F1003-BSD1) Prepared: 06/13/16 Analyzed: 06/16/16

Sodium	409	10	mg/kg	400		102	75-125	2.17	20	
Iron	406	10	mg/kg	400		101	85-115	1.82	20	
Calcium	218	10	mg/kg	200		109	85-115	1.87	20	
Magnesium	407	10	mg/kg	400		102	85-115	0.503	20	
Manganese	20.5	1.0	mg/kg	20.0		102	85-115	0.671	20	
Potassium	399	100	mg/kg	400		99.7	75-125	3.36	20	
Boron	192	10	mg/kg	200		95.9	75-125	0.214	20	

Matrix Spike (U6F1003-MS1) Source: CF08043-02 Prepared: 06/13/16 Analyzed: 06/16/16

Boron	162	10	mg/kg	202	3.79	78.3	75-125		20	
Manganese	172	1.0	mg/kg	20.2	168	18.5	75-125		20	MS3

Matrix Spike (U6F1003-MS2) Source: CF09049-04 Prepared: 06/13/16 Analyzed: 06/16/16

Boron	174	10	mg/kg	199	18.0	78.6	75-125		20	
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Matrix Spike Dup (U6F1003-MSD1) Source: CF08043-02 Prepared: 06/13/16 Analyzed: 06/16/16

Manganese	192	1.0	mg/kg	19.9	168	119	75-125	11.0	20	
Boron	179	10	mg/kg	199	3.79	88.1	75-125	10.4	20	

Matrix Spike Dup (U6F1003-MSD2) Source: CF09049-04 Prepared: 06/13/16 Analyzed: 06/16/16

Boron	174	10	mg/kg	200	18.0	77.8	75-125	0.408	20	
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RWQCB - Fresno	Project 15-011-150	
1685 E Street	Project Number Oldenkamp	Reported:
Fresno CA, 93706-2007	Project Manager Anthony Toto	6/23/2016

### Metals - Dissolved - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	%REC Limits	RPD	RPD Limit	Notes
<b>Batch U6F0712 - EPA 200.7</b>										

#### Blank (U6F0712-BLK1)

Prepared & Analyzed: 06/13/16

Iron	ND	0.10	mg/L							
Manganese	ND	0.0050	mg/L							
Sodium	ND	1.0	mg/L							
Potassium	ND	1.0	mg/L							
Boron	ND	0.050	mg/L							
Magnesium	ND	0.10	mg/L							
Calcium	ND	0.10	mg/L							

#### LCS (U6F0712-BS1)

Prepared & Analyzed: 06/13/16

Calcium	1.07	0.10	mg/L	1.00		107	85-115		20	
Boron	0.931	0.050	mg/L	1.00		93.1	85-115		20	
Sodium	1.96	1.0	mg/L	2.00		98.2	85-115		20	
Magnesium	2.03	0.10	mg/L	2.00		102	85-115		20	
Potassium	2.02	1.0	mg/L	2.00		101	85-115		20	
Iron	2.00	0.10	mg/L	2.00		100	85-115		20	
Manganese	0.0997	0.0050	mg/L	0.100		99.7	85-115		20	

#### LCS Dup (U6F0712-BSD1)

Prepared & Analyzed: 06/13/16

Manganese	0.0992	0.0050	mg/L	0.100		99.2	85-115	0.454	20	
Sodium	2.02	1.0	mg/L	2.00		101	85-115	3.03	20	
Boron	0.927	0.050	mg/L	1.00		92.7	85-115	0.401	20	
Magnesium	2.05	0.10	mg/L	2.00		102	85-115	0.835	20	
Calcium	1.05	0.10	mg/L	1.00		105	85-115	1.56	20	
Potassium	2.05	1.0	mg/L	2.00		102	85-115	1.18	20	
Iron	1.99	0.10	mg/L	2.00		99.6	85-115	0.589	20	

#### Matrix Spike (U6F0712-MS1)

Source: CF02007-01

Prepared & Analyzed: 06/13/16

Manganese	0.240	0.010	mg/L	0.200	0.0457	97.3	70-130		20	
Boron	2.48	0.10	mg/L	2.00	0.534	97.1	70-130		20	
Iron	4.12	0.20	mg/L	4.00	0.204	98.0	70-130		20	

#### Matrix Spike (U6F0712-MS2)

Source: CF07062-02

Prepared & Analyzed: 06/13/16

Boron	2.55	0.10	mg/L	2.00	0.599	97.6	70-130		20	
Iron	4.04	0.20	mg/L	4.00	0.198	96.1	70-130		20	
Manganese	2.15	0.010	mg/L	0.200	1.96	95.2	70-130		20	

#### Matrix Spike Dup (U6F0712-MSD1)

Source: CF02007-01

Prepared & Analyzed: 06/13/16

Manganese	0.239	0.010	mg/L	0.200	0.0457	96.7	70-130	0.535	20	
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Moore Twining Associates, Inc.

Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





2527 Fresno Street  
Fresno, CA 93721  
(559) 268-7021 Phone  
(559) 268-0740 Fax

California ELAP Certificate #1371

RWQCB - Fresno	Project 15-011-150	
1685 E Street	Project Number Oldenkamp	Reported:
Fresno CA, 93706-2007	Project Manager Anthony Toto	6/23/2016

### Metals - Dissolved - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch U6F0712 - EPA 200.7

Matrix Spike Dup (U6F0712-MSD1)	Source: CF02007-01		Prepared & Analyzed: 06/13/16							
Iron	4.20	0.20	mg/L	4.00	0.204	99.8	70-130	1.73	20	
Boron	2.48	0.10	mg/L	2.00	0.534	97.2	70-130	0.0508	20	

Matrix Spike Dup (U6F0712-MSD2)	Source: CF07062-02		Prepared & Analyzed: 06/13/16							
Manganese	2.14	0.010	mg/L	0.200	1.96	87.0	70-130	0.769	20	
Iron	4.05	0.20	mg/L	4.00	0.198	96.3	70-130	0.190	20	
Boron	2.56	0.10	mg/L	2.00	0.599	98.1	70-130	0.400	20	

#### Batch U6F1014 - EPA 200.7

Blank (U6F1014-BLK1)	Prepared: 06/14/16 Analyzed: 06/15/16									
Iron	ND	0.10	mg/L							
Boron	ND	0.050	mg/L							
Manganese	ND	0.0050	mg/L							
Sodium	ND	1.0	mg/L							
Magnesium	ND	0.10	mg/L							
Calcium	ND	0.10	mg/L							
Potassium	ND	1.0	mg/L							

LCS (U6F1014-BS1)	Prepared: 06/14/16 Analyzed: 06/15/16									
Manganese	0.103	0.0050	mg/L	0.100		103	85-115		20	
Potassium	2.00	1.0	mg/L	2.00		100	85-115		20	
Magnesium	2.07	0.10	mg/L	2.00		103	85-115		20	
Sodium	2.07	1.0	mg/L	2.00		104	85-115		20	
Iron	2.12	0.10	mg/L	2.00		106	85-115		20	
Calcium	1.10	0.10	mg/L	1.00		110	85-115		20	
Boron	0.949	0.050	mg/L	1.00		94.9	85-115		20	

LCS Dup (U6F1014-BSD1)	Prepared: 06/14/16 Analyzed: 06/15/16									
Magnesium	2.06	0.10	mg/L	2.00		103	85-115	0.277	20	
Potassium	1.94	1.0	mg/L	2.00		97.1	85-115	3.13	20	
Iron	2.09	0.10	mg/L	2.00		104	85-115	1.40	20	
Calcium	1.08	0.10	mg/L	1.00		108	85-115	1.82	20	
Boron	0.955	0.050	mg/L	1.00		95.5	85-115	0.649	20	
Manganese	0.102	0.0050	mg/L	0.100		102	85-115	1.30	20	
Sodium	2.03	1.0	mg/L	2.00		102	85-115	2.01	20	

Matrix Spike (U6F1014-MS1)	Source: CF09004-01		Prepared: 06/14/16 Analyzed: 06/15/16							
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Moore Twining Associates, Inc.

Juliane Adams, Director of Analytical Chemistry

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





2527 Fresno Street  
Fresno, CA 93721  
(559) 268-7021 Phone  
(559) 268-0740 Fax

California ELAP Certificate #1371

RWQCB - Fresno	Project: 15-011-150	
1685 E Street	Project Number: Oldenkamp	Reported:
Fresno CA, 93706-2007	Project Manager: Anthony Tolo	6/23/2016

### Metals - Dissolved - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

#### Batch U6F1014 - EPA 200.7

Matrix Spike (U6F1014-MS1)		Source: CF09004-01		Prepared: 06/14/16 Analyzed: 06/15/16						
Iron	4.19	0.20	mg/L	4.00	0.0796	103	70-130		20	
Boron	1.98	0.10	mg/L	2.00	0.0690	95.6	70-130		20	
Manganese	0.216	0.010	mg/L	0.200	0.0169	99.7	70-130		20	
Matrix Spike (U6F1014-MS2)		Source: CF10013-01		Prepared: 06/14/16 Analyzed: 06/15/16						
Manganese	0.193	0.010	mg/L	0.200	0.000534	96.1	70-130		20	
Boron	2.00	0.10	mg/L	2.00	0.0304	98.6	70-130		20	
Iron	4.28	0.20	mg/L	4.00	0.0621	106	70-130		20	
Matrix Spike Dup (U6F1014-MSD1)		Source: CF09004-01		Prepared: 06/14/16 Analyzed: 06/15/16						
Manganese	0.222	0.010	mg/L	0.200	0.0169	102	70-130	2.42	20	
Iron	4.28	0.20	mg/L	4.00	0.0796	105	70-130	2.21	20	
Boron	2.05	0.10	mg/L	2.00	0.0690	99.0	70-130	3.38	20	
Matrix Spike Dup (U6F1014-MSD2)		Source: CF10013-01		Prepared: 06/14/16 Analyzed: 06/15/16						
Manganese	0.193	0.010	mg/L	0.200	0.000534	96.3	70-130	0.238	20	
Boron	2.07	0.10	mg/L	2.00	0.0304	102	70-130	3.18	20	
Iron	4.28	0.20	mg/L	4.00	0.0621	105	70-130	0.0625	20	





ANALYTICAL CHEMISTRY DIVISION  
CALIFORNIA ELAP CERTIFICATION # 1371

# CHAIN OF CUSTODY/ANALYSIS REQUEST

2527 FRESNO STREET • FRESNO, CA 93721 • PHONE (559) 268-7021 • FAX: (559) 268-0740

WORK ORDER #:

PAGE 1 OF 2

CF080684B3

ATTENTION: <b>Jeff Hannel</b>	ATTENTION: <b>Anthony Toto</b>	<input type="checkbox"/> STANDARD FORMAT <input type="checkbox"/> WRITE-ON (STATE FORM) <input type="checkbox"/> GEOTRACKER/COELT (LUFT) <input type="checkbox"/> PDF <input type="checkbox"/> SPREADSHEET <input type="checkbox"/> County DHS : <input type="checkbox"/> Environmental Health Agency : <input type="checkbox"/> OTHER:
NAME: <b>Regional Water Board</b>	NAME: <b>Regional Water Board</b>	
ADDRESS: <b>1685 E Street</b>	ADDRESS: <b>1685 E Street</b>	
<b>Fresno, CA 93706</b>	<b>Fresno, CA 93706</b>	
PHONE: <b>559-445-</b>	PHONE: <b>559-445-6278</b>	
email: <b>Jhannel@waterboards.ca.gov</b>	FAX: <b>559-445-5910</b>	

<b>SAMPLE INFORMATION</b>		<b>SAMPLE TYPES:</b>	<b>PROJECT INFORMATION</b>
SAMPLED BY (PRINT): <b>Jeff Hannel</b>	<b>SOLID:</b> BS - BIOSOLID CR - CERAMIC SL - SOIL/SOLID <b>LIQUID:</b> DW - DRINKING WATER GW - GROUND WATER OL - OIL SF - SURFACE WATER ST - STORM WATER WW - WASTE WATER	CONTRACT/P.O. NO.: <b>15-011-150</b>	
SIGNATURE:		PROJECT: <b>Oldenkamp</b>	
<input type="checkbox"/> PUBLIC SYSTEM <input checked="" type="checkbox"/> ROUTINE <input type="checkbox"/> PRIVATE WELL <input type="checkbox"/> REPEAT <input type="checkbox"/> OTHER <input type="checkbox"/> REPLACEMENT		PROJECT NUMBER:	
TURN AROUND TIME: <input type="checkbox"/> RUSH, DUE ON: <input checked="" type="checkbox"/> STANDARD		PROJECT MANAGER: <b>Jeff Hannel</b>	
		<b>ANALYSIS REQUESTED</b>	

L A B  U S E	NOTES ON RECEIVED CONDITION:				General Minerals	pH	Filter in Lab										
	<input type="checkbox"/> CUSTODY SEAL(S) BROKEN <input type="checkbox"/> SAMPLE(S) DAMAGED  <input type="checkbox"/> ON ICE <input type="checkbox"/> AMBIENT TEMP. <input type="checkbox"/> INCORRECT PRESERVATION																
	CLIENT SAMPLE ID	DATE	TIME	TYPE													
1	JWH160608-1	6/8/16	11:35 AM	WW	X	X	X										
2	JWH160608-2	6/8/16	11:45 AM	WW	X	X	X										
3	JWH160608-3	6/8/16	11:55 AM	SL	X	X											
4	JWH160608-4	6/8/16	12:05 PM	SL	X	X											
5	JWH160608-5	6/8/16	12:20 PM	SL	X	X											
6	JWH160608-6	6/8/16	12:25 PM	SL	X	X											
7	JWH160608-7	6/8/16	12:30 PM	WW	X	X	X										
8	JWH160608-8	6/8/16	12:40 PM	SL	X	X											

REPORT TO:	INVOICE TO:	REPORT COPY TO:	REPORTING:
COMMENTS/ADDITIONAL INSTRUCTIONS:	<i>L/S/16 1622</i>		
<i>Greg Butts</i>			
RELINQUISHED BY	COMPANY	DATE	TIME
RECEIVED BY			Page 21 of 22



Sample Integrity

Page 2 of 2

Moore Twining Associates

WO# CF08003MTA Bottles: Yes or No

COC Info	Was temperature within range?	Yes	No	N/A	Did all bottle labels agree with COC?	Yes	No	N/A	Were there bubbles in VOA vials? (Volatiles Only)	Yes	No	N/A
	Chemistry $\leq 6^{\circ}\text{C}$ Micro $< 10^{\circ}\text{C}$ Temp $^{\circ}\text{C}$				Was a sufficient amount of sample received?	Yes	No	N/A	Was PM notified of discrepancies?	Yes	No	N/A
	If samples were taken today, is there evidence that chilling has begun? Recvd <u>C</u>	Yes	No	N/A	Were correct containers and preservatives received for the tests requested?	Yes	No	N/A	PM: By/Time:			
	Did all bottles arrive unbroken and intact?	Yes	No	N/A								
Bottles Received	Do samples have a hold time <72 hours?	Yes	No	N/A								
	125ml (A) 250ml (B) 1Liter (C) 40ml VOA (V)	1-2	3-10	7	8							
	Bacti $\text{Na}_2\text{S}_2\text{O}_3$											
	None (P)	1-C		1-C								
	Cr6 Buffer (P) Borate Carbonate Buffer											
	$\text{HNO}_3$ (P)	2-A		1-A								
	$\text{H}_2\text{SO}_4$ (P)											
	$\text{NaOH}$ (P)											
	$\text{NaOH}+\text{ZnAc}$ (P)											
	Dissolved Oxygen 300ml (P)											
	None (AG)											
	None (CG) 500ml											
	$\text{Na}_2\text{S}_2\text{O}_3$ 250ml (Brown P) 549											
	$\text{Na}_2\text{S}_2\text{O}_3$ (AG)											
	$\text{Na}_2\text{S}_2\text{O}_3$ (AG)											
	Thio/K Citrate											
	$\text{NH}_4\text{Cl}$ (AG) 552											
	$\text{HCl}$ (AG)											
	None (CG) 500ml											
	$\text{H}_3\text{PO}_4$ (AG)											
	Other:											
	Plastic Bag											
	Low Level Hg/Metals Double Bag											
Client Own												
Glass Jar: 125/ 250/ 500												
Soil Tube: Brass/ Steel/ Plastic												
5 g Encore												
Student	Filter or Split	Container	Preservative	Date/Time/Initials								
		S P F	125ml	HNO3	10-8-16 16:30 YJB							
		S P F										
		S P F										
		S P F										

Labeled by: VB @ 1712Labels checked by: 2 @ 1720

FL-SC-0003-06



## **APPENDIX 2**



**Evaporation Rate** Source: DWR, California Irrigation Management Information System (CIMIS) Reference Evapotranspiration Map, 1999.

Evaporation Rate													
Source: DWR, California Irrigation Management Information System (CIRIS) Page One Evaporation Rate (EPR), 2001													
Zone	Jan (inch/month)	Feb (inch/month)	Mar (inch/month)	Apr (inch/month)	May (inch/month)	Jun (inch/month)	Jul (inch/month)	Aug (inch/month)	Sept (inch/month)	Oct (inch/month)	Nov (inch/month)	Dec (inch/month)	Total (inch/month)
15	1.24	2.24	3.72	5.7	7.44	8.1	8.68	7.75	5.7	4.03	2.1	1.24	57.94
Days	31	28	31	30	31	30	31	31	30	31	30	31	Avg Evap inch/day
Evap inch/day	0.04	0.08	0.12	0.19	0.24	0.27	0.28	0.25	0.19	0.13	0.07	0.04	0.158
Evap ft/day	0.003	0.007	0.010	0.016	0.020	0.023	0.023	0.021	0.016	0.011	0.006	0.003	75% of Avg Evap inch/day
75 %Evap ft/day	0.0025	0.005	0.0075	0.011875	0.015	0.016875	0.0175	0.015625	0.011875	0.008125	0.004375	0.0025	0.119
Application of Water Average per year													75% of Avg Evap ft/day
1 ac = 43,560.00 ft^2 10.41 maximum acres on site for dust control													0.009895833
Evap depth of water 0.010 ft 4,487.36 ft^3 on site													
1 ft^3 = 7.48052 gal 33,567.79 Maximum gal/day to cover truck parking													

**Application of Water (gal that can be applied per day)**

	6000 gal water spreader							2500 storage tank					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	
	8,480.28	16,960.57	25,440.85	40,281.35	50,881.70	57,241.92	59,361.99	53,001.78	40,281.35	27,560.92	14,840.50	8,480.28	
Spreader	141%	283%	424%	671%	848%	954%	989%	883%	671%	459%	247%	141%	
Storage	339%	678%	1018%	1611%	2035%	2290%	2374%	2120%	1611%	1102%	594%	339%	



### **APPENDIX 3**



# SAFETY DATA SHEET

## Elite

Page: 1  
Printed: 05/13/2015  
Revision: 12/29/2014

### 1. Product and Company Identification

**Product Code:** 170842  
**Product Name:** Elite  
**Company Name:** IBA  
27 Providence Rd.  
Millbury, MA 01527  
**Phone Number:**  
1 (508)865-6911  
**Emergency Contact:** Chemtrec 1 (800)424-9300

### 2. Hazards Identification

Corrosive To Metals, Category 1  
Acute Toxicity: Oral, Category 4  
Skin Corrosion/Irritation, Category 1A-1C  
Serious Eye Damage/Eye Irritation, Category 1  
Aquatic Toxicity (Acute), Category 2



**GHS Signal Word:**

**Danger**

**GHS Hazard Phrases:**

Harmful if swallowed.  
Causes severe skin burns and eye damage.  
May be corrosive to metals.  
Toxic to aquatic life.

**GHS Precaution Phrases:**

Keep out of reach of children.  
Read label before use.  
Do not get in eyes, on skin, or on clothing.  
Do not breathe dust/fume/gas/mist/vapours/spray.  
Wear rubber gloves, chemical goggles, face shield and rubber apron.  
Take precautions to avoid mixing with acid products and ammoniated products.

**GHS Response Phrases:**

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get immediate medical advice/attention.  
IF ON SKIN: Remove immediately all contaminated clothing and wash it before reuse. Wash with plenty of water for 15 minutes. If skin irritation occurs: Get medical advice/attention.  
IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Get medical advice/attention.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for 15 minutes. Get immediate medical advice/attention.

**GHS Storage and Disposal Phrases:**

Medical and Transportation Emergencies contact Chemtrec 1-800-424-9300.  
Dispose of contents/container in accordance with local, state and federal regulations.  
Store locked up.



# SAFETY DATA SHEET

## Elite

Page: 2  
Printed: 05/13/2015  
Revision: 12/29/2014

Hazard Rating System:

HEALTH	3
FLAMMABILITY	0
PHYSICAL	0
PPE	D

HMIS:

Potential Health Effects  
(Acute and Chronic):

### 3. Composition/Information on Ingredients

CAS #	Hazardous Components (Chemical Name)	Concentration
1310-73-2	Sodium hydroxide	10 - 20 %
7681-52-9	Sodium hypochlorite	1.0 - 5.0 %

### 4. First Aid Measures

**Emergency and First Aid Procedures:** No data available.

**In Case of Inhalation:** Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Get immediate medical advice/attention.

**In Case of Skin Contact:** Flush thoroughly with fresh, tepid water for 15 minutes. Discard contaminated clothing and footwear or wash before reuse. If skin irritation occurs: Get medical advice/attention.

**In Case of Eye Contact:** Immediately flush eyes with large amounts of fresh, tepid water for at least 15 minutes. Hold eyelids open to ensure complete irrigation of eye and lid tissues. Tilt head to the side and irrigate the eye from the bridge of the nose to the outside of the face. Keep run-off from entering the other eye, mouth or ear. Washing eye within the first few seconds is essential to achieve maximum effectiveness. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.

**In Case of Ingestion:** Do not induce vomiting. Rinse mouth with fresh, Tepid water, than immediately drink 4-8 oz. or milk or water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep airways open. Keep head lower than hips to prevent aspiration into the lungs. Get medical advice/attention.

### 5. Fire Fighting Measures

**Flash Pt:** No data.

**Explosive Limits:** LEL: No data. UEL: No data.

**Autoignition Pt:** No data.

**Suitable Extinguishing Media:** Use extinguishing media appropriate to surrounding fire conditions.

**Fire Fighting Instructions:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

**Flammable Properties and Hazards:** No data available.



# SAFETY DATA SHEET

## Elite

Page: 3  
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### 6. Accidental Release Measures

**Protective Precautions, Protective Equipment and Emergency Procedures:** Goggles or face shield. Rubber gloves. Wear chemical protective clothing.

**Steps To Be Taken In Case Material Is Released Or Spilled:** Absorb spill with inert material (e.g. dry sand or earth), and dispose of in accordance with applicable regulations.

### 7. Handling and Storage

**Precautions To Be Taken In Handling:** For industrial or institutional use only.

**Precautions To Be Taken In Storing:** Store away from incompatible substances. Keep from freezing.

### 8. Exposure Controls/Personal Protection

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
1310-73-2	Sodium hydroxide	PEL 2 mg/m3	CEIL 2 mg/m3	No data.
7681-52-9	Sodium hypochlorite	No data	No data	No data

**Respiratory Equipment (Specify Type):** A respirator is not needed under normal and intended conditions of product use.

**Eye Protection:** Goggles and face shield.

**Protective Gloves:** Rubber gloves.

**Other Protective Clothing:** Wear chemical protective clothing. Chemical resistant apron.

**Engineering Controls (Ventilation etc.):** Handle in accordance with good industrial hygiene and safety practice. In a well ventilated area. Wash hands before breaks and at the end of workday.

### 9. Physical and Chemical Properties

**Physical States:** ☐ Gas ☒ Liquid ☐ Solid

**Appearance and Odor:** Appearance: Clear, yellow. Liquid.  
Odor: chlorine-like.

**Melting Point:** No data.

**Boiling Point:** No data.

**Autoignition Pt:** No data.

**Flash Pt:** No data.

**Explosive Limits:** LEL: No data. UEL: No data.

**Specific Gravity (Water = 1):** 1.220 - 1.250

**Vapor Pressure (vs. Air or mm Hg):** No data.

**Vapor Density (vs. Air = 1):** No data.

**Evaporation Rate:** No data.

**Solubility in Water:** 100%

**pH:** Alk.

**Percent Volatile:** No data.



**10. Stability and Reactivity**

**Reactivity:** Avoid contact with acidic or ammonia products.

**Stability:** Unstable [ ] Stable [ X ]

**Conditions To Avoid - Instability:** Avoid handling conditions which may allow for leaks and spills of this material. Do not permit personnel to handle this product without proper training and/or protective equipment.

**Incompatibility - Materials To Avoid:** Avoid contact with acidic and ammonia products.

**Hazardous Decomposition Or Byproducts:** No data available.

**Possibility of Hazardous Reactions:** Will occur [ ] Will not occur [ X ]

**Conditions To Avoid - Hazardous Reactions:** No data available.

**11. Toxicological Information**

**Toxicological Information:** Inhalation, Eye contact, Skin contact

**Irritation or Corrosion:**

Eyes:	Causes serious eye damage
Skin:	Causes severe skin burns.
Ingestion:	Causes digestive tract burns.
Inhalation:	May cause nose, throat, and lung irritation

**Symptoms related to Toxicological Characteristics:**

Eyes:	Redness, Pain, Corrosion.
Skin:	Redness, Pain, Corrosion.
Ingestion:	Corrosion, Abdominal pain
Inhalation:	Respiratory irritation, cough

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
1310-73-2	Sodium hydroxide	n.a.	n.a.	n.a.	n.a.
7681-52-9	Sodium hypochlorite	n.a.	n.a.	n.a.	n.a.

**12. Ecological Information**

**General Ecological Information:** Harmful to aquatic life

**13. Disposal Considerations**

**Waste Disposal Method:** Dispose of contents/container in accordance to local, state and federal regulations.

**14. Transport Information****LAND TRANSPORT (US DOT):**

**DOT Proper Shipping Name:** Corrosive liquid, basic, inorganic, n.o.s. (Sodium hydroxide, Sodium hypochlorite)

**DOT Hazard Class:** 8 CORROSIVE

**UN/NA Number:** UN3266 **Packing Group:** II



# SAFETY DATA SHEET

## Elite

Page: 5  
Printed: 05/13/2015  
Revision: 12/29/2014

### 15. Regulatory Information

#### EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
1310-73-2	Sodium hydroxide	No	Yes 1000 LB	No
7681-52-9	Sodium hypochlorite	No	Yes 100 LB	No

#### CAS # Hazardous Components (Chemical Name)

#### Other US EPA or State Lists

1310-73-2	Sodium hydroxide	CAA HAP, ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; CA TAC, Title 8: TAC, Title 8; MA Oil/HazMat: Yes; MI CMR, Part 5: Part 5; NC TAP: No; NJ EHS: Yes - 1706; NY Part 597: Yes; PA HSL: Yes - E; SC TAP: Yes; WI Air: Yes
7681-52-9	Sodium hypochlorite	CAA HAP, ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; CA TAC, Title 8: Title 8; MA Oil/HazMat: Yes; MI CMR, Part 5: Part 5; NC TAP: No; NJ EHS: Yes - 1707; NY Part 597: Yes; PA HSL: Yes - E; SC TAP: No; WI Air: No

### 16. Other Information

Revision Date: 12/29/2014

**Additional Information About This Product:** Company's Disclaimer: While IBA believes this statement set forth herein are accurate as of the date hereof, IBA makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such data is offered solely for your consideration, investigation and verification.



# SAFETY DATA SHEET

## FC-298

Page: 1  
Printed: 05/15/2015  
Revision: 12/17/2014

### 1. Product and Company Identification

Product Code: 200961  
Product Name: FC-298  
Company Name: IBA  
27 Providence Rd.  
Millbury, MA 01527  
Emergency Contact: Chemtrec  
Phone Number:  
1 (508)865-6911  
1 (800)424-9300

### 2. Hazards Identification

Skin Corrosion/Irritation, Category 1B

Serious Eye Damage/Eye Irritation, Category 1

Acute Toxicity: Oral, Category 4

Corrosive To Metals, Category 1



GHS Signal Word: **Danger**

GHS Hazard Phrases: Causes severe skin burns and eye damage.  
Harmful if swallowed.  
May be corrosive to metals.

GHS Precaution Phrases: Keep out of reach of children.  
Read label before use.  
Do not breathe dust/fume/gas/mist/vapours/spray.  
Do not get in eyes, on skin, or on clothing.  
Wear rubber gloves, chemical goggles, face shield and rubber apron.  
Wash hands thoroughly after handling.  
Take any precaution to avoid mixing with chlorinated products.

GHS Response Phrases: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for 15 minutes. Get immediate medical advice/attention.  
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get immediate medical advice/attention.  
IF ON SKIN: Remove immediately all contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention.  
IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Get immediate medical advice/attention.

GHS Storage and Disposal Phrases: Medical and Transportation Emergencies contact Chemtrec 1-800-424-9300.  
Store locked up.  
Dispose of contents/container in accordance with local, state and federal regulations.



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Printed: 06/15/2015  
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HEALTH	3
FLAMMABILITY	0
PHYSICAL	0
PPE	D

HMIS:

**Potential Health Effects  
(Acute and Chronic):**

### 3. Composition/Information on Ingredients

CAS #	Hazardous Components (Chemical Name)	Concentration
7664-38-2	Phosphoric acid	30 - 40 %
7664-93-9	Sulfuric acid	<5.0 %

### 4. First Aid Measures

**Emergency and First Aid Procedures:** No data available.**In Case of Inhalation:** Immediately move victim to fresh air. If experiencing respiratory symptoms: Get immediate medical advice/attention.**In Case of Skin Contact:** Flush thoroughly with fresh, tepid water for 15 minutes. Discard contaminated clothing and footwear or wash before reuse. If skin irritation occurs: Get medical advice/attention.**In Case of Eye Contact:** Immediately flush eyes with large amounts of fresh, tepid water for at least 15 minutes. Hold eyelids open to ensure complete irrigation of eye and lid tissues. Tilt head to the side and irrigate the eye from the bridge of the nose to the outside of the face. Keep run-off from entering the other eye, mouth or ear. Washing eye within the first few seconds is essential to achieve maximum effectiveness. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advice/attention.**In Case of Ingestion:** Do not induce vomiting. Rinse mouth with fresh, tepid water, then immediately drink 4-8 oz. or milk or water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep airways open. Keep head lower than hips to prevent aspiration into the lungs. Get medical advice/attention.

### 5. Fire Fighting Measures

**Flash Pt:** No data.**Explosive Limits:** LEL: No data. UEL: No data.**Autoignition Pt:** No data.**Suitable Extinguishing Media:** Use foam, dry chemical, or carbon dioxide. Do NOT get water inside containers.**Fire Fighting Instructions:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.**Flammable Properties and Hazards:** No data available.



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### 6. Accidental Release Measures

#### Protective Precautions, Protective Equipment and Emergency Procedures:

Goggles and face shield. Rubber gloves. Wear chemical protective clothing. NIOSH/MSHA approved respirator. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Provide mechanical ventilation to disperse or ventilate the area with fresh air.

#### Steps To Be Taken In Case Material Is Released Or Spilled:

Absorb spill with inert material (e.g. dry sand or earth), and dispose of in accordance with applicable regulations.

### 7. Handling and Storage

#### Precautions To Be Taken In Handling:

For industrial or institutional use only.

#### Precautions To Be Taken in Storing:

Store away from incompatible substances. Keep from freezing.

### 8. Exposure Controls/Personal Protection

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
7664-38-2	Phosphoric acid	PEL: 1 mg/m3	TLV: 1 mg/m3 STEL: 3 mg/m3	No data.
7664-93-9	Sulfuric acid	PEL: 1 mg/m3	TLV: (1 mg/m3) STEL: (3 mg/m3)	No data.

#### Respiratory Equipment (Specify Type):

A respirator is not needed under normal and intended conditions of product use.

#### Eye Protection:

Goggles and face shield.

#### Protective Gloves:

Rubber gloves.

#### Other Protective Clothing:

Wear chemical protective clothing. Chemical resistant apron.

#### Engineering Controls (Ventilation etc.):

Handle in accordance with good industrial hygiene and safety practice. In a well ventilated area. Wash hands before breaks and at the end of workday.

### 9. Physical and Chemical Properties

**Physical States:** ☐ Gas ☒ Liquid ☐ Solid

#### Appearance and Odor:

Appearance: Clear, green, Liquid.  
Odor: Acid-like.

#### Melting Point:

No data.

#### Boiling Point:

No data.

#### Autoignition Pt:

No data.

#### Flash Pt:

No data.

#### Explosive Limits:

LEL: No data.

UEL: No data.

**Specific Gravity (Water = 1):** 1.220 - 1.250

#### Vapor Pressure (vs. Air or mm Hg):

No data.

#### Vapor Density (vs. Air = 1):

No data.

#### Evaporation Rate:

No data.

#### Solubility in Water:

100



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Percent Volatile: No data

### 10. Stability and Reactivity

**Reactivity:** Contact with chlorine liberates very toxic gas.

**Stability:** Unstable [ ] Stable [ X ]

**Conditions To Avoid - Instability:** Avoid handling conditions which may allow for leaks and spills of this material. Do not permit personnel to handle this product without proper training and/or protective equipment.

**Incompatibility - Materials To Avoid:** Avoid contact with alkalis and chlorine products. Avoid contact with materials such as aluminum, tin, zinc, and alloys containing these materials.

**Hazardous Decomposition Or Byproducts:** No data available.

**Possibility of Hazardous Reactions:** Will occur [ ] Will not occur [ X ]

**Conditions To Avoid - Hazardous Reactions:** No data available.

### 11. Toxicological Information

**Toxicological Information:** Inhalation, Eye contact, Skin contact, Ingestion

**Irritation or Corrosion:**

Eyes:	Causes serious eye damage
Skin:	Causes severe skin burns.
Ingestion:	Causes digestive tract burns.
Inhalation:	May cause nose, throat, and lung irritation

**Symptoms related to Toxicological Characteristics:**

Eyes:	Redness, Pain, Corrosion.
Skin:	Redness, Pain, Corrosion.
Ingestion:	Corrosion, Abdominal pain
Inhalation:	Respiratory irritation, cough

**Chronic Toxicological Effects:** Improper use or misting of Sulfuric Acid products may be cancer causing.

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
7664-38-2	Phosphoric acid	n.a.	n.a.	n.a.	n.a.
7664-93-9	Sulfuric acid	Known	n.a.	A2	n.a.

### 12. Ecological Information

**General Ecological Information:** May be harmful to aquatic life.

### 13. Disposal Considerations

**Waste Disposal Method:** Dispose of contents/container in accordance to local, state and federal regulations.

### 14. Transport Information

**LAND TRANSPORT (US DOT):**

**DOT Proper Shipping Name:** Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, Sulfuric acid)

**DOT Hazard Class:** 8 CORROSIVE

**UN/NA Number:** UN3264

**Packing Group:** II



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### 15. Regulatory Information

#### EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS #	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
7664-38-2	Phosphoric acid	No	Yes 5000 LB	No
7664-93-9	Sulfuric acid	Yes 1000 LB	Yes 1000 LB	Yes

#### CAS # Hazardous Components (Chemical Name)

7664-38-2 Phosphoric acid

7664-93-9 Sulfuric acid

#### Other US EPA or State Lists

CAA HAP, ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; CA TAC, Title 8: TAC, Title 8; MA Oil/HazMat: Yes; MI CMR, Part 5: Part 5; NC TAP: No; NJ EHS: Yes - 1805; NY Part 597: Yes; PA HSL: Yes - E, SC TAP: Yes; WI Air: Yes

CAA HAP, ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No; CA TAC, Title 8: TAC, Title 8; MA Oil/HazMat: Yes; MI CMR, Part 5: Part 5; NC TAP: Yes; NJ EHS: Yes - 1761; NY Part 597: Yes; PA HSL: Yes - E, SC TAP: Yes; WI Air: Yes

### 16. Other Information

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**Additional Information About This Product:** Company's Disclaimer: While IBA believes this statement set forth herein are accurate as of the date hereof, IBA makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such data is offered solely for your consideration, investigation and verification.



## **APPENDIX 4**



SWW	Investigation	SON_MAD27	SEC_MAD27	Total Depth	Sampling Date	Score ID	Value	Constituent	Constituent_ABR	Constituent_Unit_Abr	How Detectd	MCL_General	Detection Limit	Constituent_Group	Basin_Name	Basin_Abr	Investment
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0005	402	402	Specific Electrical Conductance	SEC	µmhos/cm	FALSE	300	300	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0005	402	402	Barbiturate (HCO3)	HCO3	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0005	220	220	Carbonate (CO3)	CO3	mg/l	TRUE	FALSE	FALSE	2.5 General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0005	940	940	Nitrite as N (Nitrogen)	NO2-N	µg/l	FALSE	FALSE	FALSE	Additional Inorganic chemicals	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0000	150	150	Total Hardness (as CaCO3)	Hardness	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0005	53	53	Calcium (Ca)	Ca	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0005	5.4	5.4	Magnesium (Mg)	Mg	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0005	1.7	1.7	Sodium Absorption Ratio (SAR)	SAR	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0037	1.4	1.4	Potassium (K)	K	mg/l	FALSE	FALSE	FALSE	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 00940	13	13	Chloride (Cl)	Cl	mg/l	FALSE	250	250	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 00945	56	56	Sulfate (SO4)	SO4	mg/l	FALSE	1.6	1.6	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 00951	0.21	0.21	Fluoride (total)	F (tot)	mg/l	FALSE	10	10	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 01002	9.8	9.8	Arsenic	As	µg/l	FALSE	FALSE	FALSE	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 01020	0.19	0.19	Oron (Dissolved)	OR	mg/l	FALSE	0.2	0.2	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 01020	8	8	Dibromochloropropane (DBCP)	DBCP	mg/l	TRUE	0.0023 organics	0.0023	1.4 General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 01830	4.1	4.1	Nitrate as NO3	NO3	mg/l	FALSE	45	45	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 01850	4.1	4.1	Nitrate as NO3	NO3	mg/l	FALSE	0.02	0.02	Organic Chemical - Synthetics	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 01851	290	290	Ethylene Diamine (EDB)	EDB	µg/l	TRUE	FALSE	FALSE	Organic Chemical - Synthetics	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0105	290	290	Total Dissolved Solids (calculated)	TDS (calc)	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	02-Feb-09 0105	1.8	1.8	GPSPUM REQUIREMENT	GP REQ	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 0005	492	492	Specific Electrical Conductance	SEC	µmhos/cm	FALSE	900	900	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 0005	8	8	pH (Lab)	pH (Lab)	su	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00400	220	220	Carbonate (HCO3)	HCO3	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00405	940	940	Carbonate (CO3)	CO3	mg/l	TRUE	FALSE	FALSE	2.5 General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00397	1.4	1.4	Potassium (K)	K	mg/l	FALSE	FALSE	FALSE	additional inorganic chemicals	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00940	13	13	Chloride (Cl)	Cl	mg/l	FALSE	250	250	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00945	56	56	Sulfate (SO4)	SO4	mg/l	FALSE	1.6	1.6	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00951	0.21	0.21	Fluoride (total)	F (tot)	mg/l	FALSE	10	10	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01002	9.8	9.8	Arsenic	As	µg/l	FALSE	FALSE	FALSE	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01020	0.19	0.19	Oron (Dissolved)	OR	mg/l	FALSE	FALSE	FALSE	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01020	8	8	Dibromochloropropane (DBCP)	DBCP	mg/l	FALSE	FALSE	FALSE	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01830	4.1	4.1	Nitrate as NO3	NO3	mg/l	FALSE	45	45	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01850	4.1	4.1	Nitrate as NO3	NO3	mg/l	FALSE	0.02	0.02	Organic Chemical - Synthetics	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01851	290	290	Ethylene Diamine (EDB)	EDB	µg/l	TRUE	FALSE	FALSE	Organic Chemical - Synthetics	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 0105	290	290	Total Dissolved Solids (calculated)	TDS (calc)	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 0105	1.8	1.8	GPSPUM REQUIREMENT	GP REQ	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	14.4	14.4	Total Alpha	Alpha	µg/l	FALSE	15	15	Radioactivity	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	9.94	9.94	Total Alpha	Alpha	µg/l	FALSE	15	15	Radioactivity	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01052	1.44	1.44	Total Alpha Counting Error	Alpha Err	µg/l	FALSE	FALSE	FALSE	Radioactive	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01052	1.32	1.32	Total Alpha Counting Error	Alpha Err	µg/l	FALSE	0.2	0.2	Radioactive	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01850	4.1	4.1	Dibromochloropropane (DBCP)	DBCP	mg/l	TRUE	FALSE	FALSE	0.0023 organics	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01850	4.1	4.1	Nitrate as NO3	NO3	mg/l	FALSE	45	45	1.4 General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01851	290	290	Ethylene Diamine (EDB)	EDB	µg/l	FALSE	FALSE	FALSE	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	290	290	Total Dissolved Solids (calculated)	TDS (calc)	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	1.8	1.8	GPSPUM REQUIREMENT	GP REQ	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	11.2	11.2	Total Alpha	Alpha	µg/l	FALSE	15	15	Radioactivity	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	4.16	4.16	Specific Electrical Conductance	SEC	µmhos/cm	FALSE	900	900	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	8.12	8.12	pH (Lab)	pH (Lab)	su	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	3.8	3.8	Carbonate (HCO3)	HCO3	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	2200	2200	Carbonate (CO3)	CO3	mg/l	TRUE	FALSE	FALSE	2.5 General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 01051	120	120	NITRATE NITROGEN (NO3-N)	NO3-N	µg/l	FALSE	10000	10000	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00900	4.1	4.1	Total Hardness (as CaCO3)	Hardness	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00927	4.1	4.1	Calcium (Ca)	Ca	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00929	4.1	4.1	Magnesium (Mg)	Mg	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00929	4.1	4.1	Sodium (Na)	Na	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00931	1.8	1.8	Sodium Absorption Ratio (SAR)	SAR	mg/l	FALSE	FALSE	FALSE	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00937	1.4	1.4	Potassium (K)	K	mg/l	FALSE	FALSE	FALSE	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00940	11	11	Chloride (Cl)	Cl	mg/l	FALSE	250	250	Inorganic Chemical	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00945	42	42	Sulfate (SO4)	SO4	mg/l	FALSE	1.6	1.6	General Mineral	San Joaquin Valley	SJV	KOWO
315/27E-12-03	K3 (KOWO)	636472.125	1695135.779	765	20-Feb-09 00951	0.26	0.26	Fluoride (total)	F (tot)	mg/l	FALSE	10	10	Inorganic Chemical	San Joaquin Valley	SJV	KOWO



[illegible]



Average of the Wells

	Constituent <sup>1</sup>
N/A	Total Kjeldahl Nitrogen as N
N/A	Ammonia Nitrogen as N
N/A	Nitrate Nitrogen as N
8.05	pH
	General Minerals <sup>2</sup>
N/A	Alkalinity
N/A	Hardness
209	Bicarbonate
N/A	Carbonate
50.2	Calcium
5.06	Magnesium
13	Chloride
1.44	Potassium
48	Sodium
52.8	Sulfate



Lorelei H. Oviatt, AICP, Director  
2700 "M" Street, Suite 100  
Bakersfield, CA 93301-2323  
Phone: (661) 862-8600  
Fax: (661) 862-8601 TTY Relay 1-800-735-2929  
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Web Address: <http://pcd.kerndsa.com/>



**PLANNING AND NATURAL  
RESOURCES DEPARTMENT**

Planning  
Community Development  
Administrative Operations

December 15, 2016

**FILE: CUP #69, Map #142**

Oldenkamp Trucking  
by WZI Inc.  
1717 28th Street  
Bakersfield, CA 93301

Oldenkamp Trucking  
13535 South Union Avenue  
Bakersfield, CA 93307

Re: Conditional Use Permit Case No. 69, Map No. 142  
11314 Wible Road, Bakersfield, southeast corner Wible Road at Engle Road, approximately  
one mile south of State Route 119 (Taft Highway)

Ladies and Gentlemen:

Enclosed is a copy of Resolution No(s). 113-16 adopted by the Kern County Planning Commission on  
**December 8, 2016**, approving the referenced zoning matter, subject to the conditions set forth therein.

Pursuant to the provisions of the Kern County Land Use Zoning Ordinance, this action will not become  
final until **December 15, 2016**, and no building permits can be issued prior to that date. When application  
for a building permit is made, it should be accompanied by two copies of a plot plan, showing your proposal  
and clearly indicating thereon that all the conditions set forth in the enclosed resolution have been, or will  
be, complied with prior to completion of any construction or use of the property as permitted by this action.

The Land Use Zoning Ordinance also provides that if the use authorized by this permit is, or has been,  
unused, abandoned, discontinued, or has ceased for a period of one year, or if the conditions have not been  
complied with, the permit shall become null and void unless an extension therefore has been granted by the  
Planning Commission upon written petition of the applicant before the expiration of the above period.

**Should you have any questions, please contact Roque Nino, Planning Supervisor ((661) 862-5044) of  
the Planning Operations Section of this Department.**

Very truly yours,

LORELEI H. OVIATT, AICP, Director  
Planning and Natural Resources Department

A handwritten signature in black ink, appearing to read "Scott F. Denney", is written over a horizontal line.

By Scott F. Denney, AICP  
Planning Operations Division Chief

mc

Enclosure



**BEFORE THE PLANNING COMMISSION  
COUNTY OF KERN, STATE OF CALIFORNIA**

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In the matter of:

**RESOLUTION NO. 113-16**

**APPLICATION FOR CONDITIONAL USE PERMIT CASE NO. 69, MAP NO. 142**

11314 Wible Road, Bakersfield, southeast corner Wible Road at Engle Road, approximately one mile south of State Route 119 (Taft Highway)  
Oldenkamp Trucking by WZI Inc. (PP15133)

**FINDINGS AND DETERMINATION**

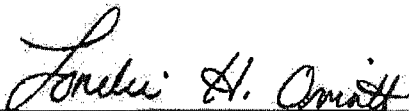
I, Lorelei H. Oviatt, Secretary of the Planning Commission of the County of Kern, State of California, do hereby certify that the following resolution, proposed by Ms. Poole, seconded by Mr. Sprague, was duly passed and adopted by said Planning Commission at an official meeting hereof this **8th** day of **December, 2016**, by the following vote, to wit:

**AYES:** Babcock, Poole, Sprague

**NOES:** None

**ABSTAINED:** None

**ABSENT:** Garcia, Louie

  
\_\_\_\_\_  
**SECRETARY OF THE PLANNING COMMISSION  
COUNTY OF KERN, STATE OF CALIFORNIA**

---

**R E S O L U T I O N**

**SECTION 1. WHEREAS:**

(a) Pursuant to the California Government Code, Title 7, Section 65000, et seq. (known as the Planning and Zoning Law), the Kern County Board of Supervisors has adopted the Official Land Use and Zoning Ordinance for the County of Kern (Ordinance Code of Kern County, Chapter 19.02, et seq.), herein called the Zoning Ordinance; and



(b) The Zoning Ordinance establishes various classes of zones, prescribes land uses and regulations for the various zones, and adopts zoning maps for the purposes of dividing the County into zones and showing the zone boundaries; and

(c) The Zoning Ordinance regulates the use of buildings, structures, and land, as between agriculture, industry, business, residence, and other purposes, and other uses more specifically set forth in Section 65850 of said Government Code; and

(d) The Kern County Planning and Natural Resources Department has received an application pertaining to a parcel of real property which is located within that portion of the unincorporated area of the County for which an official Zoning Map has been adopted under Section 7297.158 of said Ordinance Code and for which precise land use and zoning regulations are in effect; and

(e) Said parcel of real property is described as follows:

APN: 184-150-42

Sect 12, T31S, R27E, MDB&M, County of Kern, State of California (A complete legal description is on file with the Kern County Planning and Natural Resources Department);  
and

(f) Said application has been made pursuant to provisions of Chapter 19.104 of said Ordinance Code, and requests a conditional use permit as provided in Section 19.12.030.A.2, insofar as said requirements are applicable to the aforescribed parcel of real property, to allow the retention of a phased, 72 maximum truck agricultural trucking facility in an A (Exclusive Agriculture) District; and

(g) Said application has been made in the form and in the manner prescribed by said Zoning Ordinance and is on file with the Secretary of this Commission, designated as above, and reference is hereby made thereto for further particulars; and

(h) The Secretary of this Commission has caused notice to be duly given of a public hearing in this matter in accordance with law, as evidenced by the affidavit of publication and the affidavit of mailing on file with the Secretary of this Commission; and

(i) Said notice of hearing stated that a Negative Declaration will be presented which states that the activity in question will not have a significant effect on the environment and that an environmental impact report is, therefore, not



required under the provisions of the California Environmental Quality Act and that it is proposed to dispense with any environmental impact report in the consideration of such matter; and

(j) Said public hearing has been duly and timely conducted, during which the proposal was explained by a representative of the Planning and Natural Resources Department and all persons so desiring were duly heard; and

(k) During said hearing and prior to consideration of the merits of said matter, this Commission called for any objections to the dispensing with an environmental impact report or to said Negative Declaration; and

(l) This Commission has considered the recommendation of the Planning and Natural Resources Department and all the testimony presented during said public hearing, after which said public hearing was concluded.

**SECTION 2. NOW, THEREFORE, BE IT HEREBY RESOLVED** by the Planning Commission of the County of Kern, as follows:

(a) This Commission finds that the facts recited above are true and that this Commission has jurisdiction to consider the subject of this resolution; and

(b) This Commission hereby adopts said Negative Declaration and Mitigation Measure Monitoring Program and, after careful consideration of all facts and evidence as presented at said hearing, it is the decision of the Planning Commission that the application herein described be, and it is hereby, **APPROVED**, with development to be in substantial conformity with the approved plan, and the approved plan shall be revised to include the following conditions of approval:

- (1) Development shall be in substantial conformity with the approved plan, and the approved plan shall be revised to include the following conditions of approval.
- (2) This approval authorizes a conditional use permit to allow the retention of a phased, 72 maximum truck agricultural trucking facility (Section 19.12.030.A.2) in an A (Exclusive Agriculture) District. Any additions or expansions to the approved plan may be subject to a formal modification to this plan or a new precise development plan/conditional use permit, as determined by the Director of the Kern County Planning and Natural Resources Department
- (3) All necessary building permits must be obtained. If no building permits are required, the applicant shall immediately obtain a tracking permit from the Kern County Public Works Department to verify compliance with the adopted conditions of approval to allow for continued operation of the agricultural trucking facility.
- (4) **Prior to the issuance of building or grading permits, the applicant shall submit documentation of the following:**
  - \*(a) Comply with any Climate Change Action Plan that is adopted by the Kern County Board of Supervisors.



- \* (b) Be subject to any development impact fee for public services adopted by the Kern County Board of Supervisors.
- (5) The method of water supply and sewage disposal shall be as required and approved by the Kern County Public Health Services Department/Environmental Health Division.
- \* (6) Prior to the issuance of any building permit, the project proponent shall obtain a "will serve" letter from the appropriate sewer service provider for sewage disposal. If the project proponent is unable to obtain a "will serve" letter for sewage disposal, or is physically incapable of connecting to public sewer, the project proponent may seek an exception to the sewer service implementation policies of the Metropolitan Bakersfield General Plan. In order to seek such an exception, the project proponent shall first obtain a recommendation from the Kern County Public Works Department prior to requesting approval of the exception from the Kern County Board of Supervisors. Approval of the exception may require the installation of a dry sewer line and the payment of a sewer development fee.
- (7) Fire flows, fire protection facilities, and access ways shall be as required and approved by the Kern County Fire Department.
- \* (8) A plan for the disposal of drainage waters originating on site and from adjacent road rights-of-way shall be approved by the Kern County Public Works Department - Building & Development - Floodplain, if required. Easements or grant deeds shall be given to the County of Kern for drainage purposes or access thereto, as necessary.
- (9) Prior to submittal of the drainage plan to the County, the plan shall be reviewed and approved by the responsible mosquito abatement district.
- (10) The applicant shall pay the required Metropolitan Bakersfield Transportation Impact Fees.
- (11) A comprehensive landscaping and maintenance irrigation plan shall be approved in accordance with the requirements of Chapter 19.86 of the Zoning Ordinance and California Code of Regulations, Title 23, Division 2, Chapter 2.7 Model Water Efficient Landscape Ordinance. A minimum of 5 percent of the total developed area shall be landscaped and continuously maintained in good condition. Landscaping shall be installed or bonded for prior to occupancy of the building or site. Minimum tree size shall be 15 gallon. Minimum shrub size shall be five (5) gallon, and minimum size for small shrubs and groundcover shall be one (1) gallon. The landscape plan shall list the location, size (in gallons), and type of plant and tree material to be used throughout the site.
- (12) A minimum of five (5) percent of the interior parking area shall be landscaped, with trees planted at a ratio of one (1) tree per six (6) parking spaces placed at a maximum of 65-foot intervals. Minimum tree size shall be 15 gallon container. An irrigation system adequate for maintenance of the landscaping shall be installed. Parking area landscaping shall be in accordance with Section 19.82.090 of the Zoning Ordinance and may be used in the calculation of total landscaping requirements. Landscaping shall be installed or bonded for prior to occupancy of the building or site. The required landscaping plan shall show projected tree canopies demonstrating that a minimum of forty (40) percent of the parking lot area will be shaded at maturity. All landscaping shall be consistent with Title 14, California Code of regulations, Division 1.5, Chapter 7, Subchapter 2.
- (13) If more than 500 square feet of landscaping area will be required, or proposed, a landscaping and irrigation plan for the project shall be submitted demonstrating compliance with the Water Efficient Landscape requirements as set forth in Sections 19.86.065, 19.86.070 and 19.86.080 of the Zoning Ordinance.
- \* (14) No more than 30 days prior to ground disturbing activities, the project proponent shall submit documentation of the following to the Kern County Planning and Natural Resources Department:



- \* (a) All development shall comply with the adopted Metropolitan Bakersfield Habitat Conservation Plan (MBHCP), including any mitigation assessment fees, and pay the required fee of \$2,145 per acre. Compliance with the interim Incidental Take Permit (ITP) issued for the MBHCP, also requires the project proponent to cause a biological clearance survey to be performed, by an approved qualified wildlife biologist, no more than 30 days prior to ground disturbing activities and submit the survey to the Kern County Planning and Natural Resources Department, the U.S. Fish and Wildlife Service, and the California Department of Fish and Wildlife. The survey shall include full coverage transect surveys for San Joaquin kit fox dens, Tipton kangaroo rat burrows, and Bakersfield cactus and shall evaluate the proposed development footprint and a 50-foot buffer zone except for any portions of the buffer zone that are already fully developed. Should the biological clearance survey detect a covered species, the project proponent shall abide by the minimization measures specified in the ITP.
- \* (b) If ground disturbing activities are planned during the potential nesting season for migratory birds that may nest on or near the site (generally February 1 through August 31), nesting bird surveys are recommended no more than one week prior to the commencement of ground disturbance for project activities. If nesting birds are present, no new construction or ground disturbance should occur within an appropriate avoidance area for that species until young have fledged. Appropriate avoidance should be determined by a qualified biologist. Minimum avoidance zones for active nests should be implemented as follows: (1) ground or low shrub nesting non-raptors - 300 feet; (2) burrowing owl - 600 feet; (3) sensitive raptors (e.g., prairie falcon, Golden eagle) - 0.5 miles; and (3) other raptors - 500 feet.
- \* (c) If burrows that show evidence of occupation by burrowing owl are discovered during subsequent surveys, including the 30-day preactivity survey, the project proponent shall implement the applicable California Department of Fish and Wildlife monitoring procedures.
- \* (d) If any San Joaquin kit fox dens (potential, known, or suspected natal/pupping) are observed during subsequent surveys, including the 30-day preactivity survey, the project proponent shall implement the applicable U.S. Fish and Wildlife Service procedures. If any known kit fox dens for which the recommended avoidance of 100 feet cannot be maintained or suspected natal/pupping dens are discovered, California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service shall be contacted for further guidance.
- \* (e) A qualified biologist shall develop and submit to the Kern County Planning and Natural Resources Department for review and approval, an Environmental Education and Compliance Program identifying sensitive species identification and avoidance techniques.
- \* (f) Any take, harm, harassment, injury, or killing of a sensitive or endangered species, or any attempt to engage in these activities, shall be reported promptly to the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service.
- \* (g) All pipes, culverts, or similar structures with a diameter of four inches or greater shall be kept capped to prevent the entry of any sensitive or endangered species, and all structures not capped or otherwise covered shall be inspected daily and prior to burial or closure to ensure no sensitive or endangered species become trapped. Should any sensitive or endangered species be found entrapped in a pipe section, the pipe shall be avoided and the animal(s) left to leave of its own accord, except as otherwise authorized by the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service.
- \* (h) All food, garbage, and plastic shall be disposed of in closed containers and regularly removed from the site to minimize attracting ranging kit fox or other animals to the site where they may be harmed.



- \* (i) Any steep wall excavation conducted as part of this project shall include escape ramps or otherwise be covered to prevent entrapment. As an alternative, the site shall be protected with a wildlife exclusion fence to eliminate the possibility of ranging animals being harmed.
- \* (j) Dogs and cats shall be prohibited from the project site, during construction.
- \* (k) Speed limits shall not exceed 20 mile per hour (20 mph) on the project site.
- \* (15) Any employee or contractor entering the site for the first time shall be trained in sensitive species identification and avoidance techniques established in the Environmental Education and Compliance Program.
- (16) The owner/operators of permitted uses that involve equipment or activities that store, use, or generate hydrocarbons, particulate matter, toxic chemicals, nuisance odors, or other air contaminants subject to air pollution control requirements, shall consult with, and be subject to the requirements of, the applicable Air Pollution Control District. If requested by the applicable Air Pollution Control District, the Building Official may withhold final inspection or issuance of a Certificate of Occupancy for any structure on property containing a business which is in noncompliance with the requirements of that District until such time as the deficiencies are corrected.
- (17) **Prior to final occupancy approval, the following conditions shall be verified by the building inspector and shall be continuously maintained while this permit is active:**
- (18) The following shall be performed in compliance with the requirements of the Kern County Public Works Department and shall be accomplished at no cost to the County.
  - (a) The project proponent shall record an irrevocable offer of dedication to the County of Kern, of all subject property for Wible Road, 55 feet in width, per Kern County Land Division Ordinance and Development Standards
  - (b) The project proponent shall under encroachment permit, construct a paved private road approach on the east side of Wible Road at the proposed new driveway location
  - (c) All easements shall be kept open, clear, and free from buildings and structures. All obstructions, including utility poles and lines, trees, pole signs, fences, or similar obstructions, shall be removed from the ultimate road rights-of-way.
  - (d) All easements shall be kept open, clear, and free from buildings and structures of any kind pursuant to Section 19.08.225 and Section 19.80.030.C of the Kern County Zoning Ordinance and Chapters 18.50 and 18.55 of the Kern County Land Division Ordinance. All obstructions, including utility poles and lines, trees, pole signs, or similar obstructions, shall be removed from the ultimate road rights-of-way in accordance with Section 18.55.030 of the Land Division Ordinance. Compliance with this requirement is the responsibility of the applicant and may result in significant financial expenditures.
- (19) All storage and pressure tanks shall be painted an earthen hue color.
- (20) Parking shall be provided as illustrated on the approved plan. Should the project be built in phases, parking may be phased and provided in a manner as shown on the approved plan.
- (21) In Phase II, or by December 2, 2021, whichever occurs first, all access drives, parking areas, and vehicle maneuvering areas shall be surfaced with a minimum of two (2) inches of asphaltic concrete paving constructed over a minimum of three inches of compacted base material or material of higher quality.
- (22) In Phase I all vehicle parking and maneuvering areas shall be surfaced with one of the following: three inches of decomposed granite, three inches of compacted rock dust, three inches of gravel, or



three inches of a material of a higher quality. All required surfacing shall be continuously maintained in good condition, as determined by the Director of the Kern County Planning and Natural Resources Department.

- (23) Vehicle parking spaces shall be nine (9) feet by twenty (20) feet or larger in size and shall be designated by white painted stripes at such time as asphaltic concrete surfacing is applied, except as provided in Sections 19.82.030 and 19.82.040 of the Zoning Ordinance.
- (24) Concrete wheel blocks or a six-inch raised A.C. curb shall be installed at each parking space that abuts a structure or property line at such time as asphaltic concrete surfacing is applied.
- (25) Where the parking area abuts Wible Road, it shall be separated therefrom by an ornamental fence, wall, or evergreen landscaping or berm, or any combination of the above, not more than four (4) feet in total height shall be established between the parking area Wible Road to eliminate headlight glare. Fence materials or method of landscaping shall be approved by the Director of the Kern County Planning and Natural Resources Department prior to construction. Said fence or hedge shall be continuously maintained in good condition.
- \*(26) The applicant shall submit and obtain approval of a vector control plan from the Kern County Public Health Services Department/Environmental Health Division/Solid Waste Program.
- (27) All signs shall be approved by the Director of the Kern County Planning and Natural Resources Department prior to installation.
- (28) As shown in the approved plan, all trash and recyclable bin receptacles shall be enclosed within a six- (6-) foot-high, three-sided masonry enclosure with securable iron gate and shall be installed on an impervious surface at a location that is outside the required front yard and convenient for refuse haulers and which does not interfere with on- or off-site parking or circulation. For all commercial and industrial uses with five (5) or more employees, adequate space shall be provided for the collection and loading of recyclable materials. The location for all trash and recycling bin enclosures shall be approved by the Director of the Kern County Planning and Natural Resources Department prior to construction.
- (29) Areas and containers shall be provided for the collection of recyclable materials consisting of plastic and aluminum beverage containers for the benefit of employees and customers. The collection site may be included in the required solid waste disposal area(s) or in a separate area meeting the enclosure requirements of Section 19.80.030.K of the Kern County Zoning Ordinance. The collection area(s) shall be maintained in good condition, and recyclable materials stored therein shall be collected regularly with a frequency that ensures that the collection site does not become a visual nuisance and does not result in the creation of health, safety, or vector problems.
- (30) The areas devoted to outside storage shall be treated with a dust binder or other dust control measure, as approved by the Director of the Kern County Planning and Natural Resources Department.
- (31) From the drop point of any overhead power pole on the periphery of the site, all new on-site utility services shall be placed underground.
- (32) Permitted uses that include the placement of any solid or liquid material directly on the ground which has the potential to leach into the ground and adversely impact groundwater, the applicant shall consult with, and be subject to review and approval by, the California Regional Water Quality Control Board or, alternatively, the Kern County Public Health Services Department/Environmental Health Division.
- (33) Any business which stores hazardous or toxic chemicals as a normal part of its business shall file a Business Plan with the Kern County Public Health Services Department/Environmental Health Division.



- (34) **The property owner shall continuously comply with the following conditions of approval during implementation of this permit:**
- (35) The development shall comply with any requirements of the San Joaquin Valley Air Pollution Control District.
- (36) If any previously unknown oil, gas or injection wells are discovered, work in the area of discovery shall be stopped and the Department of Conservation/Division of Oil, Gas, and Geothermal Resources/Bakersfield office contacted by the project proponent to obtain information on the requirements of, and approval to perform, remedial operations implemented prior to resumption of work in the area of discovery.
- (37) If any previously unknown archaeological or cultural resources are discovered, work in the area of discovery shall be stopped and a qualified archaeologist contacted to evaluate the find. A copy of the archaeologist's evaluation shall be submitted to the Kern County Planning and Natural Resources Department upon its issuance and any measures recommended by the archaeologist shall be implemented prior to resumption of work in the area of discovery.
- (38) All exterior/outdoor lighting fixtures shall comply with Chapter 19.81 (Outdoor Lighting "Dark Skies Ordinance") of the Kern County Zoning Ordinance. Lighting fixtures shall not exceed a height of thirty (30) feet above grade, if freestanding, or the height of the building upon which they are attached. Light fixtures shall be maintained in sound operating conditions at all times.
- (39) All signs shall comply with the signage regulations of the applicable base zone district and with Chapter 19.84 and Chapter 19.81.040(h) of the Zoning Ordinance. (63) During all on-site grading and construction activities, adequate measures shall be implemented to control fugitive dust.
- (40) During all on-site grading and construction activities, adequate measures shall be implemented to control fugitive dust.
- (41) Trash pickup shall occur a minimum of once each week.
- (42) Roof-mounted mechanical, refrigeration or heating equipment shall be concealed by full or partial enclosures that employ the same building materials as used in the facade and/or roof design so that the equipment is not visible from any off-site location. When located on the ground adjacent to a building, mechanical, refrigeration or heating equipment shall be screened by landscaping, solid masonry wall or solid fencing, or combination thereof, from abutting public streets and all adjacent properties developed with residential or commercial uses.
- (43) All used oil (as defined in Section 25250.1 of the California Health and Safety Code) shall be disposed of in accordance with all local, State, and federal regulations following consultation with the Kern County Public Health Services Department/Environmental Health Division/Hazardous Materials Section, the State of California Department of Health Services, and the Environmental Protection Agency. All used oil and other wastes shall be transported by a registered waste hauler.
- \*(44) The use shall not generate noise that exceeds an average 65 dB Ldn (24-hour median), between the hours of 7:00 a.m. and 10:00 p.m., and shall not generate noise that exceeds 65 dB, or which would result in an increase of 5 dB or more from ambient sound levels, whichever is greater, between the hours of 10:00 p.m. and 7:00 a.m. Should noise concerns arise as a result of on-site activities, noise level measurements shall be taken at the exterior of the closest residential dwelling with sound level meter using an A-weighted network (scale) and, where practical, the microphone shall be positioned five feet above the ground and away from reflective surfaces. Public complaints alleging violation of this standard may be required to submit documentation of actual noise level measurements. The Director of the Kern County Planning and Natural Resources Department, in consultation with the Kern County Public Health Services Department/Environmental Health Division, may authorize deviations or exceptions to the standards contained in this subsection and may require noise attenuation measures in conjunction with such authorization.



- (45) If the development for which this conditional use permit has been approved pursuant to the provisions of the Zoning Ordinance has not commenced, or permits for such development have not been issued, within one (1) year of the granting of the use permit, or if the conditional use permit has been unused, abandoned, discontinued, or has ceased for a period of one (1) year, the use permit shall become null and void and of no effect, unless an extension has been granted by the decision-making authority upon written request for an extension before the expiration of the one- (1-) year period.
- (46) At the time building permits are applied for, a filing fee of \$130 may be imposed to ensure that final plans are consistent with adopted conditions of approval. This fee may serve as an initial deposit for particularly complex cases, in which case a cost recovery agreement will be required and charges will be billed at \$100 per hour.
- \*(47) No trailers shall use the Transport Refrigeration Units (TRUs) unless an electric standby power source is provided. A maximum of two loaded trailers may use the TRU diesel generators for a maximum of two hours each while parked on site. TRU diesel generators shall not be operated more than a combined four hours within a twenty-four hour period.
- \*(48) No more than ten (10) minutes of truck idle time shall be permitted prior to site departure. Trucks entering the site shall turn off their engines within five (5) minutes of being parked. Signage indicating this requirement shall be posted on the entry/exit gate.
- \*(49) Prior to final occupancy approval, the project proponent shall pay a proportionate share for the future roadway improvements as determined by the Kern County Public Works Department.
- \*(50) During implementation of the project, the project proponent is permitted as an agricultural trucking facility and shall prohibit parking on-site of general truck tractor trailers and non-owned tractor trailers.
- \*(51) During implementation of the project, project proponent parking shall be prohibited along project frontage of Wible Road; and

**\* DENOTES MITIGATION MEASURES**

(c) Noncompliance with the adopted conditions of approval may cause permit revocation proceedings in accordance with Section 19.102.020 of said Ordinance Code; and

(d) The findings of this Commission upon which its decision is based are as follows:

- (1) The applicable provisions of the California Environmental Quality Act, the State CEQA Guidelines, and the Kern County Guidelines have been duly observed in conjunction with said hearing in the consideration of this matter and all of the previous proceedings relating thereto.
- (2) This project and any activities and improvements authorized thereunder will not have a significant effect on the environment and an environmental impact report was not required for consideration of such matter.
- (3) The effect upon the environment of such project and the activities and improvements which may be carried out thereunder will not be substantial and will not interfere with maintenance of a high-quality environment now or in the future.
- (4) The proposed use is consistent with the goals and policies of the General Plan.
- (5) The proposed use is consistent with the purpose of the applicable district or districts.



- (6) The proposed use is listed as a use subject to a conditional use permit in the applicable zoning district or districts or a use determined to be similar to a listed conditional use in accordance with the procedures set out in Section 19.08.060.
  - (7) The proposed use meets the minimum requirements of this title applicable to the use and complies with all other applicable laws, ordinances, and regulations of the County of Kern and the State of California.
  - (8) The proposed use will not be materially detrimental to the health, safety, and welfare of the public or to property and residents in the vicinity.
  - (9) Approval of this project shall not be considered operative, vested, or final until such time as the required verification from the Office of the County Clerk is submitted, attesting that payment of fees for the filing of a "Notice of Determination" for the benefit of the California Department of Fish and Game, as required by AB 3158 (Section 10005 Public Resources Code) has been made.
  - (10) Approval of this request is consistent with past Commission/Board action for similar requests in the area; and
- (e) The Secretary of this Commission shall cause a Notice of Determination to be filed with the County Clerk; and
  - (f) The Secretary of this Commission shall cause copies of this resolution to be transmitted to the following:

Oldenkamp Trucking by WZI Inc. (PP15133) (applicant/owner) (1)  
 Kern County Fire Department (1)  
 Kern County Public Health Services Department/Environmental Health Division (1)  
 Kern County Public Health Services Department/  
 Environmental Health Division/Solid Waste Program (1)  
 Kern County Public Health Services Department/  
 Environmental Health Division/Hazardous Materials Section (1)  
 Kern County Public Works Department - Building & Development - Floodplain (1)  
 Kern County Public Works Department - Building & Development - Development Review (1)  
 Kern County Public Works Department/Building and Development/  
 Building Inspection and Flood-Drainage-Grading-CSA/Flood-Drainage-Grading-CSA (1)  
 San Joaquin Valley Air Pollution Control District (1)  
 California Regional Water Quality Control Board (1)  
 State of California Department of Health Services (1)  
 California Department of Fish and Wildlife (1)  
 U.S. Fish and Wildlife Service (1)  
 Environmental Protection Agency (1)  
 Department of Conservation/Division of Oil, Gas, and Geothermal Resources (1)  
 LiUNA/Arthur Izzo (1)  
 Kern County Assessor/Chief, Realty Division (1)  
 File (3)

dr:mc



# **TICOR TITLE COMPANY**

## **PRELIMINARY REPORT**

*In response to the application for a policy of title insurance referenced herein, **Ticor Title Company** hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a policy or policies of title insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an exception herein or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations or Conditions of said policy forms.*

*The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said policy or policies are set forth in Attachment One. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limit of Liability for certain coverages are also set forth in Attachment One. Copies of the policy forms should be read. They are available from the office which issued this report.*

*This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.*

*The policy(ies) of title insurance to be issued hereunder will be policy(ies) of Chicago Title Insurance Company, a Florida corporation.*

***Please read the exceptions shown or referred to herein and the exceptions and exclusions set forth in Attachment One of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.***

***It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land.***

**Chicago Title Insurance Company**

By:



\_\_\_\_\_  
President

Attest:



\_\_\_\_\_  
Secretary

Countersigned By:

\_\_\_\_\_  
Authorized Officer or Agent





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# TICOR TITLE COMPANY

**ISSUING OFFICE:** 2540 W. Shaw Lane, Suite 112, Fresno, CA 93711

**FOR SETTLEMENT INQUIRIES, CONTACT:**

Ticor Title Company  
10000 Stockdale Hwy, Suite 101 • Bakersfield, CA 93311  
(661)647-7000 • FAX (661)241-5114

***Another Prompt Delivery From Ticor Title Company Title Department  
Where Local Experience And Expertise Make A Difference***

## PRELIMINARY REPORT

Title Officer: Scott Murray  
Email: [scmurray@ticortitle.com](mailto:scmurray@ticortitle.com)  
Title No.: FTKE-3011703953SC

Escrow Officer: Brenda Amble  
Email: [bamble@ticortitle.com](mailto:bamble@ticortitle.com)  
Escrow No.: FTKE-3011703953 -BA

TO: Newmark Grubb ASU & Associates  
2000 Oak Street, Suite 100  
Bakersfield, CA 93301  
Attn: Martin Starr  
Your Ref No.:

**PROPERTY ADDRESS(ES):** APN/Parcel ID(s) 184-150-35,38,39,40,41,42,52

**EFFECTIVE DATE:** December 18, 2017 at 07:30 AM

The form of policy or policies of title insurance contemplated by this report is:

1. THE ESTATE OR INTEREST IN THE LAND HEREINAFTER DESCRIBED OR REFERRED TO COVERED BY THIS REPORT IS:

A Fee

2. TITLE TO SAID ESTATE OR INTEREST AT THE DATE HEREOF IS VESTED IN:

Dana L. Oldenkamp, Trustee of the Oldenkamp Family Trust dated October 30, 2014, as to Tract A  
Pinheiro Family Limited Partnership, a Limited Partnership, as to Tract B  
Wible Avenue LLC, a California Limited Liability Company, as to Tract C  
Pinheiro Family L. P., a California Limited Partnership, as to Tract D

3. THE LAND REFERRED TO IN THIS REPORT IS DESCRIBED AS FOLLOWS:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF



**EXHIBIT "A"**  
Legal Description

**For APN/Parcel ID(s): 184-150-35,38,39,40,41,42,52**

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THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE UNINCORPORATED AREA IN COUNTY OF KERN, STATE OF CALIFORNIA AND IS DESCRIBED AS FOLLOWS:

TRACT A:

THE EAST HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

TRACT B:

PARCEL 1:

THE EAST HALF OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

PARCEL 2:

THE WEST HALF OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27 EAST, M.D.B. & M.

PARCEL 3:

THE EAST HALF OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27 EAST, M.D.B. & M.

PARCEL 4:

THE WEST HALF OF THE SOUTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, IN THE COUNTY OF KERN, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

TRACT C:

THE WEST HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

TRACT D:

PARCEL MAP WAIVER NO. 129, AS EVIDENCED BY A CERTIFICATE OF COMPLIANCE RECORDED JUNE 4, 1980 IN BOOK 5290, PAGE 113 OF OFFICIAL RECORDS, BEING ALL OF THE SW 1/4 OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27, EAST, M.D.M., IN THE UNINCORPORATED AREA, COUNTY OF KERN, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT MAP THEREOF.

EXCEPT THEREFROM THE WEST 1/2 OF THE SOUTHWEST 1/4 OF THE SOUTHWEST 1/4.

ALSO EXCEPT THEREFROM THE WEST 1/2 OF THE EAST 1/2 OF THE SOUTHWEST 1/4 OF SAID SOUTHWEST 1/4.



**AT THE DATE HEREOF, EXCEPTIONS TO COVERAGE IN ADDITION TO THE PRINTED EXCEPTIONS AND EXCLUSIONS IN SAID POLICY FORM WOULD BE AS FOLLOWS:**

THE FOLLOWING AFFECTS TRACT A

1. Reservations contained in the Patent

From: The United States of America  
To: William Henry  
Recording Date: October 30, 1878  
Recording No.: Book 3, Page 22, of Patents

Which among other things recites as follows:

Subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by local customs, laws and decisions of the courts; and also subject to the right of the proprietor of a vein or lode to extract and remove his ore therefrom should the same be found to penetrate or intersect the premises hereby granted, as provided by law.

2. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2018-2019.

3. Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area: 061-006  
Tax Identification No.: 184-150-35  
Fiscal Year: 2017-2018  
1st Installment: \$1,710.83 paid  
2nd Installment: \$1,710.82 open  
Land: \$227,285.00  
Improvements: \$70,002.00

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

4. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.

5. Taxes and assessments levied by the Kern Delta Water District.

Amounts are unavailable at this time. A report has been ordered and the Company reserves the right to add additional items or make further requirements after review of the requested report.



**EXCEPTIONS**  
(continued)

6. Said land lies within the boundaries of the Improvement District shown below and is subject to any and all assessments levied thereunder.

Name of District: Kern Community College District Assessment District

7. Any assessments levied, or which may be levied, by the Kern-Delta Water Storage District, organized under the California Water Storage District Act (Deering General Laws Act 9126).
8. Such rights of way over said land for ditches as may have been granted to Charles Kerr by Agreement recorded in Book 1 Page 180 of Agreements.
9. Covenants and restrictions imposed by a Land Conservation Contract executed pursuant to Section 51200 et seq. California Government Code (Williamson Act) authorizing the establishment of agricultural preserves. The use of the land within the preserve may be restricted by the contract to agricultural, recreational, open-space, and other approved compatible uses.

Dated: November 23, 1970  
Executed by: County of Kern and Barrett S. Baldwin  
Recording Date: February 24, 1971  
Recording No.: 11892, Book 4490, Page 858, of Official Records  
Affects: The herein described land and other land

10. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to: Pacific Bell, a corporation  
Purpose: Public Utilities  
Recording Date: November 5, 1985  
Recording No.: 050369, Book 5813, Page 464, of Official Records  
Affects: The North 8 feet of said land

11. An unrecorded oil and gas lease for the term therein provided, with certain covenants, conditions and provisions, together with easements, if any, as set forth therein, disclosed by document

Entitled: Oil, Gas and Mineral Lease (Short Form)  
Dated: April 2, 1985  
Lessor: Lawrence H. Baldwin, Sr., a married man  
Lessee: Texas Crude Exploration, Inc.  
Recording Date: February 11, 1986  
Recording No.: 015184, Book 5842, Page 2052, of Official Records

No insurance is made as to the present ownership of the leasehold created by said lease, nor as to other matters affecting the rights or interests of the lessor or lessee in said lease.



**EXCEPTIONS**  
(continued)

12. Matters contained in that certain document

Entitled: Agreement Regarding operation, maintenance, and cost distribution of a shared well  
Dated: October 30, 2014  
Executed by: Dana L. Oldenkamp, a widow, Pinheiro Family L.P., a California Limited Partnership  
and Wible Avenue, LLC, a California Limited Liability Company  
Recording Date: November 3, 2014  
Recording No.: 000214136611, of Official Records

Reference is hereby made to said document for full particulars.

Affects: The herein described Land and other land.

13. A deed of trust to secure an indebtedness in the amount shown below,

Amount: \$300,000.00  
Dated: October 21, 2014  
Trustor/Grantor Wible Avenue LLC, a California limited liability company, as to Parcel 1; and Dana L. Oldenkamp, a widow, as to Parcel 2  
Trustee: American AgCredit, FLCA  
Beneficiary: American AgCredit, FLCA, a corporation  
Loan No.: None shown  
Recording Date: November 13, 2014  
Recording No.: 000214140995, of Official Records

The Deed of Trust set forth above is purported to be a "Credit Line" Deed of Trust. Under California Civil Code §2943.1 it is a requirement that the Trustor/Grantor of said Deed of Trust either immediately provide the beneficiary with the "Borrower's instruction to Suspend and Close Equity Line of Credit" or provide a satisfactory subordination of this Deed of Trust to the proposed Deed of Trust to be recorded at closing.

If the above credit line is being paid off, this Company will require that Escrow obtain written confirmation from the current Beneficiary that the account has been frozen prior to recording. Failure to do so will result in this Company holding funds at the close of Escrow until such confirmation is obtained from the Beneficiary.

Affects: The herein described Land and other land.

14. Any invalidity or defect in the title of the vestees in the event that the trust referred to herein is invalid or fails to grant sufficient powers to the trustee(s) or in the event there is a lack of compliance with the terms and provisions of the trust instrument.

If title is to be insured in the trustee(s) of a trust, (or if their act is to be insured), this Company will require a Trust Certification pursuant to California Probate Code Section 18100.5.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

**THE FOLLOWING AFFECTS TRACT B**



**EXCEPTIONS**  
(continued)

15. Reservations contained in the Patent

From: The United States of America  
To: William Henry  
Recorded: October 30, 1878, Book 3, Page 22, of Patents

Which among other things recites as follows:

Subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by local customs, law and decision of the courts; and also subject to the right of the proprietor of a vein or lode to extract and remove his ore therefrom should the same be found to penetrate or intersect the premises hereby granted, as provided by law.

16. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2018-2019.

17. Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area: 061-006  
Tax Identification No.: 184-150-38  
Fiscal Year: 2017-2018  
1st Installment: \$1,831.80 paid  
2nd Installment: \$1,831.79 open  
Land: \$308,442.00  
Improvements: \$9,866.00

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

18. Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area: 061-006  
Tax Identification No.: 184-150-39  
Fiscal Year: 2017-2018  
1st Installment: \$1,831.80 paid  
2nd Installment: \$1,831.79 open  
Land: \$312,368.00  
Improvements: \$5,940.00

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.



**EXCEPTIONS**  
(continued)

19. Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area: 061-006  
 Tax Identification No.: 184-150-40  
 Fiscal Year: 2017-2018  
 1st Installment: \$1,831.80 paid  
 2nd Installment: \$1,831.79 open  
 Land: \$312,368.00  
 Improvements: \$5,940.00

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

20. Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area: 061-006  
 Tax Identification No.: 184-150-41  
 Fiscal Year: 2017-2018  
 1st Installment: \$1,831.80 paid  
 2nd Installment: \$1,831.79 open  
 Land: \$312,368.00  
 Improvements: \$5,940.00

21. Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.
22. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.
23. Taxes and assessments levied by the Kern Delta Water District.

Amounts are unavailable at this time. A report has been ordered and the Company reserves the right to add additional items or make further requirements after review of the requested report.

24. Said land lies within the boundaries of the Improvement District shown below and is subject to any and all assessments levied thereunder.

Name of District: Kern Community College District Assessment District

25. Any assessments levied, or which may be levied, by the Kern-Delta Water Storage District, organized under the California Water Storage District Act (Deering General Laws Act 9126).
26. Such rights of way over said land for ditches as may have been granted to Charles Kerr by Agreement recorded in Book 1 Page 180 of Agreements



**EXCEPTIONS**  
(continued)

27. An oil and gas lease for the term therein provided with certain covenants, conditions and provisions, together with easements, if any, as set forth therein.

Dated: May 28, 1985  
Lessor: Barry Irvin  
Lessee: Texas Crude Exploration  
Recorded: July 31, 1985, Instrument No. 011280, Book 5782, Page 2064, of Official Records

28. Covenants and restrictions imposed by a Land Conservation Contract executed pursuant to Section 51200 et seq. California Government Code.

Dated: November 23, 1970  
Executed by: County of Kern and Barrett S. Baldwin  
Recorded: February 24, 1971, Instrument No. 11892, Book 4490, Page 858, of Official Records  
Affects: The herein described land and other land

29. The search did not disclose any open mortgages or deeds of trust of record, therefore the Company reserves the right to require further evidence to confirm that the property is unencumbered, and further reserves the right to make additional requirements or add additional items or exceptions upon receipt of the requested evidence.

30. Any right, interest or claim that may exist, arise or be asserted against the Title under or pursuant to the Perishable Agricultural Commodities Act of 1930, as amended, 7 USC 499a et seq., the Packers and Stockyard Act of 1921, as amended, 7 USC 181 et seq., or any similar state laws.

31. Before issuing its policy of title insurance, the Company will require the following for the below-named limited partnership:

Name: Pinheiro Family Limited Partnership, a Limited Partnership

- a. Certificate of Limited Partnership filed with the Secretary of State, in compliance with the provision of the California Revised Limited Partnership Act, Section 15611 et. seq., Corporations Code.
- b. Certified Copy of the Certificate of Limited Partnership certified by the Secretary of State filed with the County Recorder.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation



**EXCEPTIONS**  
(continued)

32. This Company will require the following documents for review prior to the issuance of any title insurance predicated upon a conveyance or encumbrance by the corporation named below.

Name of Corporation: Kern High School District

- a. A copy of the corporation By-laws and Articles of Incorporation.
- b. An original or certified copy of the resolution authorizing the subject transaction, together with a Certificate of Compliance pursuant to Section 5912 or 7912 Corporations Code.
- c. If the Articles and/or By-laws require approval by a "parent" organization, a copy of those By-laws and Articles of Incorporation is required.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

**THE FOLLOWING AFFECTS TRACT C**

33. Reservations contained in the Patent

From: The United States of America  
To: William Henry  
Recording Date: October 30, 1978  
Recording No.: Book 3, Page 22, of Patents

Which among other things recites as follows:

Subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by local customs, laws and decisions of the courts; and also subject to the right of the proprietor of a vein or lode to extract and remove his ore therefrom should the same be found to penetrate or intersect the premises hereby granted, as provided by law.

34. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2018-2019.
35. Property taxes, including any personal property taxes and any assessments collected with taxes are as follows:

Code Area: 061-006  
Tax Identification No.: 184-150-42  
Fiscal Year: 2017-2018  
1st Installment: \$2,036.22 paid  
2nd Installment: \$2,036.21 open  
Land: \$210,628.00  
Improvements: \$143,201.00

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.



**EXCEPTIONS**  
(continued)

36. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.
37. Taxes and assessments levied by the Kern Delta Water District.
- Amounts are unavailable at this time. A report has been ordered and the Company reserves the right to add additional items or make further requirements after review of the requested report.
38. Said land lies within the boundaries of the Improvement District shown below and is subject to any and all assessments levied thereunder.
- Name of District: Kern Community College District Assessment District
39. Such rights of way over said land for ditches as may have been granted to Charles Kerr by Agreement recorded in Book 1 Page 180 of Agreements.
40. Rights of the public in and to that portion of the herein described land lying within: Wible Road No. 50
41. Covenants and restrictions imposed by a Land Conservation Contract executed pursuant to Section 51200 et seq. California Government Code (Williamson Act) authorizing the establishment of agricultural preserves. The use of the land within the preserve may be restricted by the contract to agricultural, recreational, open-space, and other approved compatible uses.
- Dated: November 23, 1970  
Executed by: County of Kern and Barrett S. Baldwin  
Recording Date: February 24, 1971  
Recording No.: 11892, Book 4490, Page 858, of Official Records  
Affects: This and other land
42. A Notice of Substandard property as disclosed by a document
- Recording Date: March 27, 2012  
Recording No.: 0212040171 of Official Records
- Reference is hereby made to said document for full particulars.



**EXCEPTIONS**

(continued)

43. Matters contained in that certain document

Entitled: Agreement Regarding operation, maintenance, and cost distribution of a shared well  
Dated: October 30, 2014  
Executed by: Dana L. Oldenkamp, a widow, Pinheiro Family L.P., a California Limited Partnership  
and Wible Avenue, LLC, a California Limited Liability Company  
Recording Date: November 3, 2014  
Recording No.: 000214136611, of Official Records

Reference is hereby made to said document for full particulars.

Affects: The herein described Land and other land.

44. A deed of trust to secure an indebtedness in the amount shown below,

Amount: \$300,000.00  
Dated: October 21, 2014  
Trustor/Grantor: Wible Avenue LLC, a California limited liability company, as to Parcel 1; and Dana L. Oldenkamp, a widow, as to Parcel 2  
Trustee: American AgCredit, FLCA  
Beneficiary: American AgCredit, FLCA, a corporation  
Loan No.: None shown  
Recording Date: November 13, 2014  
Recording No.: 000214140995, of Official Records

The Deed of Trust set forth above is purported to be a "Credit Line" Deed of Trust. Under California Civil Code §2943.1 it is a requirement that the Trustor/Grantor of said Deed of Trust either immediately provide the beneficiary with the "Borrower's instruction to Suspend and Close Equity Line of Credit" or provide a satisfactory subordination of this Deed of Trust to the proposed Deed of Trust to be recorded at closing.

If the above credit line is being paid off, this Company will require that Escrow obtain written confirmation from the current Beneficiary that the account has been frozen prior to recording. Failure to do so will result in this Company holding funds at the close of Escrow until such confirmation is obtained from the Beneficiary.

Affects: The herein described Land and other land.



**EXCEPTIONS**  
(continued)

45. The Company will require the following documents for review prior to the issuance of any title insurance predicated upon a conveyance or encumbrance from the entity named below.

Limited Liability Company: Wible Avenue LLC, a California Limited Liability Company

- a. A copy of its operating agreement, if any, and any and all amendments, supplements and/or modifications thereto, certified by the appropriate manager or member.
- b. If a domestic Limited Liability Company, a copy of its Articles of Organization and all amendment thereto with the appropriate filing stamps.
- c. If the Limited Liability Company is member-managed a full and complete current list of members certified by the appropriate manager or member.
- d. A current dated certificate of good standing from the proper governmental authority of the state in which the entity was created
- e. If less than all members, or managers, as appropriate, will be executing the closing documents, furnish evidence of the authority of those signing.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

46. Any right, interest or claim that may exist, arise or be asserted against the Title under or pursuant to the Perishable Agricultural Commodities Act of 1930, as amended, 7 USC 499a et seq., the Packers and Stockyard Act of 1921, as amended, 7 USC 181 et seq., or any similar state laws.

**THE FOLLOWING AFFECTS TRACT D**

47. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2018-2019.

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

48. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.

49. Taxes and assessments levied by the Kern Delta Water District.

Amounts are unavailable at this time. A report has been ordered and the Company reserves the right to add additional items or make further requirements after review of the requested report.



**EXCEPTIONS**  
(continued)

50. Said land lies within the boundaries of the Improvement District shown below and is subject to any and all assessments levied thereunder.

Name of District: Kern Community College District Assessment District

51. Rights of the public in and to that portion of the herein described land lying within: Wible Road No. 50

52. An easement for PUBLIC HIGHWAY PURPOSES and incidental purposes, recorded MAY 23, 1956 as BOOK 2611, PAGE 454 of Official Records.

In Favor of: THE COUNTY OF KERN  
Affects: AS DESCRIBED THEREIN

53. Covenants and restrictions imposed by a Land Conservation Contract executed pursuant to Section 51200 et seq. California Government Code (Williamson Act) authorizing the establishment of agricultural preserves. The use of the land within the preserve may be restricted by the contract to agricultural, recreational, open-space, and other approved compatible uses.

Executed by: B.S. Baldwin Farms Inc  
Recording Date: February 24, 1975  
Recording No.: Book 4883, Page 640 of Official Records

54. A deed of trust to secure an indebtedness in the amount shown below,

Amount: \$609,000.00  
Dated: October 25, 2012  
Trustor/Grantor: Pinheiro Family L. P., a California Limited Partnership  
Trustee: American AgCredit, FLCA  
Beneficiary: American AgCredit, FLCA  
Recording Date: November 14, 2012  
Recording No.: 0212163593 of Official Records

55. Matters contained in that certain document

Entitled: Agreement Regarding operation, maintenance, and cost distribution of a shared well  
Dated: October 30, 2014  
Executed by: Dana L. Oldenkamp, a widow, Pinheiro Family L.P., a California Limited Partnership  
and Wible Avenue, LLC, a California Limited Liability Company  
Recording Date: November 3, 2014  
Recording No.: 000214136611, of Official Records

Reference is hereby made to said document for full particulars.



**EXCEPTIONS**  
(continued)

56. Before issuing its policy of title insurance, the Company will require the following for the below-named limited partnership:

Name: Pinheiro Family L. P., a California Limited Partnership

- a. Certificate of Limited Partnership filed with the Secretary of State, in compliance with the provision of the California Revised Limited Partnership Act, Section 15611 et. seq., Corporations Code.
- b. Certified Copy of the Certificate of Limited Partnership certified by the Secretary of State filed with the County Recorder.

The Company reserves the right to add additional items or make further requirements after review of the requested documentation

57. Any right, interest or claim that may exist, arise or be asserted against the Title under or pursuant to the Perishable Agricultural Commodities Act of 1930, as amended, 7 USC 499a et seq., the Packers and Stockyard Act of 1921, as amended, 7 USC 181 et seq., or any similar state laws.

**END OF EXCEPTIONS**

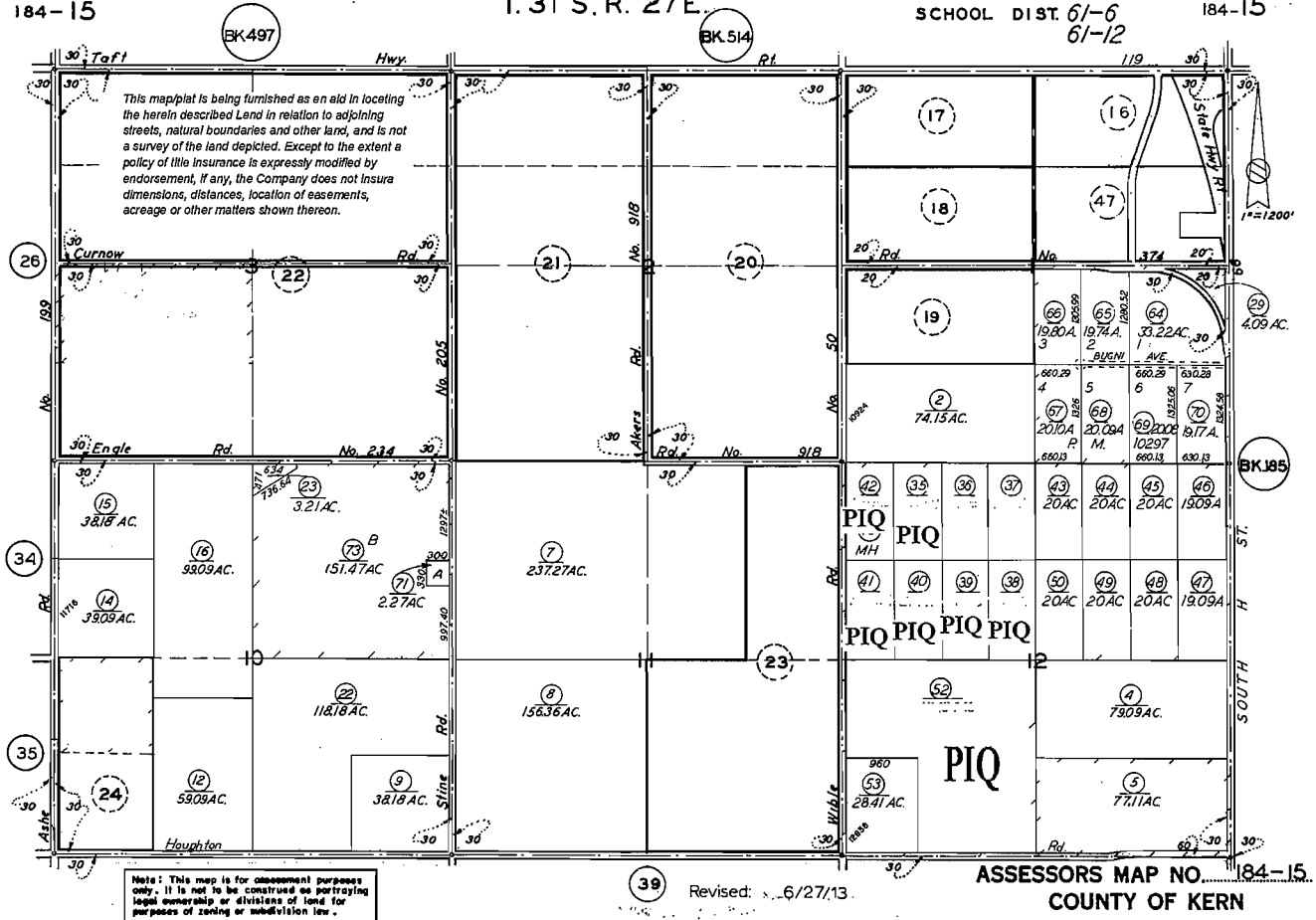


184-15

T. 31 S. R. 27 E.

SCHOOL DIST. 6/-6  
61-12

184-15

















0 1 2  
Standard Scale 1 : 1



# Legend

-  TRACT A - Property In Question, Fee
-  TRACT B - PARCEL 1 - Property In Question, Fee
-  TRACT B - PARCEL 2 - Property In Question, Fee
-  TRACT B - PARCEL 3 - Property In Question, Fee
-  TRACT B - PARCEL 4 - Property In Question, Fee
-  TRACT C - Property In Question, Fee
-  TRACT D - Property In Question, Fee

-  Item No. 1 & 15 - Easement for Rights to Ditches in 10/30/1878 Bk3 Pg22 of Patents  
The exact location of said easement cannot be determined and is not plottable
-  Item No. 10 - Easement for Public Utilities in 11/05/1985 Inst # 050369 Bk5813 Pg464 of Official Records  
Affects said portion as described in the document
-  Item No. 8, 26 & 39 - Easement for Ditches in Bk1 Pg180 of Agreements  
The exact location of said easement cannot be determined and is not plottable
-  Item No. 35 - Easement for Rights to Ditches in 10/30/1878 Bk3 Pg22 of Patents  
The exact location of said easement cannot be determined and is not plottable
-  Item No. 52 - Easement for Public Highway in 05/23/1958 Bk2811 Pg454 of Official Records  
Affects said portion as described in the document

© 2018  
Ticor Title Company  
2540 W. Shaw Lane, Suite 112  
Fresno, CA 93711

Title Order No.: F182-3011/00062 - Preliminary Report dated December 18, 2017

Drawing Date: 01/18/2018 - FNFI

Reference

Assessor's Parcel No.: 154-156-35,36,38,40,41,42,43

Property: APNs/Parcel ID(s) 154-156-35,36,38,40,41,42,43

Date:

This report is being furnished as an aid in making the record associated with it and is not a survey of the land depicted. Except as the owner is aware of, the information is not intended to be used for any purpose other than the one for which it was prepared. The user of this report is responsible for the accuracy of the information and for the results of any action taken thereon. The user of this report is responsible for the accuracy of the information and for the results of any action taken thereon.

Plot Showing: THE EAST HALF OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 12, TOWNSHIP 31 SOUTH, RANGE 27 EAST, MOUNT DIABLO BASE AND MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF

Sheet 1 of 1

Printer:



## APPENDIX C

**EDR Radius Map Summary, Historical Topographic Maps, Sanborn Map  
Report, City Directory Summary, Vapor Encroachment Screening.**



**SW HS Site**

Wible & Engle

Bakersfield, CA 93313

Inquiry Number: 5230947.2s

March 22, 2018

## EDR Summary Radius Map Report



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.362.0050  
[www.edrnet.com](http://www.edrnet.com)



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Government Records Searched/Data Currency Tracking .....	GR-1

### GEOCHECK ADDENDUM

GeoCheck - Not Requested

***Thank you for your business.***  
Please contact EDR at 1-800-352-0050  
with any questions or comments.

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## EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

### TARGET PROPERTY INFORMATION

#### ADDRESS

WIBLE & ENGLE  
BAKERSFIELD, CA 93313

#### COORDINATES

Latitude (North):	35.2479500 - 35° 14' 52.62"
Longitude (West):	119.0338010 - 119° 2' 1.68"
Universal Transverse Mercator:	Zone 11
UTM X (Meters):	314956.5
UTM Y (Meters):	3902237.8
Elevation:	336 ft. above sea level

### USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey
Target Property:	N
Source:	U.S. Geological Survey

### AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140617
Source:	USDA



MAPPED SITES SUMMARY
----------------------

Target Property Address:  
WIBLE & ENGLE  
BAKERSFIELD, CA 93313

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	OLDENKAMP TRUCKING	11314 WIBLE RD	AST	Higher	95, 0.018, NW
A2	B S BALDWIN DAIRY	3151 ENGLE RD	LUST, HIST CORTESE	Higher	221, 0.042, NW
A3	B S BALDWEN DAIRY	3151 ENGLE RD	UST	Higher	221, 0.042, NW
4	MARTIN FEED, INC. T/	12838 WIBLE ROAD	SWF/LF	Lower	1986, 0.376, SSW



## EXECUTIVE SUMMARY

### TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

### SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property. Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

### STANDARD ENVIRONMENTAL RECORDS

#### ***State and tribal landfill and/or solid waste disposal site lists***

SWF/LF: A review of the SWF/LF list, as provided by EDR, has revealed that there is 1 SWF/LF site within approximately 0.5 miles of the target property.

<u>Lower Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
MARTIN FEED, INC. T/ Database: SWF/LF (SWIS), Date of Government Version: 11/13/2017 Facility ID: 15-AA-0390 Operational Status: Active Regulation Status: Permitted	12838 WIBLE ROAD	SSW 1/4 - 1/2 (0.376 mi.)	4	8

#### ***State and tribal leaking storage tank lists***

LUST: A review of the LUST list, as provided by EDR, has revealed that there is 1 LUST site within approximately 0.5 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
<b><i>B S BALDWIN DAIRY</i></b> Database: LUST, Date of Government Version: 03/12/2018 Database: LUST REG 5, Date of Government Version: 07/01/2008 Status: Completed - Case Closed Status: Case Closed Global Id: T0602900471	<b><i>3151 ENGLE RD</i></b>	<b><i>NW 0 - 1/8 (0.042 mi.)</i></b>	<b><i>A2</i></b>	<b><i>8</i></b>



## EXECUTIVE SUMMARY

### ***State and tribal registered storage tank lists***

UST: A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
B S BALDWIN DAIRY Database: KERN CO. UST, Date of Government Version: 11/02/2017	3151 ENGLE RD	NW 0 - 1/8 (0.042 mi.)	A3	8

AST: A review of the AST list, as provided by EDR, and dated 07/06/2016 has revealed that there is 1 AST site within approximately 0.25 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
OLDENKAMP TRUCKING	11314 WIBLE RD	NW 0 - 1/8 (0.018 mi.)	A1	8

### **ADDITIONAL ENVIRONMENTAL RECORDS**

#### ***Other Ascertainable Records***

HIST CORTESE: A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

<u>Equal/Higher Elevation</u>	<u>Address</u>	<u>Direction / Distance</u>	<u>Map ID</u>	<u>Page</u>
B S BALDWIN DAIRY Reg Id: 5T15000485	3151 ENGLE RD	NW 0 - 1/8 (0.042 mi.)	A2	8



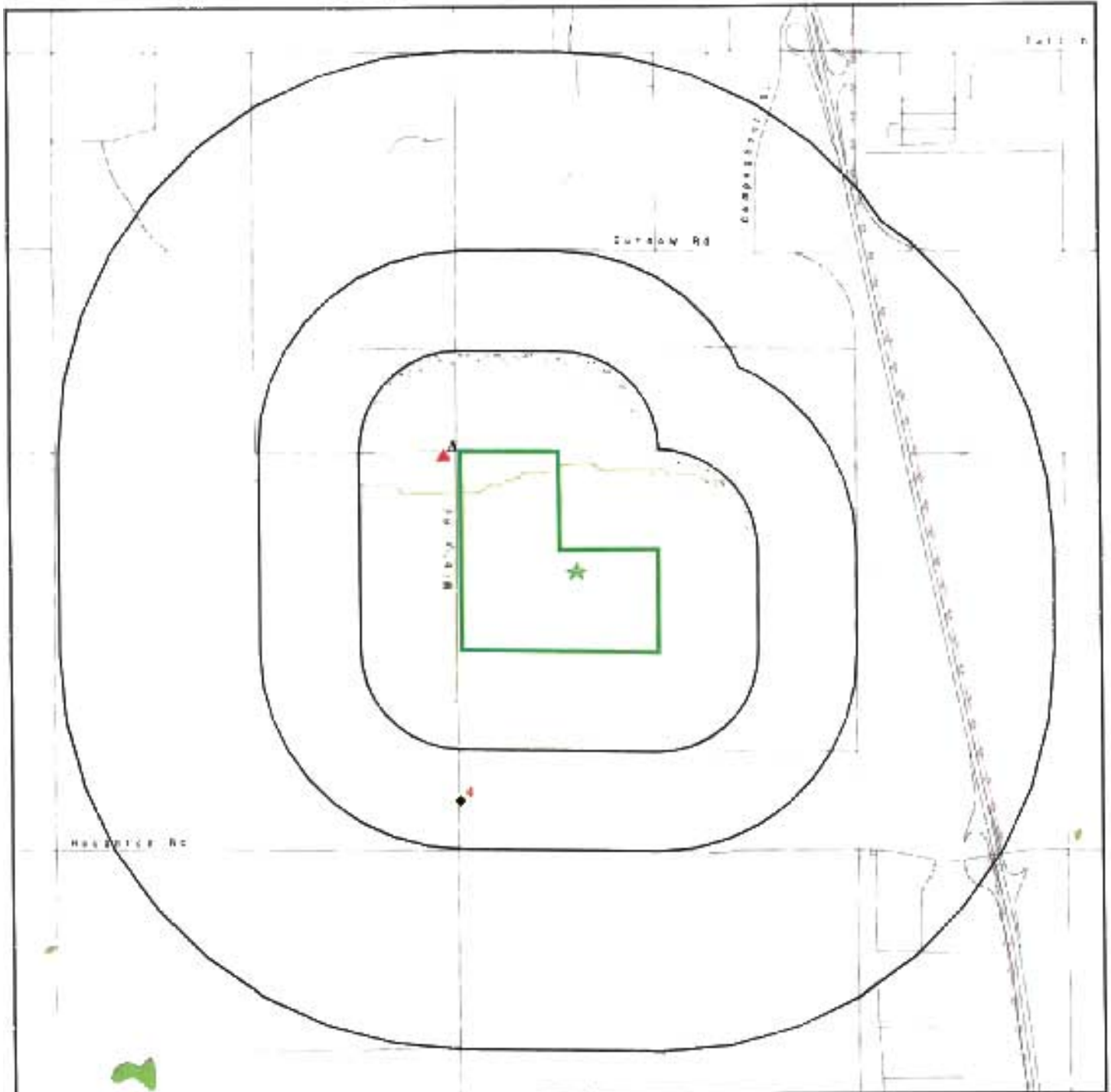
Count: 2 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
BAKERSFIELD	S108723976		WIBLE RD, 1 MILE N OF HERRING	93307	CDL
METTLER	S107541216		WIBLE RD, 1 MILE NORTH OF HERR	93307	CDL



# OVERVIEW MAP - 5230947.2S



- Target Property  
 Sites at elevations higher than or equal to the target property  
 Sites at elevations lower than the target property  
 Manufactured Gas Plants  
 National Priority List Sites  
 Dept. Defense Sites  
 Indian Reservations BIA  
 Power transmission lines  
 100-year flood zone  
 500-year flood zone  
 National Wetland inventory  
 State Wetlands  
 Upgradient Area  
 Areas of Concern

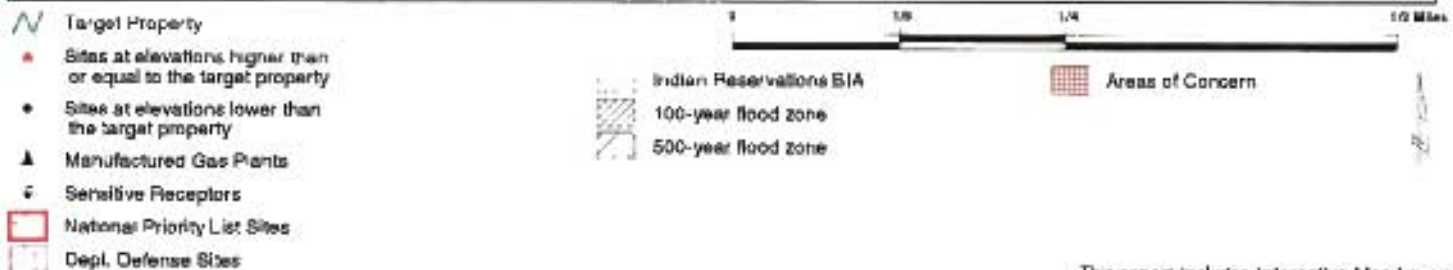
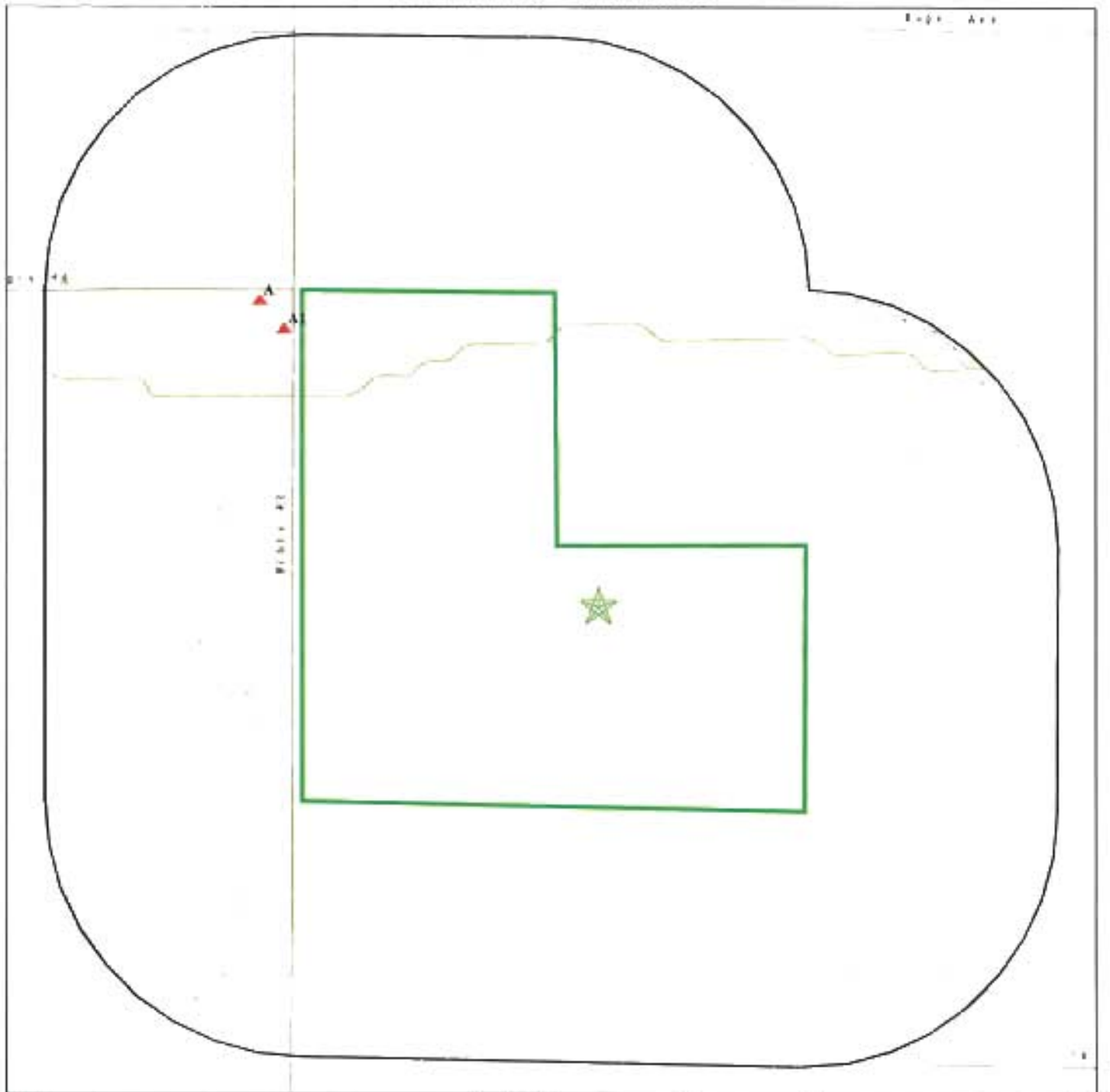
This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: SW HS Site  
 ADDRESS: Wible & Engle  
 Bakersfield CA 93313  
 LAT/LONG: 35.24795 / 119.033801

CLIENT: Solis Engineering, Inc.  
 CONTACT: Bob Becker  
 INQUIRY #: 5230947.2s  
 DATE: March 22, 2018 1:22 pm



# DETAIL MAP - 5230947.2S



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: SW HS Site  
 ADDRESS: Wible & Engle  
 Bakersfield CA 93313  
 LAT/LONG: 35.24795 / 119.033801

CLIENT: Soils Engineering, Inc.  
 CONTACT: Bob Becker  
 INQUIRY #: 5230947.2s  
 DATE: March 22, 2018 1:24 pm



## MAP FINDINGS SUMMARY

<u>Database</u>	<u>Search Distance (Miles)</u>	<u>Target Property</u>	<u>&lt; 1/8</u>	<u>1/8 - 1/4</u>	<u>1/4 - 1/2</u>	<u>1/2 - 1</u>	<u>&gt; 1</u>	<u>Total Plotted</u>
<b><u>STANDARD ENVIRONMENTAL RECORDS</u></b>								
<b><i>Federal NPL site list</i></b>								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
<b><i>Federal Delisted NPL site list</i></b>								
Delisted NPL	1.000		0	0	0	0	NR	0
<b><i>Federal CERCLIS list</i></b>								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
<b><i>Federal CERCLIS NFRAP site list</i></b>								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
<b><i>Federal RCRA CORRACTS facilities list</i></b>								
CORRACTS	1.000		0	0	0	0	NR	0
<b><i>Federal RCRA non-CORRACTS TSD facilities list</i></b>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<b><i>Federal RCRA generators list</i></b>								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
<b><i>Federal institutional controls / engineering controls registries</i></b>								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
<b><i>Federal ERNS list</i></b>								
ERNS	0.001		0	NR	NR	NR	NR	0
<b><i>State- and tribal - equivalent NPL</i></b>								
RESPONSE	1.000		0	0	0	0	NR	0
<b><i>State- and tribal - equivalent CERCLIS</i></b>								
ENVIROSTOR	1.000		0	0	0	0	NR	0
<b><i>State and tribal landfill and/or solid waste disposal site lists</i></b>								
SWF/LF	0.500		0	0	1	NR	NR	1
<b><i>State and tribal leaking storage tank lists</i></b>								
LUST	0.500		1	0	0	NR	NR	1



## MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
<b>State and tribal registered storage tank lists</b>								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		1	0	NR	NR	NR	1
AST	0.250		1	0	NR	NR	NR	1
INDIAN UST	0.250		0	0	NR	NR	NR	0
<b>State and tribal voluntary cleanup sites</b>								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
<b>State and tribal Brownfields sites</b>								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
<b>ADDITIONAL ENVIRONMENTAL RECORDS</b>								
<b>Local Brownfield lists</b>								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
<b>Local Lists of Landfill / Solid Waste Disposal Sites</b>								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
<b>Local Lists of Hazardous waste / Contaminated Sites</b>								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
<b>Local Lists of Registered Storage Tanks</b>								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
<b>Local Land Records</b>								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
<b>Records of Emergency Release Reports</b>								
HMIRS	0.001		0	NR	NR	NR	NR	0



## MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
<b>Other Ascertainable Records</b>								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0



## MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		1	0	0	NR	NR	1
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0

### EDR HIGH RISK HISTORICAL RECORDS

#### *EDR Exclusive Records*

EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0

### EDR RECOVERED GOVERNMENT ARCHIVES

#### *Exclusive Recovered Govt. Archives*

RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0

- Totals --		0	4	0	1	0	0	5
-------------	--	---	---	---	---	---	---	---

#### NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database



Map ID	MAP FINDINGS		EDR ID Number
Direction			EPA ID Number
Distance		Database(s)	
Elevation	Site		
A1	OLDENKAMP TRUCKING	AST	A100422972
NW	11314 WIBLE RD		N/A
< 1/8	BAKERSFIELD, CA 93307		
0.018 mi.			
95 ft.			
Relative:	<a href="#">Click here for full text details</a>		
Higher			
A2	B S BALDWIN DAIRY	LUST	S100930422
NW	3151 ENGLE RD	HIST CORTESE	N/A
< 1/8	BAKERSFIELD, CA 93313		
0.042 mi.			
221 ft.			
Relative:	<a href="#">Click here for full text details</a>		
Higher	LUST		
	Status: Case Closed		
	Status: Completed - Case Closed		
	Global Id: T0602900471		
	HIST CORTESE		
	Reg Id: 5T15000486		
A3	B S BALDWIN DAIRY	UST	U004111753
NW	3151 ENGLE RD		N/A
< 1/8	BAKERSFIELD, CA		
0.042 mi.			
221 ft.			
Relative:	<a href="#">Click here for full text details</a>		
Higher			
4	MARTIN FEED, INC. T/P FACILITY	SWF/LF	S108985745
SSW	12838 WIBLE ROAD		N/A
1/4-1/2	PUMPKIN CENTER, CA		
0.376 mi.			
1986 ft.			
Relative:	<a href="#">Click here for full text details</a>		
Lower	SWF/LF		
	Operational Status: Active		
	Regulation Status: Permitted		
	Facility ID: 15-AA-0390		



# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
CA	BROWNFIELDS	Considered Brownfields Sites Listing	State Water Resources Control Board	12/22/2017	12/26/2017	01/31/2018
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	06/30/2017	08/18/2017	09/21/2017
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	05/09/2017	07/26/2017	09/21/2017
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	02/08/2018	02/08/2018	02/08/2018
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	02/08/2018	02/08/2018	02/08/2018
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	12/01/2017	02/02/2018	03/16/2018
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2015	03/21/2017	08/15/2017
CA	ENF	Enforcement Action Listing	State Water Resources Control Board	01/22/2018	01/24/2018	03/19/2018
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	01/30/2018	01/31/2018	03/19/2018
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	01/22/2018	01/24/2018	03/20/2018
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	11/14/2017	11/17/2017	12/18/2017
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	02/08/2018	02/09/2018	03/20/2018
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2016	07/12/2017	10/17/2017
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	11/20/2017	11/20/2017	12/27/2017
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	01/08/2018	01/09/2018	02/06/2018
CA	ICE	ICE	Department of Toxic Substances Control	11/20/2017	11/20/2017	12/27/2017
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Quality Control Board	03/12/2018	03/14/2018	03/21/2018
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	11/30/2017	12/01/2017	01/11/2018
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	03/12/2018	03/14/2018	03/21/2018
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Board	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Board	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Board	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Board	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Board	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Board	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Board	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Board	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Board	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Board	03/01/2001	04/23/2001	05/21/2001
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	03/12/2018	03/14/2018	03/21/2018
CA	MINES	Mines Site Location Listing	Department of Conservation	12/11/2017	12/12/2017	01/12/2018
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	11/29/2017	12/05/2017	01/16/2018
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	12/14/2017	12/15/2017	01/16/2018
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	02/14/2018	02/14/2018	03/15/2018
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	12/04/2017	12/05/2017	01/16/2018
CA	PROC	Certified Processors Database	Department of Conservation	12/11/2017	12/12/2017	01/16/2018
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	01/30/2018	01/31/2018	03/19/2018
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tank	State Water Resources Control Board		07/01/2013	12/30/2013
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	01/30/2018	01/31/2018	03/19/2018
CA	SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	03/12/2018	03/14/2018	03/21/2018



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	11/13/2017	11/14/2017	12/07/2017
CA	SWRCY	Recycler Database	Department of Conservation	12/11/2017	12/12/2017	01/17/2018
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	12/11/2017	12/12/2017	01/17/2018
CA	UST	Active UST Facilities	SWRCB	12/11/2017	12/12/2017	01/17/2018
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	11/27/2017	11/29/2017	12/18/2017
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	01/30/2018	01/31/2018	03/19/2018
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	04/15/2015	04/17/2015	06/23/2015
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	04/22/2013	03/03/2015	03/09/2015
US	ABANDONED MINES	Abandoned Mines	Department of Interior	09/25/2017	09/26/2017	10/20/2017
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	07/01/2014	09/10/2014	10/20/2014
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	09/30/2017	11/10/2017	01/12/2018
US	CORRACTS	Corrective Action Report	EPA	12/11/2017	12/26/2017	02/09/2018
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	06/27/2017	11/21/2017	01/12/2018
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	07/31/2012	08/07/2012	09/18/2012
US	Delisted NPL	National Priority List Deletions	EPA	12/11/2017	12/22/2017	01/05/2018
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	01/13/2018	01/19/2018	03/02/2018
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	09/18/2017	09/21/2017	10/13/2017
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	11/07/2016	01/05/2017	04/07/2017
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	12/31/2005	02/06/2006	01/11/2007
US	FEMA UST	Underground Storage Tank Listing	FEMA	05/15/2017	05/30/2017	10/13/2017
US	FINDS	Facility Index System/Facility Registry System	EPA	07/23/2017	09/06/2017	09/15/2017
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	01/31/2015	07/08/2015	10/13/2015
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	11/20/2017	11/20/2017	01/12/2018
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	12/23/2016	12/27/2016	02/17/2017
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	09/21/2017	09/21/2017	10/13/2017
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Services, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/14/2017	07/27/2017	10/06/2017
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	04/25/2017	11/07/2017	12/08/2017
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	10/14/2016	01/27/2017	05/05/2017
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	04/26/2017	07/27/2017	10/13/2017
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	04/24/2017	07/27/2017	10/06/2017
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	04/14/2017	07/27/2017	10/06/2017
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	05/01/2017	07/27/2017	10/13/2017
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	04/13/2017	07/27/2017	10/13/2017
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	04/14/2017	07/27/2017	10/06/2017
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	04/25/2017	07/27/2017	10/13/2017
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	10/14/2016	01/27/2017	05/05/2017
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/26/2017	07/27/2017	10/06/2017
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	04/24/2017	07/27/2017	12/08/2017
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	05/02/2017	07/27/2017	10/06/2017
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	05/01/2017	07/27/2017	10/13/2017
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	04/13/2017	07/27/2017	10/13/2017
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Listing	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	01/09/2018	02/06/2018	03/02/2018
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	12/11/2017	12/22/2017	01/12/2018
US	LUCIS	Land Use Control Information System	Department of the Navy	05/22/2017	06/13/2017	09/15/2017
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	08/30/2016	09/08/2016	10/21/2016
US	NPL	National Priority List	EPA	12/11/2017	12/22/2017	01/05/2018
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	06/01/2017	06/09/2017	10/13/2017
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	PRP	Potentially Responsible Parties	EPA	10/25/2013	10/17/2014	10/20/2014
US	Proposed NPL	Proposed National Priority List Sites	EPA	12/11/2017	12/22/2017	01/05/2018
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	10/02/2017	10/05/2017	10/13/2017
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	12/11/2017	12/26/2017	02/09/2018
US	RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators	Environmental Protection Agency	12/11/2017	12/26/2017	02/09/2018
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	12/11/2017	12/26/2017	02/09/2018
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	12/11/2017	12/26/2017	02/09/2018
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	12/11/2017	12/26/2017	02/09/2018



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	RMP	Risk Management Plans	Environmental Protection Agency	11/02/2017	11/17/2017	12/08/2017
US	ROD	Records Of Decision	EPA	12/11/2017	12/22/2017	01/12/2018
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	12/11/2017	12/22/2017	01/12/2018
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	12/11/2017	12/22/2017	01/12/2018
US	SSTS	Section 7 Tracking Systems	EPA	12/31/2009	12/10/2010	02/25/2011
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2016	01/10/2018	01/12/2018
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	06/23/2017	10/11/2017	11/03/2017
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	01/19/2018	01/19/2018	02/09/2018
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	01/09/2018	01/24/2018	02/09/2018
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	11/13/2017	11/27/2017	02/09/2018
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	01/11/2018	01/19/2018	03/02/2018
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	01/19/2018	01/24/2018	02/09/2018
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	11/13/2017	11/27/2017	02/09/2018
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	10/29/2017	11/28/2017	01/12/2018
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UXO	Unexploded Ordnance Sites	Department of Defense	09/30/2016	10/31/2017	01/12/2018
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	11/11/2017	11/14/2017	12/18/2017
NJ	NJ MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2016	04/11/2017	07/27/2017
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	12/31/2017	01/31/2018	03/09/2018
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2016	07/25/2017	09/25/2017
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2013	06/19/2015	07/15/2015
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	12/31/2016	04/13/2017	07/14/2017
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
CA	Daycare Centers	Sensitive Receptor: Licensed Facilities	Department of Social Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
CA	State Wetlands	Wetland Inventory	Department of Fish & Game			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		PennWell Corporation			
US	Electric Power Transmission Line Data		PennWell Corporation			



## GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

<u>St</u>	<u>Acronym</u>	<u>Full Name</u>	<u>Government Agency</u>	<u>Gov Date</u>	<u>Arvl. Date</u>	<u>Active Date</u>
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### STREET AND ADDRESS INFORMATION

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## **GEOCHECK® - PHYSICAL SETTING SOURCE ADDENDUM**

### **TARGET PROPERTY ADDRESS**

SW HS SITE  
WIBLE & ENGLE  
BAKERSFIELD, CA 93313

### **TARGET PROPERTY COORDINATES**

Latitude (North):	35.248618 - 35° 14' 55.02"
Longitude (West):	119.034518 - 119° 2' 4.26"
Universal Transverse Mercator:	Zone 11
UTM X (Meters):	314892.8
UTM Y (Meters):	3902313.2
Elevation:	336 ft. above sea level

### **USGS TOPOGRAPHIC MAP**

Target Property Map:	5639068 CONNER, CA
Version Date:	2012
North Map:	5639816 GOSFORD, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.



## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

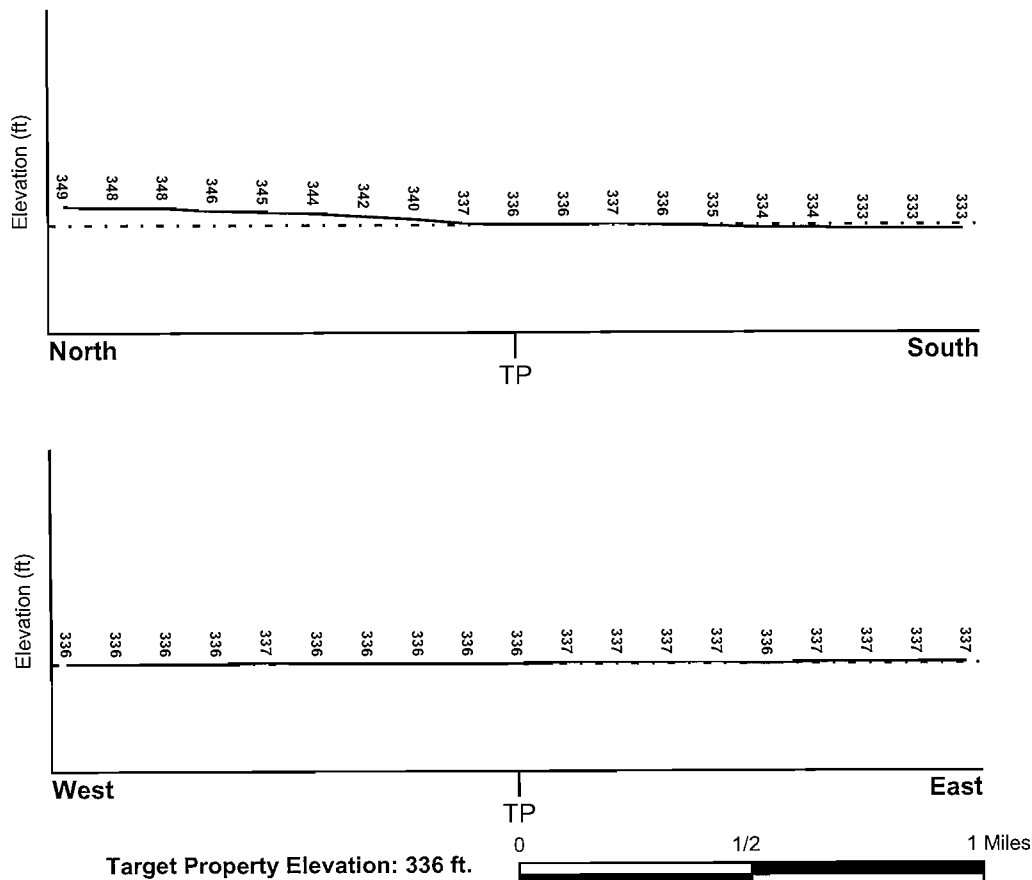
### TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

### TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

### SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.



## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

### FEMA FLOOD ZONE

<u>Flood Plain Panel at Target Property</u>	<u>FEMA Source Type</u>
06029C2725E	FEMA FIRM Flood data
<u>Additional Panels in search area:</u>	<u>FEMA Source Type</u>
06029C2300E	FEMA FIRM Flood data

### NATIONAL WETLAND INVENTORY

<u>NWI Quad at Target Property</u>	<u>NWI Electronic Data Coverage</u>
CONNER	YES - refer to the Overview Map and Detail Map

### HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

#### ***Site-Specific Hydrogeological Data\*:***

Search Radius:	1.25 miles
Status:	Not found

### AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

<u>MAP ID</u>	<u>LOCATION FROM TP</u>	<u>GENERAL DIRECTION GROUNDWATER FLOW</u>
Not Reported		



## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

### GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

#### ROCK STRATIGRAPHIC UNIT

#### GEOLOGIC AGE IDENTIFICATION

Era:	Cenozoic	Category:	Stratified Sequence
System:	Quaternary		
Series:	Quaternary		
Code:	Q		(decoded above as Era, System & Series)

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

### DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	KIMBERLINA
Soil Surface Texture:	fine sandy loam
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.

Hydric Status: Soil does not meet the requirements for a hydric soil.

Corrosion Potential - Uncoated Steel: HIGH

Depth to Bedrock Min:	> 60 inches
Depth to Bedrock Max:	> 60 inches



## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
Layer	Boundary		Soil Texture Class	Classification		Permeability Rate (in/hr)	Soil Reaction (pH)
	Upper	Lower		AASHTO Group	Unified Soil		
1	0 inches	9 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 2.00	Max: 8.40 Min: 6.60
2	9 inches	45 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 6.00 Min: 2.00	Max: 8.40 Min: 7.90
3	45 inches	71 inches	stratified	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 2.00 Min: 0.60	Max: 8.40 Min: 7.90

### OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinator soil types may appear within the general area of target property.

Soil Surface Textures: sandy loam  
clay  
clay loam  
loamy sand  
gravelly - sandy loam

Surficial Soil Types: sandy loam  
clay  
clay loam  
loamy sand  
gravelly - sandy loam

Shallow Soil Types: loam  
sand  
loamy sand

Deeper Soil Types: clay



## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

### LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

### WELL SEARCH DISTANCE INFORMATION

<u>DATABASE</u>	<u>SEARCH DISTANCE (miles)</u>
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

### FEDERAL USGS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
A2	USGS40000161805	1/4 - 1/2 Mile ENE
B5	USGS40000161741	1/2 - 1 Mile SE
8	USGS40000161935	1/2 - 1 Mile North
9	USGS40000161766	1/2 - 1 Mile West
C10	USGS40000161954	1/2 - 1 Mile NNW
D11	USGS40000161810	1/2 - 1 Mile ENE

### FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
No PWS System Found		

Note: PWS System location is not always the same as well location.

### STATE DATABASE WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
A1	CADW600000015164	1/4 - 1/2 Mile ENE
3	CADW600000005113	1/2 - 1 Mile SSE
B4	CADW600000031599	1/2 - 1 Mile SE
6	CADW600000015637	1/2 - 1 Mile SSW
7	CADW600000031607	1/2 - 1 Mile SSE
C12	CADW600000004566	1/2 - 1 Mile NNW
D13	CADW600000032344	1/2 - 1 Mile ENE
14	CADW600000004567	1/2 - 1 Mile NW

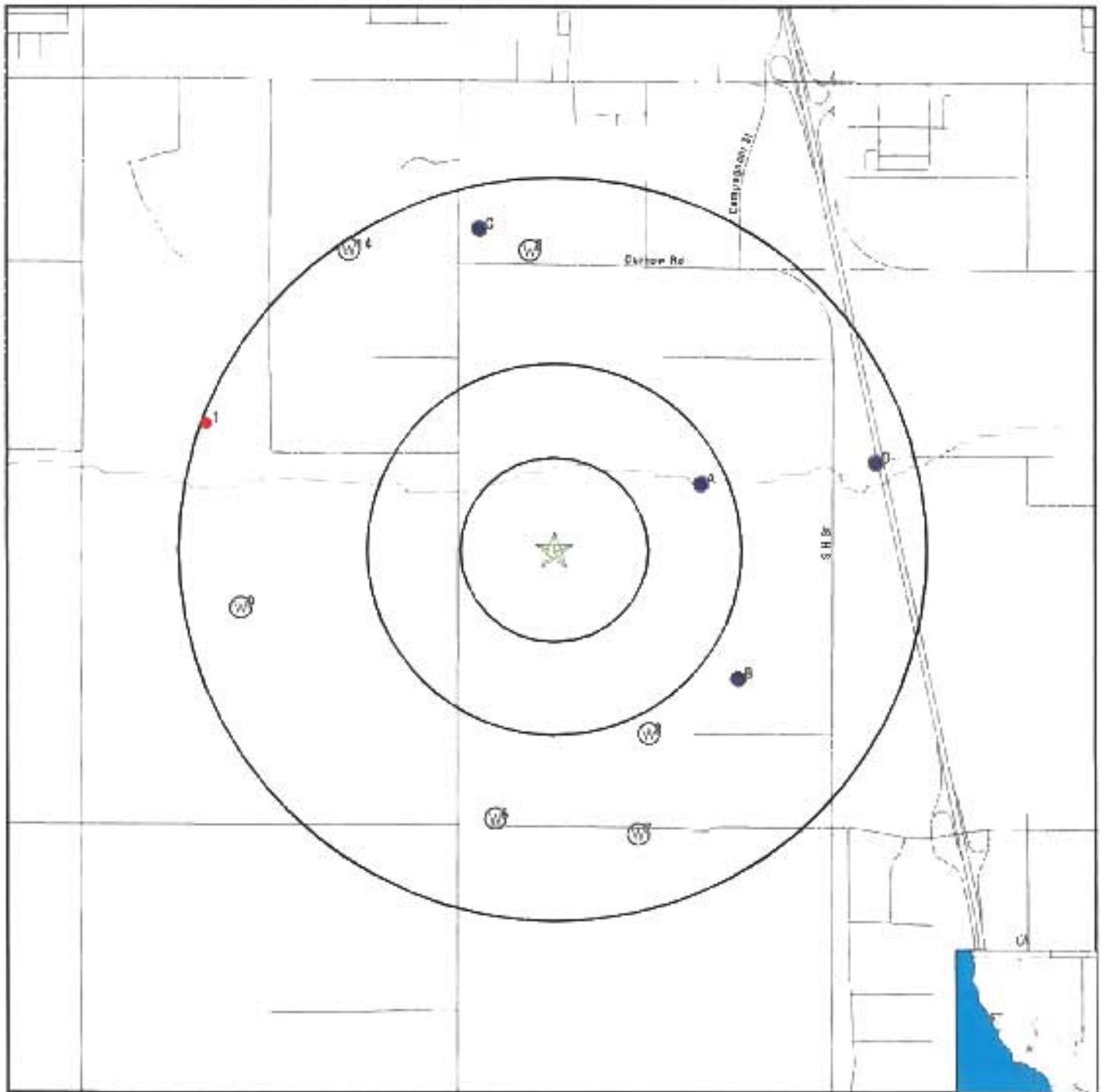
### OTHER STATE DATABASE INFORMATION

### STATE OIL/GAS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
1	CAOG11000042673	1/2 - 1 Mile WNW



# PHYSICAL SETTING SOURCE MAP - 4963452.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 6 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: SW HS Site  
 ADDRESS: Wible & Engle  
 Bakersfield CA 93313  
 LAT/LONG: 35.248618 / 119.034518

CLIENT: Soils Engineering, Inc.  
 CONTACT: Bob Becker  
 INQUIRY #: 4963452.2s  
 DATE: June 12, 2017 1:14 pm



## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID  
Direction  
Distance  
Elevation

Database EDR ID Number

1  
WNW [Click here for full text details](#)  
1/2 - 1 Mile

OIL\_GAS CAOG11000042573

A1  
ENE [Click here for full text details](#)  
1/4 - 1/2 Mile  
Higher

CA WELLS CADW60000015164

A2  
ENE [Click here for full text details](#)  
1/4 - 1/2 Mile  
Higher

FED USGS USGS40000161805

3  
SSE [Click here for full text details](#)  
1/2 - 1 Mile  
Lower

CA WELLS CADW60000005113

B4  
SE [Click here for full text details](#)  
1/2 - 1 Mile  
Lower

CA WELLS CADW60000031599

B5  
SE [Click here for full text details](#)  
1/2 - 1 Mile  
Lower

FED USGS USGS40000161741

6  
SSW [Click here for full text details](#)  
1/2 - 1 Mile  
Lower

CA WELLS CADW60000015637

7  
SSE [Click here for full text details](#)  
1/2 - 1 Mile  
Lower

CA WELLS CADW60000031607

8  
North [Click here for full text details](#)  
1/2 - 1 Mile  
Higher

FED USGS USGS40000161835



## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation		Database	ECR ID Number
9 West 1/2 - 1 Mile Higher	<a href="#">Click here for full text details</a>	FED USGS	USGS40000161766
C10 NNW 1/2 - 1 Mile Higher	<a href="#">Click here for full text details</a>	FED USGS	USGS40000161954
D11 ENE 1/2 - 1 Mile Higher	<a href="#">Click here for full text details</a>	FED USGS	USGS40000161810
C12 NNW 1/2 - 1 Mile Higher	<a href="#">Click here for full text details</a>	CA WELLS	CADW60000004566
D13 ENE 1/2 - 1 Mile Higher	<a href="#">Click here for full text details</a>	CA WELLS	CADW60000032344
14 NW 1/2 - 1 Mile Higher	<a href="#">Click here for full text details</a>	CA WELLS	CADW60000004567



## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS RADON

### AREA RADON INFORMATION

State Database: CA Radon

#### Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
93313	12	1

Federal EPA Radon Zone for KERN County: 2

Note: Zone 1 indoor average level > 4 pCi/L.

: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.

: Zone 3 indoor average level < 2 pCi/L.

---

Federal Area Radon Information for KERN COUNTY, CA

Number of sites tested: 94

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.422 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported



# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

## HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA

Telephone: 877-336-2627

Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory

Source: Department of Fish & Game

Telephone: 916-445-0411

## HYDROGEOLOGIC INFORMATION

AQUIFLOW<sup>R</sup> Information System

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)

Telephone: 800-672-5559

SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.



# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## LOCAL / REGIONAL WATER AGENCY RECORDS

### FEDERAL WATER WELLS

#### PWS: Public Water Systems

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

#### PWS ENF: Public Water Systems Violation and Enforcement Data

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

#### USGS Water Wells: USGS National Water Inventory System (NWIS)

This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

### STATE RECORDS

#### Water Well Database

Source: Department of Water Resources

Telephone: 916-651-9648

#### California Drinking Water Quality Database

Source: Department of Public Health

Telephone: 916-324-2319

The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

## OTHER STATE DATABASE INFORMATION

#### California Oil and Gas Well Locations

Source: Department of Conservation

Telephone: 916-323-1779

Oil and Gas well locations in the state.

### RADON

#### State Database: CA Radon

Source: Department of Health Services

Telephone: 916-324-2208

Radon Database for California

#### Area Radon Information

Source: USGS

Telephone: 703-356-4020

The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

#### EPA Radon Zones

Source: EPA

Telephone: 703-356-4020

Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.



## PHYSICAL SETTING SOURCE RECORDS SEARCHED

### OTHER

Airport Landing Facilities: Private and public use landing facilities  
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater  
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

### STREET AND ADDRESS INFORMATION

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SW HS Site

Wible & Engle

Bakersfield, CA 93313

Inquiry Number: 4963452.4

June 12, 2017

## EDR Historical Topo Map Report

with QuadMatch™



8 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)



## EDR Historical Topo Map Report

06/12/17

**Site Name:**

SW HS Site  
Wible & Engle  
Bakersfield, CA 93313  
EDR Inquiry # 4963452.4

**Client Name:**

Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA 93313  
Contact: Bob Becker



EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Soils Engineering, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDR's Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

**Search Results:**

**P.O.#** 16195  
**Project:** SW HS Site

**Coordinates:**

**Latitude:** 35.248618 35° 14' 55" North  
**Longitude:** -119.034518 -119° 2' 4" West  
**UTM Zone:** Zone 11 North  
**UTM X Meters:** 314897.06  
**UTM Y Meters:** 3902511.56  
**Elevation:** 336.00' above sea level

**Maps Provided:**

2012	1933
1973	1930, 1932
1968	1912
1954	1910
1950	
1947	
1942	
1941	

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### Topo Sheet Key

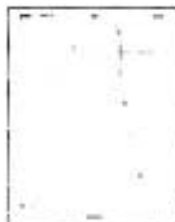
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

#### 2012 Source Sheets



Conner

7.5-minute, 24000



Gosford

7.5-minute, 24000

#### 1973 Source Sheets



Conner

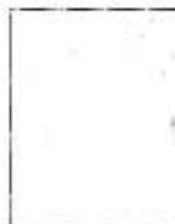
7.5-minute, 24000  
Aerial Photo Revised 1973



Gosford

7.5-minute, 24000  
Aerial Photo Revised 1973

#### 1968 Source Sheets



Conner

7.5-minute, 24000  
Aerial Photo Revised 1968



Gosford

7.5-minute, 24000  
Aerial Photo Revised 1968

#### 1954 Source Sheets



Gosford

7.5-minute, 24000



Conner

7.5-minute, 24000  
Aerial Photo Revised 1952

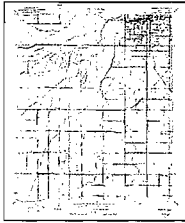


## ***Topo Sheet Key***

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This EDR Topo Map Report is based upon the following USGS topographic map sheets.

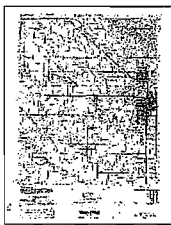
### **1950 Source Sheets**



Gosford

7.5-minute, 24000

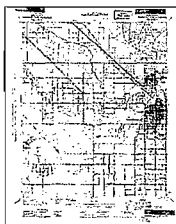
### **1947 Source Sheets**



BAKERSFIELD WEST

15-minute, 50000

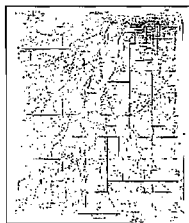
### **1942 Source Sheets**



Bakersfield West

15-minute, 62500  
Aerial Photo Revised 1942

### **1941 Source Sheets**



GOSFORD

7.5-minute, 31680



### Topo Sheet Key

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This EDR Topo Map Report is based upon the following USGS topographic map sheets

#### 1933 Source Sheets



Conner

7.5-minute, 31580

#### 1930, 1932 Source Sheets



Conner

7.5-minute, 31680



Gostord

7.5-minute, 31680

#### 1912 Source Sheets



Buena Vista Lake

30-minute, 125000

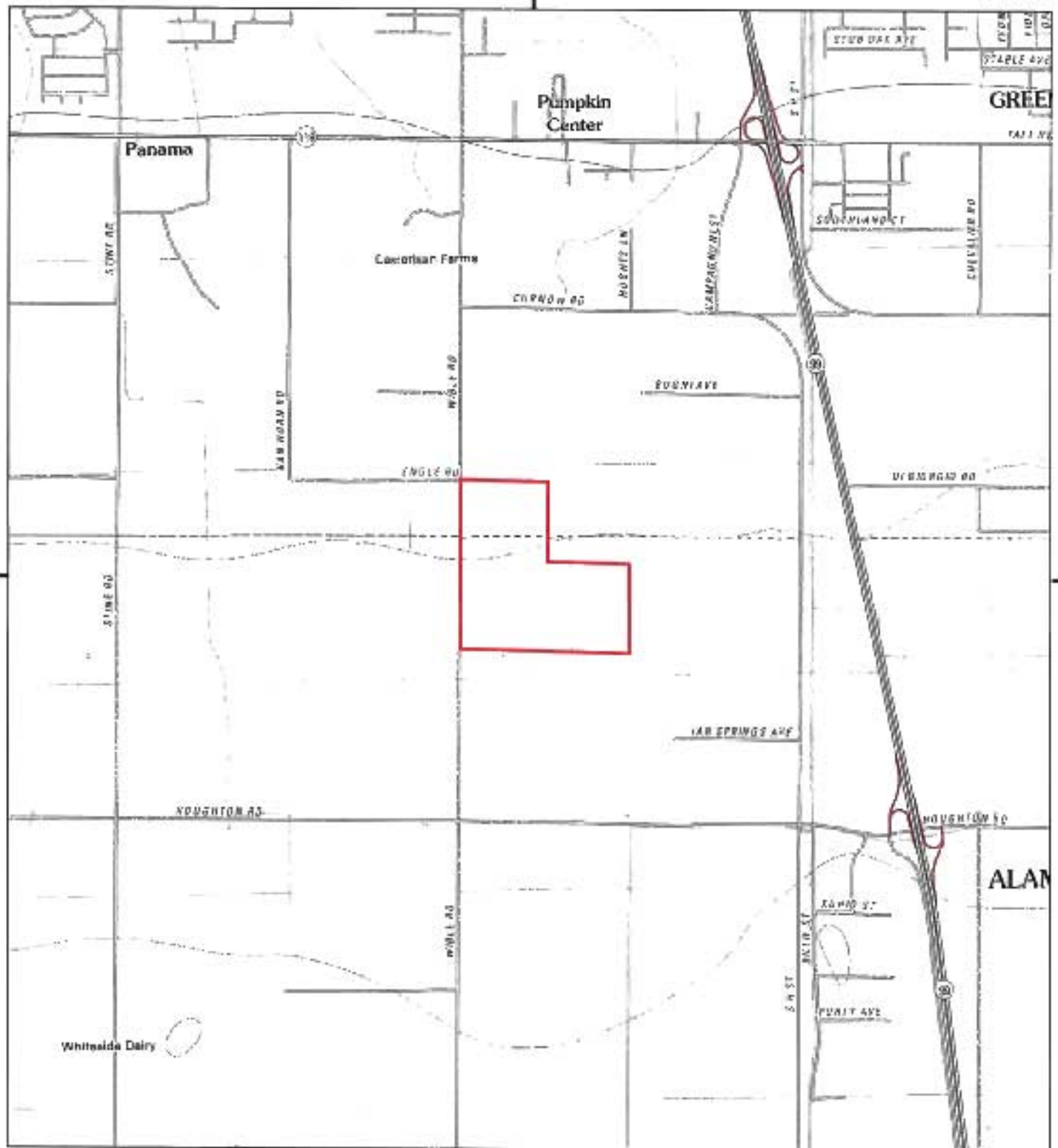
#### 1910 Source Sheets



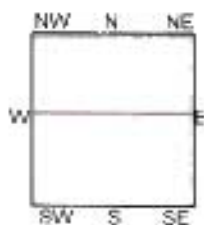
Buena Vista Lake

30-minute, 125000





This report includes information from the following map sheet(s)

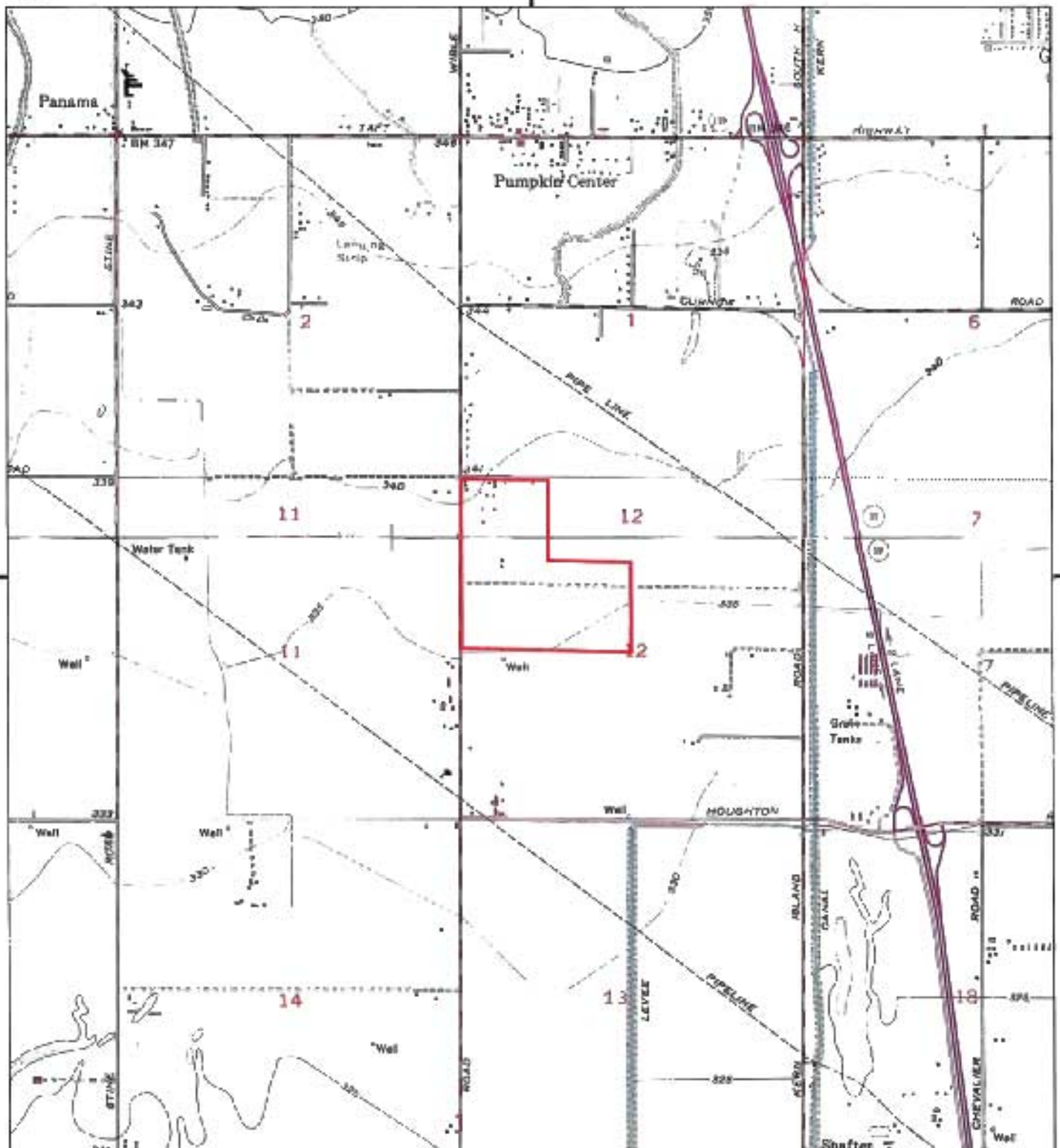


TP, Corner: 2012, 7.5 minute  
N, Gosford, 2012, 7.5 minute

SITE NAME: SW HS Site  
ADDRESS: Wible & Engle  
Bakersfield, CA 93313  
CLIENT: Soils Engineering, Inc.







This report includes information from the following map sheet(s).



TP. Corner. 1973. 7.5-minute  
N. Gusford, 1973. 7.5 minute

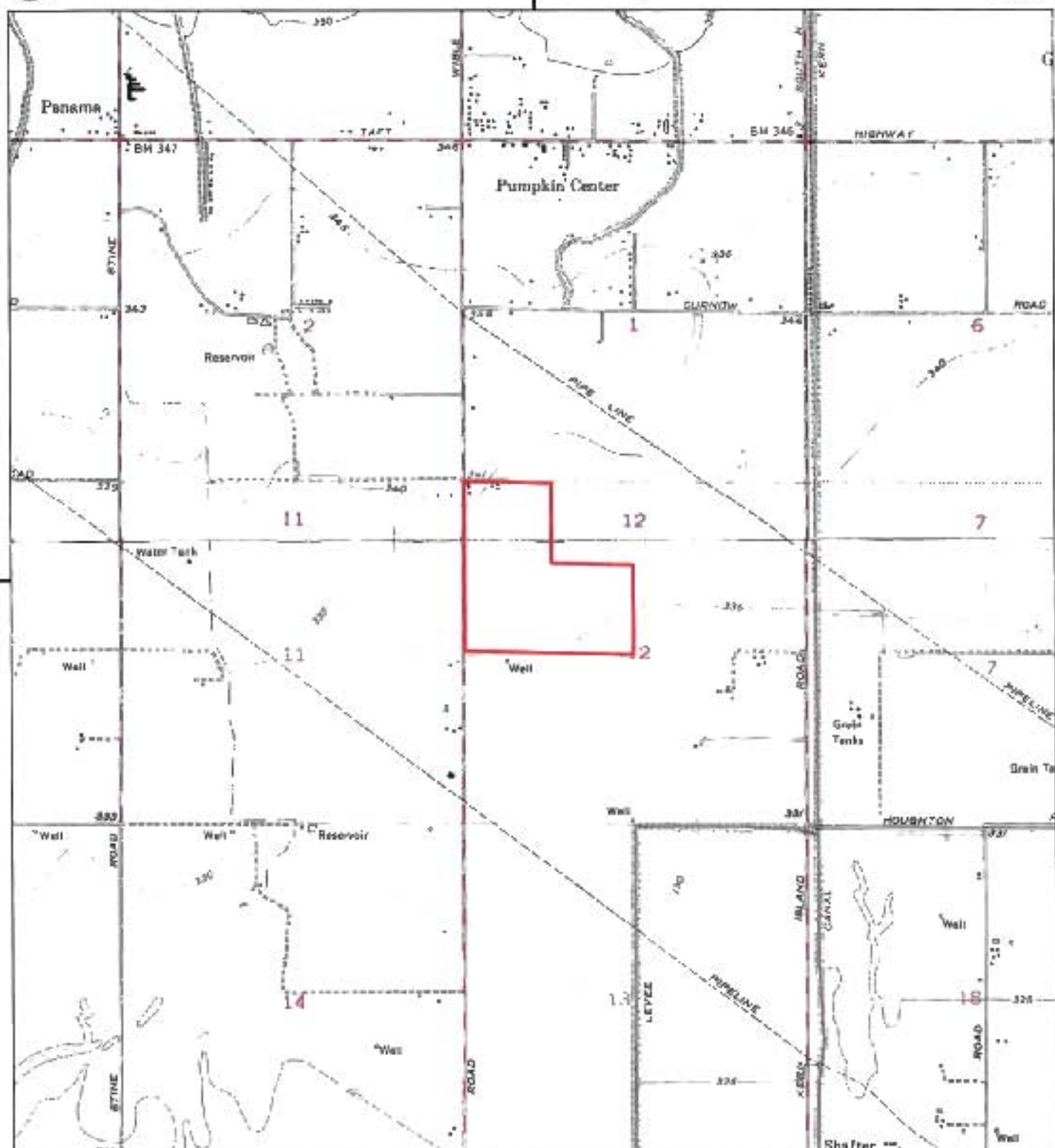
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ADDRESS: Wible & Engle  
Bakersfield, CA 93313  
CLIENT: Soils Engineering, Inc.



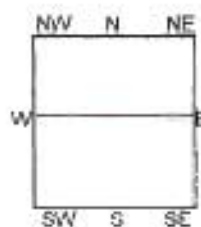








This report includes information from the following map sheet(s)

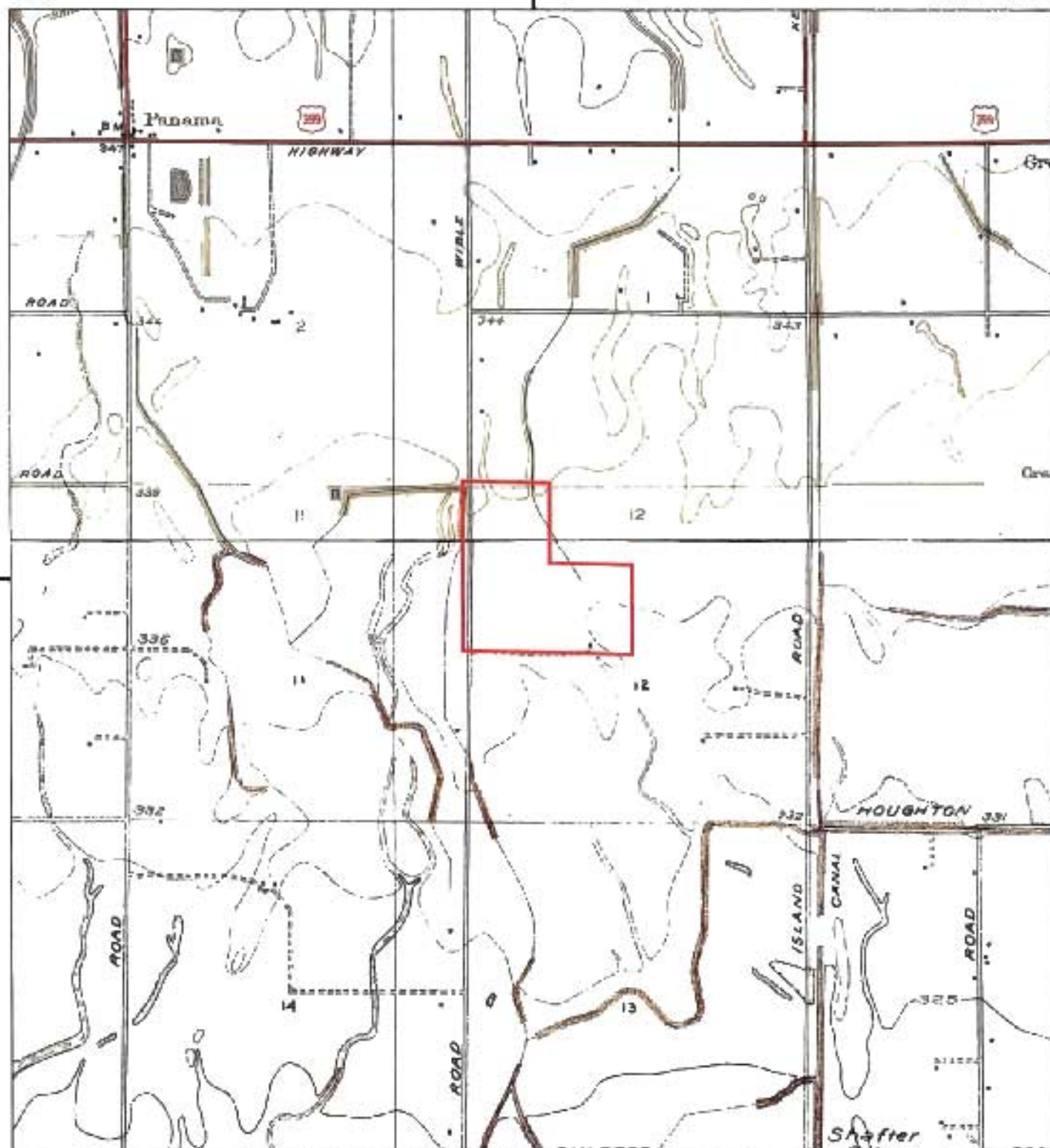


TP Conner, 1954, 7.5-minute  
N, Gostford, 1954, 7.5-minute

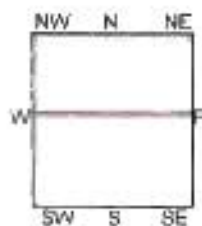
SITE NAME: SW HS Site  
ADDRESS: Wible & Engle  
Bakersfield, CA 93313  
CLIENT: Solis Engineering, Inc.







This report includes information from the following map sheet(s)

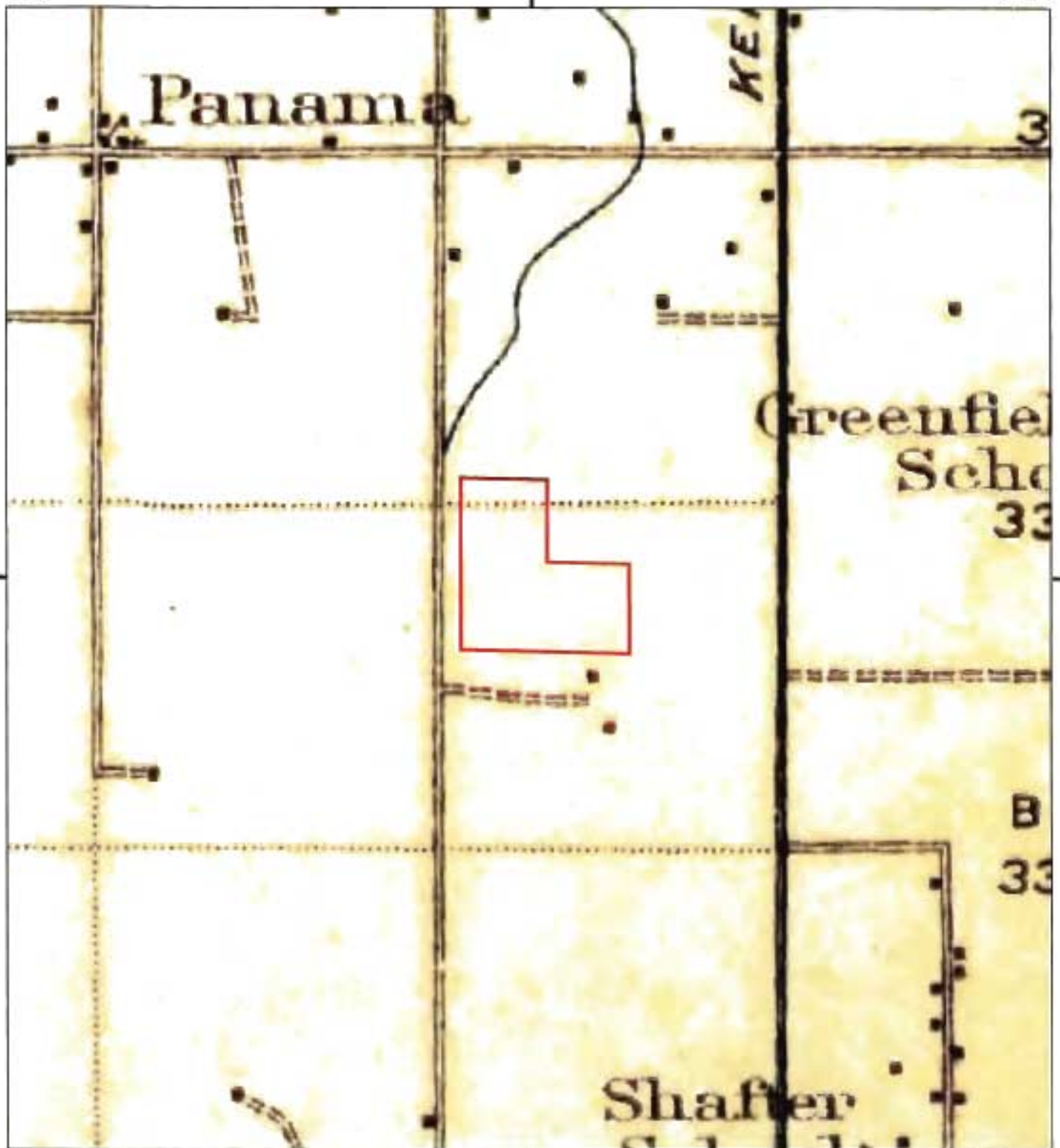


TP, Conner, 1930, 7.5-minute  
N. Gosford, 1932, 7.5-minute

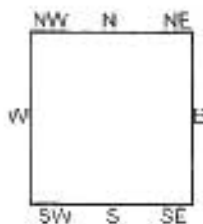
SITE NAME: SW HS Site  
ADDRESS: Wible & Engle  
Bakersfield, CA 93313  
CLIENT: Solis Engineering, Inc.







This report includes information from the following map sheet(s)



TP, Buena Vista Lake- 1910, 30 minute

SITE NAME SW HS Site  
ADDRESS: Wible & Engle  
Bakersfield, CA 93313  
CLIENT Soils Engineering, Inc.





SW HS Site  
Wible & Engle  
Bakersfield, CA 93313

Inquiry Number: 4963452.3  
June 12, 2017

## Certified Sanborn® Map Report



6 Armstrong Road, 4th floor  
Shelton, CT 06484  
Toll Free: 800.352.0050  
[www.edrnet.com](http://www.edrnet.com)



## Certified Sanborn® Map Report

06/12/17

**Site Name:**

SW HS Site  
Wible & Engle  
Bakersfield, CA 93313  
EDR Inquiry # 4963452.3

**Client Name:**

Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA 93313  
Contact: Bob Becker



The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Soils Engineering, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Penns & Browne, Hopkins, Barlow and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting [www.edrnet.com/sanborn](http://www.edrnet.com/sanborn)

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

### Certified Sanborn Results:

**Certification #** E24B-4F35-A541

**PO #** 16195

**Project** SW HS Site

#### UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.



Sanborn® Library search results

Certification #: E24B-4F35-A541

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Penns & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✓ Library of Congress
- ✓ University Publications of America
- ✓ EDR Private Collection

The Sanborn Library LLC Since 1898™

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SW HS Site  
Wible and Engle  
Bakersfield, CA 93313

Inquiry Number: 4963452.5  
June 12, 2017

## The EDR-City Directory Abstract



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City Directory Images

***Thank you for your business.***

Please contact EDR at 1-800-352-0050  
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## EXECUTIVE SUMMARY

### DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1922 through 2014. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

### RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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Data by

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### RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

<u>Year</u>	<u>Source</u>	<u>TP</u>	<u>Adjoining</u>	<u>Text Abstract</u>	<u>Source Image</u>
2014	EDR Digital Archive	-	-	-	-
2010	EDR Digital Archive	-	-	-	-
2005	EDR Digital Archive	-	-	-	-
2002	R.L. Polk Co Publishers	-	X	X	X
1995	R.L. Polk Co Publishers	-	-	-	-
1990	Pacific Bell Telephone Co	-	X	X	-
1986	Pacific Telephone	-	X	X	-
1980	R.L. Polk Co Publishers	-	-	-	-
1976	B&G Publications	-	-	-	-
1975	R.L. Polk Co Publishers	-	-	-	-
1971	B&G Publications	-	-	-	-
1970	R.L. Polk Co Publishers	-	-	-	-



## EXECUTIVE SUMMARY

<u>Year</u>	<u>Source</u>	<u>TP</u>	<u>Adjoining</u>	<u>Text Abstract</u>	<u>Source Image</u>
1965	R.L. Polk Co Publishers	-	-	-	-
1960	R.L. Polk Co Publishers	-	-	-	-
1955	R. L. Polk Co.	-	-	-	-
1951	R. L. Polk Co.	-	-	-	-
1945	R. L. Polk Co.	-	-	-	-
1940	R. L. Polk Co.	-	-	-	-
1935	R.L. Polk Co Publishers	-	-	-	-
1930	R. L. Polk Co.	-	-	-	-
1928	R.L. Polk Co Publishers	-	-	-	-
1922	Polk-Husted Directory Co.	-	-	-	-



## EXECUTIVE SUMMARY

### SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

<u>Address</u>	<u>Type</u>	<u>Findings</u>
11314 Wible	Client Entered	



## FINDINGS

### TARGET PROPERTY INFORMATION

#### ADDRESS

Wible and Engle  
Bakersfield, CA 93313

#### FINDINGS DETAIL

Target Property research detail.



## FINDINGS

### ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

#### WIBLE RD

##### 11228 WIBLE RD

<u>Year</u>	<u>Uses</u>	<u>Source</u>	
2002	11352 Not Verified 3 Hses	R.L. Polk Co Publishers	Image pg. A1
1990	Lanterman Eugene & Helen	Pacific Bell Telephone Co	
1986	Lanterman Eugene & Helen	Pacific Telephone	

##### 11354 WIBLE RD

<u>Year</u>	<u>Uses</u>	<u>Source</u>	
2002	Sandrini Guido C & Carolina A	R.L. Polk Co Publishers	Image pg. A1
1990	Sandrini Guido	Pacific Bell Telephone Co	



## FINDINGS

### TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

#### Address Researched

Wible and Engle

#### Address Not Identified in Research Source

2014, 2010, 2005, 2002, 1995, 1990, 1986, 1980, 1976, 1975, 1971, 1970, 1965, 1960, 1955, 1951, 1945, 1940, 1935, 1930, 1928, 1922

### ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

#### Address Researched

11228 WIBLE RD

#### Address Not Identified in Research Source

2014, 2010, 2005, 1995, 1980, 1976, 1975, 1971, 1970, 1965, 1960, 1955, 1951, 1945, 1940, 1935, 1930, 1928, 1922

11354 WIBLE RD

2014, 2010, 2005, 1995, 1986, 1980, 1976, 1975, 1971, 1970, 1965, 1960, 1955, 1951, 1945, 1940, 1935, 1930, 1928, 1922



## **Source Page Images Appendix**



# WIBLE RD 2002

## WIBLE RD - WILLIAM F HALSEY AVE

WIBLE RD Cont'd

B Santiago Juan N Jr [A] [B]

7639 Leon Alexie M .....661-398-1089

7639 Leon Alexie M .....661-398-0292

7644 LOCK-SPERTS locks & locksmiths

7645 Book Branda J [A] .....661-282-5625

7658 Not Verified

7726 AMERICAN TOWING wrecker serv

Henson Cindy

Henson Mike E [A]

RUSTY'S TOWING wrecker serv

7728 Leonard K D [A] .....661-836-1600

7821 [A] Kanton Frenk [A]

7853 Gibbs James C & Barbara [A]

7908 Not Verified

+ HOSKING RD INTERSECTS

+ SIERRA MEADOWS DR BEGINS

8501 KINGDOM HALL OF JEHOVAH

WITNES churches .....661-397-0659

+ STONECREAK AVE INTERSECTS

+ KICKER RD ENDS

6922 Eyrard Anna E .....661-831-1661

Eyrard John C [A] [B] .....661-831-1661

+ EMERSON WAY ENDS

9214 Evans Albert E [A] [B] .....661-397-4150

Evans Danny L .....661-397-4150

9400 B J'S LITTLE TRADING POST

ludwig goods .....661-834-8604

9420 FAST ACTION CONSTRUCTION

building contractors .....661-834-8604

McGhee Everett R II [A] [B]

9460 Griffin Charles [A] [B] .....661-832-3856

9500 DISCOUNT AUTO & TRUCK

SALVAGE transmissions-auto

.....827-8000

+ TAFT HWY INTERSECTS

\* ZIP CODE 93313 CAR-RT R010

10151 Weingarden John W [A] [B]

Weingarden Nancy [A] [B]

10454 Poncetta Elmo E & Elsie [A] [B]

+ ENGLE RD BEGINS

+ HOUGHTON RD INTERSECTS

10716 Bravo Alfred L .....661-832-0684

Bravo Madeline M [A] [B]

10915 - 10919 Not Verified (2 Hses)

10924 Collier Brian T [A] [B]

Collier Karra F

11228 - 11352 Not Verified (3 Hses)

11354 Sandrini Guido C & Carolina [A] [B]

.....661-831-3092

\* ZIP CODE 93313 CAR-RT R007

12141 1 - 2 Not Verified (2 Apts)

12711 REAL ESTATE BOOK-KERN

COUNTY advertising-directory &

guide .....805-544-3439

13711 Carro Heather .....661-832-8814

Carro Mark E [A] [B] .....661-832-8814

13715 Not Verified

14259 Arbura Joseph M [A] [B]

.....661-831-1415

14655 Jimenez Jessie .....661-396-0715

Jimenez Jesus S [A] [B]

14801 Clason Donna D [A] [B]

Clason Jody A

14843 Vincent Frank L [A] [B]

.....661-832-5298

Vincent M L .....661-832-5298

15259 Parker Larry M & Kathleen H [A] [B]

.....661-832-5214

15720 PARKER FARMS ranches

Plaster Jean C [A] [B]

15852 Patton Myron S [A] [B]

.....661-832-8316

Patton Susan .....661-832-8316

15906 Schallberger Paul E [A] [B]

.....661-397-4897

16417 Fanuochi George J & Mariena Y [A] [B]

.....661-836-3232

17600 Not Verified

17620 2 Cardenas Armando [A] [B]

2 Cardenas Iseldia

17752 - 17756 Not Verified (2 Hses)

17758 Contreras Jose E [A] [B]

.....661-366-0539

17800 MC KITTRICK RANCH INC

ranches .....661-831-1734

BUSINESSES 148 HOUSEHOLDS 432

WICKS ST (BAKERSFIELD)-FROM 3401

CHARLOTTE ST SOUTH

\* ZIP CODE 93313 CAR-RT C004

5900 Korsgaard Connie .....661-834-3084

Korsgaard Rudy [A] [B] .....661-834-3084

5901 Regan Michael D & Laura A [A] [B]

.....661-396-7854

5904 [A] Castaneda Natlvidia C [A] [B]

Castaneda Rosa

[A] Perez Rosa .....661-831-7814

5905 Gustafson Larry L & Nora L [A] [B]

5908 Longwith Cheryl R [A] [B]

Longwith Gary A

5909 - 5913 Not Verified (3 Hses)

6000 [A] Kraft Wesley [A]

WICKS ST Cont'd

6001 Lee Judy

.....661-398-1089

6004 Corum Mark B

Corum Trishe L [A] [B]

6005 [A] Aranda Juan C

Aranda Maria

6008 Robertson Robert A & Jennifer D [A] [B]

6009 Escamilla Monica S & Anthony W [A] [B]

6012 Yohn Alan S [A] [B]

Yohn Jayme D

6013 Rufus Elzora

Rufus Lee D [A] [B]

+ FIESTA AVE INTERSECTS

HOUSEHOLDS 17

WIDE LOOP RD (BAKERSFIELD)-FROM 299

QUAIL RIDGE RD

\* ZIP CODE 93309 CAR-RT C034

7500 COMPUTER SOFTWARE

SOLUTIONS computer & equip dtrs

.....661-397-0236

MEMORIES BY MORAN

photographers-portfolio

.....661-397-0236

+ QUAILWOOD DR CONTINUES

7501 Johnson Norman E & Nancy C [A] [B]

.....661-397-3818

7504 Arbelt Haley S [A] [B]

7505 Fehlberg Erick L & Verna P [A] [B]

7508 Barron Oscar M Sr & Susan R [A] [B]

.....661-397-5553

7512 Miller Henry R [A] [B]

Miller Judith N

7516 Tormaline Robert P II & Brenda L [A] [B]

7520 Cline Allen F & Roni A [A] [B]

7521 Le Minh T [A] [B]

Le Thomas C

7600 Thompson Gary E [A] [B]

.....661-398-1722

Thompson Sally M .....661-398-1722

7601 Cales Donna S

Cales John C [A] [B]

7604 Fieldgrove Gary G [A] [B]

Fieldgrove Grant A .....661-833-3211

7605 Quinn Gerald A & Dana F [A] [B]

7608 Cox Earlene W & Bradley S [A] [B]

7609 Delarosa Roy J & Ma G [A] [B]

.....661-833-8790

7612 Lemos Jimmie S [A] [B]

.....661-831-2524

Lemos Phillip D .....661-831-2524

7613 Williams Coby R

Williams Danny R [A] [B]

7616 Hogaboom Paul B & Darla L [A] [B]

7617 Upshaw Darren B & Carolyn M [A] [B]

7620 Vidaurreta Chris

Vidaurreta Javier S [A] [B]

7621 Black Harold E [A] [B]

BUSINESSES 2 HOUSEHOLDS 21

WIGWAM ST (BAKERSFIELD)-FROM 11573

CHOCTAW DR

\* ZIP CODE 93308 CAR-RT R018

9363 Not Verified

HOUSEHOLDS 1

WILCOX WAY (BAKERSFIELD)-FROM 7599

LORDSBURG DR SOUTH

+ HACHITA CT ENDS

\* ZIP CODE 93309 CAR-RT C033

3705 Not Verified

3709 Anderson Sharon M [A] [B]

3801 Mann Donna J

Mann Ricki L [A] [B]

3805 Pass Carol

Ross Wyatt B [A] [B]

3808 Morgan John H & Regina A [A] [B]

3809 Chung Cang T [A] [B]

Chung Hung T

3812 Michaels Alan M & Angelina M [A] [B]

3813 Montgomery Robert B Jr [A] [B]

3816 [A] Vaughan Roy E

Vaughan Scott A

3817 Martinez Joyce L [A] [B]

Martinez Rodney T

3820 Hayes Jerry W & Rena L [A] [B]

+ ASHFORK LN BEGINS

HOUSEHOLDS 11

WILD OAK CT (BAKERSFIELD)-FROM 9701

GREEN OAK PL

\* ZIP CODE 93311 CAR-RT C002

2200 Tomasi Stephen J & Deborah J [A] [B]

2201 Rizo Fernando A & Natalia A [A] [B]

2204 [A] Balfour Mel & Nancy

.....661-664-4535

2205 Szytel Thomas [A] [B]

2208 Leon John R Sr [A] [B] .....661-665-8076

Leon Magolena S .....661-665-8076

2209 Christy Roger H & Patricia J [A] [B]

2212 Allan Malcolm E & Corinne A [A] [B]

2213 Chae Joe R & Sherry R [A] [B]

2300 Not Verified

2304 Hollick Tim C & Diann M [A] [B]

2308 [A] Kuhach Jennifer L

WILD OAK CT Cont'd

2312 Martin Dan E [A] [B]

Marlin Donna

+ SPRING OAK DR INTERSECTS

HOUSEHOLDS 12

WILD ROUGE CT (BAKERSFIELD)-FROM 5885

SKY LAKES AVE

\* ZIP CODE 93313 CAR-RT R027

5902 [A] Hansen Donald S

Hansen Terry R

5906 Carrillo Javier L [A] [B]

Carrillo Socorro W

5907 Galindo Javier & Delfina [A] [B]

5910 Layman Ramil L & Pomposa K [A] [B]

.....661-665-8728

5911 Rypkema Lenore Z [A] [B]

.....661-663-6492

5914 Rosete Benjamin [A] [B]

Rosete Javier M Sr

5915 Patterson Bryan L [A] [B]

7000 Lunders Harold S & Karen J [A] [B]

7004 Kennedy Thad W [A] [B]

7005 Farolan Douglas D & Tereasa R [A] [B]

.....661-663-0809

7008 Urnie Richard M & Catalina C [A] [B]

7009 [A] Perrino Anthony J

Perrino Kim K

7015 Cleveland Jerry E & Peggy G [A] [B]

HOUSEHOLDS 13

WILD SONG CT (BAKERSFIELD)-FROM 7137

ROGUE RIVER DR SOUTH

\* ZIP CODE 93313 CAR-RT R023

5000 Not Verified

5001 Abasta Cesar A & Calla C [A] [B]

5004 Not Verified

5005 Nguyen Thao A Sr & Yanhuong P [A] [B]

5008 [A] Wattell James V .....661-663-3704

5009 Not Verified

5012 Walker Mildred I [A] [B]

5015 Worley Dan J & Debbie D [A] [B]



# VAPOR ENCROACHMENT SCREEN

Prepared by: Soils Engineering, Inc.

7/22/2017



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Aerial Photography

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EXECUTIVE SUMMARY
-------------------

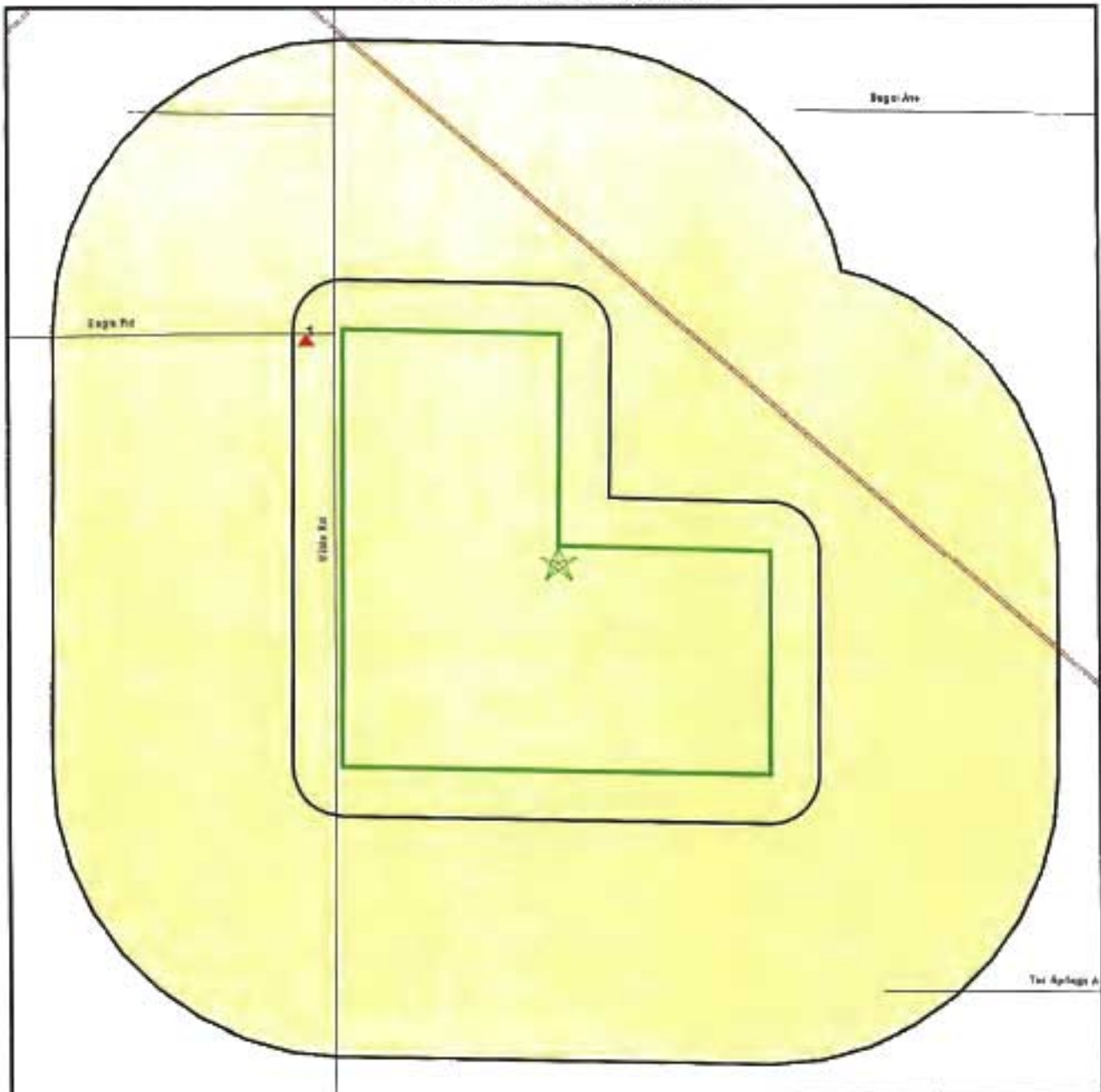
B S BALDWIN DAIRY 3151 ENGLE RD, BAKERSFIELD, CA, 93313
--

S100930422
------------

Impact on Target Property: VEC does not exist
---



# PRIMARY MAP - 4963452.6S



Target Property

▲ Sites at elevations higher than or equal to the target property

▼ Sites at elevations lower than the target property

▲ Manufactured Gas Plants

⚡ Sensitive Receptors

☒ National Priority List Sites

☒ Dept. Defense Sites

Indian Reservations BIA

Pipelines

100-year flood zone

500-year flood zone

→ Groundwater Flow Direction

GI Indeterminate Groundwater Flow at Location

GV Groundwater Flow Varies at Location

Area of Concern

SITE NAME: SW HS Site  
ADDRESS: Wible & Engle  
Bakersfield CA 93313  
LAT/LONG: 35.248618 / 119.034518

CLIENT: Soils Engineering, Inc.  
CONTACT: Bob Becker  
INQUIRY #: 4963452.6s  
DATE: June 12, 2017 7:06 pm

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# AERIAL PHOTOGRAPHY - 4963452.6s



1  
A  
Pal

SITE NAME: SW HS Site  
ADDRESS: Wible & Engle  
Bakersfield CA 93313  
LAT/LONG: 35.248618 / 119.034518

CLIENT: Soils Engineering, Inc.  
CONTACT: Bob Becker  
INQUIRY #: 4963452.6s  
DATE: June 12, 2017 7:11 pm

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## MAP FINDINGS

B S BALDWIN DAIRY 3151 ENGLE RD, BAKERSFIELD, CA, 93313			S 100930422
Map ID: 1	Distance: NW <1/10 (222 ft. / 0.042 mi.)	Elevation: 7 ft. Higher Elevation 343 ft. Above Sea Level	State and tribal leaking storage tank lists Other Records

Worksheet:

Impact on Target Property: VEC does not exist

Comments: The source is not within the area of concern, based on its distance, gradient and suspected chemical of concern.

Conditions:

Petroleum Hydrocarbon Chemicals of Concern: YES

Database Details:

LUST: State and tribal leaking storage tank lists

Region: STATE  
 Global Id: T0602900471  
 Latitude: 35.2524333  
 Longitude: -119.0417246  
 Case Type: LUST Cleanup Site  
 Status: Completed - Case Closed  
 Status Date: 01/24/1997  
 Lead Agency: KERN COUNTY  
 Case Worker: BRI  
 Local Agency: KERN COUNTY  
 RB Case Number: 5T15000485  
 LOC Case Number: 320061  
 File Location: Not Reported  
 Potential Media Affect: Soil  
 Potential Contaminants of Concern: Gasoline  
 Site History: Not Reported  
 Click here to access the California GeoTracker records for this facility: [http://www.web.edmet.com/ordering/switchboard/redirect.aspx?s=GRR\\_CA\\_LUST\\_ST&global\\_id=T0602900471](http://www.web.edmet.com/ordering/switchboard/redirect.aspx?s=GRR_CA_LUST_ST&global_id=T0602900471)  
 Contact:

Global Id: T0602900471  
 Contact Type: Local Agency Caseworker  
 Contact Name: BRIAN PITTS  
 Organization Name: KERN COUNTY  
 Address: 2700 M STREET, SUITE 300  
 City: BAKERSFIELD  
 Email: brianp@co.kern.ca.us  
 Phone Number: 6618628704



## MAP FINDINGS

B S BALDWIN DAIRY, 3151 ENGLE RD, BAKERSFIELD, CA, 93313 (Continued)

Global Id: T0602900471  
Contact Type: Regional Board Caseworker  
Contact Name: JOHN WHITING  
Organization Name: CENTRAL VALLEY RWQCB (REGION 5F)  
Address: 1685 E STREET  
City: FRESNO  
Email: jwhiting@waterboards.ca.gov  
Phone Number: Not Reported

### Status History:

Global Id: T0602900471  
Status: Completed - Case Closed  
Status Date: 01/24/1997

Global Id: T0602900471  
Status: Open - Case Begin Date  
Status Date: 11/26/1991

Global Id: T0602900471  
Status: Open - Remediation  
Status Date: 10/28/1993

Global Id: T0602900471  
Status: Open - Site Assessment  
Status Date: 11/26/1991

Global Id: T0602900471  
Status: Open - Site Assessment  
Status Date: 12/02/1991

Global Id: T0602900471  
Status: Open - Site Assessment  
Status Date: 12/19/1991

Global Id: T0602900471  
Status: Open - Site Assessment  
Status Date: 08/01/1993

### Regulatory Activities:

Global Id: T0602900471  
Action Type: Other



## MAP FINDINGS

B S BALDWIN DAIRY, 3151 ENGLE RD, BAKERSFIELD, CA, 93313 (Continued)

Date: 12/12/1991  
Action: Leak Discovery

Global Id: T0602900471  
Action Type: Other  
Date: 11/26/1991  
Action: Leak Stopped

Global Id: T0602900471  
Action Type: Other  
Date: 12/12/1991  
Action: Leak Reported

LUST REG 5:

Region: 5  
Status: Case Closed  
Case Number: 5T15000485  
Case Type: Soil only  
Substance: GASOLINE  
Staff Initials: JDW  
Lead Agency: Local  
Program: LUST  
MTBE Code: N/A

HIST CORTESE: Other Records

Region: CORTESE  
Facility County Code: 15  
Reg By: LTNKA  
Reg Id: 5T15000485



## **APPENDIX D**

### **Historical Aerial Photos and QA/QC Summary**





**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

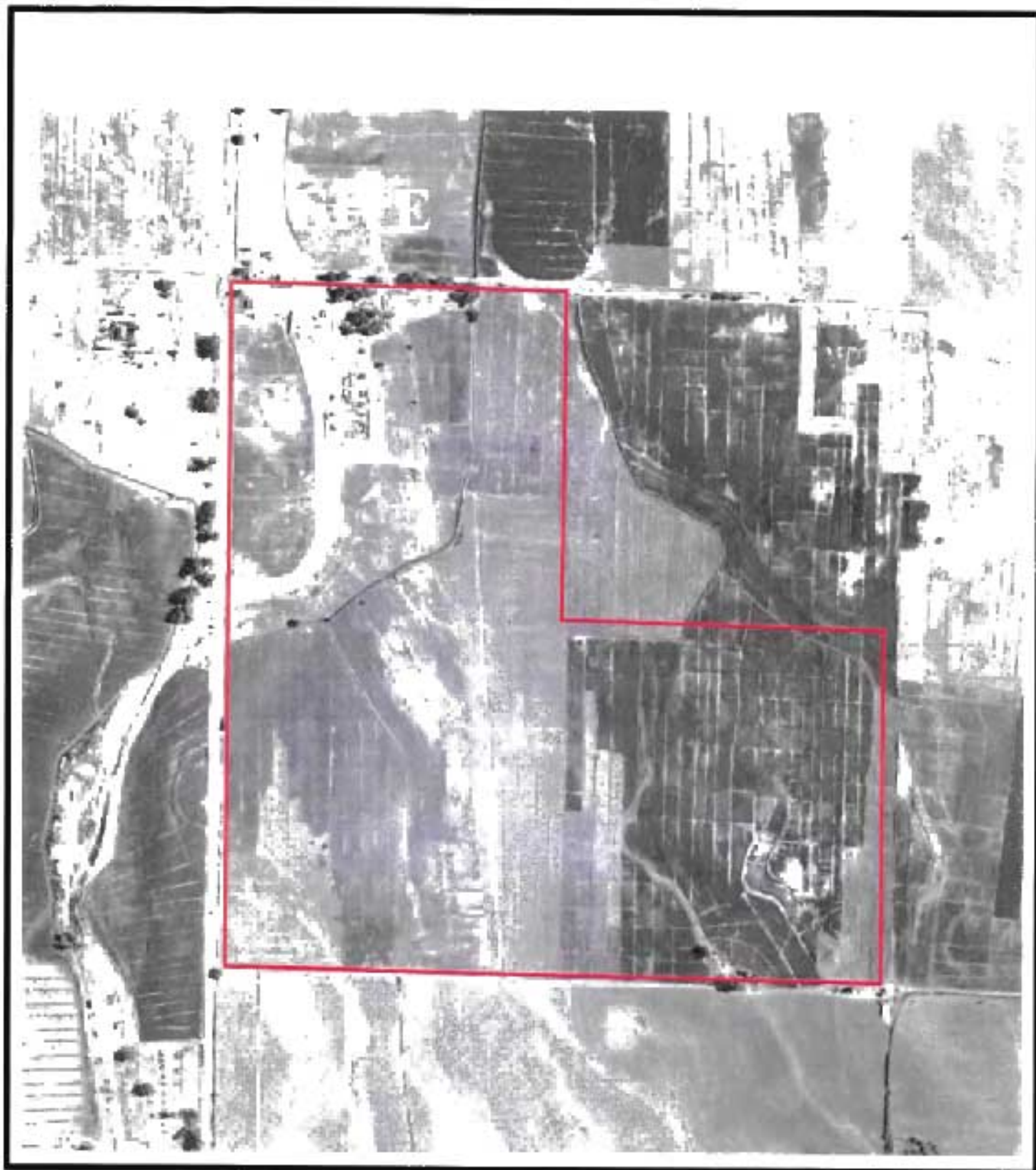
DATE: 12/17  
PROJECT: #16195

**Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA**

**1937 Aerial Photograph**

**PLATE**





**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

**Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA**

**1942 Aerial Photograph**

**PLATE**





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**1952 Aerial Photograph**

PLATE





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**1956 Aerial Photograph**

PLATE





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

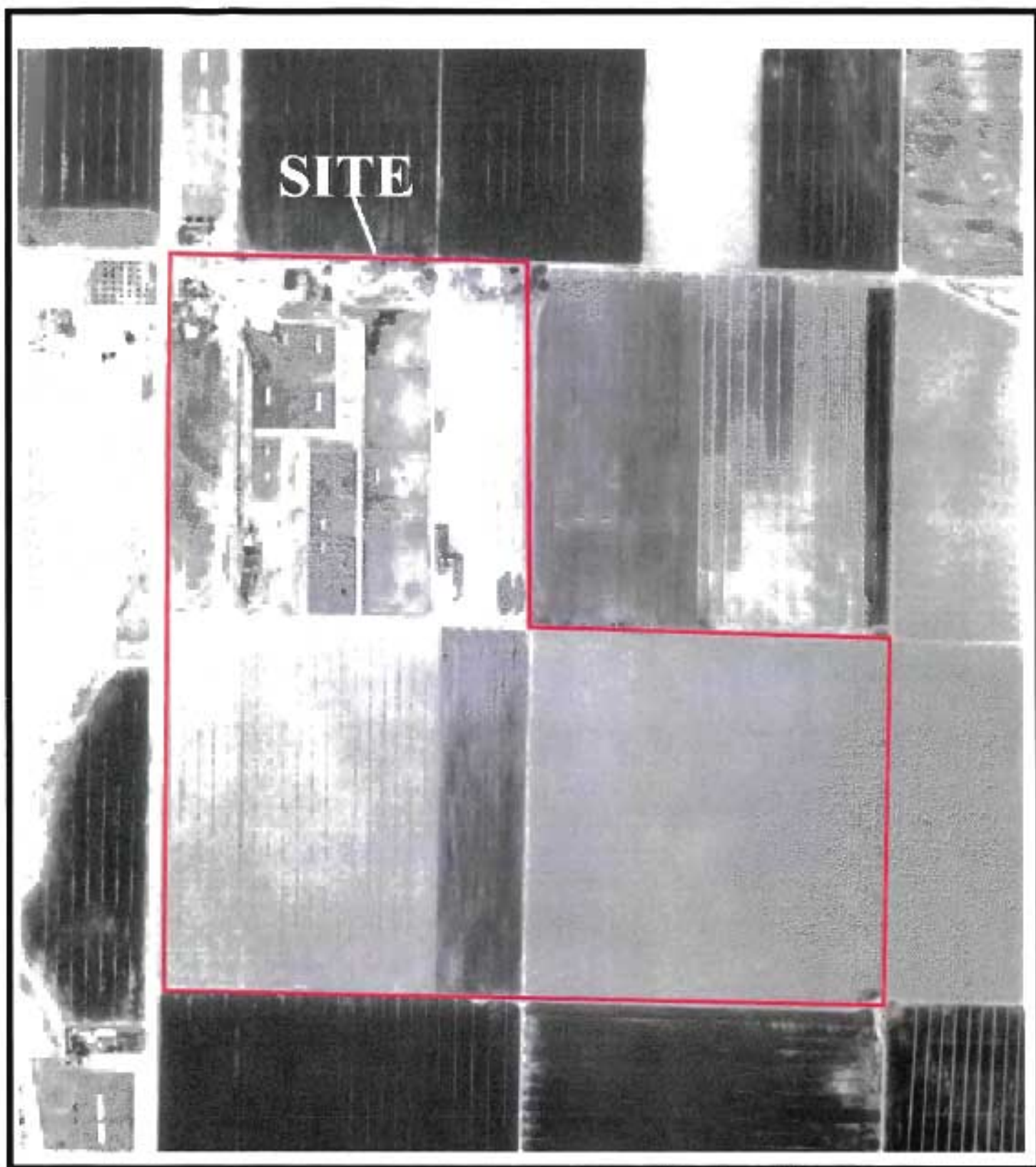
DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**1968 Aerial Photograph**

PLATE





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**1973 Aerial Photograph**

PLATE



**SITE**



**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

**Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA**

**1984 Aerial Photograph**

**PLATE**





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**1994 Aerial Photograph**

PLATE





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

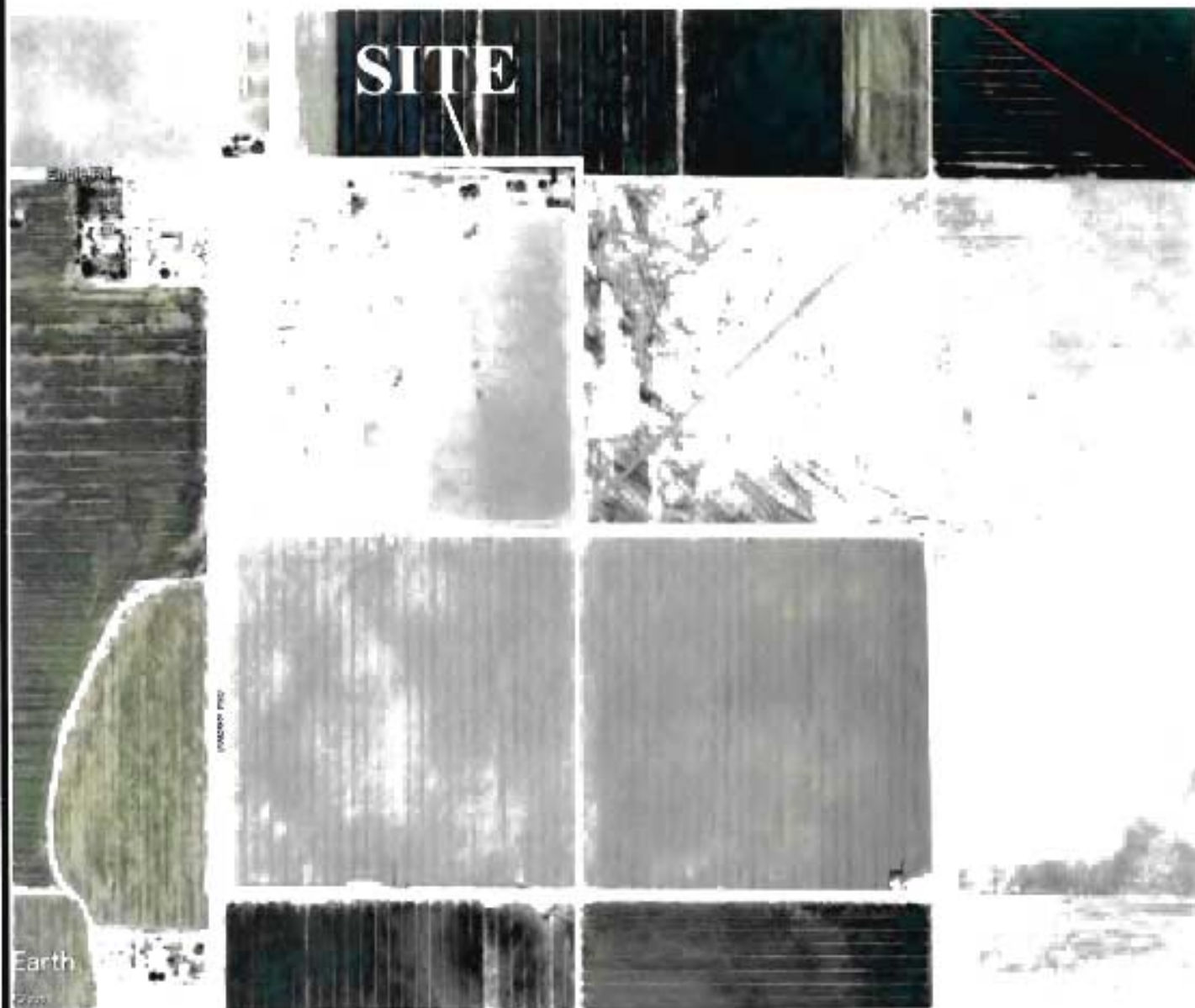
DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**2003 Aerial Photograph**

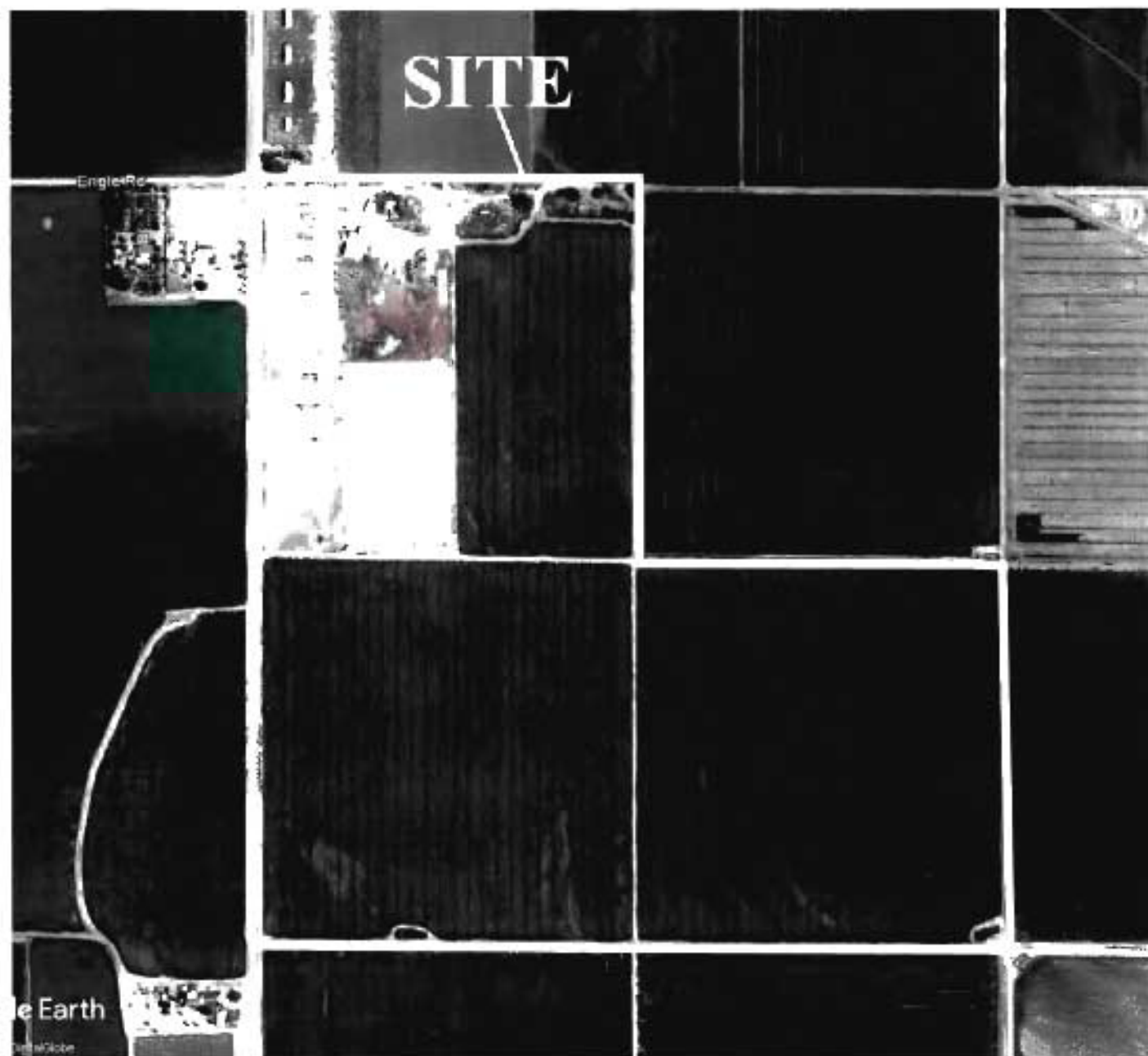
PLATE





# PLATE





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**2011 Aerial Photograph**

PLATE





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 12/17  
PROJECT: #16195

Potential High School  
SE Of Engle Rd. & Wible Rd.  
Bakersfield, CA

**2017 Aerial Photograph**

PLATE



PEA Equivalent Report  
Proposed HS Site  
Bakersfield, CA

File Number 17-16195  
April 2018

QA/QC - FORM D-1 Specific Issues			
Y/N	Issue	Y/N	Issue
Y	Above Ground Storage Tank(s)	Y	Underground Storage Tank(s) <b>former</b>
N	Clarifiers	N	Fill (Earth Berms)
Y	Vent Pipes (irrigation lines)	Y	Fuel Dispenser (diesel)
Y	Drums	N	Other Containers
Y	Surface Staining – <b>NW Parcel</b>	N	Solid Waste Disposal
Y	Sump ( <b>tailwater, irrigation, wash water</b> )	N	Pits, Lagoons, Canals or Ditches
Y	Ponds	Y	Pesticide Use
N	Stockpiled Soils	N	Distressed Vegetation
N	Oil or Gas Wells	N	Monitoring Wells
Y	Water Well	N	Dry Wells- Oil Exploration
Y	Electrical Transformers	N	Chemical Process
N	Waste Treatment	N	Hazardous Waste Discharge
Y	Septic Systems	Y	Waste Water Discharge
N	Dry Cleaners	Y	Repair or Servicing Facilities
N	Photo Processing	N	Manufacturing
N	Distribution Warehouse	N	Asbestos Containing Materials
N	High Radon Levels (See Geocheck Version 2.1)	Y	Suspect Lead Containing Paint
N	Lead in Water	N	Others
N	Is/was heating fuel provided by on-site storage fuel oil?		
N	<u>On-site</u> use, disposal, treatment, storage, or emission, of significant quantities of hazardous materials or wastes.		
Y	Evidence of any <u>on-site</u> release of hazardous materials which could impact the subject site?		
N	Evidence of any <u>off-site</u> release of hazardous materials which could impact the subject site?		







PEA Equivalent Report  
Proposed HS Site  
Bakersfield, CA

File Number 17-16195  
April 2018

QA/QC FORM D-3 AERIAL PHOTOGRAPH REVIEW		
Concern	On-Site	Off-Site
Improvements	Vacant Area, Agricultural Land, Dairy, Trucking Yard	Vacant Land, agricultural land, Dairy, Residential
<b>USE - Note evidence of:</b>		
Above Ground Storage Tanks	Y	N
Fuel Islands	Y	N
Drums	Y	N
Agricultural Land	Y	Y
Surface Staining	Y	N
Solid Waste Disposal/Land Fill	N	N
Pits, Ponds, Lagoons, Sumps	Y	Y
Stockpiled Soils	N	N
Distressed Vegetation	N	N
Wells (Oil)	N	N
Repair or Servicing Facilities	Y	N
Industrial/Manufacturing	N	N
Warehouse	Y	N
Gas Station	N	N
Others: Dairy	Y	Y
Note: Not found where left blank		



PEA Equivalent Report  
Proposed HS Site  
Bakersfield, CA

File Number 17-16195  
April 2018

QA/QC - FORM D-4  
Exception Items

[illegible]







**SOILS ENGINEERING, INC.**



**ADDENDUM No. 2 TO  
PRELIMINARY ENVIRONMENTAL  
ASSESSMENT EQUIVALENT REPORT**

**PROPOSED HIGH SCHOOL SITE  
SOUTHEAST OF WIBLE ROAD & ENGLE ROAD  
BAKERSFIELD, CALIFORNIA**

**Prepared For:**

**Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA. 93309-2924  
Attn: Jenny Hannah**

**File No. 17-16195**

**Prepared By:**

**Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA. 93313**

**August 2018**



## SOILS ENGINEERING, INC.



August 17, 2018

File No. 17-16195

Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA 93309

Attention: Jenny Hannah

Subject: Addendum No. 2 to PEA Equivalent Report  
For Proposed High School Site  
SE of Wible Rd. & Engle Rd.  
Bakersfield, Kern County, California  
APN: 184-150-38 to -42, & -35

Dear Ms. Hannah:

Soils Engineering, Inc. (SEI) has prepared this Addendum following the receipt of a Report of Impacted Soil Excavation and Off-site Disposal dated July 3, 2018 (Report) prepared by Advanced Environmental Concepts (AEC). This AEC Report summarizes the work conducted at the subject site to properly remove and dispose of the non-hazardous and California hazardous soil removed from multiple excavations at the subject site. Addendum 1 dated June 6, 2018 was earlier prepared by SEI which describes the work conducted to assess and remove this soil which was stockpiled on-site pending proper disposal.

### **Non-Hazardous Soil Disposal**

A total of 20.75 tons of non-hazardous soil impacted with petroleum hydrocarbons was disposed of at Waste Management's McKittrick Waste Class II landfill in McKittrick, CA under 2 non-hazardous waste manifests on June 27, 2018. This soil was generated from the excavations at sample areas NW-S5, NW-S6 and NW-S7 and nearby off-site area S2 by an existing water well.

### **California Hazardous Soil Disposal**

A total of 51.31 tons of California hazardous soil impacted with Organochlorine Pesticides, Total Petroleum Hydrocarbons, lead and malodorous soil was disposed of at Waste Management's Kettleman Hills Class I disposal facility in Kettleman, CA under 2 hazardous waste manifests on June 27, 2018. This soil was generated from the excavations at sample areas NW-S1 (storage barn area) and S1 (southwest tail water sump area).

See Appendix A for the main portions of the AEC Report for more detail (does not include the SEI Report already submitted in Addendum #1 or the AEC analytical reports).



*Addendum No. 2 to PEA Equivalent Report  
Proposed High School Site  
SE of Wible Rd. & Engle Rd., Bakersfield, CA*

*File Number 17-16195  
August 17, 2018  
Page 2*

## **CONCLUSIONS AND RECOMMENDATIONS**

### ***Conclusions***

Based on field observations and the AEC Report SEI concludes the following:

- The non-hazardous soil removed from oil-stained areas NW-S5, NW-S6 and NW-S7 along with off-site area S2 has been properly disposed of off-site as non-hazardous waste.
- The California hazardous soil removed from the storage barn area (NW-S1) and the southwest tail water sump (S1) has been properly disposed of off-site as hazardous waste.

### ***Recommendations***

- Once the house has been removed from the northwestern parcel the elevated OCPs and lead in the soil around the perimeter of this house should be removed to a depth of approximately 1.5' and properly disposed of as a California hazardous waste per State and Federal regulations. Confirmation soil sampling and reporting will also be required to document this removal for the DTSC.

## **LIMITATIONS**

This report was prepared for the exclusive use of the Kern High School District as it relates to the property described. The discussion and conclusions presented in this report are based on:

- The excavations and sampling performed at this site.
- The observations of field personnel.
- The results of laboratory tests performed by California certified laboratories.
- Our understanding of the regulations of the Department of Toxic Substances Control (DTSC), California Regional Water Quality Control Board (RWQCB), Bakersfield Fire Department and the Kern County Environmental Health Service Department.
- Our understanding of the previous work conducted on the site.




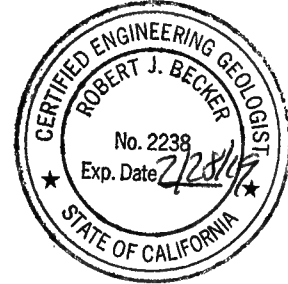
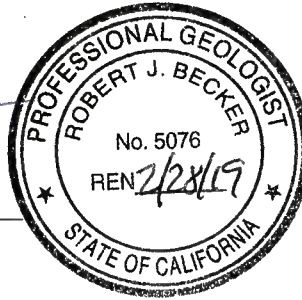
*Addendum No. 2 to PEA Equivalent Report  
Proposed High School Site  
SE of Wible Rd. & Engle Rd., Bakersfield, CA*

*File Number 17-16195  
August 17, 2018  
Page 3*

Please call (661) 831-5100 for assistance or any questions concerning this report.

Sincerely,  
SOILS ENGINEERING, INC.

  
Robert J. Becker, PG, CEG, QSD/QSP  
Expires 2/28/19



Attachments: Appendix A, Main Portions of AEC Report dated July 3, 2018



**APPENDIX A**

**AEC's Report of Impacted Soil Excavation and Off-site Disposal  
Dated July 3, 2018 (Main Portion)**





July 3, 2018

Wible Avenue, LLC  
c/o Ms. Dana Oldenkamp  
11314 Wible Road  
Bakersfield, California 93313

RE: Report of Impacted Soil Excavation and Offsite Disposal  
Oldenkamp Trucking Property and Pinheiro Property  
Wibel Road and Engle Road  
Bakersfield, California

Dear Ms. Oldenkamp:

**Advanced Environmental Concepts, Inc. (AEC)** is pleased to present this Summary Report regarding the excavation and offsite disposal of primarily hydrocarbon and organochlorinated pesticide (OCP) impacted soil at various locations within the Oldenkamp Trucking Yard and the intersection of Wible Road and Engle Road and also from the interior of a tailwater sump and surrounding an irrigation well along the south boundary access road to agricultural property that is owned jointly by the Pinheiro Family and Oldenkamp Family. Regulatory oversight was not requested for this remediation effort.

## 1.0 BACKGROUND

During February 2018 Soils Engineering, Inc. (SEI) commenced a subsurface evaluation of near surface soils across the approximately 127-acre subject property. The Kern High School District (KHSD) plans to construct a Comprehensive High School in the northern portion of the subject property. The subject property has been used for agricultural cultivation from prior to the 1930s to the present and the northwestern portion was a dairy from the 1940s into the 1990s. The northwestern portion is currently an unpaved yard that remains improved with some of the prior buildings from the former dairy operation and during the past 14 years this area has been occupied by Oldenkamp Trucking, a fresh milk trucking business. The Oldenkamp Trucking facility operates two water wells, a truck repair and service area, a fueling location, a house converted to the administrative office and various storage areas.

To evaluate near surface soils across the 127-acres of agricultural ground which includes row crop ground and a pistachio orchard SEI used a hand auger to collect approximately 177 soil samples in general accordance with the Department of Toxic Substances Control (DTSC) Preliminary Endangerment Assessment Guidance Manual and the DTSCs Interim Guidance for Sampling Agricultural Properties, 3<sup>rd</sup> Revision. Soil samples were collected from biased and non-biased locations at depths of grade level to 0.5' below ground surface (bgs) and 2' to 2.5' bgs at 70 locations. The soil samples were collected in stainless steel sleeves that were sealed with Teflon-lined end caps and placed in coolers chilled with blue ice.

The investigation by SEI identified specific areas of environmental concern within the northwestern clearing identified as the Oldenkamp Trucking Yard and also along the south boundary access road within the earthen-constructed tailwater sump and soil surrounding the irrigation well.

The specific areas of concern in the northwestern clearing are described as the interior soil within the older-vintage wood-constructed shed. The interior dimensions of the shed that was initially investigated was approximately 25'L x 30'W x 1' to 5'D. The hand auger sampling identified concentrations of Dieldrin and DDT in a few locations that exceeded Regional Screening Level (RSLs) concentrations for unrestricted land-use property.



Also, elevated concentrations of hydrocarbons were identified in the shallow sampling in soil adjacent to the west end of the diesel aboveground storage tank (AST); by the waste oil drum storage at the east end of the shop; and along the north side of the shop.

Finally, elevated hydrocarbon concentrations were identified in an extremely malodorous substance disposed in the tailwater sump that appeared to emanate from the dead carcass(es) of cattle; also, hydrocarbon-impacted soil was identified adjacent to the irrigation well along the south boundary access road.

## **2.0 REMEDIAL EXCAVATION AND CONFIRMATION SAMPLING**

### **2.1 INITIAL EXCAVATION AND SAMPLING (May 24-25, 2018)**

On May 24, 2018 AEC and Crider Construction mobilized to the site to commence the soil removal. AEC and Crider initially began excavation of the strong smelling chalky substance along the interior east bank of the tailwater sump that was sited along the north side of the south boundary access road. A shallow layer of soil was removed along with the chalky substance and the soil/chalky substance mixture was stockpiled on 6 mil plastic sheeting adjacent to the excavation. Three confirmation soil samples were collected from native soil following the removal of the contamination; the soil samples were collected from the south end of the sump (S-1-S-0.5'); central portion of the sump (S-2-C-1'); and north end of the sump (S-3-N-0.5'). The three confirmation soil samples were analyzed for Total Petroleum Hydrocarbons as carbon chain (TPH-cc) by EPA Method 8015M and also the full-scan of Volatile Organic Compounds (VOCs) by EPA Method 8260B. The TPH results indicated non-detectable concentrations of TPH as gasoline; and trace concentrations of diesel and oil-range hydrocarbons. Also, all VOC compounds were non-detectable at the indicated detection limits.

AEC and the backhoe then mobilized to the irrigation well located east of the sump along the south side of the south boundary access road. AEC instructed the backhoe operator to remove the hydrocarbon-impacted soil to an approximate depth of 3' bgs along the east side of the irrigation well and to approximately 0.5' bgs along the west side of the irrigation well. The excavated soil was again placed on 6 mil plastic sheeting adjacent to the excavation. The confirmation soil sample collected at 3' bgs in the eastern center floor of the excavation exhibited non-detectable concentrations of VOCs and gasoline, however, there was 1,100 mg/kg of TPH as diesel and 1,300 mg/kg of TPH as oil.

AEC then mobilized to the Oldenkamp Yard in the northwest portion of the site to excavate the areas of concern identified in the old wood-constructed shed; adjacent to the diesel AST; adjacent to the east side of the waste oil storage in the shop; and at the battery storage area along the north side of the shop. AEC directed the excavation of the hydrocarbon-stained soil at each of the hydrocarbon-stained areas and stockpiled the soil on 6 mil plastic sheeting. The areal extent of the hydrocarbon-impacted areas typically mirrored the surface staining and extended no deeper than 1' bgs. Confirmation soil samples were collected from the floor of each remedial excavation following sufficient removal of the hydrocarbon-impacted soil and the analytical results indicated no detections of VOCs or TPH in the gasoline, diesel and/or oil range.

AEC completed the remedial excavation process with the removal of the OCP-impacted soil from the interior of the older vintage wood-constructed shed. Approximately 1-foot of soil was removed across the approximate 30'L x 25'W interior of the shed and within a 5'L x 5'W area in the northwest portion the soil was removed to approximately 5' bgs. The removed soil was stockpiled on 6 mil plastic sheeting and confirmation samples were collected from the floor and sidewalls of the larger excavation and from the smaller deeper excavation. The soil samples were analyzed for OCPs and TPH-cc.



The excavation and subsequent sampling process conducted by AEC was observed by Soils Engineering, Inc. (SEI), representing the Kern High School District as their environmental consultant. SEI also collected confirmation samples from locations sampled by AEC and at additional locations not sampled by AEC. It was these samples collected by SEI in the shed that prompted additional soil removal.

The analytical results for the soil collected beneath the shed and analyzed for OCPs indicated concentrations of DDT from various locations (primarily the north and south sidewalls) that exceeded their comparative RSL, therefore, additional excavation was recommended. Also, there were elevated concentrations of TPH that were recorded.

In addition, soil collected from the floor of the excavation adjacent to the east side of the irrigation well indicated diesel concentrations that exceed its respective RSL, therefore, additional excavation was also recommended in this area.

## **2.2 FOLLOW UP EXCAVATION AND SAMPLING (June 2, 2018)**

On June 2, 2018 AEC and Crider Construction re-mobilized to the subject property to conduct additional removal of soil beneath the shed and also adjacent to the east side of the irrigation well. AEC initially conducted the additional removal of soil along the east side of the irrigation well. AEC widened the excavation and also deepened the excavation to 5' bgs until no further oil odor appeared to be present. Following sufficient removal the soil was placed in the initial stockpile pending offsite disposal.

Following removal of the additional soil from the excavation adjacent to the irrigation well, AEC and Crider Construction re-mobilized to the wood-constructed shed to conduct the additional soil removal. An approximate 5'L x 25'W x 1' deep over-excavation was created into the north wall at the northwest portion of the shed and also the same dimension area was excavated at the southwest portion. Confirmation soil samples collected from these two additional over-excavations were analyzed for OCPs, TPH and lead. The analytical results did not exhibit any concentration for the prescribed analyte that exceeded their respective RSLs.

## **2.3 TRANSPORTATION AND OFFSITE DISPOSAL (June 27, 2018)**

AEC submitted Profile Numbers 635131CA, 635290CA, CA614469, and CA614470 to Waste Management and were issued approval on May 25, 2018 (635131CA), June 8, 2018 (635290CA), and June 18, 2018 (CA614469 and CA614470). The removed soil from the tailwater sump and from the wood-constructed shed were deemed a California "hazardous" waste, therefore, this soil was profiled to the Kettleman Hills Class I disposal facility. The hydrocarbon-impacted soil was profiled as a California "non-hazardous" waste and approval was obtained to dispose the soil at the McKittrick Waste Class II landfill. Therefore, on June 27, 2018 AEC and Crider mobilized to the site to load out the trucks operated by J. Torres Trucking to their respective landfills. One truck made two trips to the Kettleman Hills landfill and one truck made two trips to McKittrick Waste. There were approximately 20.75 tons of soil disposed at the McKittrick Landfill and 51.31 tons disposed at the Kettleman Hills landfill.

## **3.0 CONCLUSIONS AND RECOMMENDATIONS**

AEC concludes that adequate soil removal has occurred from the various areas of concern and that the subject property is currently acceptable for unrestricted land use as no confirmation sample collected exceeded its respective RSL comparative value. Therefore, AEC recommends no further investigation, excavation and/or offsite disposal is warranted.

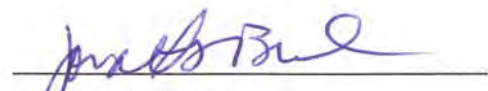


## 4.0 CLOSING

**Advanced Environmental Concepts, Inc.** appreciates the opportunity to be of service to you on this project. Should you have any questions or require additional information regarding this Summary Report, please do not hesitate to contact our office at (661) 395-1646.

Respectfully submitted by:

**Advanced Environmental Concepts, Inc.**

  
Jonathan L. Buck  
Principal Geologist





Appendix A

**FIGURES AND SITE PHOTOGRAPHS**













Scale: 1" = 30'  Soil Sample Location



**AEC**  
-ADVANCED ENVIRONMENTAL CONCEPTS INC-  
220 East Truxtun Avenue  
Bakersfield, California 93305  
(661) 395-1646

**Area 1 - Sump  
Sample Location Map  
Proposed High School Site  
East of Wible Road and South of Engle Road  
County of Kern • Bakersfield, California**

**FIGURE**

**2**

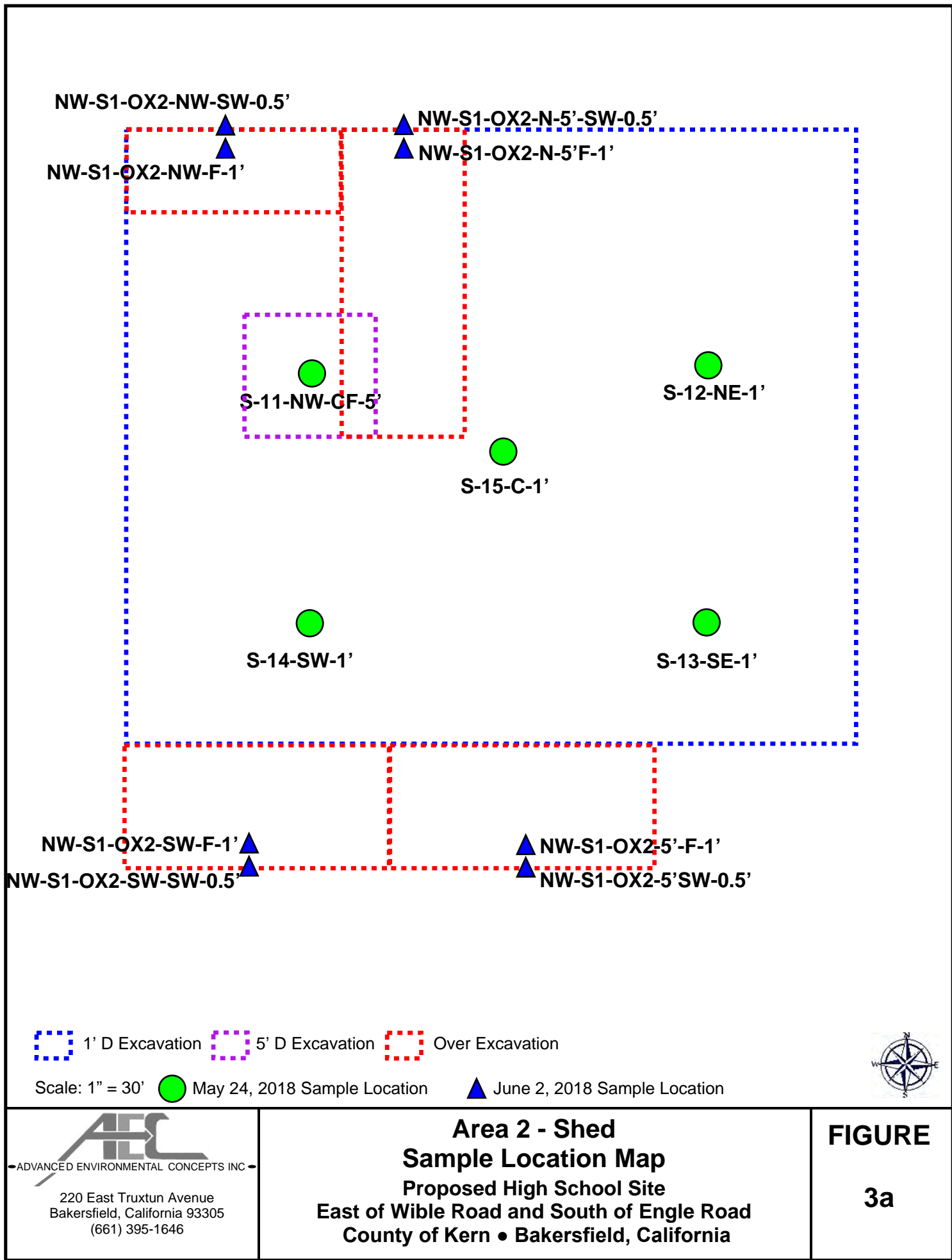




Scale: 1" = 30' ● Soil Sample Location   1' D Excavation   5' D Excavation











Scale: 1" = 30' ● Soil Sample Location



**AEC**  
 — ADVANCED ENVIRONMENTAL CONCEPTS INC. —  
 220 East Truxtun Avenue  
 Bakersfield, California 93305  
 (661) 395-1646

**Area 3 - Hydrocarbon Staining  
 Sample Location Map**  
**Proposed High School Site**  
**East of Wible Road and South of Engle Road**  
**County of Kern • Bakersfield, California**

**FIGURE**

**4**





Scale: 1" = 30'  Soil Sample Location



**AEC**  
—ADVANCED ENVIRONMENTAL CONCEPTS INC.—  
220 East Truxtun Avenue  
Bakersfield, California 93305  
(661) 395-1646

**Area 4 - Irrigation Well  
Sample Location Map  
Proposed High School Site  
East of Wible Road and South of Engle Road  
County of Kern • Bakersfield, California**

**FIGURE**

**5**



Proposed School Site  
May 24-25, 2018

1. View of excavation area in tailwater sump along west boundary of fallow field.



2. View of material being removed from tailwater sump.





Proposed School Site  
May 24-25, 2018

3. View of confirmation sample location flags in tailwater sump.



4. View of spoil pile following removal from tailwater sump.





Proposed School Site  
May 24-25, 2018

5. View of shallow excavation north and west of irrigation well.



6. View of deeper excavation along southeast side of irrigation well where pump oil has been released.





Proposed School Site  
May 24-25, 2018

7. View of sample location at southeast side of irrigation well at 3' bgs.



8. View of stockpile created from excavating around irrigation well.





Proposed School Site  
May 24-25, 2018

9. View of hydrocarbon excavation along north side of diesel and waste oil ASTs.



10. View of hydrocarbon staining to be excavated by oil drum storage east of Shop canopy.





Proposed School Site  
May 24-25, 2018

11. View of excavation and sample location for south hydrocarbon spill by oil drum storage by east side of Shop canopy.



12. View of excavation along south side of battery storage area. Also, confirmation sample location.





Proposed School Site  
May 24-25, 2018

13. Typical view of excavation following backfill. This is the drum storage area.



14. View of spoils created from the hydrocarbon excavations in the Oldenkamp Yard.





Proposed School Site  
May 24-25, 2018

15. View east across the interior of the shed with dirt floor. This area to be excavated to 1' bgs; the area in white paint will be removed in a 5'L x 5'W x 5'D.



16. View of “western” excavation of hydrocarbon impacted soil adjacent to drum storage area.





Proposed School Site  
May 24-25, 2018

17. View of excavation to approximately 1' bgs inside shed.



18. View of focused 5'L x 5'W x 5'D excavation within shed interior.





Proposed School Site  
May 24-25, 2018

19. View of finished deeper excavation inside shed.





Proposed School Site  
June 2, 2018

20. View of shed bay requiring additional excavation.



21. Excavating out to the south approximately 5-feet from shed and removing approximately 1-foot of soil.





Proposed School Site  
June 2, 2018

22. Removal of soil inside north wall of shed in second bay from the west.



23. Additional removal of soil along north interior wall of second bay inside shed.





Proposed School Site  
June 2, 2018

24. Removal of soil in first bay (west) along north side of 5' deep excavation to the north interior wall.



25. Excavating our 5-feet from south wall of shed south of the first (west) bay.





Proposed School Site  
June 2, 2018

26. View of finished excavation south of west bay.



27. View of over excavation to 5' bgs adjacent to irrigation well along south boundary access road.





Proposed School Site  
June 27, 2018

28. Typical view of loading out semi end dumps at Oldenkamp/Pinheiro jobsite.





Appendix B

**TABULATED ANALYTICAL RESULTS**



Table 1  
Proposed High School Site  
Area 1 - Sump  
East of Wible Road and South of Engle Road  
Soil Sample Results  
May 24, 2018

Parameter:	Sample ID:	<i>November 2017 RSLs THQ 0.1</i>	<b>S-1-S-0.5' Sump</b>	<b>S-2-C-1' Sump</b>	<b>S-3-N-0.5' Sump</b>
	Sample Type:				
	Sample Date:				
		<i>Residential</i>	5/24/2018	5/24/2018	5/24/2018
<b>Method 8260B</b>					
1,1,1,2-Tetrachloroethane	ug/Kg	2,000	ND<1	ND<1	ND<1
1,1,1-Trichloroethane	ug/Kg	810,000	ND<1	ND<1	ND<1
1,1,2,2-Tetrachloroethane	ug/Kg	600	ND<1	ND<1	ND<1
1,1,2-Trichloroethane	ug/Kg	150	ND<1	ND<1	ND<1
1,1-Dichloroethane	ug/Kg	3,600	ND<1	ND<1	ND<1
1,1-Dichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<1
1,1-Dichloropropene	ug/Kg	N/A	ND<1	ND<1	ND<1
1,2,3-Trichlorobenzene	ug/Kg	6,300	ND<1	ND<1	ND<1
1,2,3-Trichloropropane	ug/Kg	5.1	ND<1	ND<1	ND<1
1,2,4-Trichlorobenzene	ug/Kg	5,800	ND<1	ND<1	ND<1
1,2,4-Trimethylbenzene	ug/Kg	30,000	ND<1	ND<1	ND<1
1,2-Dibromo-3-chloropropane	ug/Kg	5.3	ND<2	ND<2	ND<2
1,2-Dibromoethane	ug/Kg	36	ND<1	ND<1	ND<1
1,2-Dichlorobenzene	ug/Kg	180,000	ND<1	ND<1	ND<1
1,2-Dichloroethane	ug/Kg	460	ND<1	ND<1	ND<1
1,2-Dichloropropane	ug/Kg	1,600	ND<1	ND<1	ND<1
1,3,5-Trimethylbenzene	ug/Kg	27,000	ND<1	ND<1	ND<1
1,3-Dichlorobenzene	ug/Kg	N/A	ND<1	ND<1	ND<1
1,3-Dichloropropane	ug/Kg	160,000	ND<1	ND<1	ND<1
1,4-Dichlorobenzene	ug/Kg	2,600	ND<1	ND<1	ND<1
2,2-Dichloropropane	ug/Kg	N/A	ND<1	ND<1	ND<1
2-Chlorotoluene	ug/Kg	N/A	ND<1	ND<1	ND<1
4-Chlorotoluene	ug/Kg	N/A	ND<1	ND<1	ND<1
Benzene	ug/Kg	1,200	ND<1	ND<1	ND<1
Bromobenzene	ug/Kg	29,000	ND<1	ND<1	ND<1
Bromochloromethane	ug/Kg	15,000	ND<1	ND<1	ND<1
Bromodichloromethane	ug/Kg	290	ND<1	ND<1	ND<1
Bromoform	ug/Kg	19,000	ND<2	ND<2	ND<2
Bromomethane	ug/Kg	680	ND<1	ND<1	ND<1
Carbon tetrachloride	ug/Kg	650	ND<1	ND<1	ND<1
Chlorobenzene	ug/Kg	28,000	ND<1	ND<1	ND<1
Chloroethane	ug/Kg	N/A	ND<2	ND<2	ND<2
Chloroform	ug/Kg	320	ND<1	ND<1	ND<1
Chloromethane	ug/Kg	11,000	ND<1	ND<1	ND<1
cis-1,2-Dichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<1
cis-1,3-Dichloropropene	ug/Kg	N/A	ND<1	ND<1	ND<1
Dibromochloromethane	ug/Kg	8,300	ND<1	ND<1	ND<1
Dibromomethane	ug/Kg	2,400	ND<1	ND<1	ND<1
Dichlorodifluoromethane	ug/Kg	8,700	ND<2	ND<2	ND<2
Isopropyl Ether (DIPE)	ug/Kg	N/A	ND<1	ND<1	ND<1
Ethanol	ug/Kg	N/A	ND<100	ND<100	ND<100
Ethyl-t-butyl ether (ETBE)	ug/Kg	N/A	ND<1	ND<1	ND<1
Ethylbenzene	ug/Kg	5,800	ND<1	ND<1	ND<1
Hexachlorobutadiene	ug/Kg	1,200	ND<1	ND<1	ND<1
Isopropylbenzene	ug/Kg	N/A	ND<1	ND<1	ND<1
m and p-Xylene	ug/Kg	55,000	ND<2	ND<2	ND<2
Methylene chloride	ug/Kg	35,000	ND<5	ND<5	ND<5
Methyl-t-Butyl Ether (MTBE)	ug/Kg	47,000	ND<1	ND<1	ND<1



Table 1  
Proposed High School Site  
Area 1 - Sump  
East of Wible Road and South of Engle Road  
Soil Sample Results  
May 24, 2018

Parameter:	Sample ID:	<i>November 2017 RSLs THQ 0.1</i>	<b>S-1-S-0.5' Sump</b>	<b>S-2-C-1' Sump</b>	<b>S-3-N-0.5' Sump</b>
	Sample Type:				
	Sample Date:				
		<i>Residential</i>	5/24/2018	5/24/2018	5/24/2018
Naphthalene	ug/Kg	3,800	ND<2	ND<2	ND<2
n-Butylbenzene	ug/Kg	390,000	ND<1	ND<1	ND<1
N-Propylbenzene	ug/Kg	N/A	ND<1	ND<1	ND<1
o-Xylene	ug/Kg	65,000	ND<1	ND<1	ND<1
sec-Butylbenzene	ug/Kg	780,000	ND<1	ND<1	ND<1
Styrene	ug/Kg	600,000	ND<1	ND<1	ND<1
Tert-amylmethylether (TAME)	ug/Kg	N/A	ND<1	ND<1	ND<1
Tertiary butyl alcohol (TBA)	ug/Kg	N/A	ND<10	ND<10	ND<10
tert-Butylbenzene	ug/Kg	780,000	ND<1	ND<1	ND<1
Tetrachloroethene	ug/Kg	N/A	ND<1	ND<1	ND<1
Toluene	ug/Kg	490,000	ND<1	ND<1	ND<1
trans-1,2-Dichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<1
trans-1,3-Dichloropropene	ug/Kg	N/A	ND<1	ND<1	ND<1
Trichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<1
Trichlorofluoromethane	ug/Kg	2,300,000	ND<1	ND<1	ND<1
Vinyl chloride	ug/Kg	59	ND<1	ND<1	ND<1
Xylenes (Total)	ug/Kg	58,000	ND<2	ND<2	ND<2
p-Isopropyltoluene	ug/Kg	N/A	ND<1	ND<1	ND<1
<b>Method 8260B</b>					
C4-C12 (Gasoline Range)	mg/Kg	52/8.2 <sup>1</sup>	ND<0.070	ND<0.070	ND<0.070
C13-C22 (Diesel Range)	mg/Kg	9.6/11 <sup>2</sup>	5	ND<2.5	8.7
C23-C40 (Oil Range)	mg/Kg	23,000/250 <sup>3</sup>	13	7.5	17

ND: Not detected above Method Detection Limit (MDL)

N/A: Not applicable

NA: Not Analyzed

Exceeds November 2017 EPA Region 9 Regional Screening Level (RSL) - Residential Soil

Note: TPH result divided by two (assuming 50% Aliphatic and 50% Aromatic) to determine if screening criteria is exceeded.

<sup>1</sup>Total Petroleum Hydrocarbons Low (52 mg/kg Aliphatic/8.2 mg/kg Aromatic)

<sup>2</sup>Total Petroleum Hydrocarbons Medium (9.6 mg/kg Aliphatic/11 mg/kg Aromatic)

<sup>3</sup>Total Petroleum Hydrocarbons High (23,000 mg/kg Aliphatic/250 mg/kg Aromatic)



Table 2  
Proposed High School Site  
Area 2 - Shed  
East of Wible Road and South of Engle Road  
Soil Sample Results  
May 25, 2018

Parameter:	Sample ID:	CHHSLs	November 2017 RSLs THQ 0.1	AEC S-11-CF-NW-5'	Soils Engineering NW-S1-OX-B-5'	AEC S-12-NE-1'	Soils Engineering NW-S1-OX-B-NE- 1'	AEC S-13-SE-1'	Soils Engineering NW-S1-OX-B-SE- 1'	AEC S-14-SW-1'	Soils Engineering NW-S1-OX-B- SW-1'	AEC S-15-C-1'	Soils Engineering NW-S1-OX-BM- 1'
	Sample Type:			Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate
	Sample Date:	Residential	Residential	5/25/2018	5/25/2018	5/25/2018	5/25/2018	5/25/2018	5/25/2018	5/25/2018	5/25/2018	5/25/2018	5/25/2018
EPA 8081A													
4,4'-DDD	ug/Kg	2,300	190	ND<1.5	ND<1	ND<1.5	ND<1	24	8.76	5	ND<1	9.1	10
4,4'-DDE	ug/Kg	1,600	2,000	ND<1.5	ND<1	4.6 J	ND<1	22	ND<1	22	ND<1	54	33
4,4'-DDT	ug/Kg	1,600	1,900	ND<1.5	ND<1	26	ND<1	ND<1.5	101	190	ND<1	320	99.4
Aldrin	ug/Kg	33	39	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
a-BHC	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
b-BHC	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Chlordane	ug/Kg	430	1,700	ND<9.8	ND<1	ND<9.9	ND<1	ND<9.8	ND<1	ND<9.9	ND<1	ND<9.8	ND<1
d-BHC	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Dieldrin	ug/Kg	35	34	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Endosulfan I	ug/Kg	N/A	47,000*	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Endosulfan II	ug/Kg	N/A	47,000*	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Endosulfan sulfate	ug/Kg	N/A	N/A	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1
Endrin	ug/Kg	21,000	1,900	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Endrin aldehyde	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Endrin Ketone	ug/Kg	N/A	N/A	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1
Lindane (Gamma-BHC)	ug/Kg	500	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Heptachlor	ug/Kg	130	130	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1
Heptachlor epoxide	ug/Kg	N/A	70	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1
Methoxychlor	ug/Kg	340,000	32,000	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1
Toxaphene	ug/Kg	460	490	ND<49	ND<1	ND<50	ND<1	ND<49	ND<1	ND<49	ND<1	ND<49	ND<1

ND: Not detected above Reporting Limit (RL)

N/A: Not applicable

NA: Not analyzed

Exceeds California Human Health Screening Levels (CHHSLs) September 2010  
Exceeds Regional Screening Levels (RSLs) for Residential Soil - November 2017  
THQ 0.1

Exceeds CHHSLs and RSLs screening criteria

\*Screening level for Endosulfan.



Table 3  
Proposed High School Site  
Area 3 - Hydrocarbon Staining  
East of Wible Road and South of Engle Road  
Soil Sample Results  
May 24, 2018

Parameter:	Sample ID:	<i>November 2017 RSLs THQ 0.1</i>	S-7-CF-2.5' Diesel AST	S-8-CF-S- 1.5' Oil Drum Storage	S-9-CF-N- 1.5' Oil Drum Storage	S-10-CF- 1.5' Battery Storage	S-11-CF- W-1' Oil Drum Storage
	Sample Type:						
	Sample Date:						
		<i>Residential</i>	5/24/2018	5/24/2018	5/24/2018	5/24/2018	5/24/2018
Method 8260B							
1,1,1,2-Tetrachloroethane	ug/Kg	2,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,1,1-Trichloroethane	ug/Kg	810,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,1,2,2-Tetrachloroethane	ug/Kg	600	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,1,2-Trichloroethane	ug/Kg	150	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,1-Dichloroethane	ug/Kg	3,600	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,1-Dichloroethene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,1-Dichloropropene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2,3-Trichlorobenzene	ug/Kg	6,300	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2,3-Trichloropropane	ug/Kg	5.1	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2,4-Trichlorobenzene	ug/Kg	5,800	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2,4-Trimethylbenzene	ug/Kg	30,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2-Dibromo-3-chloropropane	ug/Kg	5.3	ND<2	ND<2	ND<2	ND<2	ND<2
1,2-Dibromoethane	ug/Kg	36	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2-Dichlorobenzene	ug/Kg	180,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2-Dichloroethane	ug/Kg	460	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,2-Dichloropropane	ug/Kg	1,600	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,3,5-Trimethylbenzene	ug/Kg	27,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,3-Dichlorobenzene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,3-Dichloropropane	ug/Kg	160,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
1,4-Dichlorobenzene	ug/Kg	2,600	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
2,2-Dichloropropane	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
2-Chlorotoluene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
4-Chlorotoluene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Benzene	ug/Kg	1,200	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Bromobenzene	ug/Kg	29,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Bromochloromethane	ug/Kg	15,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Bromodichloromethane	ug/Kg	290	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Bromoform	ug/Kg	19,000	ND<2	ND<2	ND<2	ND<2	ND<2
Bromomethane	ug/Kg	680	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Carbon tetrachloride	ug/Kg	650	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Chlorobenzene	ug/Kg	28,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Chloroethane	ug/Kg	N/A	ND<2	ND<2	ND<2	ND<2	ND<2
Chloroform	ug/Kg	320	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Chloromethane	ug/Kg	11,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
cis-1,2-Dichloroethene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
cis-1,3-Dichloropropene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Dibromochloromethane	ug/Kg	8,300	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Dibromomethane	ug/Kg	2,400	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Dichlorodifluoromethane	ug/Kg	8,700	ND<2	ND<2	ND<2	ND<2	ND<2
Isopropyl Ether (DIPE)	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Ethanol	ug/Kg	N/A	ND<99	ND<99	ND<99	ND<99	ND<100
Ethyl-t-butyl ether (ETBE)	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Ethylbenzene	ug/Kg	5,800	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Hexachlorobutadiene	ug/Kg	1,200	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Isopropylbenzene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
m and p-Xylene	ug/Kg	55,000	ND<2	ND<2	ND<2	ND<2	ND<2
Methylene chloride	ug/Kg	35,000	ND<5	ND<5	ND<5	ND<5	ND<5
Methyl-t-Butyl Ether (MTBE)	ug/Kg	47,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1



Table 3  
Proposed High School Site  
Area 3 - Hydrocarbon Staining  
East of Wible Road and South of Engle Road  
Soil Sample Results  
May 24, 2018

Parameter:	Sample ID:	<i>November 2017 RSLs THQ 0.1</i>	S-7-CF-2.5' Diesel AST	S-8-CF-S- 1.5' Oil Drum Storage	S-9-CF-N- 1.5' Oil Drum Storage	S-10-CF- 1.5' Battery Storage	S-11-CF- W-1' Oil Drum Storage
	Sample Type:						
	Sample Date:						
Naphthalene	ug/Kg	3,800	ND<2	ND<2	ND<2	ND<2	ND<2
n-Butylbenzene	ug/Kg	390,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
N-Propylbenzene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
o-Xylene	ug/Kg	65,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
sec-Butylbenzene	ug/Kg	780,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Styrene	ug/Kg	600,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Tert-amylmethylether (TAME)	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Tertiary butyl alcohol (TBA)	ug/Kg	N/A	ND<9.9	ND<9.9	ND<9.9	ND<9.9	ND<10
tert-Butylbenzene	ug/Kg	780,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Tetrachloroethene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Toluene	ug/Kg	490,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
trans-1,2-Dichloroethene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
trans-1,3-Dichloropropene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Trichloroethene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Trichlorofluoromethane	ug/Kg	2,300,000	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Vinyl chloride	ug/Kg	59	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Xylenes (Total)	ug/Kg	58,000	ND<2	ND<2	ND<2	ND<2	ND<2
p-Isopropyltoluene	ug/Kg	N/A	ND<0.99	ND<0.99	ND<0.99	ND<0.99	ND<1
Method 8260B							
C4-C12 (Gasoline Range)	mg/Kg	52/8.2 <sup>1</sup>	ND<0.070	ND<0.069	ND<0.069	ND<0.069	ND<0.070
C13-C22 (Diesel Range)	mg/Kg	9.6/11 <sup>2</sup>	5.3	17	5.4	ND<2.5	6.9
C23-C40 (Oil Range)	mg/Kg	23,000/250 <sup>3</sup>	12	250	110	9.5	110

ND: Not detected above Method Detection Limit (MDL)  
N/A: Not applicable  
NA: Not Analyzed

Exceeds November 2017 EPA Region 9 Regional Screening Level (RSL) - Residential Soil

Note: TPH result divided by two (assuming 50% Aliphatic and 50% Aromatic) to determine if screening criteria is exceeded.

<sup>1</sup>Total Petroleum Hydrocarbons Low (52 mg/kg Aliphatic/8.2 mg/kg Aromatic)  
<sup>2</sup>Total Petroleum Hydrocarbons Medium (9.6 mg/kg Aliphatic/11 mg/kg Aromatic)  
<sup>3</sup>Total Petroleum Hydrocarbons High (23,000 mg/kg Aliphatic/250 mg/kg Aromatic)



Table 4  
Proposed High School Site  
Area 4 - Irrigation Well  
East of Wible Road and South of Engle Road  
Soil Sample Results  
May 24, 2018

Parameter:	Sample ID:	<i>November 2017 RSLs THQ 0.1</i>	S-4-SE-3' Irrigation Well	S-5-E-1' Irrigation Well	S-6-W-0.5' Irrigation Well
	Sample Type:				
	Sample Date:	<i>Residential</i>	5/24/2018	5/24/2018	5/24/2018
<b>Method 8260B</b>					
1,1,1,2-Tetrachloroethane	ug/Kg	2,000	ND<1	ND<1	ND<0.99
1,1,1-Trichloroethane	ug/Kg	810,000	ND<1	ND<1	ND<0.99
1,1,2,2-Tetrachloroethane	ug/Kg	600	ND<1	ND<1	ND<0.99
1,1,2-Trichloroethane	ug/Kg	150	ND<1	ND<1	ND<0.99
1,1-Dichloroethane	ug/Kg	3,600	ND<1	ND<1	ND<0.99
1,1-Dichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
1,1-Dichloropropene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
1,2,3-Trichlorobenzene	ug/Kg	6,300	ND<1	ND<1	ND<0.99
1,2,3-Trichloropropane	ug/Kg	5.1	ND<1	ND<1	ND<0.99
1,2,4-Trichlorobenzene	ug/Kg	5,800	ND<1	ND<1	ND<0.99
1,2,4-Trimethylbenzene	ug/Kg	30,000	ND<1	ND<1	ND<0.99
1,2-Dibromo-3-chloropropane	ug/Kg	5.3	ND<2	ND<2	ND<2
1,2-Dibromoethane	ug/Kg	36	ND<1	ND<1	ND<0.99
1,2-Dichlorobenzene	ug/Kg	180,000	ND<1	ND<1	ND<0.99
1,2-Dichloroethane	ug/Kg	460	ND<1	ND<1	ND<0.99
1,2-Dichloropropane	ug/Kg	1,600	ND<1	ND<1	ND<0.99
1,3,5-Trimethylbenzene	ug/Kg	27,000	ND<1	ND<1	ND<0.99
1,3-Dichlorobenzene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
1,3-Dichloropropane	ug/Kg	160,000	ND<1	ND<1	ND<0.99
1,4-Dichlorobenzene	ug/Kg	2,600	ND<1	ND<1	ND<0.99
2,2-Dichloropropane	ug/Kg	N/A	ND<1	ND<1	ND<0.99
2-Chlorotoluene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
4-Chlorotoluene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Benzene	ug/Kg	1,200	ND<1	ND<1	ND<0.99
Bromobenzene	ug/Kg	29,000	ND<1	ND<1	ND<0.99
Bromochloromethane	ug/Kg	15,000	ND<1	ND<1	ND<0.99
Bromodichloromethane	ug/Kg	290	ND<1	ND<1	ND<0.99
Bromoform	ug/Kg	19,000	ND<2	ND<2	ND<2
Bromomethane	ug/Kg	680	ND<1	ND<1	ND<0.99
Carbon tetrachloride	ug/Kg	650	ND<1	ND<1	ND<0.99
Chlorobenzene	ug/Kg	28,000	ND<1	ND<1	ND<0.99
Chloroethane	ug/Kg	N/A	ND<2	ND<2	ND<2
Chloroform	ug/Kg	320	ND<1	ND<1	ND<0.99
Chloromethane	ug/Kg	11,000	ND<1	ND<1	ND<0.99
cis-1,2-Dichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
cis-1,3-Dichloropropene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Dibromochloromethane	ug/Kg	8,300	ND<1	ND<1	ND<0.99
Dibromomethane	ug/Kg	2,400	ND<1	ND<1	ND<0.99
Dichlorodifluoromethane	ug/Kg	8,700	ND<2	ND<2	ND<2
Isopropyl Ether (DIPE)	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Ethanol	ug/Kg	N/A	ND<100	ND<100	ND<99
Ethyl-t-butyl ether (ETBE)	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Ethylbenzene	ug/Kg	5,800	ND<1	ND<1	ND<0.99
Hexachlorobutadiene	ug/Kg	1,200	ND<1	ND<1	ND<0.99
Isopropylbenzene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
m and p-Xylene	ug/Kg	55,000	ND<2	ND<2	ND<2
Methylene chloride	ug/Kg	35,000	ND<5	ND<5	ND<5
Methyl-t-Butyl Ether (MTBE)	ug/Kg	47,000	ND<1	ND<1	ND<0.99



Table 4  
Proposed High School Site  
Area 4 - Irrigation Well  
East of Wible Road and South of Engle Road  
Soil Sample Results  
May 24, 2018

Parameter:	Sample ID:	<i>November 2017 RSLs THQ 0.1</i>	S-4-SE-3' Irrigation Well	S-5-E-1' Irrigation Well	S-6-W-0.5' Irrigation Well
	Sample Type:				
	Sample Date:				
		<i>Residential</i>	5/24/2018	5/24/2018	5/24/2018
Naphthalene	ug/Kg	3,800	ND<2	ND<2	ND<2
n-Butylbenzene	ug/Kg	390,000	ND<1	ND<1	ND<0.99
N-Propylbenzene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
o-Xylene	ug/Kg	65,000	ND<1	ND<1	ND<0.99
sec-Butylbenzene	ug/Kg	780,000	ND<1	ND<1	ND<0.99
Styrene	ug/Kg	600,000	ND<1	ND<1	ND<0.99
Tert-amylmethylether (TAME)	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Tertiary butyl alcohol (TBA)	ug/Kg	N/A	ND<10	ND<10	ND<9.9
tert-Butylbenzene	ug/Kg	780,000	ND<1	ND<1	ND<0.99
Tetrachloroethene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Toluene	ug/Kg	490,000	ND<1	ND<1	ND<0.99
trans-1,2-Dichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
trans-1,3-Dichloropropene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Trichloroethene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Trichlorofluoromethane	ug/Kg	2,300,000	ND<1	ND<1	ND<0.99
Vinyl chloride	ug/Kg	59	ND<1	ND<1	ND<0.99
Xylenes (Total)	ug/Kg	58,000	ND<2	ND<2	ND<2
p-Isopropyltoluene	ug/Kg	N/A	ND<1	ND<1	ND<0.99
Method 8260B					
C4-C12 (Gasoline Range)	mg/Kg	52/8.2 <sup>1</sup>	ND<0.070	0.1	ND<0.069
C13-C22 (Diesel Range)	mg/Kg	9.6/11 <sup>2</sup>	1,100	ND<2.4	27
C23-C40 (Oil Range)	mg/Kg	23,000/250 <sup>3</sup>	1,300	13	190

ND: Not detected above Method Detection Limit (MDL)

N/A: Not applicable

NA: Not Analyzed

Exceeds November 2017 EPA Region 9 Regional Screening Level (RSL) - Residential Soil

Note: TPH result divided by two (assuming 50% Aliphatic and 50% Aromatic) to determine if screening criteria is exceeded.

<sup>1</sup>Total Petroleum Hydrocarbons Low (52 mg/kg Aliphatic/8.2 mg/kg Aromatic)

<sup>2</sup>Total Petroleum Hydrocarbons Medium (9.6 mg/kg Aliphatic/11 mg/kg Aromatic)

<sup>3</sup>Total Petroleum Hydrocarbons High (23,000 mg/kg Aliphatic/250 mg/kg Aromatic)



Table 5  
Proposed High School Site  
Area 2-Shed and Area 4-Irrigation Well  
East of Wible Road and South of Engle Road  
Soil Sample Results  
June 2, 2018

Parameter:	Sample ID:	CHHSLs	November 2017 RSLs THQ 0.1	AEC NW-S1- OX2-5'SW-0.5'	Soils Engineering NW-S1- OX2-S-6"	AEC NW-S1- OX2-5'-F-1'	Soils Engineering NW-S1- OX2-B-S-1'	AEC NW-S1- OX2-N-5'-SW-0.5'	Soils Engineering NW-S1- OX2-N-6"	AEC NW-S1- OX2-N-5'-F-1'	Soils Engineering NW-S1- OX2-B-N-1'	AEC SP-1-COMP	AEC NW-S1- OX2-NW-SW-0.5'	Soils Engineering NW-S1- OX2-NW-6"	AEC NW-S1- OX2-NW-F-1'	Soils Engineering NW-S1- OX2-B-NW-1'	AEC NW-S1- OX2-SW-SW-0.5'	Soils Engineering NW-S1- OX2-SW-6"	AEC NW-S1- OX2-SW-F-1'	Soils Engineering NW-S1- OX2-B-SW-1'	AEC Irr Well-S2- OX2-F-5'	Soils Engineering S2-OX2-B-5'	
	Sample Type:			Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation	Duplicate	Confirmation
	Sample Date:	Residential	Residential	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	6/2/2018	
EPA 8260B																							
*All Compounds Non Detect	ug/Kg	N/A	N/A	NA	NA	NA	NA	NA	NA	NA	NA	*ND	NA	NA	NA	NA	NA	NA	NA	NA	*ND	*ND	
EPA 8081A																							
C4-C12 (Gasoline Range)	mg/Kg		52/8.2 <sup>1</sup>	NA	ND<1	NA	ND<1	NA	ND<1	NA	ND<1	ND<0.070	NA	ND<1	NA	ND<1	NA	ND<1	NA	ND<1	0.14	ND<1	
C13-C22 (Diesel Range)	mg/Kg		9.6/1 <sup>2</sup>	NA	3.76	NA	ND<1	NA	5.17	NA	ND<1	ND<2.5	NA	ND<1	NA	ND<1	NA	ND<1	NA	ND<1	ND<2.5	ND<1	
C23-C40 (Oil Range)	mg/Kg		23,000/250 <sup>3</sup>	NA	ND<1	NA	ND<1	NA	ND<1	NA	ND<1	6.9 B	NA	ND<1	NA	ND<1	NA	ND<1	NA	ND<1	3.0 J B	ND<1	
EPA 8081A																							
4,4'-DDD	ug/Kg	2,300	190	2.5 J P	ND<1	ND<1.5	ND<1	1.6 J P	ND<1	1.5 J P	8.74	ND<1.5	1.5 J P	9.03	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
4,4'-DDE	ug/Kg	1,600	2,000	11 F2 F1	ND<1	ND<1.5	ND<1	130	225	19	ND<1	21	260	262	2.3 J	ND<1	2.2 J	ND<1	1.8 J	ND<1	NA	NA	
4,4'-DDT	ug/Kg	1,600	1,900	160	44.1	11	57.1	200	410	150	193	2.5 J	150	190	2.7 J	ND<1	18	ND<1	3.4 J	ND<1	NA	NA	
Aldrin	ug/Kg	33	39	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
a-BHC	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
b-BHC	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Chlordane	ug/Kg	430	1,700	ND<10	ND<1	ND<9.9	ND<1	ND<9.8	ND<1	ND<9.9	ND<1	ND<9.9	ND<9.8	ND<1	ND<10	ND<1	ND<10	ND<1	ND<9.8	ND<1	NA	NA	
d-BHC	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Dieldrin	ug/Kg	35	34	ND<1.5	ND<1	ND<1.5	ND<1	3.2 J	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Endosulfan I	ug/Kg	N/A	47,000*	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Endosulfan II	ug/Kg	N/A	47,000*	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Endosulfan sulfate	ug/Kg	N/A	N/A	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	NA	NA	
Endrin	ug/Kg	21,000	1,900	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Endrin aldehyde	ug/Kg	N/A	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Endrin Ketone	ug/Kg	N/A	N/A	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	NA	NA	
Lindane (Gamma-BHC)	ug/Kg	500	N/A	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Heptachlor	ug/Kg	130	130	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	NA	NA	
Heptachlor epoxide	ug/Kg	N/A	70	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	ND<2	ND<1	NA	NA	
Methoxychlor	ug/Kg	340,000	32,000	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	ND<1.5	ND<1	NA	NA	
Toxaphene	ug/Kg	460	490	ND<50	ND<1	ND<49	ND<1	ND<49	ND<1	ND<49	ND<1	ND<50	ND<49	ND<1	ND<50	ND<1	ND<50	ND<1	ND<50	ND<1	NA	NA	

ND: Not detected above Reporting Limit (RL)

N/A: Not applicable

NA: Not analyzed

Exceeds California Human Health Screening Levels (CHHSLs) September 2010

Exceeds Regional Screening Levels (RSLs) for Residential Soil - November 2017 THQ 0.1

Exceeds CHHSLs and RSLs screening criteria

\*Screening level for Endosulfan.



Appendix C

**WASTE MANIFESTS AND WEIGHT TICKETS**



## WEIGHMASTER: McKITTRICK WASTE TREATMENT SITE - A subsidiary of Waste Management

56533 HWY. 58 West, McKittrick, CA 93251

(661) 762-7366

"CLASS II SITE"

NO:

10194

## Weighmaster Certificate

This is to certify that the following described commodity was weighed, measured, or counted by a WEIGHMASTER,

whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by CHAPTER 7

(commencing with 12700) of Division 5 of the California

Business &amp; Professions Code, administered by the Division of

Measurement Standards of California Department of Food

and Agriculture

DATE Time Weight (LB)

06 27 18 08:03:50 51240 lb

GROSS:

GROSS BY: DEPUTY WEIGHMASTER

TARE: 06 27 18 08:37:48 33260 lb

TARE BY: DEPUTY WEIGHMASTER

NET:

TONS

YARDS

GENERATOR

MANIFEST

DRIVER

SITE DRIVER

PROFILE No.

TRACTOR LICENSE No.

TRAILER LICENSE No.

TRANSPORTER

No. of WASHOUTS

RECEIPT No.

## SAMPLE SCREEN ANALYSIS

MULTIPLE LOAD #

COLOR:

FREE LIQUID

SULFIDES

FLASHPOINT

CYANIDES

OTHER

PH

LAYERS

SEE MANIFEST

PROFILE EXPIRATION

DISPOSAL UNIT

TIME OUT

REC. TECH

RELEASING SIGNATURE

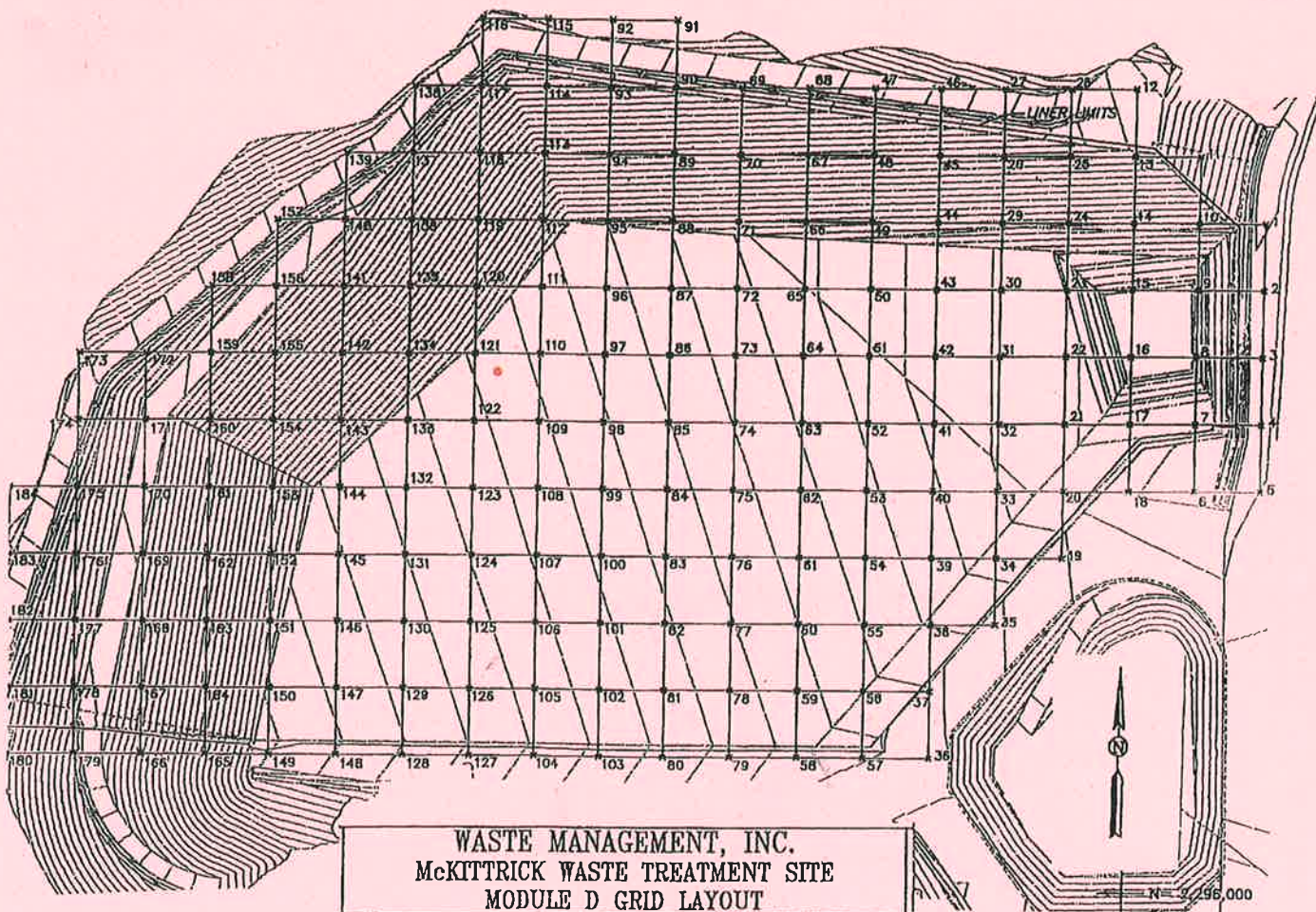
DATE

GRIDPOINT

ELEVATION

TIME

NOTES:





HC Oldenkamp Yard ①

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

**NON-HAZARDOUS  
WASTE MANIFEST**

1. Generator ID Number

NA

2. Page 1 of

3. Emergency Response Phone

661-395-1646

4. Waste Tracking Number

5. Generator's Name and Mailing Address

WIBLE AVE LLC  
11314 WIBLE RD.  
BAKERSFIELD, CA 93313

Generator's Site Address (if different than mailing address)

SAME

Generator's Phone: 661-395-1646

6. Transporter 1 Company Name

J. TORRES

U.S. EPA ID Number

CA000173872

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

MCKITTRICK WASTE LANDFILL  
56533 HWY 58 WEST  
MCKITTRICK, CA 93251 USA

U.S. EPA ID Number

CA0980535831

Facility's Phone: 661-762-7366

9. Waste Shipping Name and Description

1. HYDROCARBON IMPACTED SOIL

10. Containers

No.

Type

11. Total  
Quantity

12. Unit  
Wt./Vol.

1

DT

18

Y

13. Special Handling Instructions and Additional Information

PROFILE# 635131CA WEAR PROPER PPE WHEN HANDLING MATERIAL

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offor's Printed/Typed Name

agent for Wible Ave LLC

Signature

Jon Bul

Month Day Year

06 27 18

15. International Shipments

☐ Import to U.S.

☐ Export from U.S.

Port of entry/exit:

Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Alonso Rodriguez

Signature

Alonso

Month Day Year

06 27 18

Transporter 2 Printed/Typed Name

Signature

Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space

☐ Quantity

☐ Type

☐ Residue

☐ Partial Rejection

☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by this manifest except as noted in Item 17a

Printed/Typed Name

ebbie amica

Signature

Month Day Year

06 27 18



## WEIGHMASTER: McKITTRICK WASTE TREATMENT SITE - A subsidiary of Waste Management

56533 HWY. 58 West, McKittrick, CA 93251

(661) 762-7366

"CLASS II SITE"

128059

NO: 10214

## Weighmaster Certificate

This is to certify that the following described commodity was weighed, measured, or counted by a WEIGHMASTER, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by CHAPTER 7 (commencing with 12700) of Division 5 of the California Business & Professions Code, administered by the Division of Measurement Standards of California Department of Food and Agriculture

DATE Time Weight (LB)

GROSS: 06 27 18 12:02:17 56680 lb

GROSS BY: DEPUTY WEIGHMASTER

TARE: 06 27 18 13:11:52 33160 lb

TARE BY: DEPUTY WEIGHMASTER

NET:

TONS

YARDS

GENERATOR

MANIFEST

DRIVER

SITE DRIVER

PROFILE No.

TRACTOR LICENSE No.

TRAILER LICENSE No.

TRANSPORTER

No. of WASHOUTS

RECEIPT No.

## SAMPLE SCREEN ANALYSIS

COLOR:

FREE LIQUID

SULFIDES

FLASHPOINT

CYANIDES

OTHER

PH

LAYERS

COMMODITY:

MULTIPLE LOAD #

SEE MANIFEST

PROFILE EXPIRATION

DISPOSAL UNIT

TIME OUT

REC. TECH.

RELEASING SIGNATURE

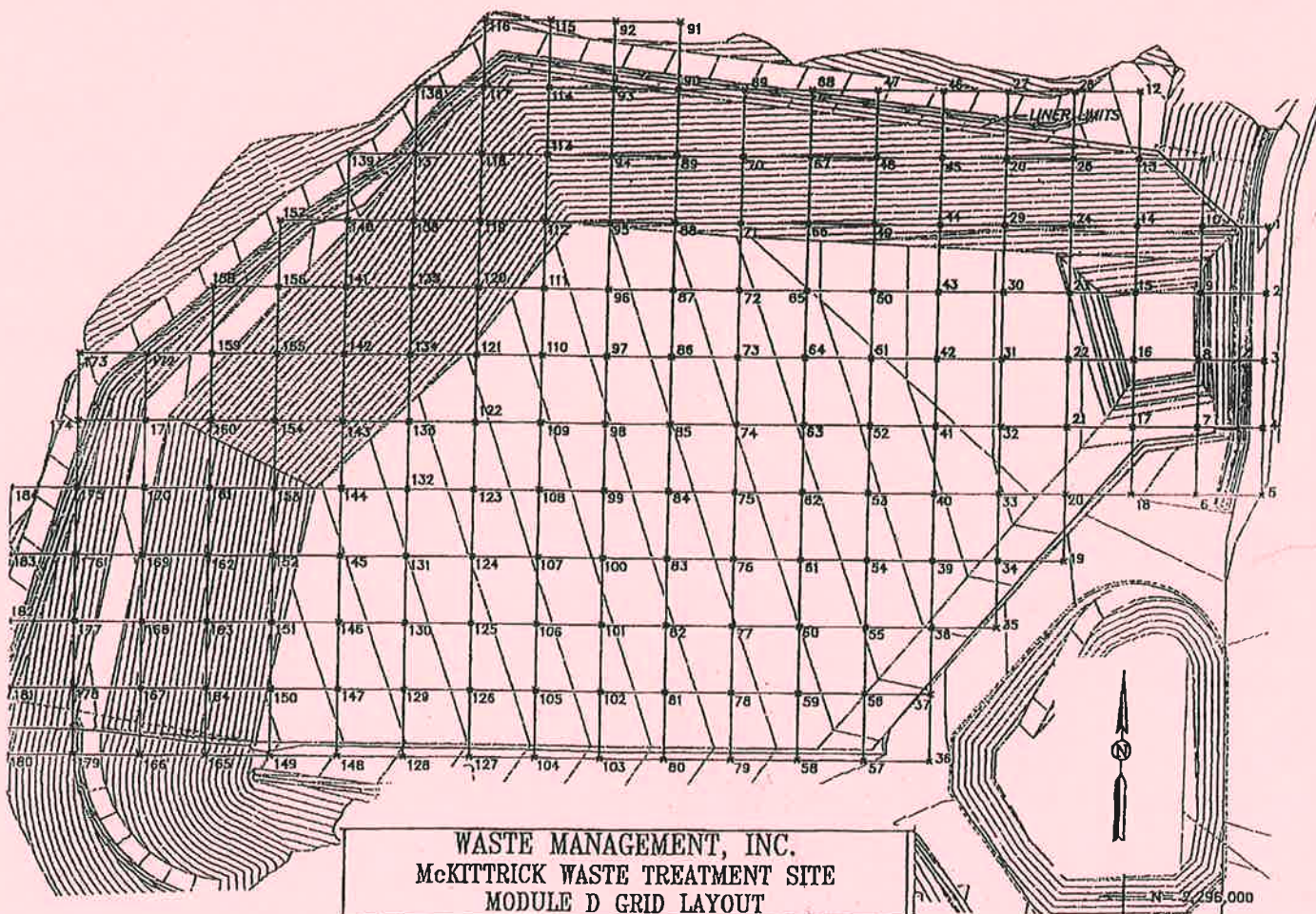
DATE

GRIDPOINT

ELEVATION

TIME

NOTES:





WP 42/67

Irrigation well

①

GENERATOR	<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number NA	2. Page 1 of	3. Emergency Response Phone 651-395-1545	4. Waste Tracking Number 2	
	5. Generator's Name and Mailing Address PINHEIRO FAMILY, LP 220 EAST TRUXTON AVE. BAKERSFIELD, CA 93305 Generator's Phone: 651-395-1545				Generator's Site Address (if different than mailing address) WIBLE RD. AND ENGLE RD. BAKERSFIELD, CA 93307		
	6. Transporter 1 Company Name J. TORRES				U.S. EPA ID Number CAR000173872		
	7. Transporter 2 Company Name				U.S. EPA ID Number		
	8. Designated Facility Name and Site Address MCKITTRICK WASTE LANDFILL 56533 HWY 58 WEST MCKITTRICK, CA 93251 USA Facility's Phone: 651-752-7355				U.S. EPA ID Number CAD980535831		
	9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.	
			No.	Type			
	1. HYDROCARBON IMPACTED SOIL		1	DT	18	Y	
	2.						
	3.						
4.							
13. Special Handling Instructions and Additional Information  Profile# 635290CA. Wear proper PPE when Handling Material							
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.							
INT'L	Generator's/Offor's Printed/Typed Name Jon Burk		Signature Jon Burk		Month Day Year 06 27 18		
	15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: Date leaving U.S.:				
TRANSPORTER	16. Transporter Acknowledgment of Receipt of Materials						
	Transporter 1 Printed/Typed Name Alonso Rodriguez		Signature Alonso		Month Day Year 06 27 18		
DESIGNATED FACILITY	Transporter 2 Printed/Typed Name		Signature		Month Day Year		
	17. Discrepancy						
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection							
17b. Alternate Facility (or Generator) Manifest Reference Number: U.S. EPA ID Number							
Facility's Phone:							
17c. Signature of Alternate Facility (or Generator) Month Day Year							
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a							
Printed/Typed Name Debbie		Signature Debbie		Month Day Year 06 27 18			



5 Toms #32 WP93261 & 36A 4FU9139

(P)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number CAL000317035	2. Page 1 of 1	3. Emergency Response Phone 651-395-1646	4. Manifest Tracking Number <b>017213185 JJK</b>
5. Generator's Name and Mailing Address OLDENKAMP TRUCKING 11316 WIBLE RD. BAKERSFIELD, CA 93313			Generator's Site Address (if different than mailing address) SAME		
Generator's Phone: 651-395-1646			U.S. EPA ID Number CAT000173872		
6. Transporter 1 Company Name Toms			U.S. EPA ID Number		
7. Transporter 2 Company Name			U.S. EPA ID Number		
8. Designated Facility Name and Site Address KETTLEMAN TILES COMPANY 35251 OLD SKYLINE DR KETTLEMAN CITY, CA 93239 USA 900-222-2954			U.S. EPA ID Number CAT000545117		
Facility's Phone:					
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
	1. UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, NOS. 9, III, (4.1-1-1-1-1)	1	DI	18	Y
	2.				
	3.				
	4.				
13. Waste Codes 511					
14. Special Handling Instructions (Additional Information) PROPER PPE WHEN HANDLING MATERIAL Profile # CA614469 #32					
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.					
Generator's/Offor's Printed/Typed Name Jon Buck			Signature Jon Buck		Month Day Year 06 27 18
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:					
17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name Rudy Negrete Signature Rudy Negrete Month Day Year 06 27 18 Transporter 2 Printed/Typed Name Signature Month Day Year					
18. Discrepancy 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number: U.S. EPA ID Number 18b. Alternate Facility (or Generator) U.S. EPA ID Number Facility's Phone: 18c. Signature of Alternate Facility (or Generator) Month Day Year					
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) 1. H132 2. 3. 4.					
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a Printed/Typed Name Guy Adams Signature Month Day Year 06 27 18					



TIME

DATE

WEIGHT (LB)

COMMODITY: HAZARDOUS WASTE

DEPUTY WEIGHMASTER

CHEMICAL WASTE MANAGEMENT, INC.  
WEIGHMASTER weighed at  
35251 Old Skyline Road  
Kettleman City, CA

GROSS: 09:41 06/27/18 787801bs

TARE:

NET: 09:24 06-27-18 46020 LB

YARDAGE: 132

NO: 310186

WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

GENERATOR OT 1000 Camp	MANIFEST 178157555C	PROFILE CA 014469
TRACTOR LICENSE # 111 15361	TRAILER LICENSE NO. 415-07135	BIN # 863697

31501 Rudy  
7 Tons

6/11/19  
85  
B8  
B2



5 Tones #32 WP 93261 E 36A 4FU 9139 (2)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number CAL000317033	2. Page 1 of 1	3. Emergency Response Phone 661-395-1545	4. Manifest Tracking Number 017213184 JJK		
5. Generator's Name and Mailing Address OLDENKAMP TRUCKING 11316 WIBLE RD. BAKERSFIELD, CA 93313			Generator's Site Address (if different than mailing address) SAME				
Generator's Phone: 661-395-1545			U.S. EPA ID Number CARLOW 173 872				
6. Transporter 1 Company Name Tones			U.S. EPA ID Number				
7. Transporter 2 Company Name			U.S. EPA ID Number				
8. Designated Facility Name and Site Address KETTLEMAN HILLS LANDFILL 35251 OLD SKYLINE DR KETTLEMAN CITY, CA 93239 USA			U.S. EPA ID Number CAT000545117				
Facility's Phone: 800-222-2554							
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
			No.	Type			
	1.	UN3077. ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, NOS, 9, III, (4.41-DBT)	1	DT	18	Y	511
	2.						
	3.						
4.							
14. Special Handling Instructions and Additional Information PROFILES CAG14459 MUST WEAR PROPER PPE WHEN HANDLING MATERIAL # 32							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offor's Printed/Typed Name Tom Buck		Signature for Buck		Month 10		Day 27	
16. International Shipments		Signature		Year 18			
17. Transporter Acknowledgment of Receipt of Materials		Signature		Month 06		Day 27	
Transporter 1 Printed/Typed Name Rudy Negret		Signature		Year 18			
Transporter 2 Printed/Typed Name		Signature		Month		Day	
18. Discrepancy		Signature		Year			
18a. Discrepancy Indication Space		Signature		Year			
18b. Alternate Facility (or Generator)		Signature		Year			
18c. Signature of Alternate Facility (or Generator)		Signature		Year			
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)		Signature		Year			
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a		Signature		Year			
Printed/Typed Name Katie Burkett		Signature		Month 10		Day 27	
		Signature		Year 18			



TIME

DATE

WEIGHT (LB)

COMMODITY: HAZARDOUS WASTE

CHEMICAL WASTE MANAGEMENT, INC.  
WEIGHMASTER weighed at  
35251 Old Skyline Road  
Kettleman City, CA

GROSS: 06/27/18 89040lbs

DEPUTY WEIGHMASTER

NO: 310117

TARE:

14:29 06-27-18

NET: 56000 LB

YARDAGE: 182

## WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

GENERATOR	MANIFEST	PROFILE
OT don Kamp	017213184	CA 614465 4501
TRACTOR LICENSE #	TRAILER LICENSE NO.	BIN #
WP 33261	4F09135	863732 6509

RECEIPT #

Rudy  
J Torres4/19  
14:13  
KR

Bfm soil







**SOILS ENGINEERING, INC.**



**SUPPLEMENTAL SITE INVESTIGATION (SSI) COMPLETION REPORT  
FOR SOUTHERN 80-ACRES**

**PROPOSED SOUTHWEST HIGH SCHOOL SITE  
SOUTHEAST OF WIBLE ROAD & ENGLE ROAD  
BAKERSFIELD, CALIFORNIA**

**Prepared For:**

**Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA. 93309-2924  
Attn: Jenny Hannah**

**File No. 17-16195**

**Prepared By:**

**Soils Engineering, Inc.  
4400 Yeager Way  
Bakersfield, CA. 93313**

**May 17, 2019**



**SOILS ENGINEERING, INC.**




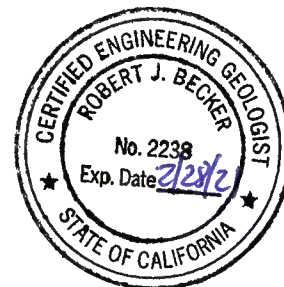
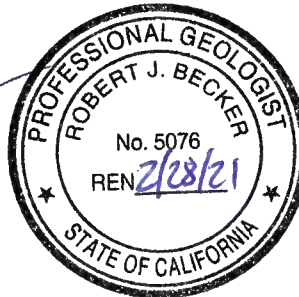
**SUPPLEMENTAL SITE INVESTIGATION COMPLETION REPORT  
PROPOSED SOUTHWEST HIGH SCHOOL SITE- SOUTHERN 80 ACRES  
SOUTHEAST OF WIBLE RD. & ENGLE RD.  
BAKERSFIELD, CA**

**APNs: 184-150-38 to -41**

This Supplemental Site Investigation Completion Report (SSI Report) for the Proposed Southwest High School Site in Bakersfield, California, was prepared by SOILS ENGINEERING INC. (SEI) on behalf of the Kern High School District (KHSD) in a manner consistent with the level of care and skill ordinarily exercised by professional geologists and environmental scientists. This SSI Report was prepared under the technical direction of the undersigned, who is a California Professional Geologist.

SOILS ENGINEERING, INC.

  
Robert J. Becker, P.G., CEG



Date: May 17, 2019



***Supplemental Site Investigation Completion Report***  
***KHSD – Proposed Southwest High School-Southern 80 Acres***  
***Southeast of Wible Rd. & Engle Rd., Bakersfield, CA***

***File Number 17-16195***

***May 2019***

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## SOILS ENGINEERING, INC.



### **SUPPLEMENTAL SITE INVESTIGATION COMPLETION REPORT PROPOSED SOUTHWEST HIGH SCHOOL- SOUTHERN 80 ACRES SOUTHEAST OF WIBLE RD. & ENGLE RD. BAKERSFIELD, CA**

**APNs: 184-150-38 to -41**

#### ***Executive Summary***

On the behalf of the Kern High School District (KHSD), Soils Engineering, Inc. (SEI) has completed a Supplemental Site Investigation (SSI) at the proposed Southwest High School Site located southeast of Wible Rd. & Engle Rd. in Bakersfield, CA (site). The SSI was conducted in the Southern 80-acres of the 120-acre site to further evaluate two (2) areas of potential concern identified during a Preliminary Environmental Assessment (PEA). The SSI was conducted per a Technical Memorandum dated March 6, 2019 which was conditionally approved by the DTSC in a letter dated April 18, 2019. See Plate 1 for a Location Map and Plate 2 for a Plot Plan of the site.

On May 2, 2019, SEI collected step-out soil samples at 3 locations adjacent to PEA soil sample P1 which was located beneath a pole-mounted electrical transformer. Soil samples were collected with a hand auger at depths of 0 to 6" (-3") and 2' to 2.5' (-2') at step-out locations 3' south (P1-S), 3' north (P1-N) and 3' west (P1-W) of PEA sample P1. All of the soil samples were collected in stainless-steel tubes, sealed with Teflon-lined plastic caps, labeled and placed in a cooler with ice. The -3" soil sample from each location was analyzed for polychlorinated biphenyl (PCBs) by EPA Method 8082. The analytical results were all none detected (ND) for PCBs. The -2' soil samples were kept on hold in case additional deeper analysis was warranted. Soil samples were also collected at PEA sample location S3 within the southeastern tail water sump to evaluate Polyaromatic Hydrocarbons (PAHs). Soil samples were collected with a hand auger at depths of 0 to 6" (-3") and 2' to 2.5' (-2') at PEA sample location S3. The soil samples were collected in stainless-steel tubes, sealed with Teflon-lined plastic caps, labeled and placed in a cooler with ice. The -3" soil sample (S3-3") was analyzed for PAHs by EPA Method 8270 SIM. The analytical results were all none detected (ND) for PAHs. The -2' soil sample was kept on hold in case additional deeper analysis was warranted. See Plate 3 for the soil sample locations and Tables 1 and 2 for the soil sample analytical results added to the previous PEA results for the Southern 80-acres of the site. See Appendix A for complete copies of the SSI analytical report and Appendix B for some pictures of the SSI activities conducted.

The SSI analytical results have been added, if warranted to the risk and hazard evaluation for the Southern 80 Acres of the site.

The highest concentrations of chemicals of potential concern reported in the SSI & PEA investigation for the Southern 80 acres were included in the human health screening evaluation. The total cumulative risk is  $3.1 \times 10^{-7}$  and the cumulative hazard is 0.58. These values are below the level of potential concern of risk ( $1 \times 10^{-6}$ ) and the hazard level of concern (1.0). This



indicates that there is not an elevated risk and hazard to future occupants within the Southern 80 acres of the site from the on-site soil. See Tables 4 to 6 for the Risk and Hazard calculations for the Southern 80-acres of the site.

The SSI & PEA equivalent investigation in the Southern 80-acres indicates:

- 1) That the historical agricultural activities at this site have not significantly impacted the near surface soil. Based on the fate and transport properties of OCPs and metals it is highly unlikely that concentrations of potential concern of these constituents would migrate to depths below 2.5' in the soil (silty sand) encountered at this site. No additional sampling and analysis below a depth of 2.5' is warranted in the agricultural field areas to achieve unrestricted Site closure.
- 2) The minor concentrations of PCBs (63.9 ug/kg) reported in soil sample P1-3" appears to be very limited and did not extend out to any of the step-out borings 3 feet away to the east, west, south or north. The PCB concentrations reported are less than the EPA RSLs. No additional assessment or mitigation appears to be warranted in the area of PEA sample P1.
- 3) The malodorous substance present in the eastern end of the southwestern tail water sump in the area of PEA sample S1 has been successfully removed and the remaining soil has only minor TPH concentrations that are not an elevated risk or hazard to future occupants.
- 4) There were no PAHs reported in soil sample S3-3" collected within the southeastern tail water sump.

SEI recommends that partial site approval be granted for the Southern 80-acres of the site.

A separate SSI Workplan should be prepared for the Northwestern 40-acre to address data gaps in the PEA Report that the DTSC has commented on.

Any off-site fill material necessary for the site will be sampled and analyzed for potential constituents of concern in accordance with the DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.

If during field investigation activities or construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC will be notified. SEI will discuss these areas with the DTSC to determine the appropriate actions to be taken to assess and/or remediate these new potential areas of concern.



## **1.0 INTRODUCTION**

On the behalf of the Kern High School District (KHSD), Soils Engineering, Inc. (SEI) has prepared this Supplemental Site Investigation (SSI) Completion Report (SSI Report) for the Proposed Southwest High School – Southern 80 acres located southeast of Wible Rd. & Engle Rd. in Bakersfield, CA (site). As previously discussed with the DTSC, the Kern High School District (KHSD) would like to get partial site approval for the Southern 80-acres of the 120-acre high school site. The Department of Toxic Substances Control (DTSC) has required that a Supplemental Site Investigation (SSI) be conducted at the site to further evaluate two (2) areas of potential concern remaining in the Southern 80-acres. This includes the PEA sample P1 area where polychlorinated biphenyls (PCBs) were reported at 63.9 ug/kg in soil sample P1-3”, but were none detected (ND) in PEA sample P1-2’ and in PEA step-out sample P1-E-3”. The other area of potential concern was at PEA sample location S3 within the bottom of the southeastern tail water sump where semi-volatile organic compounds (SVOCs) were not previously evaluated. SEI has included Plate 3, which shows the location of the soil samples conducted during the SSI and the PEA. See Plate 1 for a Location Map and Plate 2 for a Plot Plan.

### **1.1 Supplemental Site Investigation (SSI) Objectives**

SEI prepared a “Technical Memo – Additional Assessment for Southern 80 Acres” dated March 6, 2019, which was conditionally approved by the Department of Toxic Substances Control (DTSC) in a letter dated April 18, 2019 prior to conducting the SSI sampling at the site. The Technical Memo described the proposed work to be completed to adequately assess the two (2) remaining areas of potential concern within the Southern 80-acres of the site. The objective of this SSI is to evaluate the areas with potential chemicals of concern (PCBs and SVOCs) that may need to be mitigated in order to ensure the safety of future occupants of the site. This information will be utilized to assess the risk and hazards that these chemicals of concern would have on future occupants if left in-place. Based on this assessment, it will be determined if any Removal Action is warranted within the Southern 80-acres of the site.

### **1.2 SSI Scope of Work**

#### **1.2.1 Soil Sampling & Analytical Testing**

In the Technical Memo dated March 6, 2019, SEI proposed to conduct additional step-out borings approximately 3’ north, 3’ west and 3’ south of PEA sample P-1 located adjacent to the southwest tail water sump beneath a pole-mounted electrical transformer. Soil samples were also proposed to be collected at PEA sample location S3 located within the southeastern tail water sump. This includes collecting soil samples at depths of 0 to 6” and 2’ to 2.5’ with a clean hand-auger at each location.

The hand auger samplers will be decontaminated between each sampling event, utilizing water with Alconox (or equivalent) and a clean water rinse.



The shallow sampling holes will be filled and compacted with soil cuttings up to match the surface.

### **Analytical Testing of Soil Samples**

The soil samples will be transported to a State certified analytical laboratory in a sealed cooler with ice under chain of custody documents. The 0 to 6" soil samples collected at the P1 step-out locations will be analyzed for PCBs by EPA Method 8082 at a State certified analytical laboratory. The 0 to 6" soil sample at PEA location S3 will be analyzed for SVOCs or PAHs by EPA Method 8270SIM. The 2' to 2.5' soil samples will be kept on hold in a frozen state and analyzed if warranted based on the results of the 0 to 6" soil samples.

### **1.2.3 Baseline Risk Assessment**

The analytical results from the previous PEA investigation and the new soil sample results will be used in the evaluation of risk and hazards from potential pathways at the site. This evaluation will be utilized to determine the appropriate removal action areas at the site, if warranted.

### **1.3 SSI Report Format**

After receiving the results of the soil samples, this Supplemental Site Investigation Completion Report (SSI Report) was prepared. This SSI Report consists of the following main sections: 1.0 Introduction, 2.0 Summary of Site Background, 3.0 Sampling Activities and Results, 4.0 Risk Evaluation, 5.0 Quality Assurance Project Plan (QAPP) Implementation, 6.0 Health and Safety Plan Implementation, 7.0 Field Variances, 8.0 Conclusions and Recommendations, 9.0 Limitations and 10.0 References. Attachments included in this report consist of analytical results in table format, a location map, a plot plan, sample location maps, sample result maps and complete analytical reports, including Quality Assurance/Quality Control data.

## **2.0 SUMMARY OF SITE BACKGROUND**

### **2.1 Site Description and Location**

The Kern High School District (KHSD) Proposed Southwest High School – Southern 80-acres is located southeast of Wible Rd. & Engle Rd. in Bakersfield, CA. The site is bound by a dirt road to the east, Wible Rd. to the west, a dirt road to the north, and a dirt road to the south. The majority of the site is a plowed agricultural field with tail water sumps located in the southwestern and southeastern portions of the site. See Plate 1 for a Location Map and Plate 2 for a general Plot Plan.

### **2.2 Summary of PEA Equivalent Investigation – Southern 80 Acres**

To assess near surface soil conditions within the Southern 80-acres, SEI collected a total of 148 on-site soil samples in general accordance DTSC's PEA Guidance Manual and the DTSC's Interim Guidance for Sampling Agricultural Properties (3<sup>rd</sup> Revision) in August 2017. The soil samples were collected at depth intervals of 0" to 6" and 2' to 2.5' below ground surface (bgs) at the on-site sampling locations shown on Plate 3.



The analytical results of the 0" to 6" composite samples (C1A,B,C-3" to C24A,B,C-3") and the 0 to 6" (-3") and 2' to 2.5' (-2') discrete soil samples analyzed for organo-chlorine pesticides (OCPs) during this investigation indicate that only minor concentrations of 4,4'-DDE (up to 32.4 ug/kg) and 4,4'-DDT (up to 33.2 ug/kg) were reported, all well below the EPA Regional Screening Levels (RSLs) or the DTSC Recommended Screening Levels (SLs).

The results of on-site arsenic concentrations in the Southern 80 Acres ranged from 2.08 mg/kg to 9.55 mg/kg in the soil samples analyzed well below the normal DTSC level of concern (12 mg/kg). Other CAM 17 metals were all reported in the normal range for the Bakersfield area.

During the PEA additional soil samples were collected beneath three (3) pole-mounted electrical transformers (P1, P2 and P3) and within two (2) tail water sumps (S1, S1-W and S2) with the sample locations shown on Plate 3.

California hazardous concentrations were reported in PEA soil sample S1-3" in the far eastern portion of the southwestern tailwater sump with Total Petroleum Hydrocarbons (TPH) reported at 151,030 mg/kg and this soil sample failed a bioassay test.

See Tables 1 and 2 for the PEA soil sample analytical results for the Southern 80-acres of the site.

#### **Addendum No. 1 to PEA Equivalent Report Summary dated June 6, 2018**

Based on these results SEI recommended removal and appropriate disposal of the hazardous material in the area of PEA sample S1-3" to a depth of approximately 1'. The owner of the property at that time hired Advanced Environmental Concepts (AEC) to perform this removal. The KHSD contracted with SEI to oversee this remedial action and to also collect confirmation soil samples. On May 24, 2018 a backhoe was utilized to remove this highly odorous material with elevated TPH resulting in an excavation of approximately 30' x 12' and 1' deep. Soil was removed until no significant staining or odor was present in the remaining soil. The removed soil was placed on plastic sheeting adjacent to the excavation area pending disposal. AEC then collected three (3) bottom confirmation soil samples from the excavation area. SEI collected two (2) bottom and four (4) sidewall confirmation soil samples from the excavation as shown on Plate 4. The SEI confirmation soil samples were all analyzed for Total Petroleum Hydrocarbons (TPH) by EPA Method 8015B, for volatile organic compounds (VOCs) by EPA Method 8260 and for semi-volatile organics (SVOCs) by EPA Method 8270 on a rush basis by Positive Lab Services in Los Angeles, CA.

The SEI analytical results are presented on Table 3 and indicate that the highly odorous material with elevated TPH has been successfully removed from this area. The highest TPH reported in the confirmation soil samples was only 99.3 mg/kg in sample S1-OX-N-1'. No VOCs or SVOCs were reported in the soil samples.



**Addendum No. 2 to PEA Equivalent Report Summary dated August 17, 2018**

The removed soil from the S1 area was transported off-site on June 27, 2018 for disposal as a hazardous waste at the Kettleman Hills Class 1 disposal facility in Kettleman City, CA.

*Evaluation of Backfill Material*

SEI collected a composite soil sample (SP-1-COMP) from the proposed backfill material that was brought to the site by AEC. The composite soil sample was collected from multiple points within the backfill stockpile and placed in a soil sleeve, sealed with Teflon-line plastic caps and placed into a cooler with blue-ice. The soil sample was over-nighted to Positive Lab Services in Los Angeles, CA in a sealed cooler with a chain-of-custody document. The soil sample was analyzed for TPH by EPA Method 8015B, for VOCs by EPA Method 8260, for CAM 17 Metals by EPA Method 6010/7071, for OCPs by EPA Method 8081 and for pH by EPA Method 9045C on a rush basis by Positive Lab Services in Los Angeles, CA.

The analytical results indicate that the backfill material is acceptable to be used on a potential school site. The results include TPH at only 2.96 mg/kg, 4,4'-DDE at 41.3 ug/kg, with no VOCs, no elevated CAM 17 Metals and a pH of 7.9.

This backfill material was utilized to replace the removed soil from the PEA sample S1 excavation area.

The highest concentrations of chemicals of potential concern reported within the Southern 80 acres were included in a human health screening evaluation within the Technical Memo dated March 6, 2019. The Southern 80-acres has an acceptable cumulative Risk ( $3.1 \times 10^{-7}$ ) and Hazard (0.58) utilizing the very low TPH screening levels suggested by the DTSC toxicologist. These values are below the level of potential concern of risk ( $1 \times 10^{-6}$ ) and the hazard level of concern (1.0).

Based on the findings of this SSI, the potential need for remedial actions and/or engineering controls within the Southern 80 acres will be assessed and incorporated, as appropriate, into a Removal Action Workplan (RAW), if warranted.

### **3.0 SSI SAMPLING ACTIVITIES AND RESULTS**

#### **3.1 Summary of Activities**

##### **3.1.1 Boring Clearance**

SEI contacted Underground Service Alert to determine if any underground utilities were present at the pre-marked boring locations. None of the borings were located in marked utility locations.



## **3.2 Soil Matrix Sampling and Analysis**

### **3.2.1 Sample Locations and Rationale**

To assess PCBs in the soil adjacent to PEA soil sample P1, SEI collected multiple step-out soil samples in this area. The DTSC also requested SVOC evaluation in the tail water sump areas, so soil sampling was conducted in the southeastern tail water sump at PEA location S3. SVOC analysis had already been conducted in the southwestern tail water sump. If elevated concentrations of concern were identified in the field or reported in the analytical results, additional step-out soil borings would have been conducted further out from the previous boring location until this area of concern was adequately defined.

#### **3.2.1.1 PEA Sample Location P1 Area**

On May 2, 2019 SEI collected soil samples at depths of 0 to 6" and 2' to 2.5' below ground surface (bgs), adjacent to PEA sample location P1 beneath a pole-mounted electrical transformer. The step-out soil borings were placed 3' away to north (P1-N), south (P1-S) and west (P1-W) of PEA sample location P1. The soil samples were collected in stainless steel sleeves per the soil sampling protocol described in Section 3.2.2. See Plate 3 for the soil boring locations.

#### **3.2.1.2 PEA Sample Location S3 Area**

On May 2, 2019 SEI collected soil samples at depths of 0 to 6" and 2' to 2.5' below ground surface (bgs), at the approximate location of PEA sample S3 at the base of the southeastern tail water sump. The soil samples were collected in stainless steel sleeves per the soil sampling protocol described in Section 3.2.2. See Plate 3 for the soil boring locations.

## **3.2.2 Sample Collection Procedures**

### **3.2.2.1 Soil Sampling**

The soil samples were collected with a clean hand auger after achieving the sampling depth. The soil samples were collected in a stainless-steel sleeve, capped with Teflon lined caps, labeled and placed in a cooler with ice. The soil type and any staining or odor was recorded.

### **3.2.2.2 Decontamination**

The soil sampling equipment (hand augers, etc.) were decontaminated between each sampling event to prevent cross-contamination. The equipment was cleaned with a brush in a mixture of Alconox (or equivalent) and water and then rinsed in clean water. The decontamination water was changed when the wash water became too turbid and/or the rinse water was not clear.

### **3.2.3 Sample Handling Procedures**

The soil samples were over-nighted to Positive Lab Service in Los Angeles, CA, along with completed chain-of-custody documents for chemical analysis. The chain-of-custody documents included the sample ID, date, time, and chemical analysis requested, along with client and project information.



### **3.2.4 Soil Matrix Analytical Procedures**

The soil samples collected for chemical analysis during this SSI were analyzed for chemicals of concern as proposed in the Technical Memo. The soil samples P1-S-3", P1-N-3" and P1-W-3" were analyzed for PCBs by EPA Method 8082. The soil sample S3-3" was analyzed for PAHs by EPA Method 8270SIM. The chemical analyses were conducted by Positive Lab Services, a State of California certified analytical laboratory utilizing low detection limits. See Table 2 for the analytical methods employed and results.

### **3.2.5 Soil Matrix Analytical Results**

#### **3.2.5.1 PAHs & PCBs**

During the SSI sampling event, a total of 3 soil samples were analyzed for PCBs by EPA Method 8082 and one sample for PAHs by EPA Method 8270SIM. The analytical results were all none detected (ND) for these constituents. See Table 2 and Appendix A for the complete SSI analytical results and reports.

### **3.3 Disposal of Investigation Derived Wastes**

The soil cuttings derived from the soil sampling events were examined for staining, odor and other indications of contamination. If no contamination was evident the soil cuttings, they were discarded at the surface. Decontamination water was examined for evidence of sheen and odor and disposed of on-site, if not visually impacted.

### **3.4 Description of Subsurface Lithology**

The soil gas borings were advance to a maximum depth of 2.5' bgs. The collected soil samples were examined by an SEI geologist or technician supervised by a State of California professional geologist in accordance with the Uniform Soil Classification System. Earth materials encountered beneath the site consisted generally of Silty Sand (SM) in the top 2.5' feet below ground surface (bgs). No staining or odor was noted in these samples.

### **3.5 Discussion of SSI Results**

The analytical results of the soil samples analyzed for PCBs and PAHs during the SSI investigation indicate that there are not any elevated concentrations of potential concern of these constituents present at the locations sampled. The PCBs concentrations previously reported at PEA sample location P1 is limited laterally to <3' and vertically <2' in depth. The PCB Aroclor – 1260 concentrations previously reported in sample P1-3" (63.9 ug/kg) are less than the EPA RSL of 240 ug/kg and therefore no mitigation is warranted in this area of the site.



## **4.0 RISK EVALUATION**

### **4.1 Pre-SSI Risk Evaluation and Endangerment Determination**

The risk and hazard evaluation for the Southern 80-acres is summarized below:

The highest concentrations of chemicals of potential concern reported in the Southern 80-acres were evaluated in a human health screening evaluation that was included in the Technical Memo dated March 6, 2019. The total cumulative risk is  $3.1 \times 10^{-7}$  and the cumulative hazard is 0.58. These values are below the level of potential concern of risk ( $1 \times 10^{-6}$ ) and the hazard level of concern (1.0).

### **4.2 Post SSI Risk Reassessment**

Based on the analytical results reported in the soil samples collected at the site during the PEA and SSI, a hazard and risk analysis was conducted to evaluate the potential total risk and hazard at the site to human receptors.

Since none of the SSI analytical results are higher than the maximum concentrations reported in the PEA investigation the risk and hazard for the Southern 80-acres of the site has not changed and is summarized below.

The highest concentrations of chemicals of potential concern reported in the Southern 80 Acres were evaluated in a human health screening evaluation that was included in the Technical Memo dated March 6, 2019. The total cumulative risk is  $3.1 \times 10^{-7}$  and the cumulative hazard is 0.58. These values are below the level of potential concern of risk ( $1 \times 10^{-6}$ ) and the hazard level of concern (1.0). This indicates that there is not an elevated risk and hazard to future occupants at the site from the on-site soil and no mitigation is warranted prior to the school being approved. See Tables 4 to 6 for the Risk and Hazard calculations for the site.

#### **4.2.1 Exposure Pathways and Media of Concern**

The exposure pathways of concern are soil pathways (ingestion and absorption through skin contact) and air pathways (dust particles inhaled during soil disturbances and vapor intrusion from subsurface contaminants in soil and water). Since groundwater will not be exposed at the surface, absorption and ingestion of groundwater was not evaluated. Soil may have residual concentrations of pesticides, petroleum hydrocarbons and metals. The release of these soil particles would be intermittent and should be considered as a threatened release not as an actual release at this site. SEI has prepared a Conceptual Site Model to show the potential exposure pathways at this site, which is included as Plate 5.



#### **4.2.3 Post SSI Risk Characterization Summary**

Based on the comparison of the on-site concentrations of arsenic and other metals with background data and the evaluation of risk and hazard for on-site OCP, PCB and TPH concentrations in soil and air exposure routes, the following is concluded:

- Based on this comparison and calculations the risk and hazard for all pathways (air and soil) at the site appears to be less than the risk and hazard levels that would indicate a threat to humans or other biota at the site by the potential pathways.

#### **4.2.4 Uncertainty Analysis**

This uncertainty analysis looks at areas of the human health screening evaluation, which may produce minor levels of uncertainty in the results of the evaluation.

This human health screening evaluation looks mainly at the transfer of contaminants from soil particles to school occupants through ingestion, absorption and dust inhalation. Some pathways that are not included in this evaluation include; transport of soil contaminants to groundwater, potential crops grown on-site and/or contaminated groundwater used to irrigate on-site crops eaten by students; contact and inhalation of chemicals in water while showering; and the drinking water pathway. At this site it is highly unlikely that crops will be grown on-site for human consumption and local water companies regulated by local authorities will supply the water to the site.

Results of the human health screening evaluation using the maximum detected concentration values indicate that chemical concentrations detected at the site do not represent a threat to human health. The frequency and duration of soil contact activities would be a significant factor affecting the potential for adverse human health impacts from the site.

This health risk evaluation was based on the application of conservative methods and assumptions in all phases of the assessment. Because exposure point concentrations were derived from fate and transport modeling, conservative assumptions and methodology were necessarily employed to eliminate the possibility of underestimating risks. This practice, although commonly used in the risk assessment process to eliminate the possibility of underestimating risk, necessarily introduces a significant level of conservatism in the conclusions derived from the assessment. Examples of some of the conservatism in this assessment include:

- It was assumed that potential receptors at the future School site will be exposed to chemicals in soil and dust 100 percent of the time while at the site. In reality, receptors at the site are not likely to be there for more than 8 hours a day, 5 days a week.
- It was assumed that chemicals of concern in the soil were all at maximum detected concentrations across the whole site. In reality, the concentrations of chemicals of concern (if present) vary throughout the site at lower concentrations.



- It was assumed that future occupants of the site will have contact with soil. However, it is known that most, if not all, of the site surface area will be occupied by buildings, asphalt or landscaped. Thus, future contact with soil will be minimal.
- Carcinogenic risks for all pathways were based on a residential exposure of 350 days per year for 26 years. A more realistic exposure scenario for a school site would be to assume an exposure frequency of 180 days per year for a duration of 4 years, representing a typical school exposure scenario.

Some other uncertainty issues include:

- SEI did not utilize EPA SW846 Method 5035A to collect soil samples for VOC analysis. This may result in lower concentration results for VOC constituents in the samples. The soil samples were sealed by Teflon-lined plastic caps and placed in a sealed cooler with ice to prevent VOC loss during transport to the analytical laboratory.

A risk assessment that relies upon conservative input values can be used as a valuable tool when risks are shown to be de minimus, as reported in this risk assessment. The reader of this risk assessment can confidently interpret the reported risk as a conservative overestimate of any site-related risks.

### **5.0 Quality Assurance Project Plan (QAPP) Implementation**

This SSI was conducted in general accordance with SEI's Technical Memo dated March 6, 2019.

Low detection limits were utilized by the analytical laboratories for all analyses conducted.

In addition, the analytical laboratories provided QA/QC results for all of the analytical testing which are attached in Appendix A.

This analytical data was reviewed for accuracy and completeness.

Based on SEI's review, the analytical testing was conducted in compliance with the QA/QC Plan and the SSI Technical Memo.

### **6.0 Health & Safety Plan Implementation**

This SSI was conducted in accordance a Site-Specific Health & Safety Plan. This included conducting a tailgate safety meeting with the on-site personnel prior to the beginning of the sampling events. During this tailgate safety meeting, the Health & Safety Plan was discussed and a map with directions to the nearest hospital was shown to all personnel. The Health & Safety Plan was signed by all on-site personnel, and no safety concerns occurred during the sampling events.



## **7.0 Field Variances**

The following variances to the approved SSI Technical Memo were conducted during the implementation of the SSI:

- A duplicate soil sample was not collected and analyzed for PCBs as proposed in the Technical Memo. This was an over-sight, that should not impact the integrity of the results.

## **8.0 CONCLUSIONS AND RECOMMENDATIONS**

### **8.1 Conclusions**

Based on field observations, analytical testing results and the risk and hazard evaluations the following conclusions are presented:

Based on the collection and analysis of soil samples, historical review, risk and hazard analysis, and visual observations by field personnel the following is concluded;

- 1) The Southern 80-acres was utilized for agricultural purposes for 50+ years with the application of pesticides and herbicides during this time period.
- 2) Based on the fate and transport properties of OCPs and metals it is highly unlikely that concentrations of potential concern of these constituents would migrate to depths below 2.5' in the soil (silty sand) encountered at this site. No additional sampling and analysis below a depth of 2.5' is warranted in the agricultural field areas to achieve unrestricted Site closure.
- 3) Soil and air are the likely potential pathways for any contaminants at the site. Groundwater is not considered a potential pathway because of the depth to groundwater below the ground surface (200'+). In addition, all water utilized at the site will be from public water sources.
- 4) Numerous soil samples (discrete and sub samples for composites) were collected within the Southern 80-acres for chemical analysis of OCPs and arsenic and some soil samples for TPH, VOCs, PAHs, pH and for CAM 17 metals by appropriate EPA Methods. The results of this chemical analysis indicate that only minor concentrations of the OCPs 4,4'-DDE and 4,4'-DDT are present in the shallow soil well below the EPA RSLs for these constituents. The results of on-site arsenic concentrations ranged from 2.09 mg/kg to 9.55 mg/kg in the Southern 80 acres in the soil samples analyzed.
- 5) Elevated total TPH was reported in PEA soil sample S1-3" (151,030 mg/kg) in the eastern end of the southwestern tail water sump and this soil sample also failed a bioassay test indicating a State of California hazardous material. This highly malodorous material was successfully removed and disposed of off-site per State and Federal regulations. Minor TPH concentrations (up to 99.3 mg/kg) were reported in the confirmation soil samples from this



excavation. No SVOC's, VOC's or other metals of concern were reported in any of the confirmation soil samples from this excavation. No additional assessment or mitigation is warranted in this area.

- 6) A minor concentration of the PCB arcoclor-1260 (69.3 ug/kg) was reported in PEA sample P1-3" beneath a pole-mounted electrical transformer adjacent to the southwestern tail water sump. The deeper sample P1-2' and the 4 step-out soil samples P1-E-3", P1-S-3", P1-N-3" and P1-W-3" all had no PCBs reported. This indicates a very limited area with PCBs at a concentration that is less than the EPA RSL of 240 ug/kg. No additional assessment or mitigation is warranted in this area.
- 7) The highest OCPs reported along with the TPH and PCB concentrations in soil samples S1-OX-N-1' and P1-3", respectively, were included in the human health screening evaluation. The results were a total cumulative risk of  $3.1 \times 10^{-7}$  and a total cumulative hazard of 0.58 for all pathways. These results are less than a cumulative risk of  $1 \times 10^{-6}$  and less than a cumulative hazard of 1.0 to humans or other biota at the site by potential pathways. This indicates that there is not an elevated risk and hazard to future occupants at the site from the soil at the site.

## **8.2 Recommendations**

SEI recommends the following:

- A partial site approval is requested for the Southern 80-acres of the 120-acre proposed Southwest High School site with no additional assessment or mitigation required for this portion of the site.
- An SSI Workplan should be prepared for the Northwestern 40-acres of the Proposed Southwest High School Site to assess data gaps in the PEA Report that the DTSC has commented on.
- Any proposed fill material for the site should be sampled and analyzed for potential constituents of concern in accordance with the DTSC's "Information Advisory Clean Imported Fill Material", dated October 2001.
- If during field investigation activities or construction activities new areas of potential environmental concern are discovered at the site work will cease in these areas and the DTSC will be notified. SEI will discuss these areas with the DTSC to determine the appropriate actions to be taken to assess and/or remediate these new potential areas of concern.



## **9.0 LIMITATIONS**

This report was prepared for the exclusive use of the Kern High School District as it relates to the property described. The discussion and conclusions presented in this report are based on:

- The test borings performed at this site.
- The observations of field personnel.
- The results of laboratory tests performed by Positive Lab Service of Los Angeles, CA.
- Our understanding of the regulations of the California Regional Water Quality Control Board, the DTSC and the EPA.

Possible variations in the soil or groundwater conditions, which may exist beyond the points explored in this investigation, might effect the validity of this report, unless those variations or conditions come to our attention and are reviewed and assimilated into the conclusions and recommendations of this report. Also, changes in the hydrologic conditions found could occur with time due to variations in rainfall, temperature, regional water usage, or other factors, any of which could effect this report.

The services performed by SEI have been conducted in a manner consistent with the levels of care and skill ordinarily exercised by professionals currently practicing under similar conditions in California. The absence of contamination on or beneath the property cannot be guaranteed by this report. SEI is not responsible for any contamination or hazardous material found on the property. No other warranty, expressed or implied, is made.

## **10.0 REFERENCES**

1. DTSC, Final DTSC PEA Guidance Manual dated October 2015.
2. DTSC Interim Guidance for Sampling Agricultural Land (Third Revision) dated August 7, 2008.
3. DTSC, Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from termiticides and Polychlorinated Biphenyls from Electrical Transformers (revised June 9, 2006).
4. DTSC, Arsenic Strategies, Determination of Arsenic Remediation Development of Arsenic Cleanup Goals for Proposed and Existing School Sites, March 21, 2007.
5. DTSC, CA EPA, LA & SF RWQCB, Final Advisory Active Soil Gas Investigations dated July 2015.
6. DTSC, HUMAN AND ECOLOGICAL RISK OFFICE (HERO), HHRA Note Number 3, June 2018.



7. DTSC, HUMAN AND ECOLOGICAL RISK OFFICE (HERO), HHRA Note Number 2, May 2009.
8. Office of Emergency and Remedial Response (OERR) Directive 9345.3-02 dated May 1991.
9. USGS, Reported Historic Asbestos Mines, Historic Asbestos Prospects, and other Natural Occurrences of Asbestos in California, Map Sheet 59.
10. Wilson, S.A. et al, "Analysis of Soil Samples from the San Joaquin Valley of California", United States Geological Survey (USGS), Open File Report 90-214, undated.
11. EPA, Regional Screening Level (RSL) Resident Soil Table (TR=1E-6, HQ=1) November 2018.
12. Soils Engineering, Inc., PEA Equivalent Report, Proposed Southwest High School, Southeast of Wible Rd. & Engle Rd., California, April 24, 2018.
13. Addendum No. 1 to PEA Equivalent Report, Proposed High School Site, Southeast of Wible Rd. & Engle Rd., California, June 6, 2018.
14. Addendum No. 2 to PEA Equivalent Report, Proposed High School Site, Southeast of Wible Rd. & Engle Rd., California, August 17, 2018.
15. Soils Engineering, Inc., "Technical Memo – Additional Assessment of Southern 80-Acres", Proposed Southwest High School, Southeast of Wible Rd. & Engle Rd., California, March 6, 2019.



**TABLE 1**  
**PEA Soil Sample Analytical Results For Organo-Chlorine Pesticides (OCPs) & Metals in Southern 80 Acres**  
**Proposed High School Site - Kern High School District**  
**SE of Engle Road & Wible Road, Bakersfield, CA**

[illegible]

Note : Results in ppb unless otherwise noted, ppb = parts per billion (ug/kg), ppm= parts per million (mg/kg), ND = None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit For Reporting Purposes. Bold = concentration > RSLs, RSLs = EPA Regional Screening Levels November 2018, \* = compare arsenic concentrations to ambient background. \*\* = HHRA Note #3 June 2018 with DTSC Recommended Screening Levels (SLs). TPH = Total Petroleum Hydrocarbons, BTEX = Benzene, Toluene, Ethylbenzene & Xylenes, VOCs - Volatile Organic Compounds



TABLE 2																		
PEA & SSI Soil Sample Analytical Results for Southern 80 Acres - Tail Water Sump Areas of Potential Concern																		
Proposed High School Site																		
SE of Engle Road & Wible Road, Bakersfield, CA																		
CONSTITUENTS			ON-SITE DISCRETE SOIL SAMPLES IN TAILWATER SUMP AREAS															
	PQL (mg/kg)	DTSC SLs or EPA RSLs (mg/kg)	Tail Water Sump Transformer Areas									Southwest Tail Water Sump (Note: Area S1 Removed, See Table 3 For Confirmation Soil Samples)					Southeast Tail Water Sump	
			Southwestern			S Mid			SE									
Metals (EPA 6010)	mg/kg	mg/kg	P1-3"	P1-2'	P1-E-3"	P1-S-3"	P1-W-3"	P1-N-3"	P2-3"	P3-3"	S1-3"	S1-2'	S1-4'	S1-W-3"	S1-W-2'	S3-3"	S3-2'	
Antimony	2	31	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	<2	NA	NA	<2	NA	
Arsenic	2	0.11*	NA	NA	NA	NA	NA	NA	NA	NA	<2	2.08	5.09	NA	NA	6.58	NA	
Barium	1	15000	NA	NA	NA	NA	NA	NA	NA	NA	4.18	62.5	151	NA	NA	178	NA	
Beryllium	1	15	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	NA	NA	<1	NA	
Cadmium	1	5.2**	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	NA	NA	<1	NA	
Chromium	1	36000	NA	NA	NA	NA	NA	NA	NA	NA	<1	8.17	16.6	NA	NA	23	NA	
Cobalt	1	2.3	NA	NA	NA	NA	NA	NA	NA	NA	<1	4.90	10.5	NA	NA	13	NA	
Copper	1	3100	NA	NA	NA	NA	NA	NA	NA	NA	1.94	9.43	15.5	NA	NA	28.3	NA	
Lead	1	80**	NA	NA	NA	NA	NA	NA	NA	NA	<1	7.18	5.82	NA	NA	21	NA	
Molybdenum	1	39	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	NA	NA	<1	NA	
Nickel	1	490	NA	NA	NA	NA	NA	NA	NA	NA	1.53	4.89	10.2	NA	NA	13.7	NA	
Selenium	2	39	NA	NA	NA	NA	NA	NA	NA	NA	2.56	<2	<2	NA	NA	<2	NA	
Silver	1	39	NA	NA	NA	NA	NA	NA	NA	NA	<1	<1	<1	NA	NA	<1	NA	
Thallium	2	0.078	NA	NA	NA	NA	NA	NA	NA	NA	<2	<2	<2	NA	NA	<2	NA	
Vanadium	1	39	NA	NA	NA	NA	NA	NA	NA	NA	1.08	21.5	42.1	NA	NA	60.5	NA	
Zinc	5	2300	NA	NA	NA	NA	NA	NA	NA	NA	57.1	37.1	60.2	NA	NA	115	NA	
Mercury (7471A)	0.1	1*	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	<0.1	NA	
Ph (EPA 9045C)	0 to 14	<2.5 or >12	NA	NA	NA	NA	NA	NA	NA	NA	6.3	8.9	8.7	NA	NA	5.6	NA	
TPH (EPA 8015B)	mg/kg	mg/kg																
C9-C22	2.5	96	NA	NA	NA	NA	NA	NA	NA	NA	97400	9.65	3.18	7.43	<2.5	8.88	3.44	
C23-C32	100	2500	NA	NA	NA	NA	NA	NA	NA	NA	51600	<100	<100	<100	<100	<100	<100	
C33-C36	100	2500	NA	NA	NA	NA	NA	NA	NA	NA	2030	<100	<100	<100	<100	<100	<100	
TPH Aliphatic & Aromatic Breakdown	mg/kg	mg/kg																
C5-C8 Aliphatic	0.5	520	NA	NA	NA	NA	NA	NA	NA	NA	12.7	NA	NA	NA	NA	NA	NA	
C6-C8 Aromatic	0.1	82	NA	NA	NA	NA	NA	NA	NA	NA	7.75	NA	NA	NA	NA	NA	NA	
C9-C16 Aromatic	2.5	110	NA	NA	NA	NA	NA	NA	NA	NA	7.15	NA	NA	NA	NA	NA	NA	
C17-C32 Aromatic	100	2500	NA	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA	NA	NA	NA	NA	
C9-C18 Aliphatic	2.5	96	NA	NA	NA	NA	NA	NA	NA	NA	3.84	NA	NA	NA	NA	NA	NA	
C19-C35 Aliphatic	100	11000**	NA	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA	NA	NA	NA	NA	
BTEX (8021B)	ug/kg	ug/kg									Bioassay- Failed							
Benzene	1	330**	NA	NA	NA	NA	NA	NA	NA	NA	8.43	<1	<1	NA	NA	<1	NA	
Toluene	1	110000**	NA	NA	NA	NA	NA	NA	NA	NA	7540	12.9	1.39	NA	NA	<1	NA	
Ethylbenzene	1	5800	NA	NA	NA	NA	NA	NA	NA	NA	12	<1	<1	NA	NA	<1	NA	
Xylenes	2	580000	NA	NA	NA	NA	NA	NA	NA	NA	13.8	<2	<2	NA	NA	<2	NA	
SVOCs (8270C)	ug/kg	ug/kg																
N-Nitrosodimethylamine (NDMA)	200	2	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Pyridine	200	78000	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Aniline	500	95000	NA	NA	NA	NA	NA	NA	NA	NA	<30000	<500	NA	<500	NA	NA	NA	
Bis(2-chloroethyl)ether	200	23	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Phenol	200	19000000	NA	NA	NA	NA	NA	NA	NA	NA	56600	<200	NA	<200	NA	NA	NA	
2-Chlorophenol	200	390000	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
1,3-Dichlorobenzene	200		NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
1,4-Dichlorobenzene	200	2600	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
1,2-Dichlorobenzene	200	1800000	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Benzyl alcohol	200	6300000	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Bis(2-chloroisopropyl)ether	200		NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
2-Methylphenol	200		NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Hexachloroethane	200	1800	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
N-Nitrosodi-n-propylamine	200	78	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
4-Methylphenol	200		NA	NA	NA	NA	NA	NA	NA	NA	179000	<200	NA	<200	NA	NA	NA	
Nitrobenzene	200	5100	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Isophorone	200	570000	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
2-Nitrophenol	200		NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Bis(2-chloroethoxy)methane	200	190000	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Benzoic acid	2000	2.5 x10 <sup>8</sup>	NA	NA	NA	NA	NA	NA	NA	NA	<120000	<2000	NA	<2000	NA	NA	NA	
1,2,4-Trichlorobenzene	200	24000	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Naphthalene	200	3800	NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	<15	NA	
4-Chloroaniline	200		NA	NA	NA	NA	NA	NA	NA	NA	<12000	<200	NA	<200	NA	NA	NA	
Hexachlorobutadiene	200	1200	NA	NA	NA	NA	NA											



**TABLE 3**  
**Confirmation Soil Sample Analytical Results for Remedial Excavation S1 Area**  
**Proposed High School Site - Southern 80 Acres**  
**SE of Engle Road & Wible Road, Bakersfield, CA**

CONSTITUENTS			ON-SITE DISCRETE SOIL SAMPLES						Composite
			Southwest Tail Water Sump Excavation Discrete Confirmation Soil Samples						Backfill Material
Metals (EPA 6010)	PQL (mg/kg)	DTSC SLs or EPA RSLs (mg/kg)	S1-OX-N- 1'	S1-OX-S-6"	S1-OX-BW- 1'	S1-OX-BE- 1'	S1-OX-W- 6"	S1-OX-E- 6"	SP-1-COMP
Antimony	2	31	NA	NA	NA	NA	NA	NA	<2
Arsenic	2	0.11*	NA	NA	NA	NA	NA	NA	5.03
Barium	1	15000	NA	NA	NA	NA	NA	NA	88.6
Beryllium	1	15	NA	NA	NA	NA	NA	NA	<1
Cadmium	1	5.2**	NA	NA	NA	NA	NA	NA	<1
Chromium	1	36000	NA	NA	NA	NA	NA	NA	13.6
Cobalt	1	2.3	NA	NA	NA	NA	NA	NA	5.94
Copper	1	3100	NA	NA	NA	NA	NA	NA	13.6
Lead	1	80**	NA	NA	NA	NA	NA	NA	3.85
Molybdenum	1	39	NA	NA	NA	NA	NA	NA	<1
Nickel	1	490	NA	NA	NA	NA	NA	NA	9.07
Selenium	2	39	NA	NA	NA	NA	NA	NA	<2
Silver	1	39	NA	NA	NA	NA	NA	NA	<1
Thallium	2	0.078	NA	NA	NA	NA	NA	NA	<2
Vanadium	1	39	NA	NA	NA	NA	NA	NA	<1
Zinc	5	2300	NA	NA	NA	NA	NA	NA	<5
Mercury (7471A)	0.1	1*	NA	NA	NA	NA	NA	NA	<0.1
TPH (EPA 8015B)	PQL (mg/kg)	SLs or RSLs (mg/kg)							
C5-C12	0.5	82	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
C13-C22	2.5	96	99.3	8.91	ND	14.1	26.4	3.33	2.96
C23-C32	100	2500	<100	<100	<100	<100	<100	<100	<100
C33-C36	100	2500	<100	<100	<100	<100	<100	<100	<100
VOCs (8260)	PQL (ug/kg)	SLs or RSLs (ug/kg)							
Benzene	2	330**	<2	<2	<2	<2	<2	<2	<2
Toluene	2	1100000**	<2	<2	<2	<2	<2	<2	<2
Ethylbenzene	2	5800	<2	<2	<2	<2	<2	<2	<2
Xylenes	2	580000	<2	<2	<2	<2	<2	<2	<2
Dichlorodifluoromethane	4		<4	<4	<4	<4	<4	<4	<4
Methylene chloride	20	1900**	<20	<20	<20	<20	<20	<20	<20
trans-1,2-Dichloroethene	4		<4	<4	<4	<4	<4	<4	<4
Methyl tert-butyl ether (MTBE)	4	47000	<4	<4	<4	<4	<4	<4	<4
1,1-Dichloroethane	4	3600	<4	<4	<4	<4	<4	<4	<4
Vinyl acetate	40	910000	<40	<40	<40	<40	<40	<40	<40
2,2-Dichloropropane	4		<4	<4	<4	<4	<4	<4	<4
Chloromethane	4	110000	<4	<4	<4	<4	<4	<4	<4
cis-1,2-Dichloroethene	4	19000	<4	<4	<4	<4	<4	<4	<4
2-Butanone (MEK)	40	27000000	<40	<40	<40	<40	<40	<40	<40
Bromochloromethane	4	150000	<4	<4	<4	<4	<4	<4	<4
Chloroform	4	32	<4	<4	<4	<4	<4	<4	<4
1,1,1-Trichloroethane	4	1700000**	<4	<4	<4	<4	<4	<4	<4
Carbon tetrachloride	4	9.9**	<4	<4	<4	<4	<4	<4	<4
1,1-Dichloropropene	4		<4	<4	<4	<4	<4	<4	<4
1,2-Dichloroethane	4	46	<4	<4	<4	<4	<4	<4	<4
Vinyl chloride (Chloroethylene)	4	9.5**	<4	<4	<4	<4	<4	<4	<4
Trichloroethene (TCE)	4	94	<4	<4	<4	<4	<4	<4	<4
1,2-Dichloropropane	4	2500	<4	<4	<4	<4	<4	<4	<4
Dibromomethane	4		<4	<4	<4	<4	<4	<4	<4
1,4-Dioxane	80	5300	<80	<80	<80	<80	<80	<80	<80
Bromodichloromethane	4	30**	<4	<4	<4	<4	<4	<4	<4
2-Chloroethyl vinyl ether	40		<40	<40	<40	<40	<40	<40	<40
cis-1,3-Dichloropropene	4	58	<4	<4	<4	<4	<4	<4	<4
4-Methyl-2-pentanone (MIBK)	40		<40	<40	<40	<40	<40	<40	<40
Bromomethane	4	24000	<4	<4	<4	<4	<4	<4	<4
trans-1,3-Dichloropropene	4	1800	<4	<4	<4	<4	<4	<4	<4
1,1,2-Trichloroethane	4	1100	<4	<4	<4	<4	<4	<4	<4
Tetrachloroethene (PCE)	4	3800	<4	<4	<4	<4	<4	<4	<4
1,3-Dichloropropane	4	420000	<4	<4	<4	<4	<4	<4	<4
2-Hexanone (MBK)	40	200000	<40	<40	<40	<40	<40	<40	<40
Dibromochloromethane	4	8300	<4	<4	<4	<4	<4	<4	<4
1,2-Dibromoethane (EDB)	4	360000	<4	<4	<4	<4	<4	<4	<4
Chlorobenzene	4	280000	<4	<4	<4	<4	<4	<4	<4
1,1,1,2-Tetrachloroethane	4	2000**	<4	<4	<4	<4	<4	<4	<4
Chloroethane	4		<4	<4	<4	<4	<4	<4	<4
Styrene	4	6000000	<4	<4	<4	<4	<4	<4	<4
Bromoform (Tribromomethane)	4	20**	<4	<4	<4	<4	<4	<4	<4
Isopropylbenzene (Cumene)	4	1900000	<4	<4	<4	<4	<4	<4	<4
Bromobenzene	4	2900000	<4	<4	<4	<4	<4	<4	<4
1,1,2,2-Tetrachloroethane	4	61**	<4	<4	<4	<4	<4	<4	<4
1,2,3-Trichloropropane	4	1.5	<4	<4	<4	<4	<4	<4	<4
n-Propylbenzene	4	3800000	<4	<4	<4	<4	<4	<4	<4
Trichlorofluoromethane (FC-11)	4	1200000**	<4	<4	<4	<4	<4	<4	<4
2-Chlorotoluene	4	480000**	<4	<4	<4	<4	<4	<4	<4
4-Chlorotoluene	4	440000**	<4	<4	<4	<4	<4	<4	<4
1,3,5-Trimethylbenzene	4	270000	<4	<4	<4	<4	<4	<4	<4
tert-Butylbenzene	4	2200000**	<4	<4	<4	<4	<4	<4	<4
1,2,4-Trimethylbenzene	4	300000	<4	<4	<4	<4	<4	<4	<4
sec-Butylbenzene	4	2200000**	<4	<4	<4	<4	<4	<4	<4
1,3-Dichlorobenzene	4		<4	<4	<4	<4	<4	<4	<4
4-Isopropyltoluene	4		<4	<4	<4	<4	<4	<4	<4
1,4-Dichlorobenzene	4	2600	<4	<4	<4	<4	<4	<4	<4
1,2-Dichlorobenzene	4	18000000	<4	<4	<4	<4	<4	<4	<4
Acetone	80	61000000	<80	<80	<80	<80	<80	<80	<80
n-Butylbenzene	4	3900000	<4	<4	<4	<4	<4	<4	<4
1,2-Dibromo-3-chloropropane	4	5.3	<4	<4	<4	<4	<4	<4	<4
1,2,4-Trichlorobenzene	4	39**	<4	<4	<4	<4	<4	<4	<4
Hexachlorobutadiene	4	13**	<4	<4	<4	<4	<4	<4	<4
Naphthalene	4	24000	<4	<4	<4	<4	<4	<4	<4
1,2,3-Trichlorobenzene	4	3300	<4	<4	<4	<4	<4	<4	<4
Carbon disulfide	40	770000	<40	<40	<40	<40	<40	<40	<40
1,1-Dichloroethene	4	73000**	<4	<4	<4	<4	<4	<4	<4

Note : Results in ppm unless otherwise noted, ppb = parts per billion (ug/kg), ppm= parts per million (mg/kg), ND = None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit For Reporting Purposes. **Bold** = concentration > RSLs, RSLs = EPA Regional Screening Levels (11/2018), \* = compare arsenic concentrations to ambient background. \*\* = HHRA Note #3 (6/2018) with DTSC Recommended Screening Levels (SLs). TPH = Total Petroleum Hydrocarbons, BTEX = Benzene, Toluene, Ethylbenzene & Xylenes, VOCs - Volatile Organic Compounds, SVOCs - Semi-volatile organics, OCHs = Organochlorine Herbicides, PCBs = Polychlorinated Bi-phenyls



<div>TABLE 3 (Continued)</div> <div>Confirmation Soil Sample Analytical Results for Remedial Excavation S1 Area</div> <div>Proposed High School Site - Southern 80 Acres</div> <div>SE of Engle Road &amp; Wible Road, Bakersfield, CA</div>									
CONSTITUENTS			ON-SITE DISCRETE SOIL SAMPLES						Composite
			Southwest Tail Water Sump Excavation S1 Discrete Confirmation Soil Samples						Backfill Material
SVOCs (8270C)	ug/kg	ug/kg	S1-OX-N-1'	S1-OX-S-6"	S1-OX-BW-1'	S1-OX-BE-1'	S1-OX-W-6"	S1-OX-E-6"	SP-1-COMP
N-Nitrosodlmethylamine (NDMA)	200	2	<200	<200	<200	<200	<200	<200	NA
Pyridine	200	78000	<200	<200	<200	<200	<200	<200	NA
Aniline	500	95000	<500	<500	<500	<500	<500	<500	NA
Bis(2-chloroethyl)ether	200	23	<200	<200	<200	<200	<200	<200	NA
Phenol	200	19000000	<200	<200	<200	<200	<200	<200	NA
2-Chlorophenol	200	390000	<200	<200	<200	<200	<200	<200	NA
1,3-Dichlorobenzene	200		<200	<200	<200	<200	<200	<200	NA
1,4-Dichlorobenzene	200	2600	<200	<200	<200	<200	<200	<200	NA
1,2-Dichlorobenzene	200	1800000	<200	<200	<200	<200	<200	<200	NA
Benzyl alcohol	200	6300000	<200	<200	<200	<200	<200	<200	NA
Bis(2-chloroisopropyl)ether	200		<200	<200	<200	<200	<200	<200	NA
2-Methylphenol	200		<200	<200	<200	<200	<200	<200	NA
Hexachloroethane	200	1800	<200	<200	<200	<200	<200	<200	NA
N-Nltrosodi-n-propylamine	200	78	<200	<200	<200	<200	<200	<200	NA
4-Methylphenol	200		<200	<200	<200	<200	<200	<200	NA
Nitrobenzene	200	5100	<200	<200	<200	<200	<200	<200	NA
Isophorone	200	570000	<200	<200	<200	<200	<200	<200	NA
2-Nitrophenol	200		<200	<200	<200	<200	<200	<200	NA
Bis(2-chloroethoxy)methane	200	190000	<200	<200	<200	<200	<200	<200	NA
Benzoic acid	2000	2.5 x10 <sup>8</sup>	<2000	<2000	<2000	<2000	<2000	<2000	NA
1,2,4-Trichlorobenzene	200	24000	<200	<200	<200	<200	<200	<200	NA
Naphthalene	200	3800	<200	<200	<200	<200	<200	<200	NA
4-Chloroaniline	200		<200	<200	<200	<200	<200	<200	NA
Hexachlorobutadiene	200	1200	<200	<200	<200	<200	<200	<200	NA
4-Chloro-3-methylphenol	200		<200	<200	<200	<200	<200	<200	NA
2-Methylnaphthanlene	200	240000	<200	<200	<200	<200	<200	<200	NA
2,6-Dichlorophenol	200		<200	<200	<200	<200	<200	<200	NA
Hexachlorocyclopentadiene	200	1800	<200	<200	<200	<200	<200	<200	NA
2,4,6-Trichlorophenol	200	49000	<200	<200	<200	<200	<200	<200	NA
2,4,5-Trichlorophenol	200	630000	<200	<200	<200	<200	<200	<200	NA
2-Chloronaphthalene	200		<200	<200	<200	<200	<200	<200	NA
2-Nitroaniline	200	630000	<200	<200	<200	<200	<200	<200	NA
Acenaphthylene	200		<200	<200	<200	<200	<200	<200	NA
Dimethyl phthalate	100		<100	<100	<100	<100	<100	<100	NA
2,6-Dinitrotoluene	200	36000	<200	<200	<200	<200	<200	<200	NA
Acenaphthene	200	3600000	<200	<200	<200	<200	<200	<200	NA
3-Nitroaniline	200		<200	<200	<200	<200	<200	<200	NA
Dibenzofuran	200		<200	<200	<200	<200	<200	<200	NA
2,4-Dichlorophenol	200	190000	<200	<200	<200	<200	<200	<200	NA
2,4-Dinitrophenol	1000	130000	<1000	<1000	<1000	<1000	<1000	<1000	NA
2,4-Dinitrotoluene	200	36000	<200	<200	<200	<200	<200	<200	NA
4-Nitrophenol	200		<200	<200	<200	<200	<200	<200	NA
Fluorene	200	2400000	<200	<200	<200	<200	<200	<200	NA
4-Chlorophenyl phenyl ether	200		<200	<200	<200	<200	<200	<200	NA
Dlethyl phthalate	100	51000000	<100	<100	<100	<100	<100	<100	NA
4-Nitroaniline	200	27000	<200	<200	<200	<200	<200	<200	NA
4,6-Dinitro-2-methylphenol	500		<500	<500	<500	<500	<500	<500	NA
N-Nitrosodiphenylamine	200	110000	<200	<200	<200	<200	<200	<200	NA
1,2-Diphenylhydrazine as Azobenzene	200		<200	<200	<200	<200	<200	<200	NA
4-Bromophenyl phenyl ether	200		<200	<200	<200	<200	<200	<200	NA
Hexachlorobenzene	200	210	<200	<200	<200	<200	<200	<200	NA
Pentachlorophenol	200	1000	<200	<200	<200	<200	<200	<200	NA
Phenanthrene	200		<200	<200	<200	<200	<200	<200	NA
Anthracene	200	18000000	<200	<200	<200	<200	<200	<200	NA
Di-n-butyl phthalate	100		<200	<200	<200	<200	<200	<200	NA
Fluoranthene	200	2400000	<200	<200	<200	<200	<200	<200	NA
Benzidine	1000	0.53	<1000	<1000	<1000	<1000	<1000	<1000	NA
Pyrene	200	1800000	<200	<200	<200	<200	<200	<200	NA
Butyl benzyl phthalate	100		<100	<100	<100	<100	<100	<100	NA
3-3'-Dichlorobenzidine	1000	1200	<1000	<1000	<1000	<1000	<1000	<1000	NA
Benzo(a)anthracene	200	1100	<200	<200	<200	<200	<200	<200	NA
Chrysene	200	110000	<200	<200	<200	<200	<200	<200	NA
Bis(2-ethylhexyl)phthalate	200		<200	<200	<200	<200	<200	<200	NA
Di-n-octyl phthalate	100		<100	<100	<100	<100	<100	<100	NA
Benzo(b)fluroanthene	200	1100	<200	<200	<200	<200	<200	<200	NA
Benzo(k)fluoranthene	200	11000	<200	<200	<200	<200	<200	<200	NA
Benzo(a)pyrene (3,4-Benzopyrene)	100	110	<100	<100	<100	<100	<100	<100	NA
Indeno(1,2,3-cd)pyrene	200	1100	<200	<200	<200	<200	<200	<200	NA
Dibenzo(a,h)anthracene	200	110	<200	<200	<200	<200	<200	<200	NA
Benzo(ghi)perylene	200		<200	<200	<200	<200	<200	<200	NA

Note : Results in ppm unless otherwise noted, ppb = parts per billion (ug/kg), ppm= parts per million (mg/kg), ND = None Detected, NA = Not Analyzed, PQL = Practical Quantitation Limit For Reporting Purposes. **Bold** = concentration > RSLs, RSLs = EPA Regional Screening Levels (11/2018), \* = compare arsenic concentrations to ambient background. \*\* = HHRA Note #3 (6/2018) with DTSC Recommended Screening Levels (SLs). TPH = Total Petroleum Hydrocarbons, BTEX = Benzene, Toluene, Ethylbenzene & Xylenes, VOCs - Volatile Organic Compounds, SVOCs - Semi-volatile organics, OCHs = Organochlorine Herbicides, PCBs = Polychlorinated Bi-phenyls



TABLE 4

Risk<sub>soil</sub> and Hazard<sub>soil</sub> Calculations - Post Remedial

Southern 80 Acres - Potential High School, SE of Wible Rd. &amp; Engle Rd., in Bakersfield, CA

Chemical of Concern (COC)	EPA RSLs Residential Soils (mg/kg) or DTSC Mod. RSLs	HHRA Note #3 Residential Soils (mg/kg)	SF <sub>o</sub>	C <sub>s</sub>	CONSTANT 0.00000144	CONSTANT 0.00000462	ABS	Risk <sub>soil</sub>	RfDo	CONSTANT 0.0000128	CONSTANT 0.000037	Hazard <sub>soil</sub>
Arsenic	0.11	Use DTSC SL	1.50	9.55	0.00000144	0.00000462	0.03	NA	3.0E-04	0.0000128	3.7E-05	NA
Lead	80*	Use DTSC SL	NA	21	0.00000144	0.00000462		NA	3.0E-04	0.0000128	3.7E-05	NA
4,4'-DDD	1.9	Use EPA	0.34	<0.008	0.00000144	0.00000462	0.1	NA	5.0E-04	0.0000128	3.7E-05	NA
4,4'-DDE	2	Use EPA	0.34	0.0413	0.00000144	0.00000462	0.1	2.7E-08	5.0E-04	0.0000128	3.7E-05	0.00136
4,4'-DDT	1.9	Use EPA	0.34	0.0332	0.00000144	0.00000462	0.1	2.1E-08	5.0E-04	0.0000128	3.7E-05	0.00110
TPH C5-C8 Aliphatic HC	520	Use EPA	NA	<0.5	0.00000144	0.00000462	0.1	NA	1.0E-02	0.0000128	3.7E-05	NA
TPH C6-C8 Aromatic HC	82	Use EPA	NA	<0.5	0.00000144	0.00000462	0.1	NA	4.0E-03	0.0000128	3.7E-05	NA
TPH C9-C16 Aromatic HC	110	Use EPA	NA	99.3	0.00000144	0.00000462	0.1	NA	4.0E-03	0.0000128	3.7E-05	0.40961
TPH C9-C18 Aliphatic HC	96	Use EPA	NA	<b>99.3</b>	0.00000144	0.00000462	0.1	NA	1.0E-02	0.0000128	3.7E-05	0.16385
TPH C17-C32 Aromatic HC	2500	Use EPA	NA	<100	0.00000144	0.00000462	0.1	NA	4.0E-02	0.0000128	3.7E-05	NA
TPH C19-C35 Aliphatic HC	11000*	Use DTSC SL	NA	<100	0.00000144	0.00000462	0.1	NA	3.0E+00	0.0000128	3.7E-05	NA
Aroclor - 1260	0.24	Use EPA	2.00	0.0639	0.00000144	0.00000462	0.14	2.667E-07	NA	0.0000128	3.7E-05	NA
<b>TOTALS</b>								<b>3.1E-07</b>				<b>0.576</b>

Notes: C<sub>s</sub> = Concentration in soil in ppm, ppm = parts per million (mg/kg), SF<sub>o</sub> = Oral Cancer Slope Factor (mg/kg-day)<sup>-1</sup>, ABS = Absorption Fraction,RfDo = Oral Reference Dose (mg/kg-day), NA = Data Not Available, Risk<sub>soil</sub> = (SF<sub>o</sub> x C<sub>s</sub> x (1.44 x 10<sup>-6</sup>)) + (SF<sub>o</sub> x C<sub>s</sub> x (4.62 x 10<sup>-6</sup>) x ABS), **Bold** = Elevated ResultHazard<sub>soil</sub> = ((C<sub>s</sub>/RfDo) x (1.28 x 10<sup>-5</sup>)) + ((C<sub>s</sub>/RfDo) x (3.7 x 10<sup>-5</sup>) x ABS), Note utilizing ABS for Xylenes for Benzene. \*HHRA = Human Health Risk Assessment Note #3 June 2018, RSL = EPA Regional Screening Levels 11-2018



**TABLE 5**  
**Risk<sub>air</sub> and Hazard<sub>air</sub> Calculations - Post Remedial**  
**Southern 80 Acres - Potential High School, SE of Wible Rd. & Engle Rd., in Bakersfield, CA**

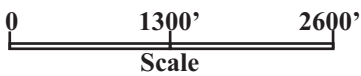
Constituent	EPA RSL's (ug/m3)	HHRA Indoor Air Residential (ug/m3)	IUR	C <sub>s</sub>	CONSTANT 0.356	C <sub>a</sub>	CONSTANT 1.36E6	Risk <sub>a</sub>	RfC	CONSTANT 0.000959	Hazard <sub>a</sub>
4,4'-DDD	0.029	Use EPA	9.70E-05	<0.008	0.356	NA	1.36E+06	NA	NA	0.000959	NA
4,4'-DDE	0.029	Use EPA	9.70E-05	0.0413	0.356	3.0E-08	1.36E+06	1.0E-12	NA	0.000959	NA
4,4'-DDT	0.029	Use EPA	9.70E-05	0.0332	0.356	2.4E-08	1.36E+06	8.4E-13	NA	0.000959	NA
TPH C5-C8 Aliphatic HC	630	Use EPA	NA	<0.5	0.356	NA	1.36E+06	NA	6.00E-01	0.000959	NA
TPH C6-C8 Aromatic HC	31	Use EPA	NA	<0.5	0.356	NA	1.36E+06	NA	3.00E-02	0.000959	NA
TPH C9-C16 Aromatic HC	3.1	Use EPA	NA	99.3	0.356	7.3E-05	1.36E+06	NA	3.00E-03	0.000959	2.3E-05
TPH C9-C18 Aliphatic HC	100	Use EPA	NA	99.3	0.356	7.3E-05	1.36E+06	NA	1.00E-01	0.000959	7.0E-07
TPH C17-C32 Aromatic HC	NA	Use EPA	NA	<100	0.356	NA	1.36E+06	NA	NA	0.000959	NA
TPH C19-C35 Aliphatic HC	NA	Use EPA	NA	<100	0.356	NA	1.36E+06	NA	NA	0.000959	NA
Aroclor - 1260	0.0049	Use EPA	5.70E-04	0.0639	0.356	4.7E-08	1.36E+06	9.5E-12	NA	0.000959	NA
Totals								1.9E-12			2.4E-05

Notes: C<sub>s</sub> = Maximum concentration in soil in ppm, ppm = parts per million (mg/kg), C<sub>a</sub> = Concentration in Air ug/m<sup>3</sup> = (C<sub>s</sub>/1.36E9 (default PEF) x 1000 ug/mg), IUR = Inhalation Unit Risk Factor (ug/m3)<sup>-1</sup>, RfC = Reference Concentration (mg/m3), Risk<sub>a</sub> = IUR x C<sub>a</sub> x 0.356, Hazard<sub>a</sub> = 1/(RfC) x C<sub>a</sub> x 0.000959, NA = Not Applicable. Equations are from Figures 2-8, 2-9 and 2-10 of PEA Guidance Manual January 1994 (Revised)



<b>TABLE 6</b> <b>Cumulative Risk and Hazard Calculations - Post Remedial</b> <b>Southern 80 Acres - Potential High School, SE of Wible Rd. &amp; Engle Rd., in Bakersfield, CA</b>		
<b>Cumulative Risk Calculation</b>		
Total Risk Soil Pathway (From Table 4)		3.1E-07
Total Risk Air Pathway (From Table 5)	+	1.9E-12
<b>Total Cumulative Risk All Pathways</b>		<b>3.1E-07</b>
<b>Cumulative Hazard Calculation</b>		
Total Hazard Soil Pathway (From Table 4)		0.58
Total Hazard Air Pathway (From Table 5)	+	0.00002
<b>Total Cumulative Hazard All Pathways</b>		<b>0.58</b>





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 11/18  
PROJECT: #16195

**Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
Bakersfield, CA**

**LOCATION MAP**

**PLATE**

**1**





SOILS ENGINEERING, INC.  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

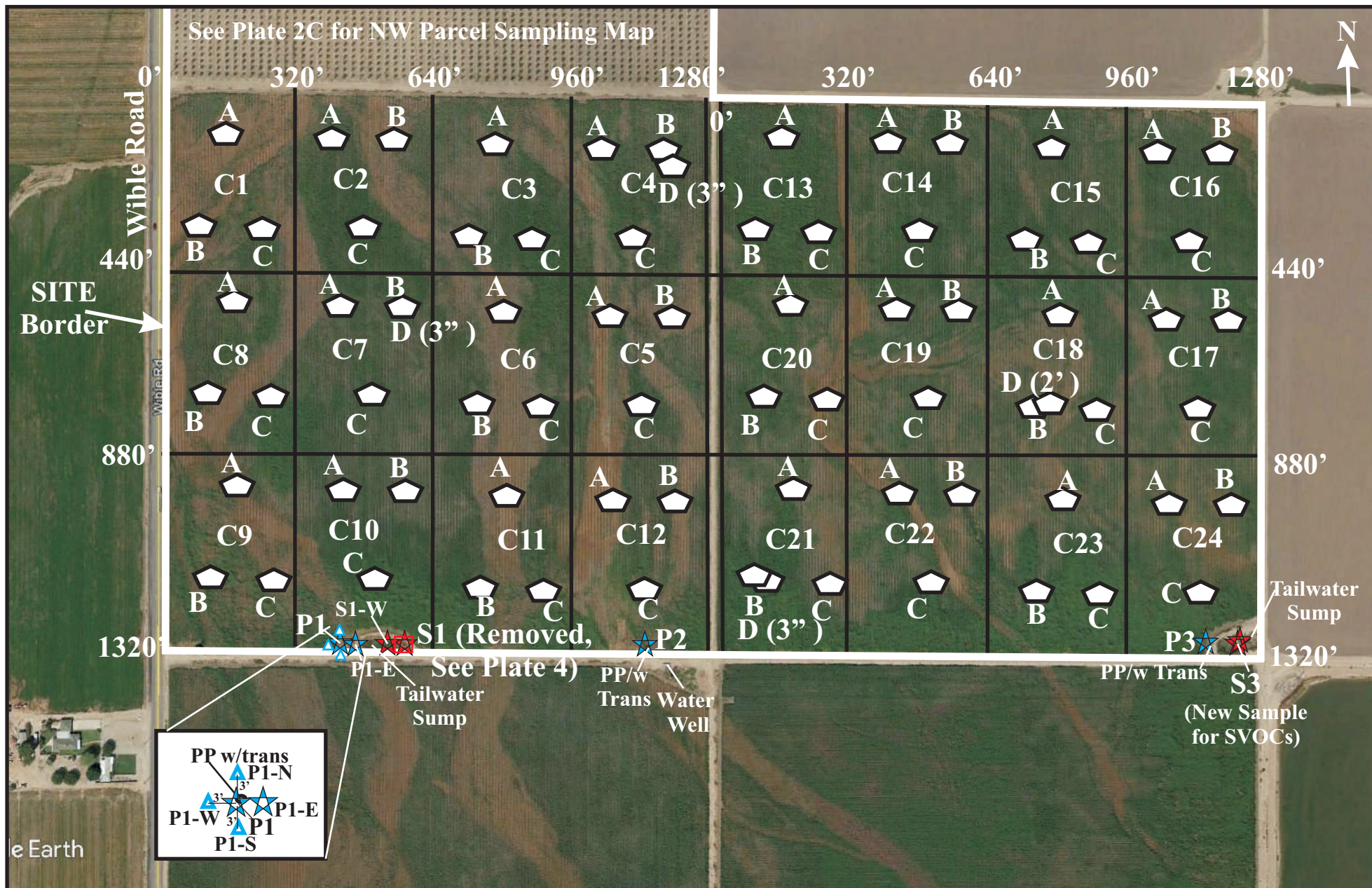
DATE: 11/18  
PROJECT: #16195

**Proposed High School Site  
SE of Wible Rd. and Engle Rd.  
Bakersfield, CA**

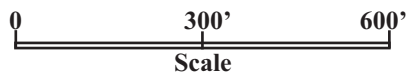
**PLOT PLAN**

**PLATE  
2**





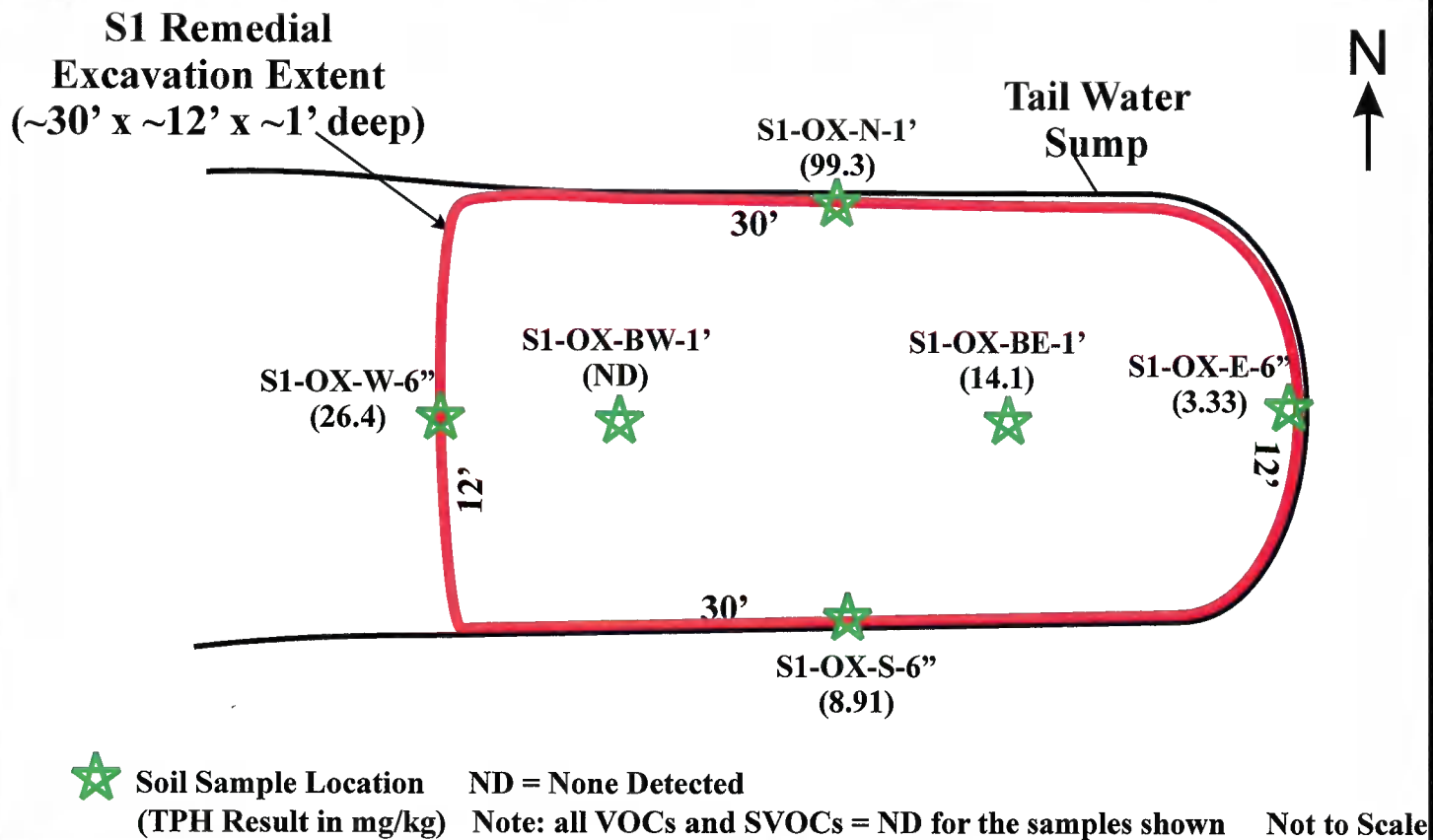
- PEA Soil Sample for OCPs & As (0 to 6", 2'-2.5')
- PEA Soil Sample for PCBs (0 to 6", 2'-2.5')
- PEA Soil Sample for TPH, VOCs, Metals, OCPs (0 to 6", 2'-2.5')
- SSI Step-out Sample Location for PCBs (0-6", 2-2.5')



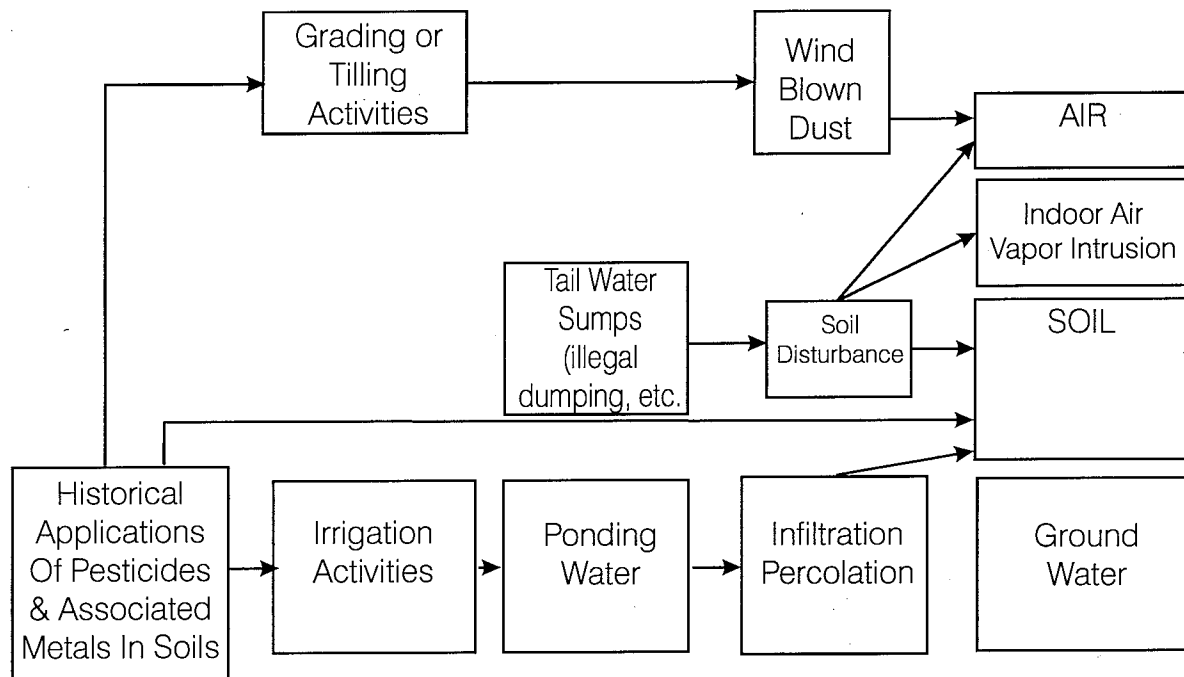
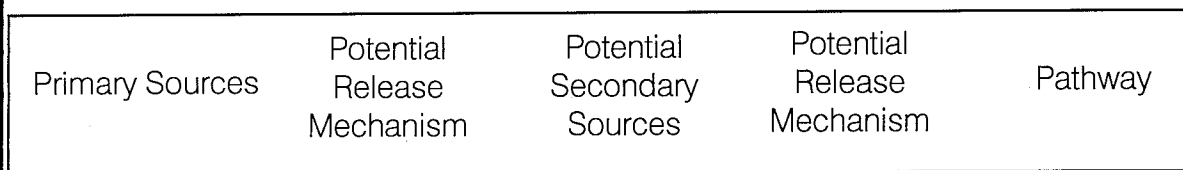
**Southern 80 Acres**  
**Soil Sampling Map**  
**Proposed High School Site**  
**SE of Wible Rd. & Engle Rd.**  
**Bakersfield, CA**

**Plate 3**









Exposure Route	RECEPTOR			
	Human		Biota	
	Area Residents	Site Visitors	Terrestrial	Aquatic

Ingestion				
Inhalation	●	●	○	
Dermal Contact				

Ingestion	●	●	○	
Inhalation				
Dermal Contact	●	●	○	

Ingestion				
Inhalation				
Dermal Contact				

SOILS ENGINEERING INC.  
4400 Yeager Way  
Bakersfield, CA.

File No. 17-16195  
May 2018

**Conceptual Site Model Diagram**  
Proposed High School Site - Southern 80 Acres  
SE of Wible Rd. & Engle Road  
Bakersfield, CA.

**PLATE**  
**5**



**APPENDIX A**

**Analytical Reports, Chain of Custody Documents & QA/QC Data Package**





781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

May 10, 2019

Mr. Robert Becker  
Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Report No.: 1905029  
Project Name: 16195 / P.O. # 16195-POS , KHSD

Dear Mr. Robert Becker,

This report contains the analytical results for the sample(s) received under chain of custody(s) by Positive Lab Service on May 03, 2019.

The test results in this report are performed in compliance with ELAP accreditation requirements for the certified parameters. The laboratory report may not be produced, except in full, without the written approval of the laboratory.

The issuance of the final Certificate of Analysis takes precedence over any previous Preliminary Report. Preliminary data should not be used for regulatory purposes. Authorized signature(s) is provided on final report only.

If you have any questions in reference to this report, please contact your Positive Lab Service coordinator.

  
Project Manager





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 (213) 745-5312 FAX (213) 745-6372

## Certificate of Analysis

Page 2 of 5

Soils Engineering Inc.  
 4400 Yeager Way  
 Bakersfield, CA 93313

File #:73443  
 Report Date: 05/10/19  
 Submitted: 05/03/19  
**PLS Report No.: 1905029**

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX:(661) 831-2111

**Project:** 16195 / P.O. # 16195-POS, KHSD

Sample ID: P1-S-3" Soil (1905029-01) Sampled: 05/02/19 08:10 Received: 05/03/19 09:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	62.0 %				54-131	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Surrogate: Decachlorobiphenyl	64.2 %				53-131	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722

Sample ID: P1-W-3" Soil (1905029-02) Sampled: 05/02/19 08:20 Received: 05/03/19 09:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	62.2 %				54-131	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Surrogate: Decachlorobiphenyl	59.3 %				53-131	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722

Sample ID: P1-N-3" Soil (1905029-03) Sampled: 05/02/19 08:30 Received: 05/03/19 09:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Aroclor-1016	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1221	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1232	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1242	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1248	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1254	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Aroclor-1260	ND		1	ug/kg	50.0	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	64.8 %				54-131	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722
Surrogate: Decachlorobiphenyl	63.2 %				53-131	EPA 3550C	EPA 8082	05/06/19	05/07/19	al	BE90722

Sample ID: S3-3" Soil (1905029-04) Sampled: 05/02/19 08:40 Received: 05/03/19 09:45											
Analyte	Results	Flag	D.F.	Units	PQL	Prep/Test Method		Prepared	Analyzed	By	Batch
Naphthalene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
2-Methylnaphthalene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
1-Methylnaphthalene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Acenaphthylene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Acenaphthene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Fluorene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Phenanthrene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Anthracene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Fluoranthene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Pyrene	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006
Benzo(a)anthracene (1,2-Benzanthracene)	ND		1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	al	BE91006





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## Certificate of Analysis

Page 3 of 5

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 05/10/19

Submitted: 05/03/19

PLS Report No.: 1905029

Project: 16195 / P.O. # 16195-POS, KHSD

Sample ID: S3-3" Soil (1905029-04) Sampled: 05/02/19 08:40 Received: 05/03/19 09:45										
Chrysene	ND	1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
Benzo(b)fluoranthene	ND	1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
(3,4-Benzofluoranthene)										
Benzo(k)fluoranthene	ND	1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
(11,12-Benzofluoranthene)										
Benzo(a)pyrene (3,4-Benzopyrene)	ND	1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
Indeno(1,2,3-cd)pyrene	ND	1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
Dibenzo(a,h)anthracene	ND	1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
(1,2,5,6-Dibenzanthracene)										
Benzo(ghi)perylene	ND	1	ug/kg	15.0	EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
(1,12-Benzoperylene)										
Surrogate: Nitrobenzene-d5	76.6 %	36-133			EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
Surrogate: 2-Fluorobiphenyl	65.0 %	42-107			EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006
Surrogate: Terphenyl-d14	67.2 %	40-149			EPA 3550C	EPA 8270 SIM	05/08/19	05/10/19	ai	BE91006





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Page 4 of 5

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Phone: (661) 831-5100 FAX: (661) 831-2111

File #: 73443

Report Date: 05/10/19

Submitted: 05/03/19

**PLS Report No.: 1905029**

**Project:** 16195 / P.O. # 16195-POS, KHSD

## Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
<b>Batch BE91006 - EPA 3550C</b>										
<b>Blank</b>										
<b>Prepared: 05/08/19 Analyzed: 05/09/19</b>										
Naphthalene	ND	15.0	ug/kg							
2-Methylnaphthalene	ND	15.0	ug/kg							
1-Methylnaphthalene	ND	15.0	ug/kg							
Acenaphthylene	ND	15.0	ug/kg							
Acenaphthene	ND	15.0	ug/kg							
Fluorene	ND	15.0	ug/kg							
Phenanthrene	ND	15.0	ug/kg							
Anthracene	ND	15.0	ug/kg							
Fluoranthene	ND	15.0	ug/kg							
Pyrene	ND	15.0	ug/kg							
Benzo(a)anthracene (1,2-Benzanthracene)	ND	15.0	ug/kg							
Chrysene	ND	15.0	ug/kg							
Benzo(b)fluoranthene	ND	15.0	ug/kg							
(3,4-Benzo)fluoranthene	ND	15.0	ug/kg							
Benzo(k)fluoranthene	ND	15.0	ug/kg							
(11,12-Benzo)fluoranthene	ND	15.0	ug/kg							
Benzo(a)pyrene (3,4-Benzopyrene)	ND	15.0	ug/kg							
Indeno(1,2,3-cd)pyrene	ND	15.0	ug/kg							
Dibenzo(a,h)anthracene	ND	15.0	ug/kg							
(1,2,5,6-Dibenzanthracene)	ND	15.0	ug/kg							
Benzo(ghi)perylene (1,12-Benzoperylene)	ND	15.0	ug/kg							
Surrogate: Nitrobenzene-d5	4600		ug/kg	5000		91.9	36-133			
Surrogate: 2-Fluorobiphenyl	3800		ug/kg	5000		76.0	42-107			
Surrogate: Terphenyl-d14	3970		ug/kg	5000		79.4	40-149			
<b>LCS</b>										
<b>Prepared: 05/08/19 Analyzed: 05/09/19</b>										
Acenaphthene	26.9	15.0	ug/kg	37.50		71.8	47-110			
Pyrene	33.2	15.0	ug/kg	37.50		88.4	41-110			
Surrogate: Nitrobenzene-d5	4790		ug/kg	5000		95.7	36-133			
Surrogate: 2-Fluorobiphenyl	3880		ug/kg	5000		77.5	42-107			
Surrogate: Terphenyl-d14	4440		ug/kg	5000		88.9	40-149			
<b>Matrix Spike</b>										
<b>Source: 1905035-06 Prepared: 05/08/19 Analyzed: 05/09/19</b>										
Acenaphthene	24.0	15.0	ug/kg	37.50	ND	64.0	49-139			
Pyrene	32.7	15.0	ug/kg	37.50	ND	87.3	45-98			
Surrogate: Nitrobenzene-d5	3710		ug/kg	5000		74.2	36-133			
Surrogate: 2-Fluorobiphenyl	3060		ug/kg	5000		61.3	42-107			
Surrogate: Terphenyl-d14	3610		ug/kg	5000		72.1	40-149			
<b>Matrix Spike Dup</b>										
<b>Source: 1905035-06 Prepared: 05/08/19 Analyzed: 05/10/19</b>										
Acenaphthene	24.7	15.0	ug/kg	37.50	ND	65.9	49-139	3.04	30	
Pyrene	32.0	15.0	ug/kg	37.50	ND	85.2	45-98	2.44	30	
Surrogate: Nitrobenzene-d5	4010		ug/kg	5000		80.2	36-133			





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## Certificate of Analysis

Page 5 of 5

Soils Engineering Inc.  
4400 Yeager Way  
Bakersfield, CA 93313

Attn: Mr. Robert Becker

Phone: (661) 831-5100 FAX: (661) 831-2111

Project: 16195 / P.O. # 16195-POS, KHSD

File #: 73443

Report Date: 05/10/19

Submitted: 05/03/19

PLS Report No.: 1905029

### Quality Control Data

Analyte	Result	PQL	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Qualifier
<b>Batch BE91006 - EPA 3550C</b>								
Surrogate: 2-Fluorobiphenyl	3270		ug/kg	5000		65.3 42-107		
Surrogate: Terphenyl-d14	3570		ug/kg	5000		71.4 40-149		
<b>Batch BE90722 - EPA 3550C</b>								
<b>Blank</b> Prepared: 05/06/19 Analyzed: 05/07/19								
Aroclor-1016	ND	50.0	ug/kg					
Aroclor-1221	ND	50.0	ug/kg					
Aroclor-1232	ND	50.0	ug/kg					
Aroclor-1242	ND	50.0	ug/kg					
Aroclor-1248	ND	50.0	ug/kg					
Aroclor-1254	ND	50.0	ug/kg					
Aroclor-1260	ND	50.0	ug/kg					
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	6.28		ug/kg	10.00		62.8 54-131		
Surrogate: Decachlorobiphenyl	5.48		ug/kg	10.00		54.8 53-131		
<b>LCS</b> Prepared: 05/06/19 Analyzed: 05/07/19								
Aroclor-1260	212	50.0	ug/kg	312.5		67.8 60-129		
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	6.81		ug/kg	10.00		68.1 57-136		
Surrogate: Decachlorobiphenyl	6.52		ug/kg	10.00		65.2 53-141		
<b>Matrix Spike</b> Source: 1905026-02 Prepared: 05/06/19 Analyzed: 05/07/19								
Aroclor-1260	187	50.0	ug/kg	250.0	ND	74.7 53-120		
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	6.32		ug/kg	10.00		63.2 54-131		
Surrogate: Decachlorobiphenyl	7.08		ug/kg	10.00		70.8 53-131		
<b>Matrix Spike Dup</b> Source: 1905026-02 Prepared: 05/06/19 Analyzed: 05/07/19								
Aroclor-1260	197	50.0	ug/kg	250.0	ND	78.7 53-120	5.26	30
Surrogate: 2,4,5,6 Tetrachloro-m-xylene	6.67		ug/kg	10.00		66.7 54-131		
Surrogate: Decachlorobiphenyl	7.42		ug/kg	10.00		74.2 53-131		

### Notes and Definitions

NA Not Applicable  
ND Analyte NOT DETECTED at or above the detection limit  
NR Not Reported  
MDL Method Detection Limit  
PQL Practical Quantitation Limit

Environmental Laboratory Accreditation Program Certificate No. 1131, Mobile Lab No. 2534, LACSD No. 10138

Authorized Signature(s)





# CHAIN OF CUSTODY AND ANALYSIS REQUEST

781 East Washington Blvd., Los Angeles, CA 90021  
(213) 745-5312 FAX (213) 745-6372

Project Name/No.

4400 Yeager Wy, Bakersfield, CA 93313

PHONE NO: 661-821-5555 FAX NO: 831-7111

(Signature)

Hour; 2 = 48 Hour; (Etc.) N = NORMAL

CONTAINER TYPES: B = Brass, E = Encore, G = Glass, P = Plastic, V = VOA Vial, O = Other:

UST Project: Y N - Global ID#

SAMPLE NO.	DATE SAMPLED	TIME SAMPLED	SAMPLE DESCRIPTION	MATRIX				TAT	CONTAINER	
				WATER	SOIL	SLUDGE	OTHER		#	TYPE
	5/2/19	8:10	P1-S-3"		X			N	1	B
		8:20	P1-W-3"							
		8:30	P1-N-3"							
		8:40	S3-3"							
		8:12	P1-S-2-							
		8:22	P1-W-2-							
		8:32	P1-N-2-							
		8:42	S3-2-		✓			✓	✓	✓

Received By: (Signature and Printed Name)

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**SPECIAL INSTRUCTIONS:**

SAMPLE DISPOSITION:	
---------------------	--

2. Samples will not be stored.

[illegible]

By \_\_\_\_\_

LAB COPY



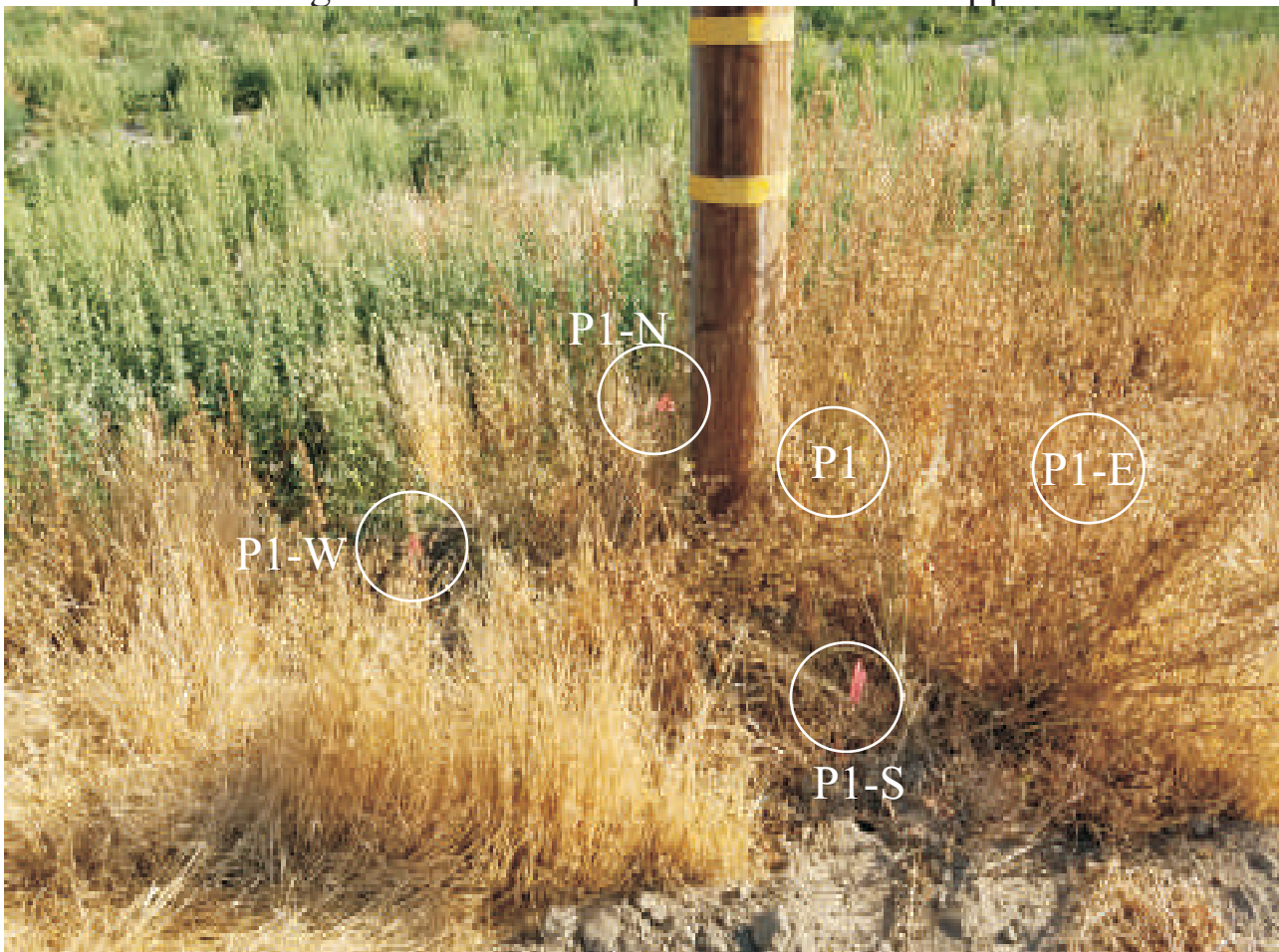
**APPENDIX B**

**SSI Site Activity Pictures**





Picture 1. Looking north at SSI Sample Location P1-S approx. 3' South of P1



Picture 2. Looking North at SSI & PEA Sample Locations by P1





Picture 3. Looking at SSI/PEA Sample Location S3 in bottom of SE Tail Water Sump



Picture 4. Looking at Sample S3 from Top of SE Tail Water Sump



SOILS ENGINEERING, INC.



**GEOTECHNICAL INVESTIGATION  
FOR THE PROPOSED NEW HIGH SCHOOL SITE  
LOCATED AT WIBLE ROAD  
AND ENGLE ROAD  
IN  
BAKERSFIELD, KERN COUNTY, CALIFORNIA**

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**Prepared for:**


**Kern High School District  
5801 Sundale Avenue  
Bakersfield, CA 93309**

***SEI File No. 18-16608***

***April 13, 2018***

  
L. Thomas Bayne, G.E.



  
Robert J. Becker, C.E.G.





**GEOTECHNICAL INVESTIGATION**  
**Proposed High School Site in South West**  
**Wible Rd. & Engle Rd., Bakersfield, Kern County, CA**

**SEI File No. 18-16608**  
**April 13, 2018**  
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# SOILS ENGINEERING, INC.



**April 13, 2018**

**SEI File No. 18-16608**

Kern High School District  
5801 Sundale Avenue  
Bakersfield, California 93309

Attention: Ms. Jenny Hannah

Subject: Geotechnical Investigation Report & Geological Hazard Study  
Project: Proposed High School Site in South West  
Location: Wible Road and Engle Road  
Bakersfield, Kern County, California

Dear Ms. Hannah:

In accordance with your request, we have performed a Geotechnical Investigation at the subject site.

This report was prepared to assess site feasibility from the perspective of grading, foundation design, including but not limited to the following: acceptability of existing soils for use as engineered fill; adequacy of existing near-surface soils for providing support foundation support; Subsurface drainage characteristics; Pavement support; Foundation design criteria; Slab-on-grade support capabilities; Soil Corrosivity

Appendix A, "Guide Specifications for Earthwork," is provided as a supplement to Section I, "Earthwork," in the recommendations of the report.

Appendix B, "Field Investigation," contains the Boring Location Map, Figure 1, showing the approximate locations of test borings, and the Logs of Test Borings, Figures 2 through 19.

Appendix C, "Soils Test Data," contains tabulations of laboratory test data.


Appendix D, "Geological Hazard Study"

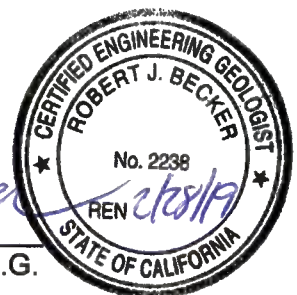
We hope this provides the information you require. If you have any questions regarding the contents of our report, or if we can be of further assistance, please contact us.

Respectfully submitted,  
SOILS ENGINEERING, INC.

  
L. Thomas Bayne, G.E.



  
Robert J. Becker, C.E.G.



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**GEOTECHNICAL INVESTIGATION**  
**FOR THE PROPOSED NEW HIGH SCHOOL SITE**  
**LOCATED AT WIBLE ROAD**  
**AND ENGLE ROAD**  
**IN**  
**BAKERSFIELD, KERN COUNTY, CALIFORNIA**

**SCOPE**

This report was prepared to provide recommendations for preparation and grading, and criteria for selection and design of foundation for the proposed structures. The following recommendations are addressed herein:

**EARTHWORK**

Site preparation and grading in areas to receive the proposed structure(s) and pavements.

Quality control of engineered fill.

**FOUNDATIONS**

Foundation types most adequate for the proposed structures.

Anticipated total and differential settlements.

Lateral earth pressures for designing retaining walls and for evaluating the passive and frictional resistance of foundations.

**PAVEMENT**

Structural section design recommendations for proposed roadways.



## **SITE LOCATION AND CONDITIONS**

The site proposed for a New High School in Southwest Bakersfield (Project) is in southwest Bakersfield, southeast of the intersection of Engle Rd. and Wible Rd. The project covers approximately 104 acres of relatively flat land, with a prevailing, gentle, downward slope toward the southwest.

Three areas were initially appraised for potential sites: the **North Parcels** comprising Assessor's Parcel Numbers 184-150-35 and 184-150-42; the **Middle Parcels** consisting of Assessor's Parcel Numbers 184-150-38, 184-150-39, 184-150-40, 184-150-41 plus the west 1687 feet of the north 400 feet of Assessor's Parcel Number 184-150-52; and the **South Parcels** identified as Assessor's Parcel 184-150-52 less the west 1687 feet of the north 400 feet. Currently, the Middle Parcels have been chosen as the most promising and **are the subject of this geotechnical investigation**

The site is currently fallow, agricultural land with mowed dry stubble. The project-site is generally flat and features a gentle-slope to the southwest. On the west, the property is bounded by Wible Road. To the north, south, and east the project abuts agricultural land. Agricultural and light industrial development bound the project near its southeast corner.

## **GEOLOGIC SETTING**

The project site rests on a considerable thickness of granitic alluvium, identified as "Recent Alluvial Fan Deposits" on geologic maps within the southern San Joaquin Valley. These sediments were derived in the Sierra Nevada Mountains to the east and deposited by the meandering Kern River and other local drainage. This geologic information is interpreted from nearby soil borings and the Bakersfield Sheet of the Geologic Map of California (Smith, Department of Conservation Division of Mines and Geology (CDMG), 1964). Active faults within 50 miles are shown in the table below:

White Wolf .....	9 miles/ 14.5 kilometers
Kern Front .....	13 miles/ 20.9 kilometers
Pleito Thrust .....	16.6 miles/ 26.7 kilometers
San Andreas - 1857 Rupture .....	28 miles/ 45 kilometers
San Andreas - Whole M-1a .....	28 miles/ 45 kilometers
San Andreas - Carrizo.....	28 miles/ 45 kilometers
San Andreas - Cho-Moj .....	28 miles/ 45 kilometers
Garlock West .....	29.3 miles/ 47.1 kilometers
Big Pine .....	29.5 miles/ 47.4 kilometers
San Gabriel .....	37.9 miles/ 61.0 kilometers
Santa Ynez (East).....	46.2 miles/ 74.3 kilometers
San Andreas - Cholame.....	47.2 miles/ 77.9 kilometers



San Andreas - Mojave.....	48.2 miles/ 77.5 kilometers
San Cayetano .....	50.8 miles/ 81.7 kilometers
Mission Ridge-Arroyo Parida .....	50.8 miles/ 81.8 kilometers

The site is not located within an Alquist-Priolo Special Study Zone (Earthquake Fault Zone). See Appendix D for a more complete geologic setting description in the Geological Hazard Study.

### **PROJECT DESCRIPTION**

At the time this report was prepared, structural details were not available. Site design has not been initiated. This geotechnical report is being prepared to investigate site feasibility for grading and foundation design for a proposed high school project. We anticipate the project scope, in terms of grading and building construction would be similar to other local high school projects for which we have been retained to provide a broad range of services:

- Centennial; Golden Valley;
- Stockdale;
- North High School;
- East High School;
- Frontier High School;
- Liberty High School;
- Independence High School;
- Bakersfield High School;
- West High School;
- Kern Regional Occupation Center;
- Foothill High School;
- Vista Continuation School;

### **SUBSURFACE CONDITIONS**

Site Geology and subsurface conditions are generally conducive to the construction of cost-effective foundation systems. Soils within the zone of influence of proposed foundations generally consist of interbedded silty-sand (SM & SP-SM) underlain by relatively thick sequences of poorly graded to well graded sand (SP & SW).

There are no conditions on site which present unusual grading or drainage problems. Soils within the zone-of-influence of proposed foundations, slabs, and pavements are:

- essentially granular;
- have relatively high frictional resistance;
- possess low to no expansion potential;
- feature negligible tendency to consolidate when loaded and then are subjected in increased moisture conditions;
- are not corrosive;



- and can be easily compacted using heavy rubber-tired equipment, sheepsfoot rollers, or vibratory compactors.
- 

Subsurface drainage conditions are good. The relative abundance of sand at shallow depths will permit storm water to percolate with sufficient rapidity to augment retention basin construction.

### **SUBSURFACE DESCRIPTION FOR EACH BORING**

In **Boring 1**, soils encountered consisted of an upper 14.5 feet thick layer of yellowish-brown dry to damp, poorly graded sand classified SP in the unified source classification system. This surface layer was underlain by a 15 feet thick stratum of brown, damp, silty sand with fine grain sand fraction, classified SM. Between 30 feet and 46 feet, soils consisted of poorly-graded sand with low-flying contents. This material is light yellowish-brown, featured a dry to damp moisture content, and was generally fine-grained. The bottom 5 feet encountered consisted of poorly-graded yellowish-brown sand classified SP in the unified source classification system. Penetration resistance measurements indicated that the upper 15 feet of materials were loose to medium dense, and became progressively more dense, firm, and compact below 16 feet. The boring was terminated at 51 feet. No free groundwater was encountered.

In **Boring 2**, two interbedded layers of silty sand (SM), poorly graded sand (SP- SM), clay sandy silt (ML) were found to a depth of 51 feet. Silty sands were generally yellowish-brown, and featured a dry moisture content that possessed a fine-grained sand fraction. Penetration resistance measurements show that earth materials are loose to medium dense in the upper 30 feet. Below 30 feet grade progressively more dense and compact. Soils at 51.5 feet, the bottom of the test boring were dense to very dense. The boring was terminated at 51.5 feet. No free groundwater was encountered.

In **Boring 3**, the top 15.5 feet consisted of brown, dry, silty sand, and a fine-grained sand fraction. This material is classified SM in the unified soils classification system. Sandy clayey silt, classified ML, featured an olive color, possessed high plasticity, and a medium stiff consistency was found between 15.5 feet and 29 feet. Thin inner beds of silty sand and clay were encountered between 29 feet and 34 feet. Between 34 feet and 46 feet, poorly-graded sand that was light yellowish-brown, dry, fine-grained, and dense was encountered. The bottom 6 feet of the test boring consisted of thin inner beds of sandy clayey silt (ML), silty sand (SM), olive brown silty clay (CL), and terminated in light yellowish-brown, dry to damp, dense, silty sand with a fine-grained sand fraction. The boring was terminated at 51.5 feet. No free groundwater was encountered.

In **Boring 4**, earth materials were characterized by an upper 31 feet of brown, sandy silt, classified ML. These materials had a stiff consistency, and contained occasional traces of clay between 31 feet and 36 feet. Soils found were identified as clayey silty sand, light yellowish-brown, dry, containing fine-grained sand fraction, and having a medium dense consistency. Between 36 feet 40 feet olive brown, damp, loose, silty sand (SM), which was cohesive, was encountered.



The boring was terminated at 51.5 feet in olive brown, damp to wet, silty clay classified CL. This material possesses low plasticity, and had a very stiff consistency. No free groundwater was encountered.

In **Boring 5**, soil comprised alternating sequences of poorly-graded sand, silty sand, silty clay, and sandy silt classified SP, SM, CL, and ML in the unified clay soils classification system. Penetration resistance measurements indicate materials are loose to medium dense in the upper 30 feet and then graded denser with depth. The boring terminated in materials that are very dense at 51.5 feet below the ground surface. No free groundwater was encountered.

In **Boring 6**, the top 6 feet consist of light yellowish-brown, dry, silty sand with a fine-grained sand fraction, and a medium dense consistency. The surface layer, which is classified SM, is underlain by light yellowish-brown dry, very stiff, sandy silt with low plasticity, classified ML. Between 11 feet and 30 feet alternating sequences of sandy silt (ML), silty sand (SM), silty clay (CL), were encountered. These materials were loose to medium dense at a depth of 11 feet, and graded gradually denser with depth. The boring terminated at 31.5 feet in medium dense to dense soil. No free groundwater was encountered.

In **Boring 7**, for the entire depth penetrated, materials consisted of interbedded layers of clay (CL), silty sand (SC), poorly graded sand (SP), sandy silt (ML). Penetration resistance measurements show that materials were loose to medium dense in the upper 25 feet, and graded dense to very dense between 25 feet and 31.5 feet, which was the bottom of the test boring. No free groundwater was encountered.

In **Boring 8**, the top 11 feet consisted of light yellowish-brown, dry to damp, clayey silt with low plasticity classified ML in the unified source classification system. Between 11 feet and 15 feet, earth materials consisted of light yellowish-brown, damp, medium dense, fine-grained, poorly-graded sand classified SP. Silty clay was yellowish-brown, damp, possessed low plasticity, and a very stiff consistency. Sandy silt was light brown, dry to damp, with a fine-grained sand fraction, and a very stiff consistency were found between 15 feet and 21 1/2 feet - bottom of the test boring. No free groundwater was encountered.

In **Boring 9**, soil found was comprised in the upper 12 feet of yellowish-brown, dry, clayey silt, with low plasticity, and a very stiff consistency that was classified ML in the unified source classification system. The surface layer was underlain by a 3 foot thick layer of olive brown, damp, silty clay, with low plasticity, and was classified CL between 13 feet and 21 feet. Soils found comprised yellowish-brown, damp, clayey silt, with low plasticity, and a stiff to very stiff consistency, with traces of sand at the bottom of the test boring of 21.5 feet. No free groundwater was encountered.

In **Boring 10**, the top 6 feet consisted of dark brown, damp, sandy silt, with low plasticity, changing to a yellowish-brown, and a hard consistency below 3 feet. These soils are classified ML in the unified source classification system.



The bottom 10 feet comprised of alternating sequences of silty clay (CL), poorly-graded sand (SP), and sandy silt (ML). These materials had consistencies ranging from medium dense to dense. The test boring was terminated at 16.5 feet. No free groundwater was encountered.

In **Boring 11**, light yellowish brown, dry to damp, silty sand, with a fine grained sand fraction, and a medium dense consistency, classified SM was encounter between the surface and a depth of 10 feet. This surface layer was underlain by light yellowish brown, dry, fine grained, poorly-graded sand, classified SP. The boring terminated at 16 feet. No free groundwater was encountered.

In **Boring 12**, light yellowish-brown, dry, sandy silt, with low plasticity classified ML was found between the surface and a depth of 10 feet. Between 10 feet and 16 feet brown, damp, silty clay, with low plasticity, and a very stiff consistency classified CL was found. The Boring was terminated at 16.5 feet in clayey silty sand that was yellowish-brown, and possessed a poorly-graded sand fraction featuring a low plasticity, and a very stiff consistency. No free groundwater was encountered.

In **Boring 13**, the upper 16 feet consisted of yellowish-brown, dry to damp, fine-grained, poorly-graded sand classified SP in the unified source classification system. This surface layer was underlain by 4 feet of light brown, damp, silty sand, with a fine-grained sand fraction classified as SM. The lowest 2 feet of the earth materials encountered consisted of a 1 foot thick layer of silt, and a 1 foot thick layer of silty clay. The silty clay was olive brown, damp, featured low plasticity, and had a stiff consistency. Penetration resistance indicates that the upper 10 to 15 feet are loose to medium dense. Boring was terminated at 21.5 feet. No free groundwater was encountered.

In **Boring 14**, the top 6 feet consisted of light yellowish-brown, dry sandy silt, classified ML. These materials possess low plasticity in a very stiff consistency. Between 6 feet and 10 feet dark olive brown, poorly-graded silty sand and possessed cohesion was encountered. These materials are classified SM in the unified source classification system. Between 10 feet and 15 feet lightly yellowish-brown, medium dense, fine-grained, poorly-graded sand was encountered. These materials are classified SP in the unified source classification system. Between 15 feet and 16.5 feet comprise olive brown, damp, silty clay, with low plasticity, and a stiff consistency was encountered. These materials are classified CL in the unified source classification system. The Boring was terminated at 16 1/2 feet. No free groundwater was encountered.

In **Boring 15**, soils comprise an upper 10 feet of light brown dry, cohesive, very stiff, sandy silt, underlain by a 10 foot thick layer of light yellowish-brown dry, fine-grained, poorly-graded sand classified SP. The bottom 1.5 feet of the test boring was terminated in olive brown, damp, silty clay, with low plasticity, grading to clayey silty sand that was brown, possessed a poorly-graded sand fraction, low to medium plasticity, and a stiff consistency. These materials are loose to medium dense as indicated by penetration resistance measurements. The Boring was terminated at 21.5 feet. No free groundwater was encountered.



In **Boring 16**, soils comprise alternating sequences of sandy silt, and poorly graded sand. Sandy silts are classified ML. They're yellowish-brown, have a dry to damp moisture content, low plasticity, and a very stiff consistency.

Poorly-graded sands were found between 5 feet and 20 feet, and are described as light yellowish-brown, dry, being fine-grained, poorly-graded, and have a loose to medium dense consistency. These materials are classified SP in the unified source classification system. The bottom 1 foot of the test boring was in brown, damp to dry, silty clay, with low plasticity, classified ML. The Boring was terminated at 21.5 feet. No free groundwater was encountered.

In **Boring 17**, the top 6 feet consisted of dark brown, damp, clayey silt, with low plasticity, and classified ML. Between 6 feet and 15 feet clayey silt were very stiff, and showed a color change from dark brown to light brown. Moisture contents were dry to damp, consistencies were hard at 6 feet and graded very stiff with depth. Between 10 feet and 15 feet a color change from light brown to light yellowish-brown was noted. The bottom 1.5 feet encountered yellowish-brown, damp, silty sand, with a fine-grained sand fraction, and a dense consistency. The Boring was terminated at 16.5 feet. No free groundwater was encountered.

In **Boring 18**, the top 11 feet consisted of clayey silty sand that was dark brown, damp to wet, and cohesive. A color change to light brown occurred below 3 feet. Moisture contents became dry to damp. Consistencies were dense. Between 11 feet and 16 feet silty sand that was yellowish-brown, medium dense, possessed a fine-grained sand fraction, and trace amounts of clay were found. These materials are classified SM. From 16.5 feet to 21 feet brown, damp, silty clay, with low plasticity, and a stiff consistency, classified CL, was encountered. The bottom 1 foot consisted of brown, damp, sandy silt, with low plasticity, and a very stiff consistency. This materials is classified ML. Boring was terminated at 21.5 feet. No free groundwater was encountered.

Expansion: Testing performed in our laboratory showed an Expansion Index (EI) ranging from 0 to 18 which indicates a low expansion potential. Expansive soils are defined in the 2016 California Building Code (CBC), Section 1803.5.3. Soils are considered to be expansive when the EI result is greater than 20, per ASTM D4829, Expansion Index of Soils. Design of foundations for structures shall be designed in accordance with the 2016 CBC, Section 1808.6.

Soils Densities: In-situ soil dry densities and moisture contents were measured for each undisturbed sample taken at the site and recorded on Logs of Test Borings in Appendix B. Densities measured vary from a low of 88.2 lbs./ft.<sup>3</sup> pounds per cubic foot to a maximum of 121.0 lbs./ft.<sup>3</sup>.

Most of the near surface soils are loose to medium dense and should provide adequate support for the proposed structures provided that a portion of the near-surface soils are excavated and compacted as recommended in our future reports once structural details are provided.



**CONCLUSION:** Site Geology is conducive to the construction of cost-effective foundation systems. There are no conditions on site which present unusual grading or drainage problems. Soils within the zone-of-influence of proposed foundations are

- Essentially granular;
- Have relatively high frictional resistance;
- Possess low to no expansion potential;
- Minimal tendency to consolidate when they are loaded and then are subjected in increased moisture conditions;
- Possess favorable drainage characteristics by reducing the tendency for storm water to pond and promote rapid sump drainage;
- Are not corrosive;
- And can be easily compacted using heavy rubber-tired equipment or sheepfoot rollers

Subsurface drainage conditions are good. The relative abundance of sand at shallow depths will permit storm water to percolate with sufficient rapidity to augment retention basin construction.

Detailed descriptions of the various soils encountered during our field investigation are shown on Figures 2 through 19 in Appendix B, "Field Investigation." A "Key to Symbols" and a Legend describing the symbols in the boring logs is also attached.

### **SEWAGE DISPOSAL FEASIBILITY**

Subsurface conditions and ground surface topography are conducive to the construction of functional on-site sewage disposal systems consisting of septic tank(s) and/or leach fields. Percolation tests were performed in accordance with the "Manual of Septic-Tank Practice" issued by the Public Health Service of the U.S. Department of Health, Education, and Welfare. Test results are provided in Table 1 & 1A. Percolation test locations are shown on the Boring Location Map, Figure 1.

A percolation rate ranging from 3 minutes/inch to 15 minutes per inch were obtained in our field testing program. Proposed sewage disposal systems could be designed for UPC Soil **Types 3 & 4** and constructed in substantial accordance with the requirements of the Kern County Environmental Health Department. Percolation tests in the proposed sewage disposal areas shall be performed once these locations are determined.



## GROUNDWATER CONDITIONS

No free groundwater was encountered during the field investigation. The maximum depth penetrated by our test borings was fifty-one and one-half feet. According to the Ground Water Information Center of the California Department of Water Resources, more recent depths to ground water were 120' in the Spring of 2012 and 150' in the Fall of 2017. Historical groundwater in wells within 1-mile have been as high as 47.1' in February 1960 and 52.7' in February 1959 according to the DWR water data library.

It is expected that groundwater will remain deep enough to be of no influence on foundation stability for this project.

## SEISMIC DESIGN VALUES

The seismic design values presented in the table below are based on the 2016 California Building Code (CBC). The Site Class for the proposed project was determined using standard penetration test data obtained at the site and are provided in the attached Boring Logs. The site is not located within an Alquist-Priolo Special Study Zone (Earthquake Fault Zone).

SEISMIC DESIGN CRITERIA	VALUE	SOURCE
Risk Category	III	2016 CBC Table 1604.5
Site Class	D	Site Specific Soils Report - 2016 CBC Section 1613.3.2 - ASCE 7-10 Table 20.3-1
Mapped $MCE_R$ Spectral Response Acceleration, short period, $S_s$	1.228g	USGS maps/Software - 2016 CBC Figure 1613.3.1 (1)
Mapped $MCE_R$ Spectral Response Acceleration, at 1-sec. Period, $S_1$	0.458g	USGS Maps/Software - 2016 CBC Figure 1613.3.1 (2)
Site Coefficient, $F_a$	1.009	USGS Software - 2016 CBC Table 1613.3.3 (1)
Site Coefficient, $F_v$	1.542	USGS Software - 2016 CBC Table 1613.3.3 (2)
Adjusted $MCE_R$ Spectral Response Acceleration, Short periods, $S_{MS} = F_a S_s$	1.239g	USGS Software - 2016 CBC Section 1613.3.3
Adjusted $MCE_R$ Spectral Response Acceleration, 1-sec. Period, $S_{M1} = F_v S_1$	0.706g	USGS Software - 2016 CBC Section 1613.3.3
Design Spectral Response Acceleration, short periods, $S_{DS} = 2/3 S_{MS}$	0.826g	USGS Software - 2016 CBC Section 1613.3.4
Design Spectral Response Acceleration, 1-sec period, $S_{D1} = 2/3 S_{M1}$	0.471g	USGS Software - 2016 CBC Section 1613.3.4
Peak Ground Acceleration (PGA) for Max. Considered Earthquake ( $MCE_G$ )	0.458g	USGS Software - ASCE 7-10 Fig 22-7
Site Coefficient, $F_{PGA} = 1.036$ ,	0.477g	USGS Software - ASCE 7-10



<b>SEISMIC DESIGN CRITERIA</b>	<b>VALUE</b>	<b>SOURCE</b>
<b><math>PGA_M = F_{PGA} * PGA =</math></b>		Table 11.8-1
Site-Specific Ground Motion Procedures for Seismic Design, <b><math>C_{RS}</math></b>	<b>1.033</b>	USGS Software - ASCE 7-10 Fig 22-17
Site-Specific Ground Motion Procedures for Seismic Design, <b><math>C_{R1}</math></b>	<b>1.042</b>	USGS Software - ASCE 7-10 Fig 22-18
Seismic Design Category short periods ( <b><math>S_{DS}</math></b> )	<b>D</b>	2016 CBC Table 1613.3.5 (1)
Seismic Design Category, 1-sec period ( <b><math>S_{D1}</math></b> )	<b>D</b>	2016 CBC Table 1613.3.5 (2)
<b><math>MCE_R</math></b> = Maximum Considered Earthquake (risk targeted) <b><math>MCE_G</math></b> = Maximum Considered Earthquake (geometric mean)		

**Site Seismic Parameters**

Major fault systems and their distances from the site are given in the EQFault Summary attached in Appendix D. The largest estimated peak site acceleration, based on deterministic methods, is 0.395g from a 7.3 magnitude earthquake on the White Wolf fault. See Appendix D for copies of the computer modeling data and a complete Geohazard Study.

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**RECOMMENDATIONS**

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**I. EARTHWORK**

The proposed site can be prepared to support the intended structures and pavements by excavating and compacting existing soils to a depth of two feet below the bottom of the deepest footing; or to three (3.0) feet below the existing ground surface exposed after stripping, whichever elevation is lower.

"Earthwork Specifications," in Appendix A are provided for general guidance in preparing site grading plans. In addition, the following specific recommendations are provided and supersede the latter wherever discrepancies may exist:

**A. Compaction**

Unless otherwise specified herein, the terms, "Compaction," or "Compacted," wherever used or implied within this report should be interpreted as compaction to 90 percent of the maximum density obtainable by ASTM Test Method D1557.

**B. Optimum Moisture**

The term, "Optimum Moisture," wherever used or implied within this report, should be interpreted as that obtained by the above described test method.

**C. Clearing and Grubbing**

Clearing and grubbing shall consist of removing all debris such as metal, broken concrete, trash, vegetation growth and other biodegradable substances, from all areas to be graded.

**D. Ground Surface Preparation**

*Proposed Structure Areas:*

Ground surfaces in the proposed building area should be compacted in accordance with the following procedures:

1. The over-excavation depth in the proposed building areas should range between one (1) to five (5) below the proposed foundation elevations depending the structural details of each structure.

A specific Geotechnical Engineering Investigation will be required for each structure to determine the geotechnical parameters, depending upon foundation sizes and magnitude of proposed loads.

2. The bottom of the excavation shall be reviewed by the soil engineer's representative prior to any backfill operations. The top twelve inches of materials exposed at the bottom of the excavation shall be scarified and compacted to a



- minimum of 90 percent of ASTM D1557.
3. Moisten excavated and imported soils to near the optimum moisture or to a moisture content consistent with effective compaction and soil stability. Compact moistened soils to a minimum of 90 percent of the maximum density obtained by ASTM Test Method D1557.
4. Work to lines at least ten (10) feet beyond the outside edges of exterior footings and two feet beyond pavement edges except if the excavation undermines adjacent improvements or structure foundations. In these situations, the geotechnical engineer should review these areas to determine if additional reinforcement is needed.

### **Review of Excavation Bottoms**

Prior to placement of backfill, excavations on all surfaces to receive engineered-fill or to support foundations, pavements, walkways, or slabs-on-grade shall be reviewed for indications of loose-fill, discoloration, or loose, compressible, native materials. Where these are encountered, they should be excavated and removed, or excavated and compacted as directed by the geotechnical engineer.

Excavation of native soils shall continue in vertical increments of one foot until relative compaction tests taken at the bottom of the working surface (excavation bottom) equal or exceed 82% relative compaction.

Fill placement in and on all surfaces to receive engineered-fill or to support foundations, pavements, walkways, or slabs-on-grade shall not proceed until the geotechnical engineer or his representative on the site has reviewed, tested as described above and accepted materials exposed at the bottom of the excavation.

### **Pavement Areas:**

Ground surfaces to receive concrete driveway and bituminous pavements should be scarified and compacted to a minimum depth of 12 inches below the grading plane in cut areas or excavated and compacted to a minimum depth of 12 inches in areas to receive fill.

Engineered fill placed in proposed pavement areas should conform to the requirements of Section 5.4, "Placing, Spreading and Compacting Fill Materials," of Appendix A.

Compaction of materials comprising the structural-section -- subgrade, subbase, and base materials -- should be a minimum of 95 percent of the maximum density as obtained by ASTM Test Method D1557 and should extend to a minimum of two feet beyond the outside edges of pavements. *The top eight (8) inches of subgrade below the grading plane shall be compacted to a minimum of 95%.*



**Utility Lines:**

Backfill for utility lines traversing areas proposed for facilities, pavements, concrete slabs-on-grade, or areas to receive engineered fill for future construction should be compacted in accordance with the same requirements for adjacent and/or overlying fill materials.

Compaction should include haunch area, spring line, and from top of pipe to finished subgrade. The haunch area up to one foot above the top of the pipe should be backfilled with "cohesionless" material.

Cohesionless native materials may be used for trench and pipe or conduit backfill. The term "cohesionless," as used herein, is defined as material which when dry, will flow readily in the haunch areas of the pipe trench.

Pipe backfill materials should not contain rocks larger than two inches in maximum dimension. Where adjacent native materials exposed on the trench bottoms contain protruding rock fragments larger than two inches in maximum dimension, conduits and pipelines should be laid on a bedding consisting of clean, cohesionless sand (SP), in the Unified Soils Classification System.

Compaction Requirements - where not otherwise specified in our plans or in these recommendations, the following compaction requirements are applicable to all electrical, gas or water conduits:

<b>TABLE A COMPACTION DEPTH</b>			
<b>Area</b>	<b>Haunch to 1 ft. Above Top of Pipe</b>	<b>1 ft. Above Top of Pipe to 2'6" Below Finished Grade</b>	<b>2'6" Below Finished Grade to Finished Subgrade</b>
<b>Structures</b>	90%	90%	90%
<b>Pavements</b>	90%	90%	90%*
<b>Non-Structural</b>	90%	90%	90%

\* The top eight (8) inches of subgrade in the pavement area shall be compacted to a minimum of 95% of ASTM D1557.



**E.     Engineered Fill**

Earth materials obtained on-site are acceptable for use as engineered fill provided that all grasses, weeds and other deleterious debris are first removed.

Engineered fill materials should be placed in thin layers (less than ten inches uncompacted thickness), brought to near the optimum moisture content or to a moisture content commensurate with effective compaction and soil stability, and compacted to a minimum of 90 percent of the maximum density obtainable by ASTM Test Method D1557, "Placing, Spreading and Compacting Fill Materials," in Appendix A.

**F.     Imported Fill**

The table shown below provides general guidelines for acceptance of **Imported-Fill**. Materials of equal or better quality than on-site material should be reviewed by the Geotechnical Engineer on a case-by-case basis. No soil materials shall be imported onto the project site without prior approval by the Geotechnical Engineer. Any deviation from the specifications given below shall be approved, in writing, by the Geotechnical Engineer, at least five-working-days prior to import operations.

Maximum Percent Passing #200 Sieve .....	40
Maximum Percent Retained 3" Sieve .....	0
Maximum Percent Retained 1½" Sieve <i>for building areas</i> .....	15
Maximum Percent Retained ¾" Sieve <i>for landscape areas</i> .....	5
Maximum Percent Retained ¾" Sieve <i>for playfields</i> .....	0
Maximum Liquid Limit .....	40
Maximum Plasticity Index .....	14

Furthermore, the soils proposed for import shall be generally homogenous and shall not contain cemented or clayey lumps larger than one inch. When such lumps are present, they shall not represent more than ten percent (10%) of the material by dry weight. Where a proposed import source contains obviously variable soils, such as clay and/or silt layers, the soils which do not meet the above requirements shall be segregated and not used for this project or the various layers shall be thoroughly-mixed prior to acceptance testing by the Geotechnical Engineer. The contractor shall provide sufficient notice, prior to import operations, to allow testing and evaluation of the proposed import materials. Because of the time needed to perform the above tests, the contractor shall provide a means by which the Geotechnical Engineer or others can verify that the soil(s) which was sampled and tested is the same soil(s) which is being imported to the project.

**G.     Drainage**

Finished ground grades adjacent to the proposed buildings should be sloped to provide positive free drainage away from the foundations and exterior flatwork.



No areas should be constructed that would allow drainage generated on the site, or water impinging upon the site from outside sources, to pond near footings and slabs or behind curbs.

Minimum drainage gradients will depend upon the nature and roughness of the surface to be drained. Table 1 provides minimum surface gradients that should be used for promoting good drainage conditions.

<b>TABLE 1</b>	
<b>RECOMMENDED MINIMUM DRAINAGE GRADIENTS</b>	
<b>Material</b>	<b>Minimum Drainage Gradient</b>
Landscaped Areas	As required to freely drain
Smooth, graded-soil	2%
Asphaltic-Concrete-Surfacing	1%
Portland-Cement Concrete Surfacing	0.5%

Where ground surfaces adjacent to subsurface walls are to be landscaped, walls should be waterproofed. Fill placed behind retaining or subsurface-walls should include the installation of gravel-encapsulated piping or gravel-filled drains to prevent the accumulation of hydrostatic-pressure.

#### **H. Slopes**

Both fill and cut slopes should be constructed at 2:1 (horizontal to vertical) in accordance with the 2016 Uniform Building Code. *The safety of slope-gradients for slopes to be constructed taller than 12 feet from toe to top should be verified by slope-stability-analyses.*

Finished slopes nearer than five feet from building foundations should be graded no steeper than five horizontal to one vertical (5:1). A slope ratio of two horizontal to one vertical (2:1) should provide adequate stability for slopes farther than five feet from footing lines.

The fill slopes shall be compacted to a minimum of 90% of ASTM D1557 and in accordance with the Guide specifications for Earthwork, Appendix A. This shall be achieved by overfilling the constructed slope and trimming to a compacted finished surface, rolling the slope face with a sheepsfoot as the level of the fill is raised, or any method that achieves the desired product.

The cut portion of the slope should be constructed first. Prior to construction of the fill slope, incompetent surface soils should be removed from the top of the cut.

Areas to receive fill or to support structures, slabs or pavements should be removed of all vegetation, debris and disturbed soils. All existing uncertified fill soils should be excavated to expose competent native soils.



Existing underground pipelines, private sewage disposal systems and any water or oil wells, if encountered during grading, should be removed or capped in accordance with procedures considered acceptable by the appropriate governing agency. Tree roots to 2 inches in diameter should be removed.

Both fill and cut slopes will be subject to erosion immediately after grading and should be designed to reduce surficial sloughing by implementing a permanent slope maintenance program as soon as practical after completion of slope construction.

Slope maintenance should include proper care of erosion and drainage control devices, rodent control, and immediate planting with deep-rooting, lightweight, drought-resistant vegetation. An erosion control geotextile, may also be used in combination with vegetation to control erosion.

Experience has shown that slope performance is largely dependent upon proper slope maintenance (i.e., planting, proper watering, clearing of drainage devices, etc.). Slopes properly placed and conscientiously maintained are not expected to display excessive raveling or sloughing.

## **II. FOUNDATIONS**

General foundation criteria for the area are provided below. These recommendations should be updated once structures location and details are finalized.

<b>TABLE B</b>			
<b>FOUNDATION DESIGN CRITERIA</b>			
<b>Footing Type</b>	<b>Minimum Width (ft.)</b>	<b>Minimum Depth Below Lowest Adjacent Subgrade (ft.)</b>	<b>Maximum Allowable<sup>1</sup> Soil Bearing Pressure (lbs./sq. ft.)</b>
Continuous	1	1	2000
Isolated	1	1	2000

Bearing pressures given are for the minimum widths and depths shown above.

Bearing pressures given above are for dead and sustained (loads acting most of the time) live loads; they may be increased by one-third for wind and/or seismic loading conditions.

<sup>1</sup> The application of a shear force or moment at the top of the foundation may reduce the **Maximum Allowable Bearing Capacity**.



**Settlement:**

Provided maximum allowable soil bearing pressures given above are not exceeded, total static settlement should not exceed one inch. A major portion ... two-thirds to one-half ... of total settlement should occur before the end of construction. Differential static settlements should not exceed 0.5 inches and should occur before the end of construction.

**III. MODULUS OF SUBGRADE REACTION**

Modulus of subgrade reaction for use in design of foundations is based on ranges of values for soil types provided by Foundation Analysis and Design by Joseph E Bowles.<sup>2</sup> Equation 1 should be used for footings on sandy soils. Foundations on clay soils should employ Equation 2. Equation 3 is for rectangular footings having dimensions b and mb.  $K_{s1}$  is the modulus of subgrade reaction from the source referenced above based on a 1-foot x 1-foot square plate. For general guidance  $K_{s1}$  of 150 kcf may be used for the subsurface cohesionless soils.

$$\text{Equation (1)} \quad k_{sf} = K_{s1} \times \left( \frac{B+1}{2B} \right)^2$$

$$\text{Equation (2)} \quad k_{sf} = K_{s1} \times B$$

$$\text{Equation (3)} \quad k_{sf} = K_{s1} \times \frac{m+5}{1.5 \times m}$$

Values given above should be used for guidance. Local values may be higher or lower and should be based on results of in-situ plate bearing tests performed in accordance with ASTM Test Method D1195.

**IV. LATERAL EARTH PRESSURES**

Lateral earth pressures and friction coefficients for determining the passive lateral resistance of foundations against lateral movement and the active lateral forces against retaining walls and subsurface walls, expressed as equivalent fluid pressures, are given below in Table C. Lateral earth pressures were computed assuming that backfill materials are essentially free draining and level; and that no surcharge loads, or sloping backfills are present within a distance from the wall equal to or less than the height (H)\* of the wall.

(H)\* = The height of backfill above the lowest adjacent ground surface.

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<sup>2</sup> Bowles, Joseph E; FOUNDATION ANALYSIS AND DESIGN McGraw-Hill Book Company (1977); Table 9-1 pg. 26



<b>TABLE C</b>	
<b>LATERAL EARTH PRESSURES</b>	
<b>Case</b>	<b>Lateral Earth Pressures</b>
Active	33 P.C.F.
Passive	350 P.C.F.
At-Rest	45 P.C.F.

**Active Case:** Active lateral earth pressures should be used when computing forces against free standing retaining walls, unrestrained at their tops.

Active pressures should not be used where tilting outward of the walls greater than .002H would not be desirable.

**Passive Case:** Passive lateral earth pressures should be used when computing the lateral resistance provided by undisturbed or compacted native soils against the movement of footing. When computing passive resistance, the upper one foot of embedment depth should be discounted.

**At-Rest Case:** At-rest pressures should be used for subsurface walls restrained at their tops by floor diaphragms or tie-backs and for retaining walls where tilting outward greater than .002 H would not be desirable.

**Frictional Resistance:** A friction coefficient of 0.38 may be used when computing the frictional resistance of footings, grade beams, and slabs-on-grade to sliding. Frictional resistance and passive lateral soil resistance may be combined without reduction.

## **V. SOIL CORROSIVITY**

### **Soluble Sulfates (SO<sub>4</sub>)**

The highest Sulfate (SO<sub>4</sub>) concentration measured was 160 ppm. Generally, sulfate concentrations greater than 1,500 ppm are corrosive to foundation elements. (Ref: ACI 318, Section 4.3, Table 4.3.1)

### **Chlorides (Cl)**

The highest Chloride (Cl) concentration measured was 10 ppm. Generally, chloride concentrations greater than 500 ppm are corrosive to foundation elements. (Ref: Caltrans Corrosion Guidelines / Version 1.0)

### **pH**

The soil pH ranged from 8.27 to 8.30. Generally, a pH level less than 5.5 is corrosive to foundation elements. (Ref: Caltrans Corrosion Guidelines / Version 1.0)



Soil corrosivity tests should be performed after the completion of site grading where excavation and or fill-placement has significantly altered the consistency of finished-subgrade soils.

## **VI. SLABS-ON-GRADE**

Slabs-on-ground may be supported on earth materials prepared in accordance with the recommendations of the Geotechnical Investigation. We recommend that moisture protection be provided for interior concrete slabs-on-ground that will receive moisture-sensitive floor coverings, or where moisture-sensitive equipment, products, or environments may be present. For exceptions to slab moisture protection, refer to the 2016 California Building Code, Section 1907.1.

The project designer should provide specific details regarding construction of the concrete slab-on-ground, including a moisture barrier or vapor retarder/barrier, capillary break (if included), and blotter material (if included). The American Concrete Institute recommends a minimum moisture vapor retarder of 10 mil thick polyethylene. The vapor retarder should be protected from damage. Punctures and tears should be repaired prior to concrete placement.

It has been common local practice to use a sandy material as a blotter layer between the moisture barrier and the concrete to absorb some of the bleed water and to potentially reduce slab curling. The blotter layer may act as a moisture reservoir and all apparent advantages of its use negated. Therefore, it should not be incorporated into the section design for moisture-sensitive slabs if it cannot be kept dry prior to concrete placement or if water may migrate into the layer after slab construction (eg. wet curing, rainfall). If the slab-on-ground section is to include a blotter layer between the moisture barrier and the concrete, it is our recommendation that the blotter material consist of crusher fines (rock dust) or sand with angular, interlocking grains. The material should be easily compacted and should be screened so that 100% of the material is finer than ¼". Do not use blotter material which may be potentially reactive with the alkalis in the concrete or which has high sulfate content. At the time of concrete placement, the blotter material should be dry to damp, compact, and smooth. For slabs which are to be water-cured, a blotter layer should not be used. For further consideration, refer to the American Concrete Institute *Manual of Concrete Practice* 302.1R and 360.

Slab thicknesses, reinforcing, and the concrete characteristics should be in accordance with the project designer's recommendations. The 2016 California Building Code, Section 1907.1 requires that the slab thickness be not less than 3½".

Pressurized water lines should not be installed beneath slabs-on-ground. Where pressurized water lines must be routed beneath the slab, they should be routed entirely inside continuous sleeves with both ends open to the atmosphere above the slab surface. Gravity flow sewer lines may underlie slabs-on-ground, but they should be routed to the point of connection by the shortest feasible path.



### **VIII. LIMITATIONS, OBSERVATIONS AND TESTING**

Conclusions and recommendations in this report are given for the proposed New High School in Bakersfield, Kern County, California and are based on the following:

- a. The information retrieved from eighteen (18) exploratory borings drilled at the subject site to a maximum depth of 51.5 feet below the existing ground surface.
- b. Our laboratory testing program results.
- c. Our engineering analysis based on the information defined in this report.
- d. Our experience in the Kern County area.

Variations in soil type, strength and consistency may exist between specific boring locations.

These variations may not become evident until after the start of construction. If such variations appear, a re-evaluation of the soils test data and recommendations may be necessary.

Unless a Geotechnical Engineer of this firm is afforded the opportunity to review plans and specifications, we accept no responsibility for compliance with design concepts or interpretations made by others regarding foundation support, fill selection, fill placement or other recommendations presented in this report.

Changes in conditions of the subject property can occur with time because of natural processes or the works of man on the subject site or on adjacent properties. Changes in applicable engineering and construction standards can also occur as the result of legislation or from the broadening of knowledge. Accordingly, the finding of this report may be invalidated, wholly or in part, by changes beyond our control. Therefore, this report is subject to review and should not be relied upon without review after a period of two years or after any modifications to the site.

### **Review of Earthwork Operations**

Review of earthwork operations relating to site clearing, ground stabilization, placement and compaction of fill materials, and finished grading is critical to the structural integrity of building foundation and floor systems. While the preliminary Geotechnical investigation and report provide guidelines, which are used by the design team, i.e., architects, grading engineers, structural engineers, landscape engineers, etc., in completing their respective tasks, review of plans and site review and testing during earthwork operations are vital adjuncts to the completion of the Geotechnical engineer's tasks.

The most prevalent cause of failure of a structure foundation system is lack of adequate review and testing during the earthwork phase of the project. Projects rarely reach completion without some alteration being required such as may result from a change in subsurface conditions, an amendment in the size and scope of the project, a revision of the grading plans or a variation in structural details. Occasionally, even minor changes can significantly affect the performance of foundations.



The most prevalent secondary cause for foundation failure is inadequate implementation of Geotechnical recommendations during the formulation of foundation designs and grading plans.

The error in a foundation design or an omission of a key element from a grading plan occurs most often because of inadequate communication between the various project consultants and - when a change in consultants occurs -- improper transfer of authority and responsibility.<sup>3</sup> It is imperative, therefore, that any revisions to the project scope, any change in structural detail, or change in consultant, be brought to the attention of Soils Engineering, Inc. to allow for timely review and revision of recommendations and for an orderly transfer of responsibility and approval.

It is the responsibility of the owner or his representative to ensure that a representative of our firm is present always during earthwork operations relating to site preparation and grading, so that relative compaction tests can be performed, earthwork operations can be observed and compliance with the recommendations provided herein can be established.

This engineering report has been prepared within the limits prescribed to us by the client or his representative, in accordance with the generally accepted principles and practices of Geotechnical engineering. No other warranty, expressed or implied, is included or intended in this report.

Respectfully submitted,  
SOILS ENGINEERING, INC.

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<sup>3</sup> If the civil engineer, the soils engineer, the engineering geologist or the testing agency of record is changed during the course of the work, the work shall be stopped until the replacement has agreed to accept the responsibility within the area of his technical competence for approval upon completion of the work.



## **APPENDIX A**

### **GENERAL GUIDE SPECIFICATIONS FOR EARTHWORK**

#### **1. GENERAL**

##### **1.1 Scope**

These specifications and plans include all earthwork pertaining to site rough grading including, but not limited to, furnishing all labor and equipment necessary for clearing and grubbing; stripping; preparation of ground surfaces to receive fill; excavation; placement and compaction of structural and non-structural fill; disposal of excess materials and products of clearing, grubbing, and stripping; and any other work necessary to bring ground elevations to the lines and grades shown on the project plans. Wherever discrepancies between these guide-specifications and the earthwork recommendations in Section I of the above geotechnical report, the most stringent recommendations shall supersede.

##### **1.2 Performance:**

It shall be the responsibility of the contractor to complete all earthwork in accordance with project plans and specifications. No variance from plans and specifications shall be permitted without written approval of the Engineer-of-Record, hereinafter referred to as the "Engineer" or his designated representative, hereinafter referred to as the "Soils Engineer." Earthwork shall not be considered complete until the "engineer" has issued a written statement confirming substantial compliance of earthwork operations to these specifications and to the project plans.

The contractor shall assume sole responsibility for job site conditions during earthwork operations on the project, including safety of all persons and preservation of all property. This requirement shall apply continuously and not be limited to normal working hours. The contractor shall defend, indemnify, and hold harmless the owners, engineer, and soils engineer from all liability and claims, real or alleged, arising out of performance of earthwork on this project, except from liability incurred through sole negligence of the owner, engineers, or soils engineers.

#### **2. DEFINITIONS**

##### **2.1 Excavations:**

Excavation shall be defined within the content of these specifications as earth material excavated for constructing fill embankment; grading the site to elevations shown on project plans; or placing underground pipelines, conduits, or other subsurface utilities or minor structures.



Excavations shall be made true to the lines shown on project plans and to within plus or minus one-tenth (0.1) of a foot, of grades shown on the accepted site grading plans.

**2.2     Engineered Fill:**

Engineered fill shall be construed within the body of these specifications as earth materials conforming to specifications provided in the soils or geotechnical report placed to raise the grade of the site, to backfill excavations, or to construct asphaltic concrete or Portland cement concrete pavement; and upon which the soils engineer has performed sufficient tests and has made sufficient observation during placement and compaction to enable him to issue a written statement confirming substantial conformance of the work to project earthwork specifications.

**2.3     On-Site Material:**

On-site material is earth material obtained in excavation made on the project site.

**2.4     Imported Material:**

Imported materials are earth materials obtained off the site, hauled in, and placed as fill.

**2.5     "Compaction" or "Compacted:"**

Wherever expressed or implied within the context of these specifications shall be interpreted as compaction to ninety (90) percent of the maximum density obtainable by ASTM Test Method D1557.

**2.6     Grading Plane:**

The grading Plane is the surface of the basement material upon which the lowest layer of subbase, base, asphaltic or Portland cement concrete, surfacing, or another specified layer is placed.

**3.     SITE CONDITIONS**

The contractor shall visit the site, prior to bid submittal, to explore existing subsurface conditions; to survey site topographic, and to define the nature of materials that may be encountered while performing its work under this contract. Moreover, the contractor shall make his own interpretation of the contents of the Geotechnical Report, as they pertain to said conditions.

The contractor shall assume all liability under the contract for any loss sustained because of variations which may exist between specific soil boring locations or changed conditions resulting from natural or man-made circumstances occurring after the date of the Preliminary Field Investigations.



#### **4. CLEARING AND GRUBBING**

##### **4.1 Clearing and Grubbing**

Clearing and grubbing shall consist of removing all debris such as metal, broken concrete, trash, vegetation growth and other biodegradable substances, from all areas to be graded. Existing obstructions below shall be removed in accordance with the following procedures:

- 4.1.1 Slabs and Pavements** - Shall be completely removed. Asphaltic or Portland Cement, concrete fragments may be used in engineered fills provided they are broken down to a maximum dimension of six (6.0) inches and thoroughly dispersed within a friable soil matrix. Engineered fill containing said fragments should not be placed above the elevation of the bottom of the lowest structure footing.
- 4.1.2 Foundations** - Existing at the time of grading shall be removed to a depth not less than two (2.0) feet below the bottom of the lowest structure footing.
- 4.1.3 Basements, Septic Tanks** – Buried concrete containers of similar construction located within areas destined to receive pavements, structures, or engineered fills should be completely removed and disposed of off the site. Basements, septic tanks, etc., situated outside structures, or structural fill areas shall be disposed of by breaking an opening in bottoms to permit drainage, and by breaking walls down to not less than two (2.0) feet below finished subgrade.
- 4.1.4 Buried Utilities** – Such as sewer, water and gas lines or electrical conduits to remain in service shall be re-routed to pass no closer than four (4.0) feet to the outside edge of proposed exterior footings of structures. Lines to be abandoned shall be completely removed to a minimum depth of two (2.0) feet below finished building pad grade. Concrete lines deeper than two (2.0) feet below finished building pad grade and having diameters less than six (6.0) inches can be crushed in place.
- 4.1.5 Root Systems** – Shall be completely removed to a minimum depth of two (2.0) feet below the bottom of the lowest proposed structure footing or to two (2.0) feet below finished subgrade, whichever depth is lower. Root systems deeper than the elevation indicated above shall be excavated to allow no roots larger than two (2.0) inches in diameter.
- 4.1.6 Cavities** – Resulting from clearing and grubbing or cavities existing on the site because of man-made or natural activity shall be backfilled with earth materials placed and compacted in accordance with Sections 5.3 and 5.4 of these specifications.



- 4.1.7 Preservation or Monuments, Construction Stakes, Property Corner Stakes**, or other temporary or permanent horizontal or vertical control reference points shall be the responsibility of the contractor. Where these markers are disturbed, they shall be replaced at the contractor's expense.

## **5. SITE GRADING**

Site grading shall consist of excavation and placement of fills to lines and grades shown on the project plans and in accordance with project specifications and recommendations of the Preliminary Soils Report, whichever is more stringent. The following are recommendations issued in this report:

### **5.1 Areas to Receive Fill:**

- 5.1.1** Surfaces to receive fill shall be scarified to a depth of at least six (6.0) inches, or as recommended in this report, whichever is greater, until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the equipment to be used.
- 5.1.2** After the area to receive fill has been cleared and scarified, it shall be moistened and compacted to a depth of at least six (6.0) inches in accordance with specifications for compacting fill material in paragraph 5.4, below.

### **5.2 Excavation:**

- 5.2.1** Excavations shall be cut to elevations plus or minus 0.1 foot of the grades shown on the accepted plans.
- 5.2.2** When excavated materials are to be used in engineered fill, the excavation shall be made in a manner to produce as much mixing of the excavated materials as practicable.
- 5.2.3** When excavations are to be backfilled, and where surfaces exposed by excavation are to support structures or concrete floor slabs, the exposed surfaces shall be scarified, moistened and compacted, as stated above, for areas to receive fill. Over excavation below specified depths will not eliminate the requirement for exposed surface compaction.

### **5.3 Fill Materials:**

- 5.3.1** Materials obtained from on-site excavations will be considered satisfactory for construction of on-site engineered fills, unless otherwise stated in the Soils Report or Foundation Investigation. If unexpected pockets of poor c 12 inches in size in any dimension shall not be allowed in the proposed building area.



If a large amount of rocks greater than 12 inches in size in any dimension is encountered, a rock disposal area shall be located on the grading plan. Rocks shall be mixed with well-graded soils to assure that the voids in these areas will fill properly.

**5.3.2** When imported fill materials are necessary to bring the site up to planned grades, no material shall be imported prior to its approval and acceptance by the soils engineer.

**5.3.3** The soils engineer shall be given notice of the proposed source of imported materials with adequate time allowance for his testing of the proposed materials. The time required for testing will vary with different types of materials, job conditions, and ultimate function of filled areas. Under best conditions the time requirement will not be less than 48 hours.

**5.4 Placing, Spreading, and Compacting Fill Material:**

**5.4.1** The fill materials shall be placed in layers which, when compacted, shall not exceed six (6.0) inches in thickness. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to insure uniformity of material in each layer. Increased thickness of layers may be approved by the soils engineer when conditions warrant.

**5.4.2** All fills shall be placed in level layers; layers shall be continuous over the area of any structural unit, and all portions of the fill shall be brought up simultaneously within the area of any structural unit. When imported material is used, it must be placed so that its thickness is as uniform as possible within the area of any structural unit.

**5.4.3** When materials are to be excavated and replaced in a compacted condition, segmented, or leap-frogging of cut-fill operations within the area of any structural unit will not be permitted unless the method is specifically described by the soils engineer.

**5.4.4** When the moisture content of fill material is below the lower limit specified by the Soils Engineer, water shall be added until the moisture content is as specified; and when it is above the upper limit specified, the material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.

**5.4.5** After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted to not less than ninety (90) percent of maximum density in accordance with ASTM Density Test Method D1557. Compaction shall be by equipment of such design that it will be able to compact the fill to specified density. When the soils engineer specifies a specific type of compaction equipment to be used, such equipment shall be used as specified.



- 5.4.6** Compaction of each layer shall be continuous over its entire area and the equipment shall make sufficient trips to ensure that the desired density has been obtained.
- 5.4.7** Field density tests shall be made by the soils engineer. The compaction of each layer of fill shall be subject to testing. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests shall be taken in the compacted material below the disturbed surface. When tests indicate the density of any layer of fill or portion thereof is below the required ninety (90) percent density, the layer or portion shall be re-worked until the required density has been obtained.
- 5.4.8** When the soils engineer specifies compaction to other standards or to percentages other than ninety (90) percent, such specification, with respect to the items, shall supersede these specifications.
- 5.4.9** The fill operation shall be continued in six (6) inch compacted layers, as specified above, until the fill has been brought to within 0.1 foot, plus or minus, of the finished slopes and grades, as shown on the accepted plans. The finished surface of fill areas shall be graded or bladed to a smooth and uniform surface and no loose material shall be left on the surface.
- 5.4.10** No fill materials shall be placed, spread, or compacted while it is frozen or thawing or during unfavorable weather conditions. When work is interrupted by weather conditions, fill operations shall not be resumed until the soils engineer indicates that moisture content and density of previously placed fill are satisfactory.

**5.5 Observations and Testing:**

The soils engineer shall be provided with a 48-hour notice, in order that he may be present at the site during all earthwork activities related to excavation, tree root removal, stripping, backfill, and compaction and filling of the site and to perform periodic compaction tests so that substantial conformance to these recommendations can be established.



## **APPENDIX B**

### **FIELD INVESTIGATION**

Eighteen (18) test borings were drilled at the subject site and terminated at a maximum depth of 51 ½ feet below the existing ground surface. Borings were advanced using an eight (8.0) inch hollow-stem auger. Test data and descriptions from these holes form the basis of the conclusions and recommendations contained in this report.

Undisturbed samples and disturbed bulk samples were obtained. Undisturbed samples were taken using either a 2-3/8" (inside diameter) split-barrel sampler or a 1-3/8" (inside diameter), 2" (outside diameter) Standard Penetration Sampler (SPT). Penetration resistance of undisturbed soils was obtained by driving the above described sampler using a one-hundred-forty-pound hammer falling thirty (30.0) inches and recording blow counts for each six (6.0) inch increment of drive on Test Boring Logs. In addition, bulk soil samples, selected as most representative of near surface soils encountered, were taken for laboratory testing.

As drilling progressed, earth materials encountered were logged and classified in accordance with the Unified Soils Classification System and presented graphically on Logs of Test Borings, Figures 2 through 19, along with the Legend.

Approximate locations of test borings are shown on the Boring Location Map, Figure 1.

In addition to the borings, six (6) percolation tests were performed in substantial accordance with the Manual of Septic Tank Practice, Part I, of the U.S. Department of Health, Education, and Welfare, Public Health Service. Tests were performed at five feet below the existing ground surface. Results are shown in Table 1.



# UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

## COARSE-GRAINED SOILS Less than 50% Fines\*

Group Symbols	Description	Major Divisions
GW	Well-graded gravels or gravel-sand mixtures, less than 5% fines	GRAVELS More than half of coarse fraction is larger than No. 4 sieve size
GP	Poorly-Graded gravels or gravel-sand mixture less than 5% fines	
GM	Silty Gravels, Gravel-sand silt mixtures, more than 12% fines	
GC	Clayey Gravels, gravel-sand-clay mixtures, more than 12% fines	
SW	Well-Graded sands or Gravelly Sands, less than 5%	SANDS More than half of coarse fraction is smaller than No. 4 sieve size
SP	Poorly-graded Sands or Gravelly Sands, less than 5% fines	
SM	Silty Sands, Sand-Silt Mixtures, more than 12% fines	
SC	Clayey Sands, Sand-Clay Mixtures, more than 12% fines	

NOTE: coarse-grained soils receive dual symbols if they contain 5 to 12% fines (e.g. SW-SM, GP-GC, etc.)

## FINE-GRAINED SOILS More than 50% Fines

Group Symbols	Description	Major Divisions
ML	Inorganic Silts, very fine sands, Rock Flour, Silty or Clayey Fine Sands	SILTS AND CLAYS Liquid Limit less than 50
CL	Inorganic Clays of low to medium plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays	
OL	Organic Silts or Organic Silt-Clays of Low Plasticity	
MH	Inorganic Silts, Micaceous or Diatomaceous Fine Sands or Silts, Elastic Silts	SILTS AND CLAYS Liquid limit more than 50
CH	Inorganic Clays of High Plasticity, Fat clays	
OH	Organic Clays of Medium to High Plasticity	
PT	Peat, Mulch, and other Highly Organic Soils	HIGHLY ORGANIC SOILS

NOTE: Fine-grained soils may receive dual classification based upon plasticity characteristics

## SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	ABOVE 12 in.
COBBLES	3 in. to 12 in.
GRAVEL Coarse Fine	No. 4 to 3 in. 3/4 in. to 3 in. No. 4 to 3/4 in.
SAND Coarse Medium Fine	No. 200 to No. 4 No. 10 to No. 4 No. 40 to No. 10 No. 200 to No. 40
* Fines (Silt or Clay)	BELOW No. 200

NOTE: Only sizes smaller than three inches are used to classify soils

## PLASTICITY OF FINE GRAINED SOILS

PLASTICITY INDEX	VOLUME CHANGE POTENTIAL
0 - 15 15 - 30 30 or more	Probably Low Probably Moderate Probably High

## CONSISTENCY

CLAYS & SILTS	BLOWS/FOOT*
VERY SOFT	0 - 2
SOFT	2 - 4
FIRM	4 - 8
STIFF	8 - 15
VERY STIFF	15 - 30
HARD	Over 30

## RELATIVE DENSITY

SANDS & GRAVELS	BLOWS/FOOT*
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	Over 50

\*Number of blows of 140 pound hammer falling 30 inches to drive a 2-inch O.D. (1 3/8" I.D.) Spill-spoon (ASTM D1586)

DRY: no feel of moisture  
DAMP: much less than normal moisture  
MOIST: normal moisture  
WET: much greater than normal moisture  
SATURATED: at or near saturation

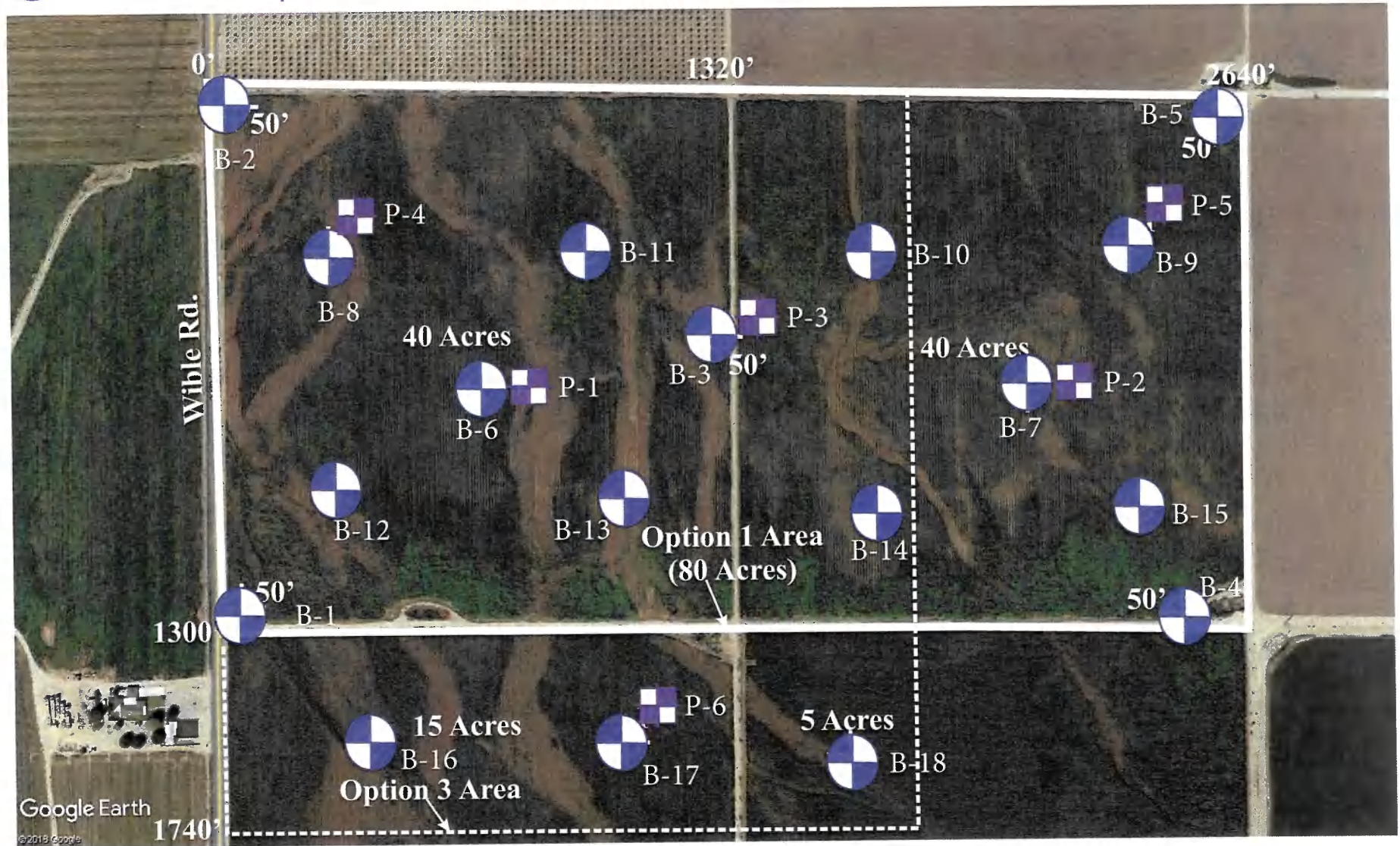




BORING



PERCOLATION



## Proposed SW HS Site - Likely School Area

SE of Engle Rd. & Wible Rd.

Bakersfield, CA

File # 18-16608

50'  
⊕ for Geohazard

⊕ Soil Boring to 20' P = Perc Test

BORNING LOCATION MAP SEI FILE NO. 16608 FIGURE 1





# LOG OF TEST BORING BORING B-1

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  : N/A

CAVING -  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; yellow brown; dry to damp; fine grained			
325 5	4/6 6/6 8/6		medium dense		96.8	4.4
320 10	4/6 7/6 7/6		brown; damp		109.5	7.4
315 15	4/6 6/6 10/6	SM	SILTY SAND; brown; damp; fine grained medium dense		105.4	7.3
310 20	6/6 9/6 10/6		brown; damp; cohesive.		92.8	23.3
305 25	4/6 13/6 18/6		CLAYEY SILT; brown; damp; hard; low plasticity		113.8	15.6
300 30	11/6 18/6 28/6	SP- SM	POORLY-GRADED SAND with low fine content; light yellowish brown; dry to damp; fine grained dense		105.8	3.1
295 35						

Figure Number 2





# LOG OF TEST BORING BORING B-1

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  : N/A

CAVING -  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS





ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	 12/6 22/6 35/6		very dense		106.3	3.0
285 45	 12/6 23/6 30/6				104.4	3.2
280 50	 11/6 20/6 24/6	SP	POORLY GRADED SAND; yellowish brown; non cohesive; dense		102.9	5.2
275 55	 14/6 33/6 50/6		very dense		103.3	3.0
270 60			BOTTOM			
265 65						
260 70						

Figure Number 2





# LOG OF TEST BORING BORING B-2

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; yellow brown; dry; fine grained			
325 5	5/6 6/6 7/6		medium dense		89.2	4.7
320 10	5/6 3/6 3/6	SP- SM	POORLY-GRADED SAND with low fine content; light yellowish brown; dry to damp; fine grained loose		96.2	3.4
315 15	4/6 6/6 6/6		medium dense		99.2	7.7
310 20	4/6 5/6 5/6	SP	POORLY GRADED SAND; olive; low cohesion; loose		99.1	4.5
305 25	1/6 1/6 3/6	ML	CLAYEY SANDY SILT; olive brown; v moist; low plasticity		105.3	22.3
300 30	7/6 8/6 12/6	SP	soft POORLY-GRADED SAND; light yellowish brown; dry to damp; fine graded medium dense		110	4.5
295 35						

Figure Number 3





# LOG OF TEST BORING BORING B-2

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  : N/A

CAVING -  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS





ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	 9/6 16/6 17/6		dense		99.4	4.7
285 45	 10/6 17/6 20/6				110	3.7
280 50	 7/6 7/6 13/6 17/6				114	4.7
275 55	 9/6 16/6 20/6		BOTTOM		116.9	4.3
270 60						
265 65						
260 70						

Figure Number 3





# LOG OF TEST BORING BORING B-3

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER - : N/A

CAVING - : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; brown; dry; fine grained; cohesive.			
325 5	5/6 8/6 6/6		medium dense		107.1	4.8
320 10	3/6 4/6 4/6		loose		105.2	8.9
315 15	2/6 3/6 3/6	ML	SANDY CLAYEY SILT; olive; high plasticity medium stiff.		99.6	20.0
310 20	2/6 3/6 5/6		stiff		94.5	20.7
305 25	1/6 3/6 4/6		medium stiff		95.2	24.0
300 30	10/6 8/6 6/6	SM	SILTY SAND; light brown; damp; fine grained			
		CL	CLAY; olive brown; damp; stiff; low plasticity		104.8	9.5
295 35		SP-SM	POORLY GRADED SAND with low fine content; light yellowish			

Figure Number 4





# LOG OF TEST BORING BORING B-3

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER - : N/A

CAVING - : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	9/6 16/6 18/6		brown; dry; fine grained dense		103.1	3.2
285 45	11/6 17/6 20/6				112.6	2.3
280 50	6/6 8/6 25/6	ML SM	SANDY CLAYEY SILT; olive; damp; low plasticity; hard SILTY SAND; light brown; damp; fine grained		105.5	20.2
275 55	17/6 17/6 16/6	CL SM	SILTY CLAY; olive brown; damp; low plasticity SILTY SAND; light brown; dry to damp; dense; fine grained BOTTOM		102.8	20.2
270 60						
265 65						
260 70						

Figure Number 4





# LOG OF TEST BORING BORING B-4

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  : N/A

CAVING -  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS







ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; brown; dry; low plasticity			
325 5	 3/6 4/6 5/6		stiff		97	11.1
320 10	 4/6 5/6 7/6				107	16.8
315 15	 2/6 2/6 2/6		soft; traces of clay		102	16.4
310 20	 3/6 5/6 7/6		stiff		108.4	15.8
305 25	 2/6 5/6 6/6				106.1	20.8
300 30	 4/6 6/6 19/6	SC	CLAYEY SILTY SAND; light yellowish brown; dry; medium dense; fine grained		111.8	15.8
295 35						

Figure Number 5





# LOG OF TEST BORING BORING B-4

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER - : N/A

CAVING - : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	6/6 4/6 4/6	SM	SILTY SAND; olive brown; damp; loose; cohesive.		110	13.3
285 45	11/6 15/6 16/6	SP- SM	POORLY GRADED SAND with low fine content; light yellowish brown; dry to damp; low cohesion. dense		106.2	3.5
280 50	8/6 9/6 12/6	CL	SILTY CLAY; olive brown; damp to wet; low plasticity very stiff		108.4	29.0
275 55	4/6 11/6 14/6		BOTTOM		100.1	30.8
270 60						
265 65						
260 70						

Figure Number 5





# LOG OF TEST BORING BORING B-5

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine			
325 5	2/6 4/6 4/6		loose		94.6	3.3
320 10	3/6 6/6 6/6		medium dense; fine to medium grained		91.3	2.1
315 15	5/6 9/6 11/6	SM	SILTY SAND; light brown; dry to damp; fine medium dense		96.4	7.0
310 20	3/6 4/6 11/6	CL ML SM	SILTY CLAY; brown; damp to v moist; low plasticity SANDY SILT; brown; damp; low plasticity		122.5	6.6
305 25	2/6 8/6 17/6	ML	SILTY SAND; yellow brown; damp; medium dense; fine grained CLAYEY SANDY SILT; olive brown; damp; low plasticity very stiff		114.6	14.9
300 30	9/6 13/6 28/6	SM	SILTY SAND; light red brown; dry to damp; dense; fine grained		121.0	2.7
295 35		CL	CLAY; olive brown; damp to			

Figure Number 6





# LOG OF TEST BORING BORING B-5

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 - 40	5/6 11/6 18/6	SM	wet; low plasticity SILTY SAND; light brown; damp; medium dense; fine grained		101.0	14.7
285 - 45	14/6 12/6 22/6	CL ML	SILTY CLAY; olive brown; damp; low plasticity CLAYEY SANDY SILT; olive brown; hard; low plasticity		113.1	18.4
280 - 50	18/6 32/6 50/6	SM	SILTY SAND; light yellowish brown; dry to damp; fine grained very dense		100.4	3.7
275 - 55	13/6 23/6 34/6	CL SM	SILTY CLAY; olive brown; wet; low plasticity SITLY SAND; yellow brown; damp; very dense; fine grained BOTTOM		114.4	7.3
270 - 60						
265 - 65						
260 - 70						

Figure Number 6





# LOG OF TEST BORING BORING B-6

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacksquare$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; light yellowish brown; dry; fine grained			
	6/6 6/6 9/6		medium dense		99.4	2.9
325 5		ML	SANDY SILT; light yellowish brown; dry; very stiff; low plasticity		90.1	7.6
	7/6 9/6 13/6					
320 10		SM	SITY SAND; yellow brown; damp; medium dense; fine grained		111.4	5.2
	5/6 9/6 12/6					
315 15		CL	SILTY CLAY; brown; damp; low plasticity		115.9	14.1
	3/6 7/6 11/6	ML	very stiff			
			SANDY SILT; brown; damp; low plasticity; trace clay;			
310 20			hard		110.8	8.7
	6/6 11/6 20/6					
305 25		CL	CLAY; olive brown; damp; low plasticity		97.9	19.0
	3/6 8/6 11/6		very stiff			
300 30		SM	SILTY SAND; light yellowish brown; dry; fine		98.9	9.6
	9/6 18/6 25/6		dense			
			BOTTOM			
295 35						

Figure Number 7





# LOG OF TEST BORING BORING B-7

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\frac{1}{2}$  : N/A

CAVING -  $\frac{1}{2}$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SC	CLAYEY SILTY SAND; light yellowish brown; dry; low plasticity.			
	6/6 8/6 13/6		medium dense		100.6	3.1
325 5		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained		98.1	1.7
	8/6 11/6 12/6					
320 10		ML	SANDY SILT; brown; damp; low plasticity; traces clay stiff		111.3	13.7
	4/6 7/6 8/6					
315 15		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained; trace silt medium dense		109.4	2.9
	5/6 11/6 14/6					
310 20		ML	CLAYEY SILT; olive brown; damp; stiff low plasticity; traces sand		106.3	18.9
	4/6 6/6 9/6					
305 25		SP	POORLY-GRADED SAND; gray; damp; fine; trace clay dense		120.3	8.1
	10/6 17/6 22/6					
300 30			fine grained		95.8	6.3
	14/6 17/6 17/6		BOTTOM			
295 35						

Figure Number 8





# LOG OF TEST BORING BORING B-8

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	CLAYEY SILT; light yellowish brown; dry to damp; low plasticity			
	8/6 10/6 16/6		very stiff		102.9	7.6
325 5	5/6 5/6 8/6		brown; stiff		92.8	13.5
320 10	3/6 7/6 14/6	SP	POORLY-GRADED SAND; light brown; damp; medium dense; fine grained		116.8	4.4
315 15	3/6 5/6 13/6	CL	SILTY CLAY; brown; damp; low plasticity		110.9	15.5
310 20	5/6 10/6 15/6	ML	SANDY SILT; light brown; dry to damp; fine grained		105.3	14.8
			very stiff			
			BOTTOM			
305 25						
300 30						
295 35						

Figure Number 9





# LOG OF TEST BORING BORING B-9

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	CLAYEY SILT; yellow brown; dry; low plasticity			
	8/6 10/6 12/6		very stiff		96.8	5.7
325 5	6/6 9/6 12/6				95.2	4.1
320 10	4/6 5/6 8/6	CL	brown; damp; stiff SILTY CLAY; olive brown; damp; low plasticity		108.6	14.2
315 15	3/6 4/6 6/6	ML	CLAYEY SILT; yellow brown; damp; low plasticity stiff		99.6	23.5
310 20	5/6 9/6		very stiff; trace sand BOTTOM		114.4	8.4
305 25						
300 30						
295 35						

Figure Number 10





# LOG OF TEST BORING BORING B-10

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/27/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; dark brown; damp; low plasticity			
	7/6 15/6 17/6		yellow brown; hard		104.4	6.4
325 5	10/6 14/6 18/6		SILTY SAND; light yellowish brown; dry; fine grained; traces clay; dense		120.1	4.6
320 10		CL	SILTY CLAY; brown; damp; low plasticity			
	5/6 10/6 14/6	SP	POORLY-GRADED SAND; yellow brown; damp; fine grained medium dense		122.3	3.0
315 15	4/6 10/6 9/6	ML	SANDY SILT; yellow brown; damp; low plasticity very stiff		103.9	13.2
			BOTTOM			
310 20						
305 25						
300 30						
295 35						

Figure Number 11





# LOG OF TEST BORING BORING B-11

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

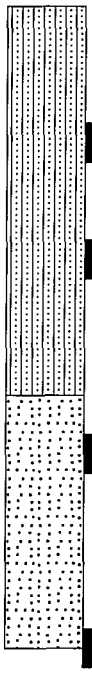
ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; light yellowish brown; dry to damp; fine grained			
325 5			medium dense		104.2	5.5
320 10			damp; brown; loose		106.6	7.8
315 15		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained		95.5	2.3
310 20			medium dense			
305 25						
300 30						
295 35						
			BOTTOM		103.6	5.1

Figure Number 12





# LOG OF TEST BORING BORING B-12

Page 1 of 1

**PROJECT:** KHSD Potential High School Site

**BORING DATE:** 02/28/2018

**BORING LOCATION:** See Boring Location Map, Figure 1

**DRILL METHOD:** 4-1/4 Inch I.D. Hollow-Stem Auger

**DESCRIPTION:** Geotech & Sewage Feasibility and Geohazard for High School Site

**DEPTH TO WATER -**  $\frac{2}{3}$  : N/A

**CAVING -**  $\blacktriangleright$  : N/A

**FILE NO:** 16608

**ELEV.:** 330'

**START:** 02/22/2018

**FINISH:** 02/28/2018

**LOGGER:** M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; light yellowish brown; dry; low plasticity			
	11/6 14/6 16/6		hard			
325 5	5/6 7/6 9/6		brown; dry; low plasticity; stiff		96.7	10.7
320 10	3/6 5/6 9/6	CL	SILTY CLAY; brown; damp; low plasticity stiff		100.2	19.8
315 15	6/6 9/6 12/6		CLAYEY SILTY SAND; yellowish brown; poorly graded; low plasticity; very stiff		109.2	10.6
310 20			BOTTOM			
305 25						
300 30						
295 35						

Figure Number 13





# LOG OF TEST BORING BORING B-13

Page 1 of 1

**PROJECT:** KHSD Potential High School Site

**BORING DATE:** 02/28/2018

**BORING LOCATION:** See Boring Location Map, Figure 1

**DRILL METHOD:** 4-1/4 Inch I.D. Hollow-Stem Auger

**DESCRIPTION:** Geotech & Sewage Feasibility and Geohazard for High School Site

**DEPTH TO WATER -** : N/A

**CAVING -** : N/A

**FILE NO:** 16608

**ELEV.:** 330'

**START:** 02/22/2018

**FINISH:** 02/28/2018

**LOGGER:** M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; yellow brown; dry to damp; fine grained			
	2/6 3/6 4/6		loose		97.7	1.9
325 5	2/6 3/6 6/6				98.6	2.1
320 10	3/6 6/6 8/6		medium dense		100.9	1.9
315 15	4/6 9/6 10/6	SM	SILTY SAND; light brown; damp; fine grained		92.6	9.5
310 20		ML				
	3/6 5/6 7/6	CL	SILTY CLAY; olive brown; damp; low plasticity stiff		91.9	27.6
			BOTTOM			
305 25						
300 30						
295 35						

Figure Number 14





# LOG OF TEST BORING BORING B-14

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; light yellowish brown; dry; low plasticity			
	8/6 10/6 14/6		very stiff		97.9	6.3
325 5		SM	SILTY SAND; dark olive brown; poorly-graded; cohesive.		114.8	4.0
	7/6 11/6 14/6					
320 10		SP	POORLY-GRADED SAND; brown; damp; fine grained		109.5	3.7
	7/6 11/6 14/6		light yellowish brown; medium dense			
315 15		CL	SILTY CLAY; olive brown; damp; low plasticity		109.3	17.1
	2/6 3/6 5/6		stiff			
			BOTTOM			
310 20						
305 25						
300 30						
295 35						

Figure Number 15





# LOG OF TEST BORING BORING B-15

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; light brown; dry; cohesive			
	4/6 7/6 11/6		very stiff		89.3	5.0
325 5						
	7/6 10/6 14/6				105.7	4.3
320 10		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained medium dense		103.4	2.1
	6/6 9/6 12/6					
315 15						
	5/6 11/6 15/6				97.4	1.6
310 20		CL	SILTY CLAY; olive brown; damp; low plasticity		109.1	18.7
	3/6 5/6 9/6		CLAYEY SILTY SAND; brown; poorly graded; low to medium plasticity; stiff			
305 25			BOTTOM			
300 30						
295 35						

Figure Number 16





# LOG OF TEST BORING BORING B-16

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; yellow brown; dry to damp; low plasticity			
	6/6 9/6 9/6		very stiff		88.2	5.8
325 5	3/6 4/6 5/6	SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained loose		95.9	2.3
320 10	4/6 8/6 10/6		medium dense		101.9	2.0
315 15	7/6 9/6 14/6				101.8	3.4
310 20	1/6 2/6 7/6	ML	SILTY CLAY; brown; damp to dry; low plasticity stiff BOTTOM		96.7	24.7
305 25						
300 30						
295 35						

Figure Number 17





# LOG OF TEST BORING BORING B-17

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/27/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	CLAYEY SILT; dark brown; damp; low plasticity			
	8/6 15/6 19/6		light brown; dry to damp; hard		110.9	7.5
325 5	8/6 13/6 14/6		very stiff		103.2	10.1
320 10	7/6 11/6 14/6		light yellowish brown		119.7	10.9
315 15	10/6 14/6 16/6	SM	SILTY SAND; yellow brown; damp; fine grained		121.2	6.5
			dense			
			BOTTOM			
310 20						
305 25						
300 30						
295 35						

Figure Number 18





# LOG OF TEST BORING BORING B-18

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/27/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SC	CLAYEY SILTY SAND; dark brown; damp to wet; cohesive.			
	11/6 17/6 22/6		light brown; dry to damp; dense.		118.8	3.1
325 5	11/6 17/6 20/6				119.8	5.0
320 10	3/6 7/6 12/6	SM	SILTY SAND; yellowish brown; medium dense; fine grained; traces clay		118.9	10.7
315 15	6/6 8/6 7/6	CL	SILTY CLAY; brown; damp; low plasticity; stiff		98.0	8.6
310 20	4/6 7/6 12/6	ML	SANDY SILT; brown; damp; low plasticity very stiff BOTTOM		110.4	15.4
305 25						
300 30						
295 35						


Figure Number 19





# KEY TO SYMBOLS


Symbol Description


## Strata symbols


 Poorly graded sand

 Silty sand


 Poorly graded sand  
with silt

 Silt

 Low plasticity  
clay


 Clayey sand

## Misc. Symbols

 Boring continues

## Soil Samplers

 California sampler

 Standard penetration test

## Notes:

1. Eighteen (18) exploratory borings were drilled between 2/22/2018 and 2/28/2018, using an 8-inch outside diameter hollow-stem auger.
2. No free groundwater was encountered to the maximum depth drilled of 51.5'.
3. Boring locations are shown on the Boring Location Map, Figure 1.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs.



TABLE 1 - PERCOLATION TEST DATA LOG

SEI File No. 17-16608

SITE ADDRESS: Wible Rd. and Engle Rd., Bakersfield, Kern County, CA

APN: 184-150-39 & 184-150-40 TEST PERFORMED BY: Soils Engineering, Inc. (SEI)

TEST DATES: February 26 & 27, 2018 TEST HOLES WERE PRESATURATED FOR 14 HOURS

HOLE #	Percolation # 1 (P-1)				Percolation # 1A (P-1A)				Percolation # 2 (P-2)			
DEPTH	5' FEET				3' FEET				3' FEET			
	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)
	INITIAL	FINAL			INITIAL	FINAL			INITIAL	FINAL		
	TEST # 1				TEST # 1				TEST # 1			
	0	10	4.00		0	10	4.50		0	10	2.50	
	10	20	4.00		10	20	4.50		10	20	2.50	
	20	30	4.00		20	30	4.50		20	30	2.25	
	30	40	3.75	2.54	30	40	4.25	2.25	30	40	2.25	4.21
	TEST # 2				TEST # 2				TEST # 2			
	0	10	4.00		0	10	4.50		0	10	2.50	
	10	20	4.00		10	20	4.50		10	20	2.25	
	20	30	3.75		20	30	4.25		20	30	2.25	
	30	40	3.75	2.58	30	40	4.25	2.29	30	40	2.25	4.32
	TEST # 3				TEST # 3				TEST # 3			
	0	10	4.00		0	10	4.50		0	10	2.25	
	10	20	3.75		10	20	4.25		10	20	2.25	
	20	30	3.75		20	30	4.25		20	30	2.25	
	30	40	3.75	2.62	30	40	4.00	2.35	30	40	2.00	4.57

REMARKS: Three tests were conducted at each location. Each test ran for 40 min after the presoak period.

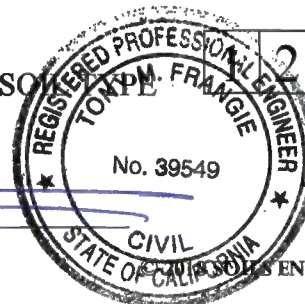
FINAL RATE TO BE USED IN DESIGN AT 3 FT: 3 Minutes/inch. SOIL TYPE

1	2	3	4	5
---	---	---	---	---

FINAL RATE TO BE USED IN DESIGN AT 5 FT: 3 Minutes/inch. SOIL TYPE

1	2	3	4	5
---	---	---	---	---

SIGNATURE OF QUALIFIED PROFESSIONAL: \_\_\_\_\_



SOILS ENGINEERING, INC.



TABLE 1 - PERCOLATION TEST DATA LOG

SEI File No. 17-16608

SITE ADDRESS: Wible Rd. and Engle Rd., Bakersfield, Kern County, CA

APN: 184-150-38, 184-150-40 & 184-150-41 TEST PERFORMED BY: Soils Engineering, Inc. (SEI)

TEST DATES: February 26 & 27, 2018 TEST HOLES WERE PRESATURATED FOR 14 HOURS

HOLE #	Percolation # 3 (P-3)				Percolation # 4 (P-4)				Percolation # 5 (P-5)			
DEPTH	5' FEET				3' FEET				5' FEET			
	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)
	INITIAL	FINAL			INITIAL	FINAL			INITIAL	FINAL		
	TEST # 1				TEST # 1				TEST # 1			
	0	10	4.25		0	10	1.50		0	10	2.25	
	10	20	4.25		10	20	1.50		10	20	2.25	
	20	30	4.25		20	30	1.50		20	30	2.00	
	30	40	4.00	2.39	30	40	1.25	6.96	30	40	2.00	4.71
	TEST # 2				TEST # 2				TEST # 2			
	0	10	4.25		0	10	1.50		0	10	2.25	
	10	20	4.25		10	20	1.50		10	20	2.00	
	20	30	4.00		20	30	1.25		20	30	2.00	
	30	40	4.00	2.42	30	40	1.25	7.27	30	40	2.00	4.85
	TEST # 3				TEST # 3				TEST # 3			
	0	10	4.25		0	10	1.50		0	10	2.00	
	10	20	4.25		10	20	1.25		10	20	2.00	
	20	30	4.25		20	30	1.25		20	30	2.00	
	30	40	4.00	2.39	30	40	1.00	8.00	30	40	1.75	5.16

REMARKS: Three tests were conducted at each location. Each test ran for 40 min after the presoak period.

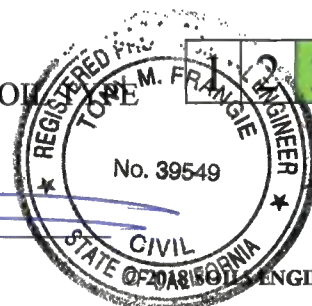
FINAL RATE TO BE USED IN DESIGN AT 3 FT: 8 Minutes/inch. SOIL TYPE

1	2	3	4	5
---	---	---	---	---

FINAL RATE TO BE USED IN DESIGN AT 5 FT: 5 Minutes/inch. SOIL TYPE

1	2	3	4	5
---	---	---	---	---

SIGNATURE OF QUALIFIED PROFESSIONAL: \_\_\_\_\_



SOILS ENGINEERING, INC.



TABLE 1 - PERCOLATION TEST DATA LOG

SEI File No. 17-16608

SITE ADDRESS: Wible Rd. and Engle Rd., Bakersfield, Kern County, CAAPN: 184-150-52 TEST PERFORMED BY: Soils Engineering, Inc. (SEI)TEST DATES: February 26 & 27, 2018 TEST HOLES WERE PRESATURATED FOR 14 HOURS

HOLE #	Percolation # 6 (P-6)				Percolation # 6A (P-6A)				N/A			
DEPTH	5' FEET				3' FEET				N/A			
	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)	TIME (MIN)		WATER LEVEL DROP (IN)	PERC RATE (MIN/IN)
	INITIAL	FINAL			INITIAL	FINAL			INITIAL	FINAL		
	TEST # 1				TEST # 1				N/A			
	0	10	3.25		0	10	1.00					
	10	20	3.25		10	20	1.00					
	20	30	3.25		20	30	0.75					
	30	40	3.00	3.13	30	40	0.75	11.43				
	TEST # 2				TEST # 2				N/A			
	0	10	3.25		0	10	1.00					
	10	20	3.25		10	20	0.75					
	20	30	3.00		20	30	0.75					
	30	40	3.00	3.20	30	40	0.75	12.31				
	TEST # 3				TEST # 3				N/A			
	0	10	3.00		0	10	0.75					
	10	20	3.00		10	20	0.75					
	20	30	2.75		20	30	0.75					
	30	40	2.75	3.48	30	40	0.50	14.55				

REMARKS: Three tests were conducted at each location. Each test ran for 40 min after the presoak period.FINAL RATE TO BE USED IN DESIGN AT 3 FT: 15 Minutes/inch. SOIL TYPE

1	2	3	4	5
---	---	---	---	---

FINAL RATE TO BE USED IN DESIGN AT 5 FT: 4 Minutes/inch. SOIL TYPE

1	2	3	4	5
---	---	---	---	---

SIGNATURE OF QUALIFIED PROFESSIONAL: \_\_\_\_\_



SOILS ENGINEERING, INC.



## **APPENDIX C**

### **SOIL TEST DATA**

#### **SIEVE ANALYSES (ASTM D422 and/or ASTM D1140)**

Grain size distributions for samples selected as most representative of sub-soils encountered in our test borings were determined by sieve analysis (ASTM Test Method D422). Test results are shown in Figures A-1 through A-33.

#### **IN-SITU MOISTURE RELATIONSHIPS (ASTM D 2216)**

Moisture density data for disturbed native soils was obtained by use of a 2-3/8-inch (inside diameter) split-barrel sampler. Test results are given on the Test Boring Logs.

#### **CONSOLIDATION TESTS (ASTM D 2435)**

Compressibility of soils was determined on saturated, undisturbed samples of native materials. Consolidation Test Diagrams, Figures B-1 through B-12, graphically express the relationship of vertical strain vs. applied vertical (normal) load for earth materials selected as most representative of the soil strata within the anticipated zone of influence of foundation loads.

#### **DIRECT SHEAR TESTS (ASTM D 3080)**

Quick-consolidated direct shear tests were performed on an undisturbed, saturated sample of native earth materials. These tests provide information on soil shear strength vs. normal load and are used to determine the angle of internal friction and cohesion of earth materials under essentially drained conditions. Test results are presented in Figures C-1 through C-2.

#### **EXPANSION INDEX (ASTM D 4829)**

The Expansion Index test is designed to measure a basic index property of soil and in this respect is comparable to other index tests such as the Atterberg Limits. In formulating the test procedures, no attempt has been made to duplicate any particular moisture or loading conditions which may occur in the field. Rather, an attempt has been made to control all variables which influence the expansive characteristics of a particular soil and still retain a practical test for general engineering usage. Four samples of near surface soils were obtained and tested for expansiveness. Test results are presented on the Laboratory Testing Recap Table 3



**SOIL CORROSIVITY (SO<sub>4</sub> / pH / Chlorides)**

Tests for Soluble Sulfates (SO<sub>4</sub>), Soluble Chlorides (Cl), and pH values were performed on four (4) composite samples taken from the upper 5 feet of Borings 7, 8, 13, and 18 to determine the corrosion potential of the soils. Corrosion prevention measures and the extent to which measures should be taken (if any) should be addressed with the corrosion engineer. Soluble Sulfates and Soluble Chlorides values were determined according to EPA 300.0M. The pH values were determined according to EPA 9045C. Results of all three constituents are discussed in the report, **Section V**.



# Kern High School District

Geotechnical Soils Investigation

KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW  
SE of Wible Rd. & Engle Rd. in Bakersfield, CA

SEI File No. 18-16608

March 28, 2018

TABLE 2

TEST LOCATION	USCS	% < # 200	CONSOLIDATION				DIRECT SHEAR		UNCONFINED COMPRESSION		E.I.	ATTERBERG LIMITS			R-VALUE @ 300 psi		MAXIMUM DENSITY	
			C <sub>c</sub>	C <sub>s</sub>	S.P. (psf)	HV %	C <sub>1</sub> (ksf)	F.A.	Q <sub>u</sub> (psi)	C <sub>1</sub> (ksf)		LL	PL	PI	R.V.	E.P. (psi)	MDD (pcf)	O.M.
B-1 @ 21'	SM	38																
B-1 @ 31'	SP-SM	6.4																
B-1 @ 46'	SP	2.0																
B-2 @ 6'	SM	32																
B-2 @ 11'	SP-SM	6.0																
B-2 @ 21'	SP	4.2																
B-2 @ 26'	ML	62																
B-2 @ 31'	SP	3.0																
B-3 @ 6'	SM	31																
B-3 @ 16'	ML	73																
B-3 @ 36'	SP-SM	9.7																
B-3 @ 46'	ML	85																
B-4 @ 6'	ML	69																
B-4 @ 16'	ML	69																
B-4 @ 31'	SC	31																
B-4 @ 36'	SM	36																
B-4 @ 41'	SP-SM	5.7																
B-5 @ 26'	ML	57																
B-5 @ 36'	SM	33																

CONSOLIDATION  
Cc - Compression Index  
Cs - Swell Index  
S.P. (psf) - Swell Pressure  
HV % - Heave Percentage / Collapse

UNCONFINED COMPRESSION  
Q<sub>u</sub> (psi) - Unconfined Compression  
Strength  
C<sub>1</sub> (ksf) - Cohesion

DIRECT SHEAR  
C (ksf) - Cohesion  
F.A. - Friction Angle

E.I. - EXPANSION INDEX  
ATTERBERG LIMITS  
LL - Liquid Limit  
PL - Plastic Limit  
PI - Plasticity Index

(R)ESISTANCE VALUE  
RV - R-Value @ 300 psi  
EP - Expansion Press @ 300 psi

MAXIMUM DENSITY  
MDD (pcf) - Max Dry Density  
O.M. - Optimum Moisture



# Kern High School District

## Geotechnical Soils Investigation

KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW  
SE of Wible Rd. & Engle Rd. in Bakersfield, CA

SEI File No. 18-16608

March 26, 2018

TABLE 3

TEST LOCATION	USCS	% < # 200	CONSOLIDATION				DIRECT SHEAR		UNCONFINED COMPRESSION		E.I.	ATTERBERG LIMITS			R-VALUE @ 300 psi		MAXIMUM DENSITY	
			C <sub>c</sub>	C <sub>s</sub>	S.P. (psf)	HV %	C, (ksf)	F.A.	Q <sub>u</sub> , (psi)	C, (ksf)		LL	PL	PI	R.V.	E.P. (psi)	MDD (pcf)	O.M.
B-5 @ 41'	ML	74																
B-6 @ 3'	SM	22					0	31.9										
B-7 @ 0-5'	SC										18							
B-7 @ 3'	SC	46	0.16	0.01	0	-0.6												
B-8 @ 0-5'	ML										6							
B-8 @ 6'	ML	94	0.21	0.03	120	0.1												
B-9 @ 3'	ML	51	0.16	0.02	0	-0.2												
B-10 @ 3'	ML	61	0.10	0.02	0	-0.1												
B-11 @ 3'	SM	14	0.02	0	0	-0.1												
B-11 @ 6'	SM		0.03	0	0	0												
B-12 @ 6'	ML	71	0.16	0.02	0	0												
B-13 @ 0-5'	SP										0							
B-13 @ 3'	SP	1.7					0	40.3										
B-14 @ 3'	ML	64	0.09	0.01	0	-0.4												
B-15 @ 3'	ML	60	0.32	0.02	0	-0.9												
B-16 @ 3'	ML	83	0.22	0.04	0	-0.2												
B-17 @ 3'	ML	74	0.14	0.04	582	0.3												
B-18 @ 0-5'	SC										15							
B-18 @ 3'	SC	32	0.05	0.01	0	-0.1												

**CONSOLIDATION**  
Cc - Compression Index  
Cs - Swell Index  
S.P. (psf) - Swell Pressure  
HV % - Heave Percentage / Collapse

**UNCONFINED COMPRESSION**  
Q<sub>u</sub> (psi) - Unconfined Compression  
Strength  
C, (ksf) - Cohesion

**DIRECT SHEAR**  
C (ksf) - Cohesion  
F.A. - Friction Angle

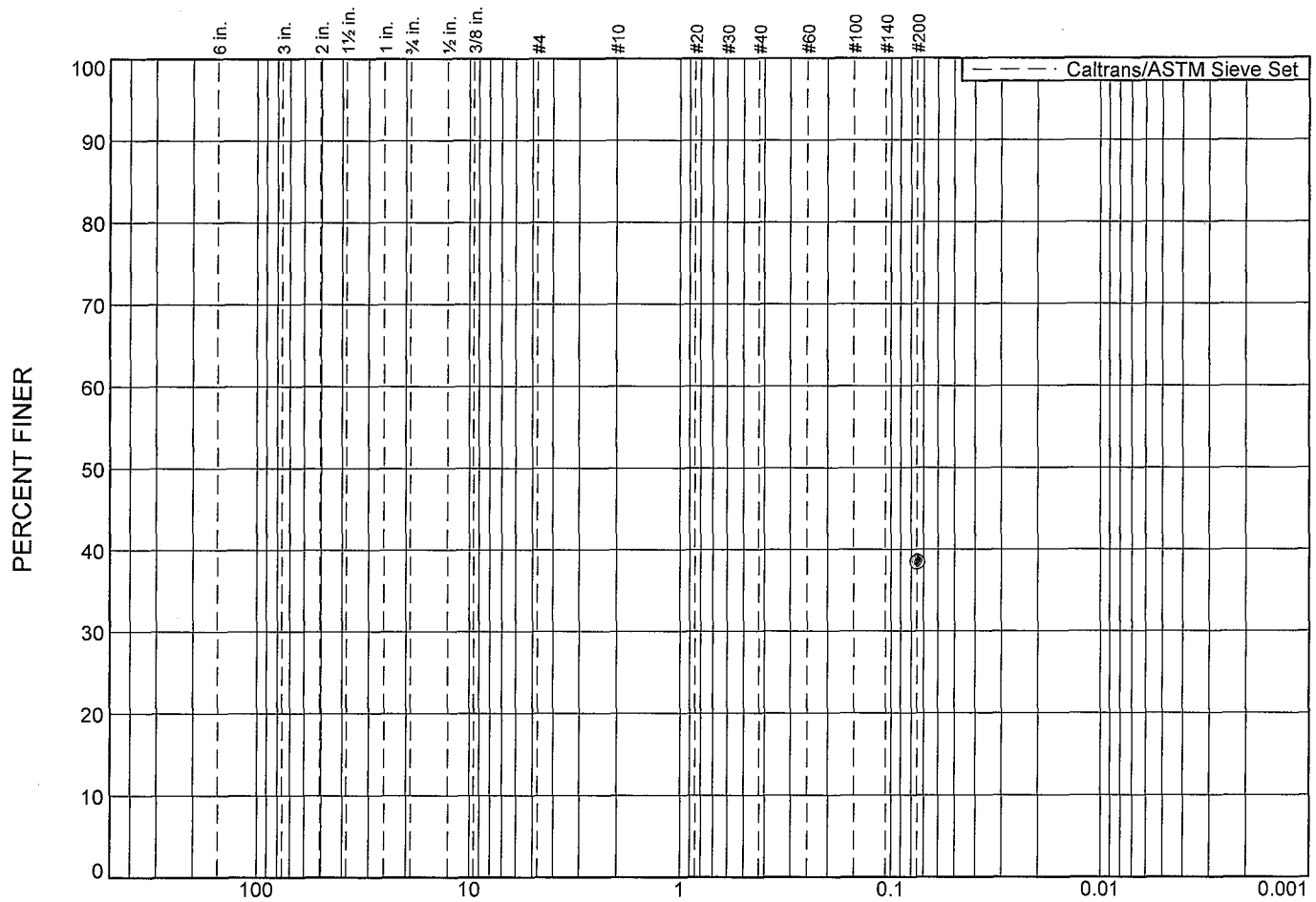
**E.I. - EXPANSION INDEX**  
**ATTERBERG LIMITS**  
LL - Liquid Limit  
PL - Plastic Limit  
PI - Plasticity Index

**(R)ESISTANCE VALUE**  
RV - R-Value @ 300 psi  
EP - Expansion Press @ 300 psi

**MAXIMUM DENSITY**  
MDD (pcf) - Max Dry Density  
O.M. - Optimum Moisture



# Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						38	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1		21'	SILTY SAND	SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

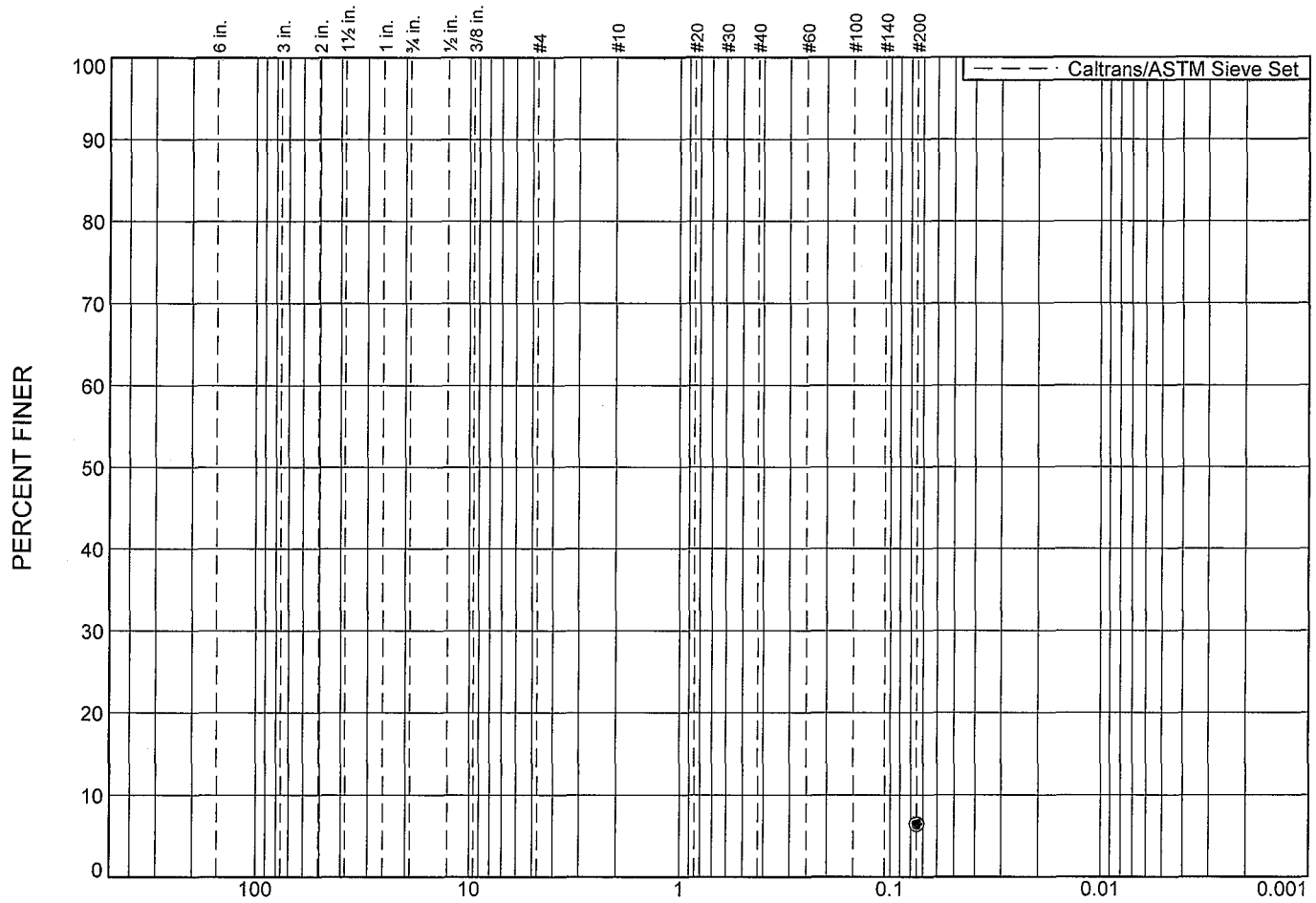
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**Figure** A-1



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						6.4	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1		31	POORLY GRADED SAND with low fine content	SP-SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

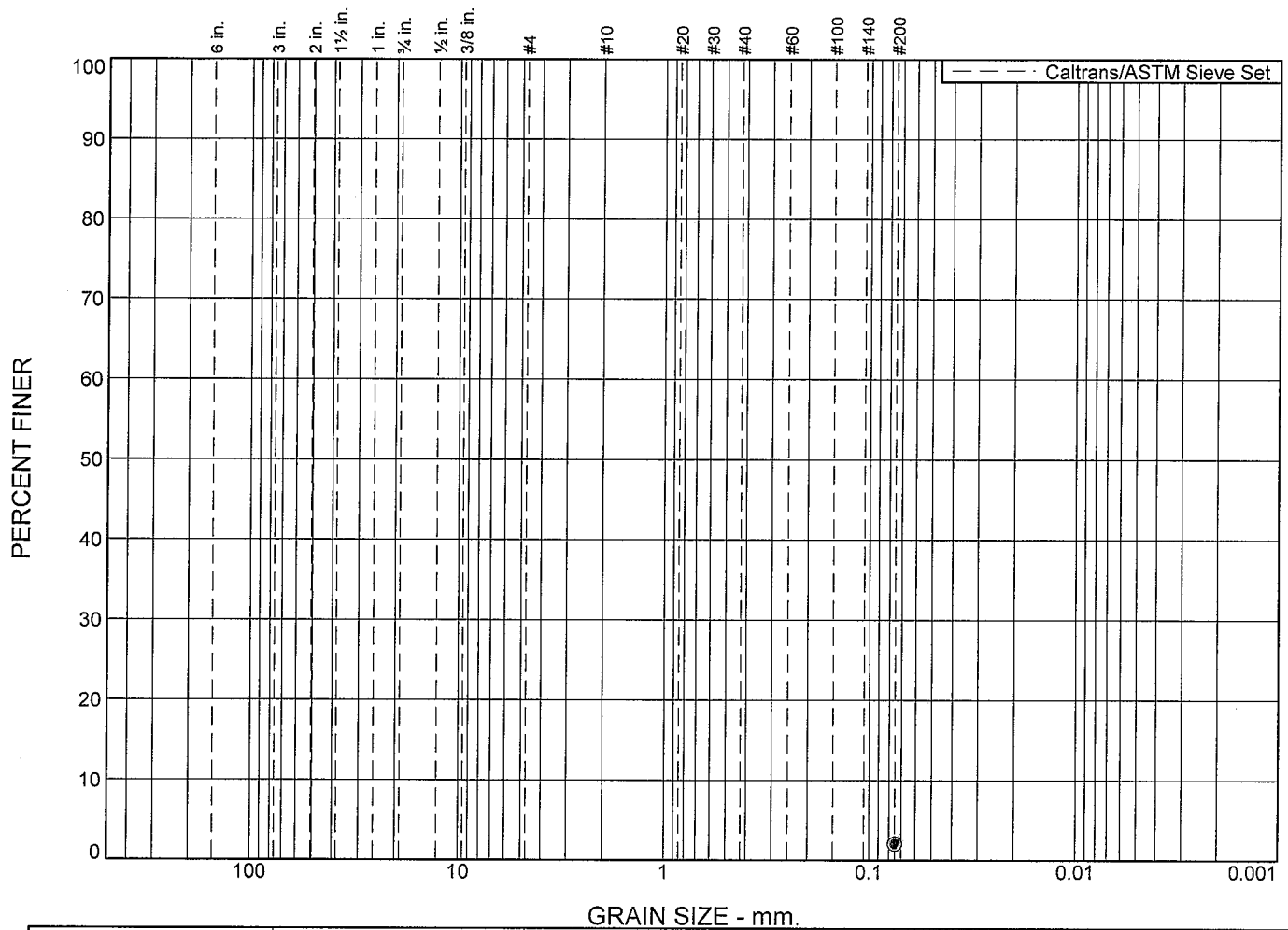
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**Figure** A-2



# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							2.0	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1		46	POORLY GRADED SAND	SP

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

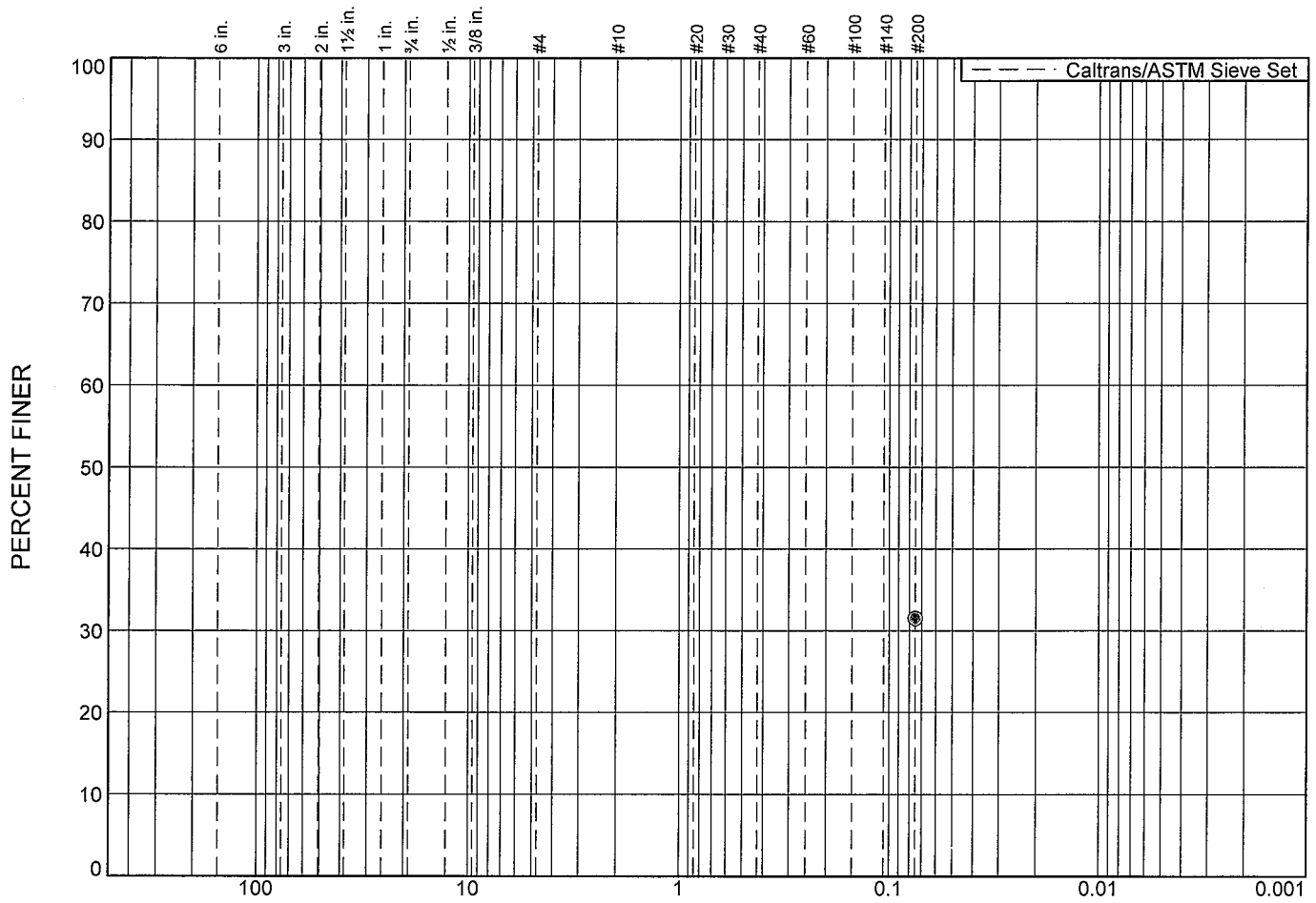
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**Figure** A-3



# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							32	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		6	SILTY SAND	SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

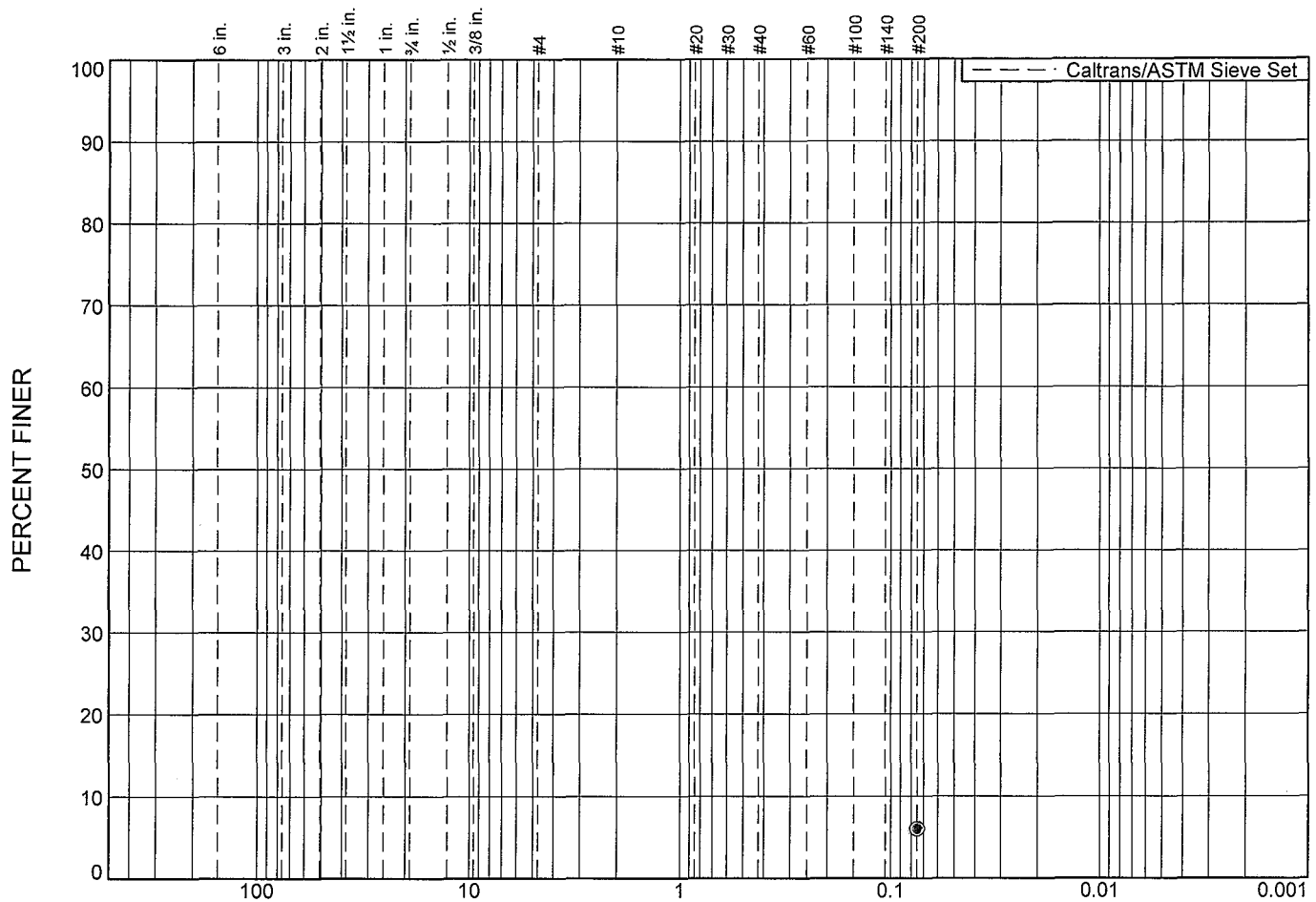
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**Figure** A-4



# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							6.0	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		11	POORLY GRADED SAND with low fine content	SP-SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

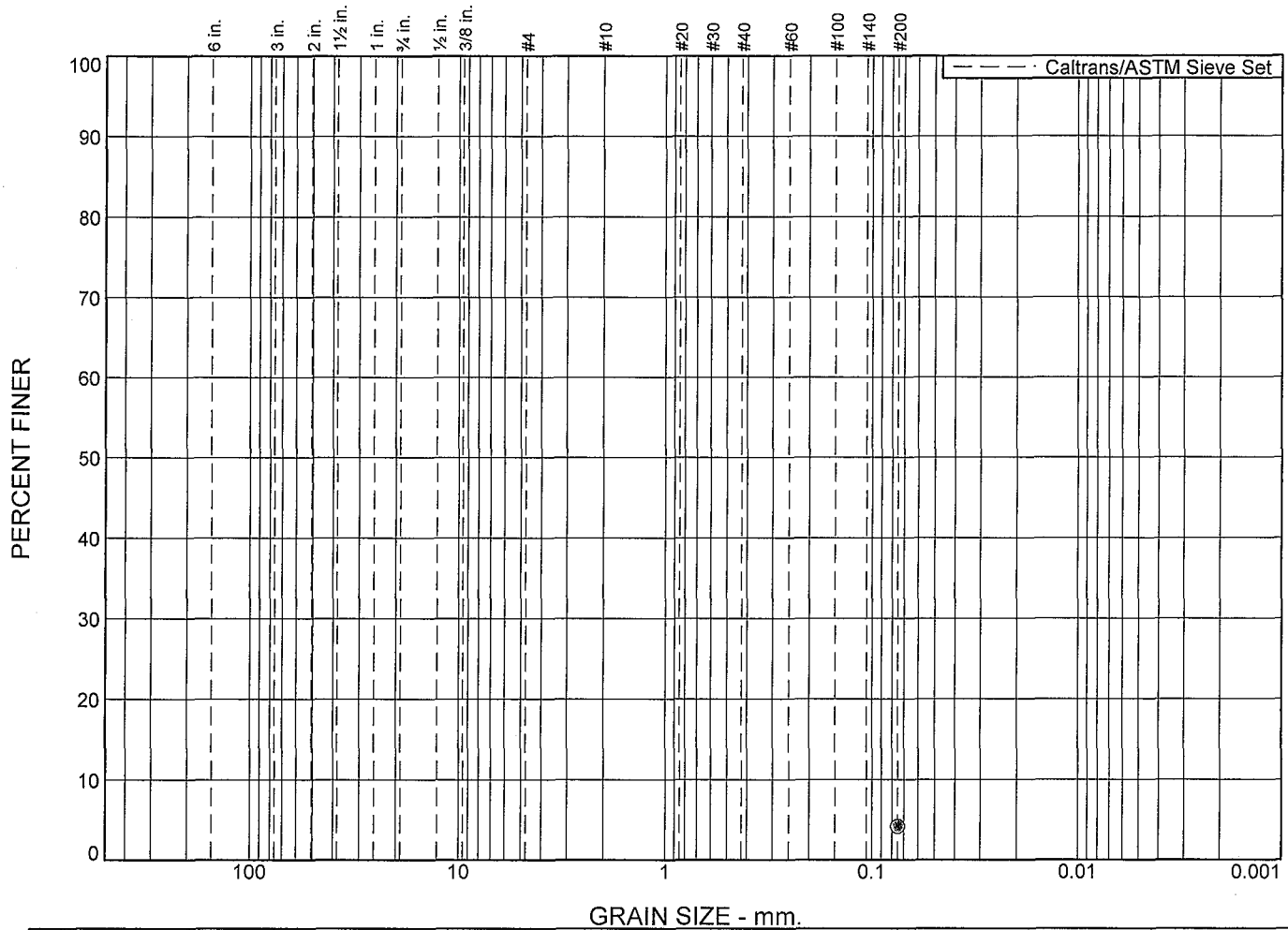
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**Figure** A-5



# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							4.2	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		21	POORLY GRADED SAND	SP

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

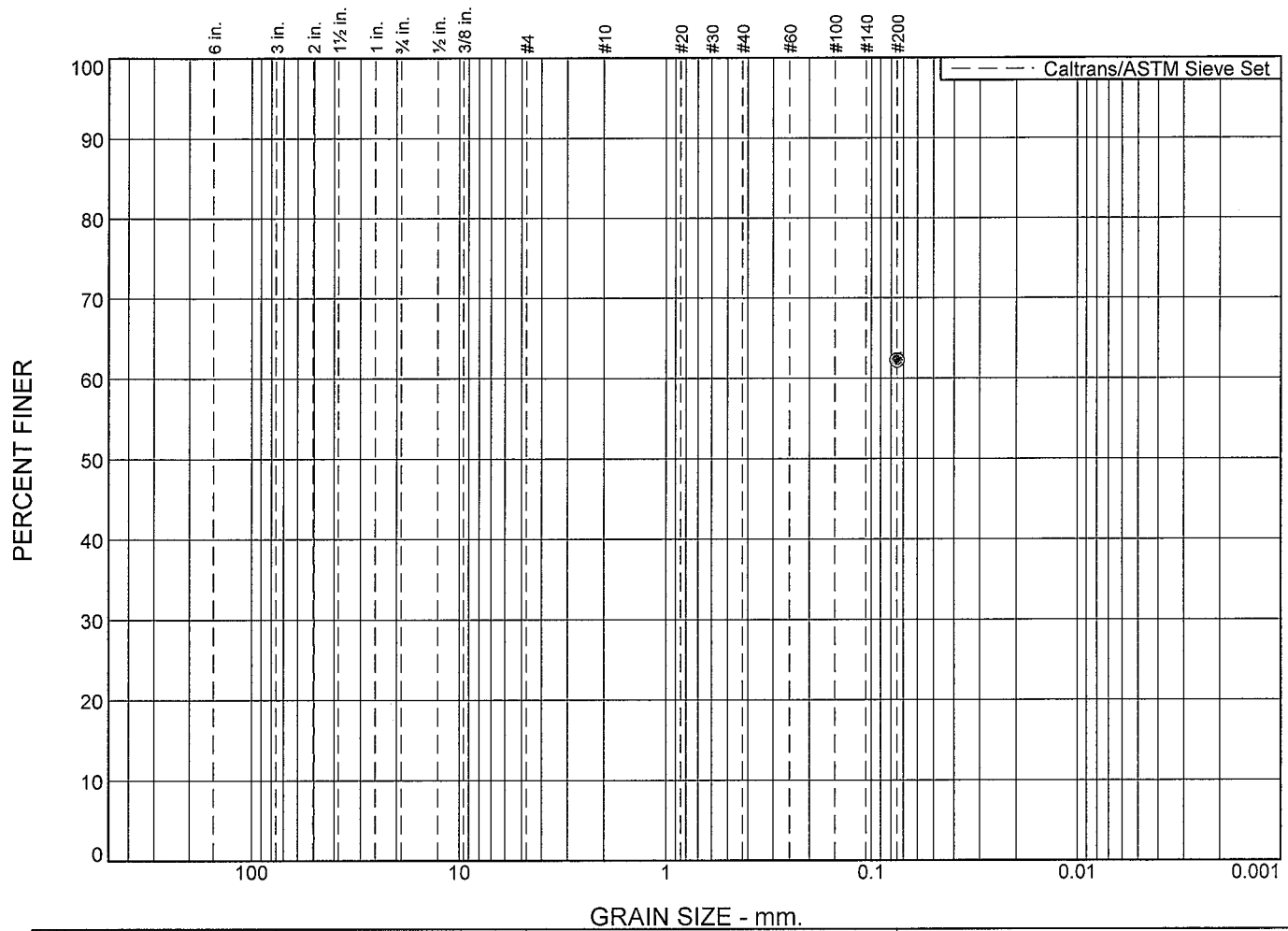
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**Figure** A-6



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						62	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		26	CLAYEY SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

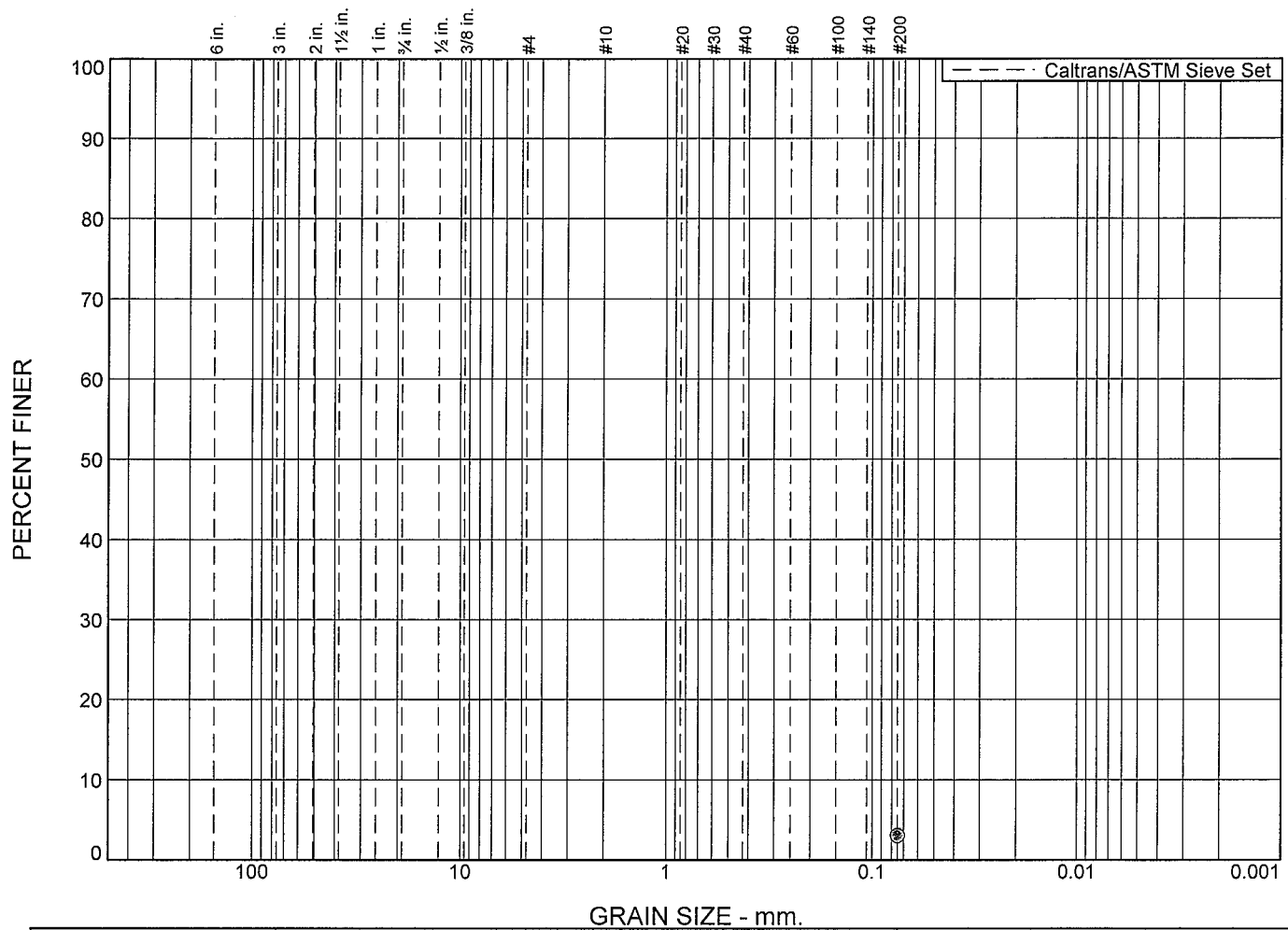
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**Figure** A-7



# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							3.0	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		31	POORLY GRADED SAND	SP

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

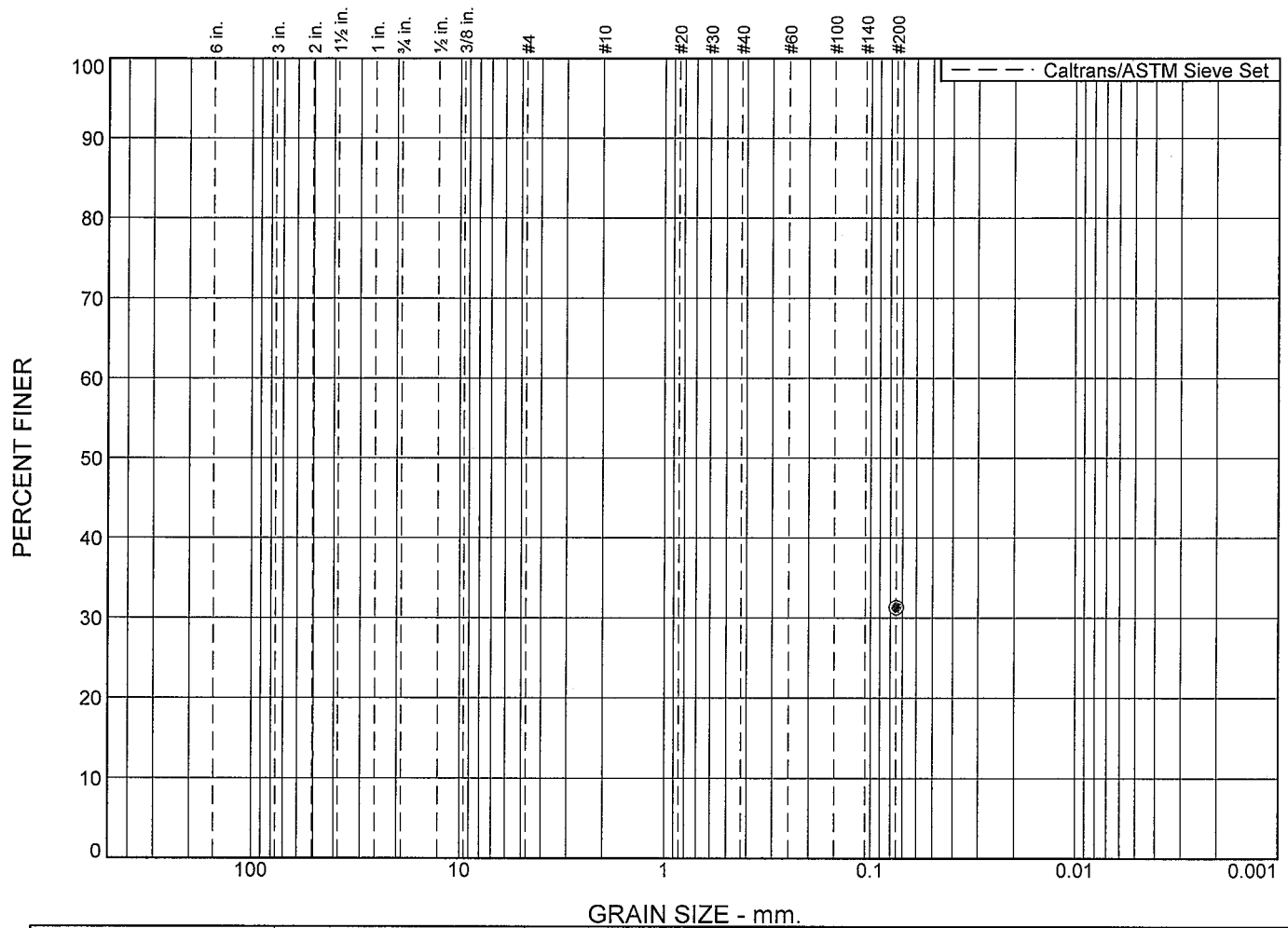
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**Figure** A-8



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						31	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-3		6	SILTY SAND	SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

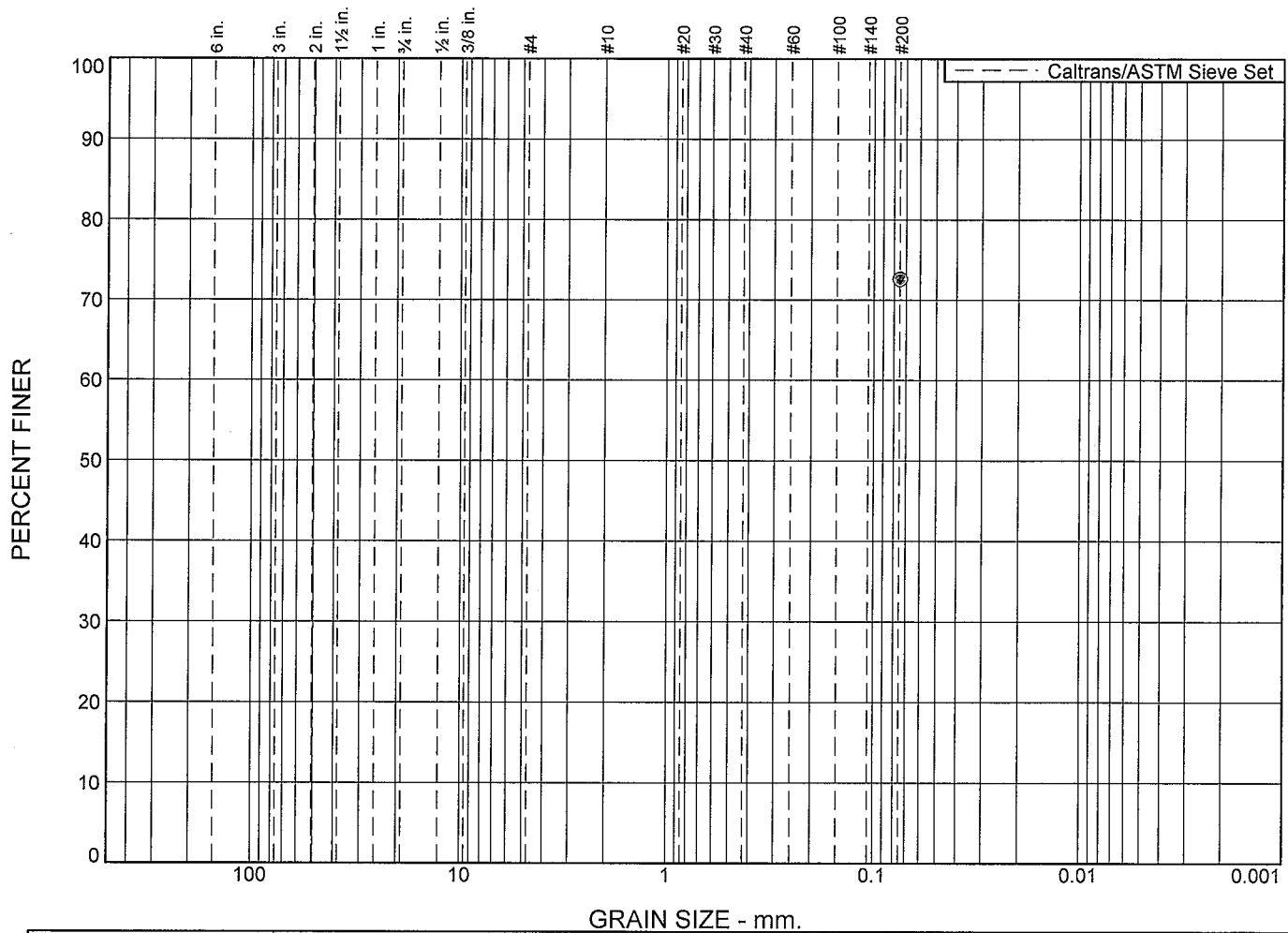
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**Figure** A-9



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						73	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-3		16	SANDY CLAYEY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

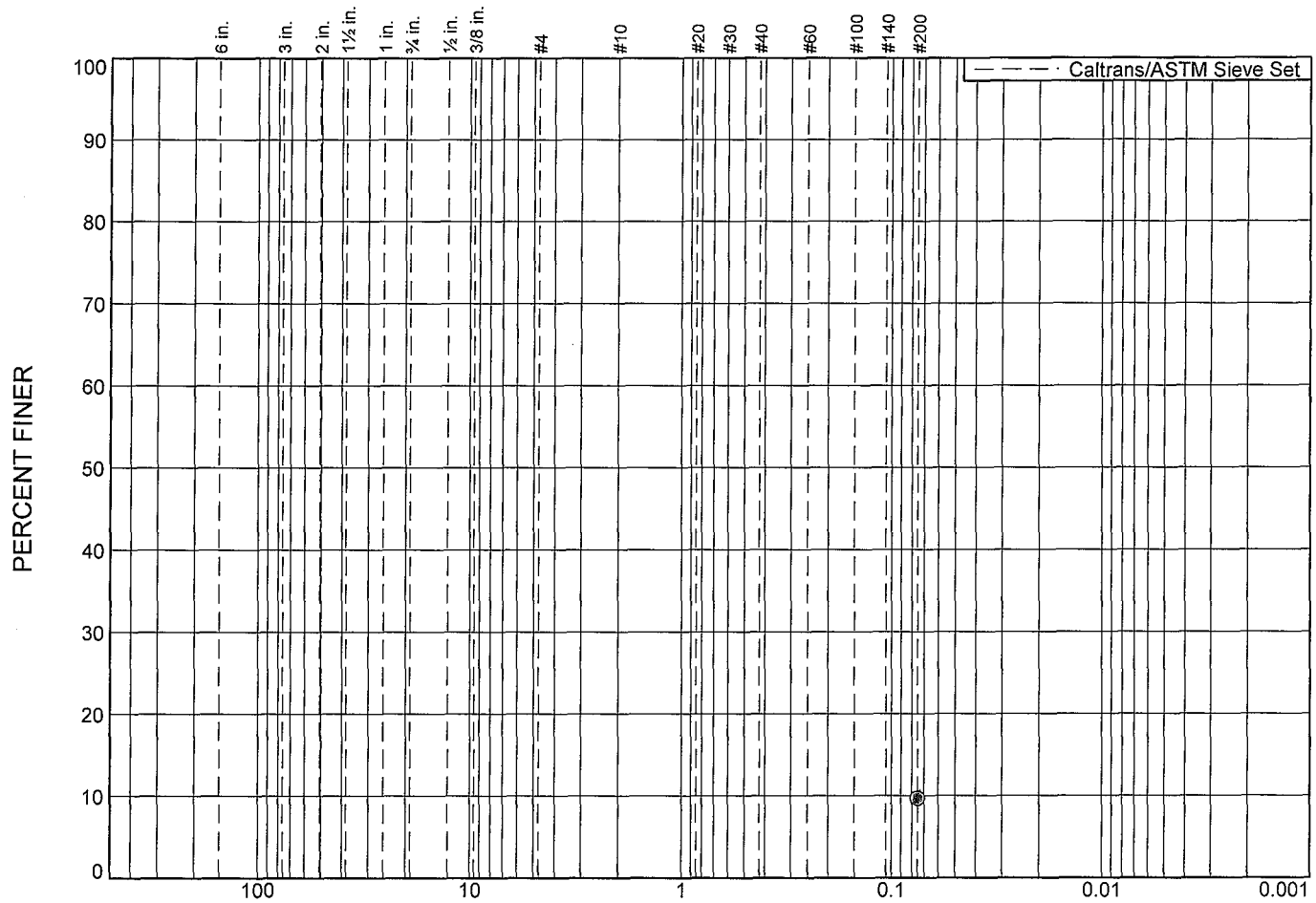
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**Figure** A-10



# Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						9.7	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-3		36	POORLY GRADED SAND with low fine content	SP-SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

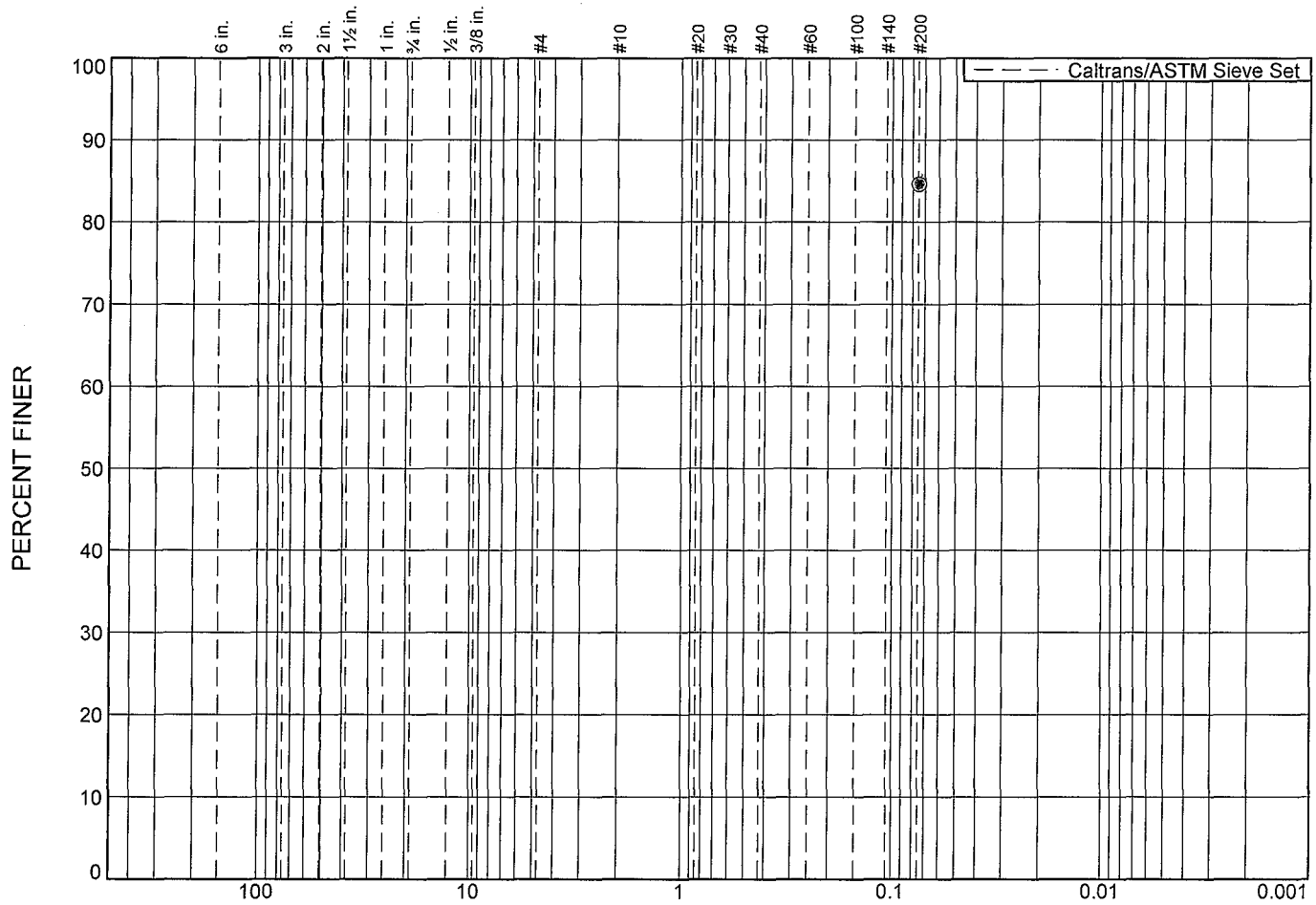
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**Figure** A-11



# Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						85	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-3		46	SANDY CLAYEY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

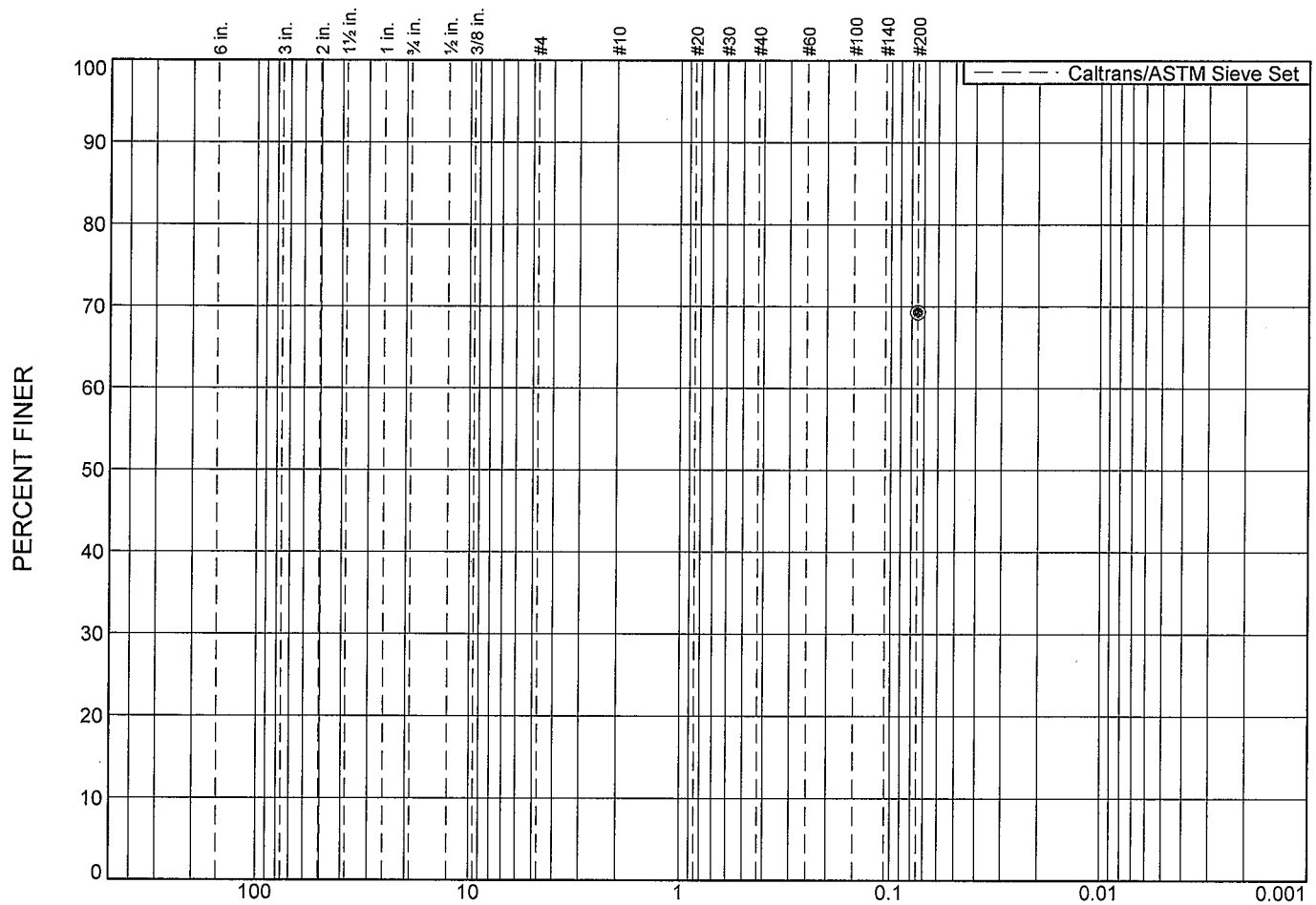
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**Figure** A-12



# Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						69	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-4		6	SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

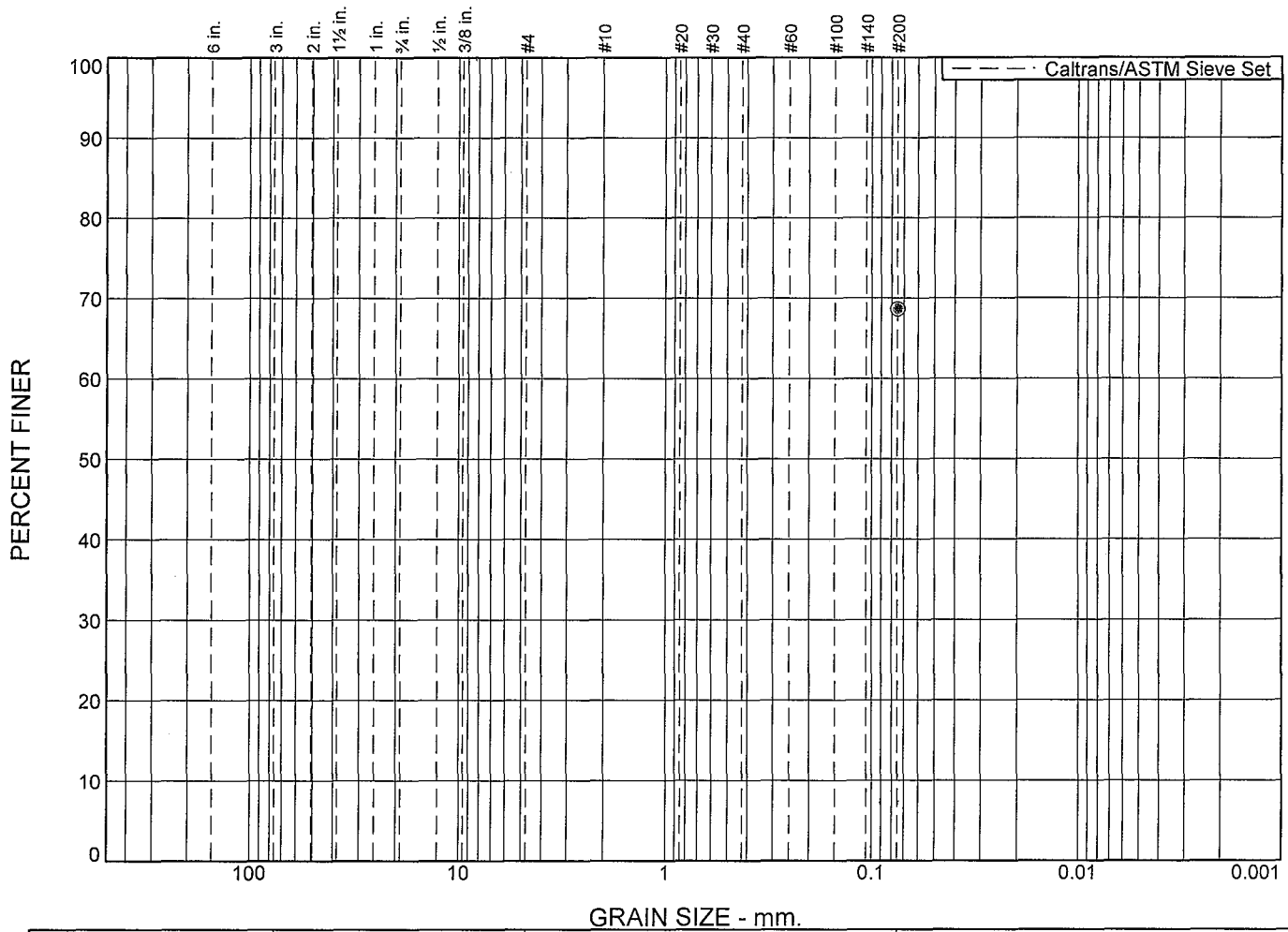
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**Figure** A-13



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						69	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-4		16	SANDY CLAYEY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

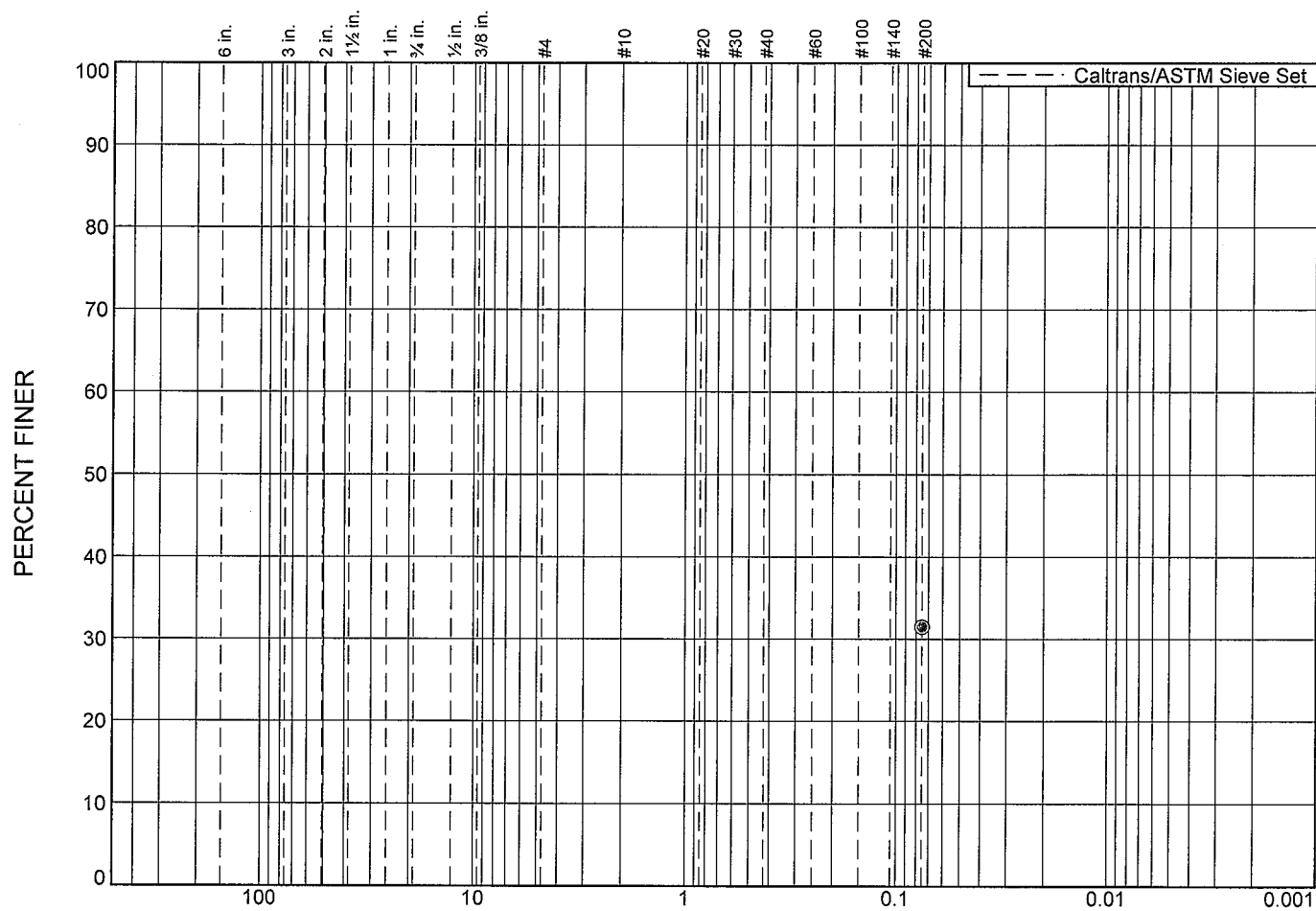
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

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**Figure** A-14



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						31	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-4		31	CLAYEY SILTY SAND	SC

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

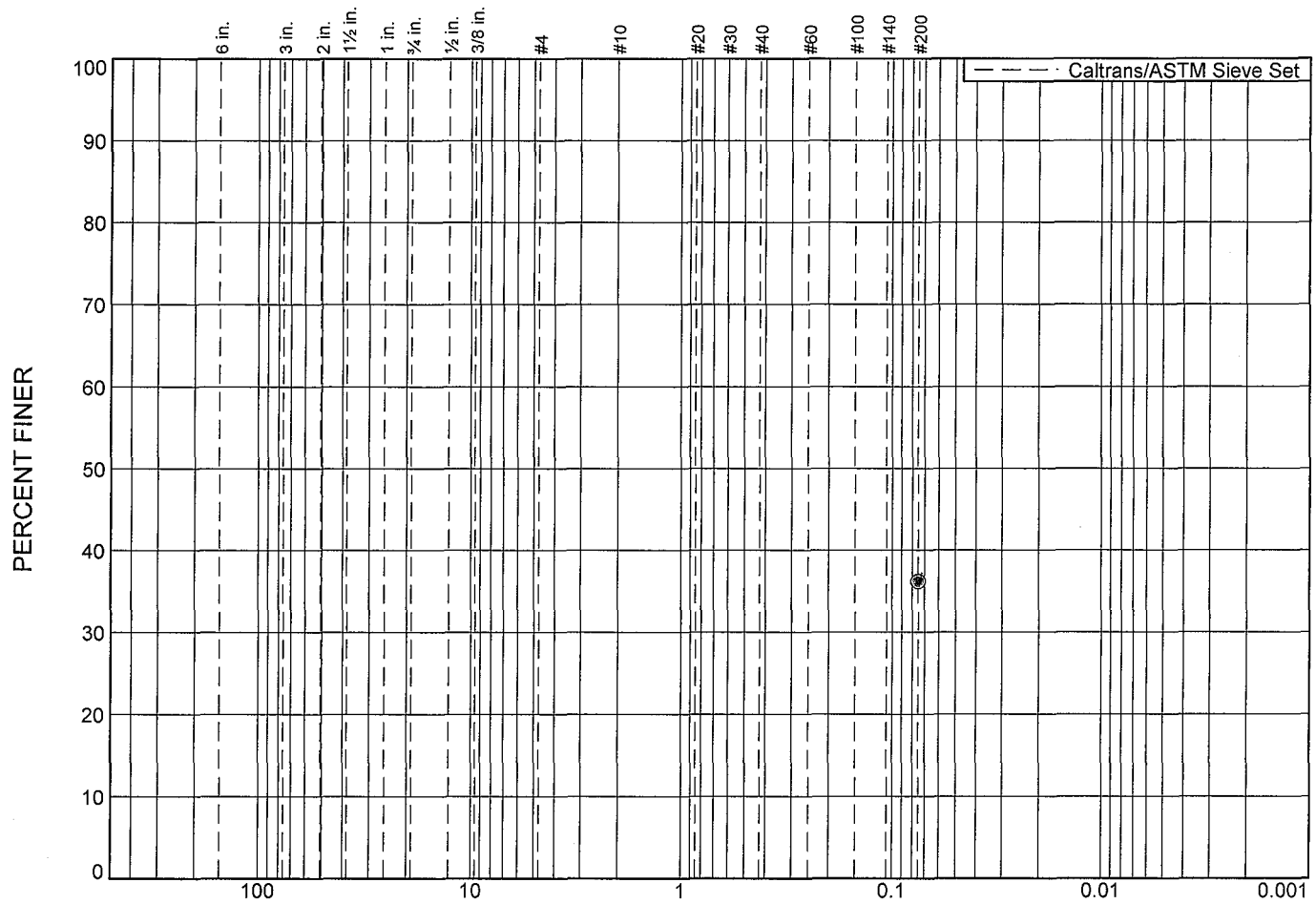
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

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**Figure** A-15



# Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						36	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-4		36	SILTY SAND	SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

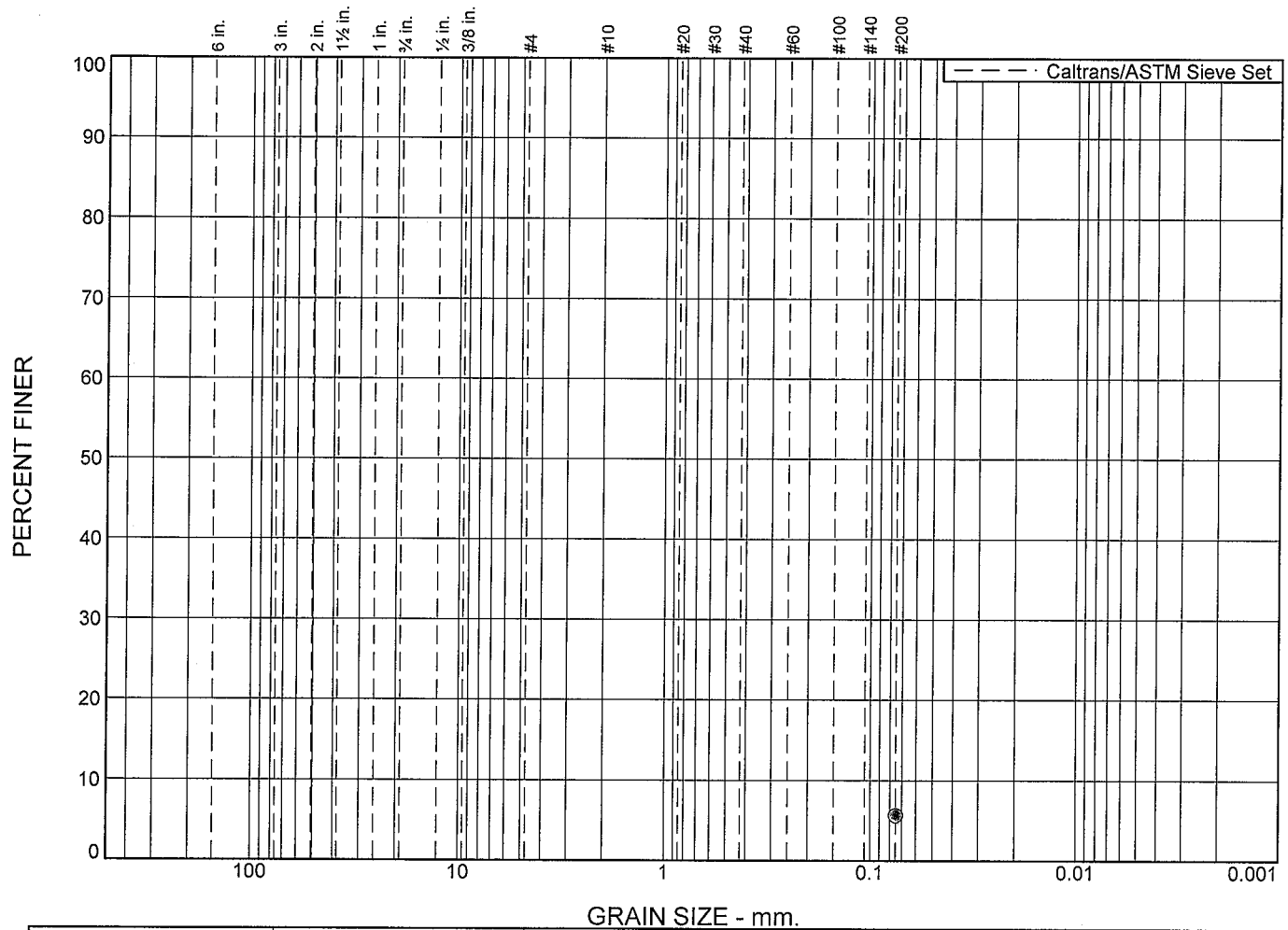
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

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**Figure** A-16



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						5.7	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-4		41	POORLY GRADED SAND with low fine content	SP-SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

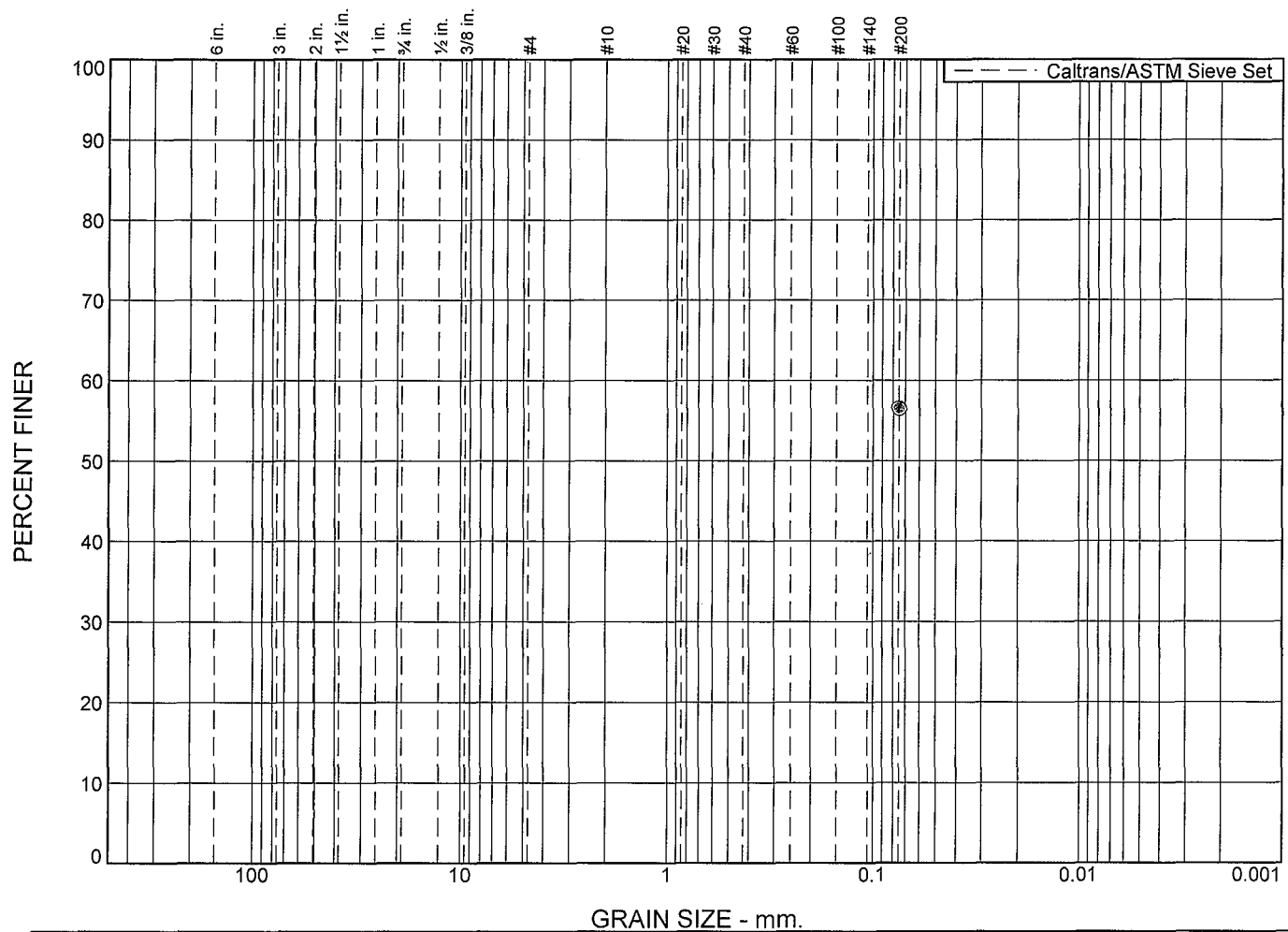
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-17



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						57	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-5		26	CLAYEY SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

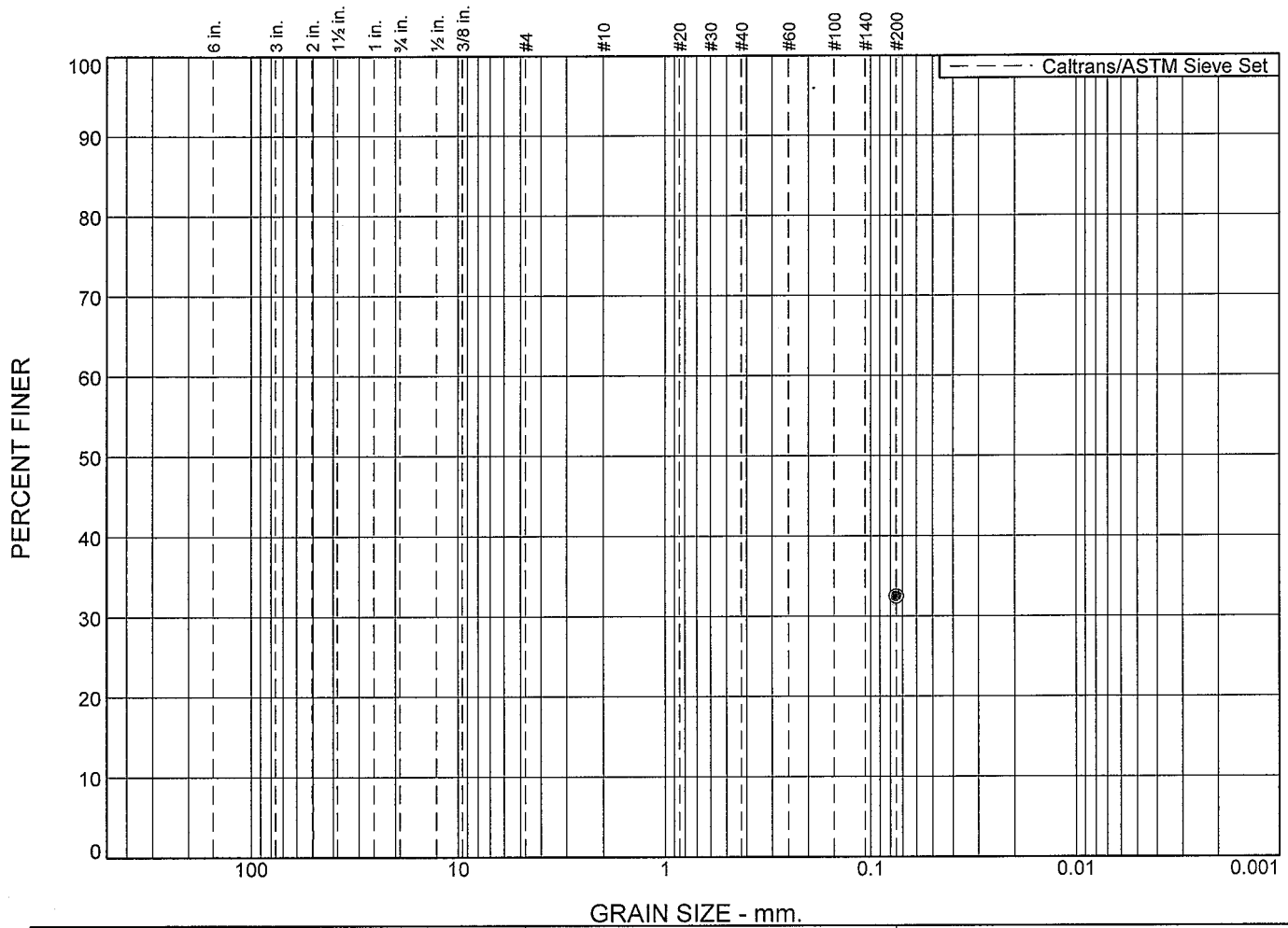
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-18



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						33	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-5		36	SILTY SAND	SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

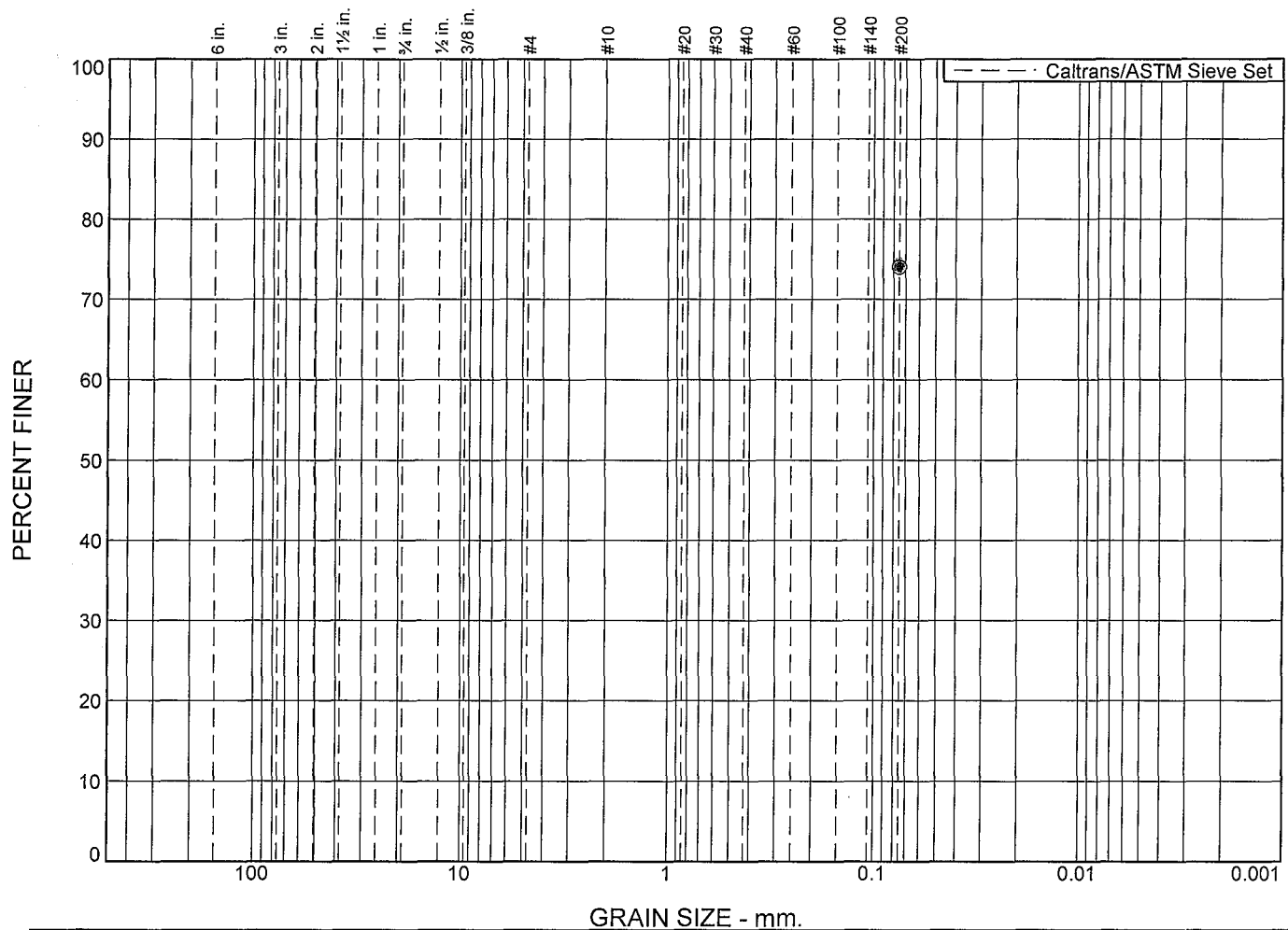
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**Project No.:** 16608

**Figure** A-19



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						74	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-5		41	CLAYEY SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

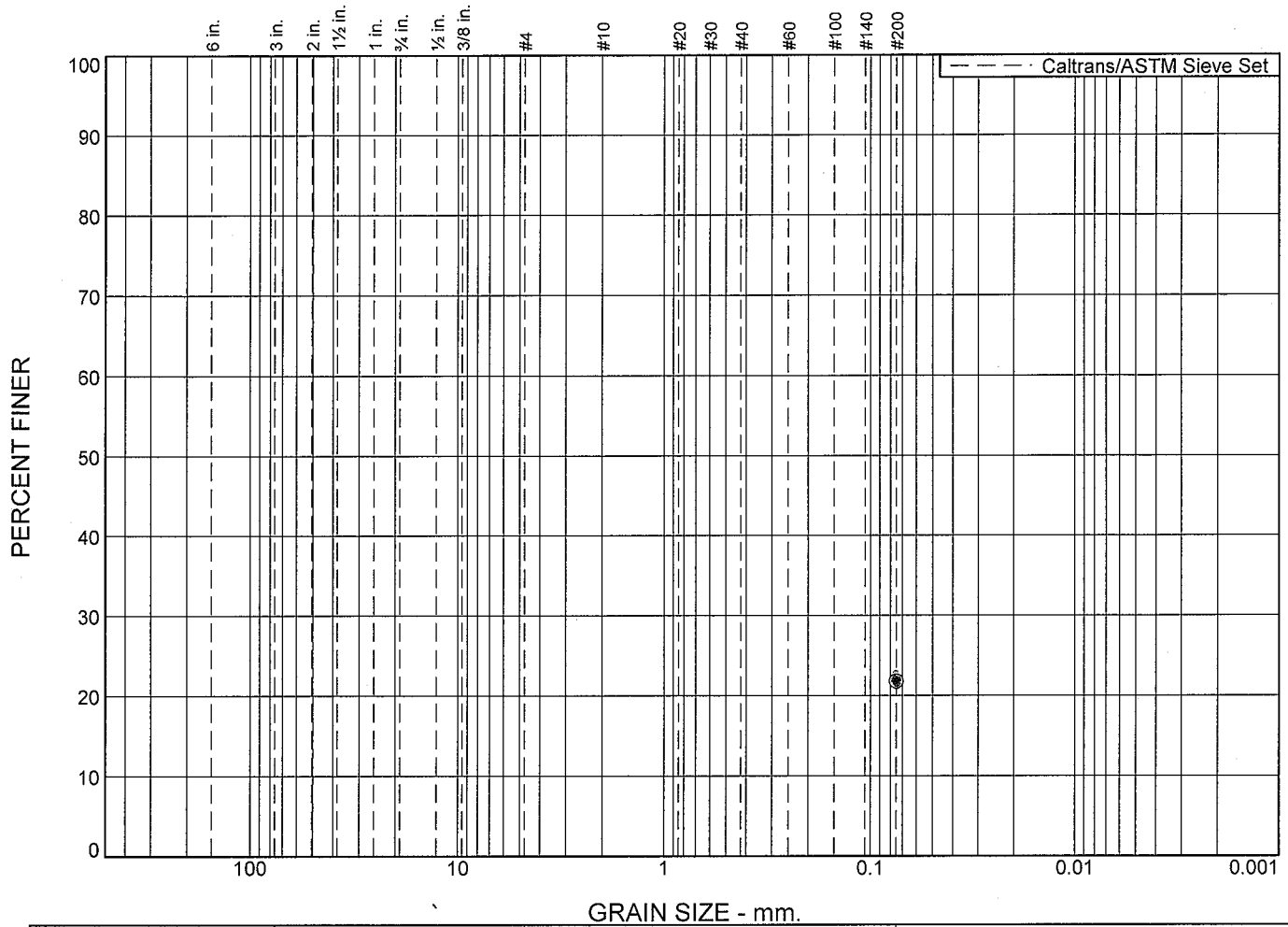
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**Figure** A-20



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						22	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-6		3	SILTY SAND	SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

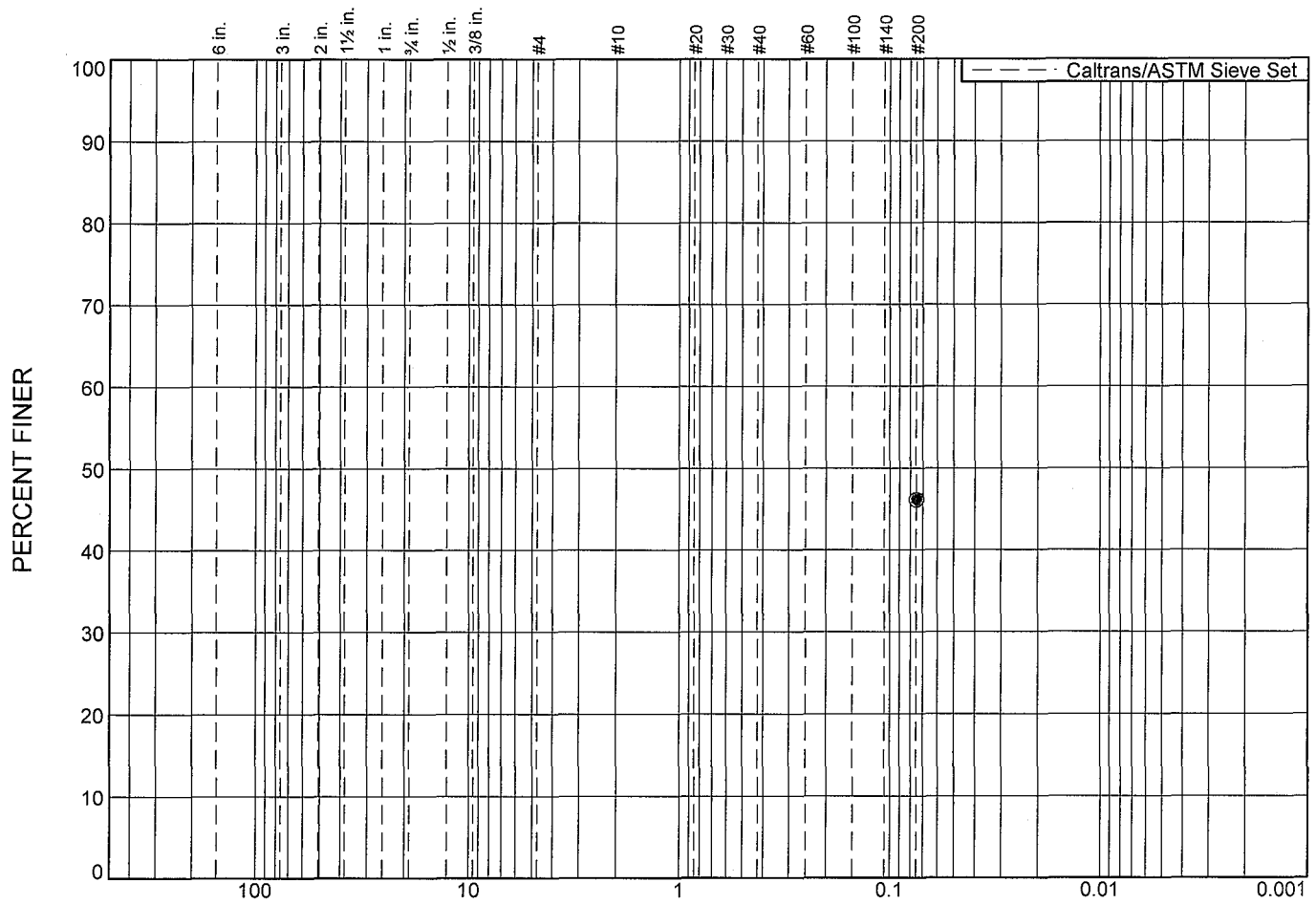
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**Project No.:** 16608

**Figure** A-21



# Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							46	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-7		3	CLAYEY SILTY SAND	SC

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

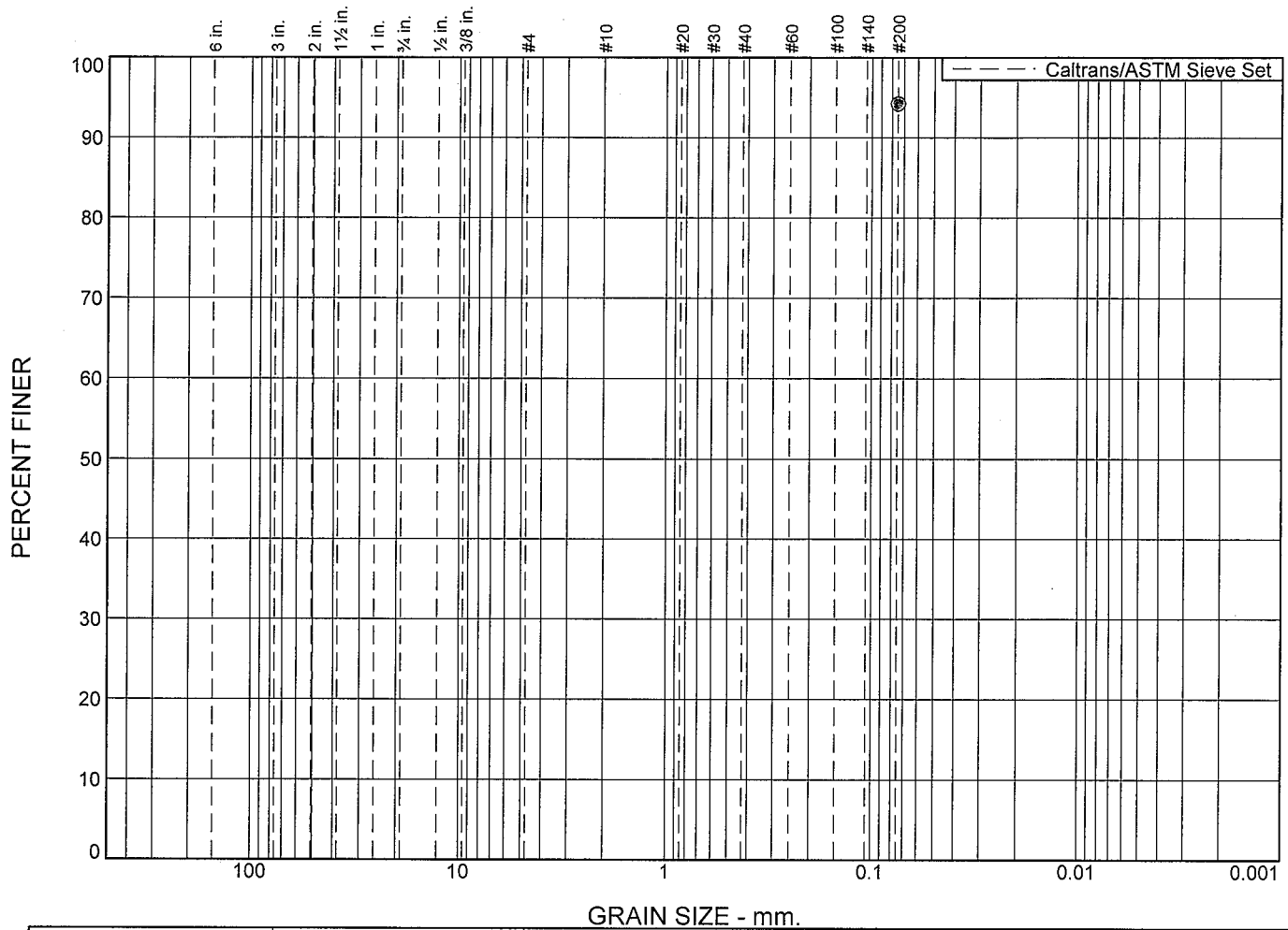
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-22



# Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							94	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-8		6	CLAYEY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

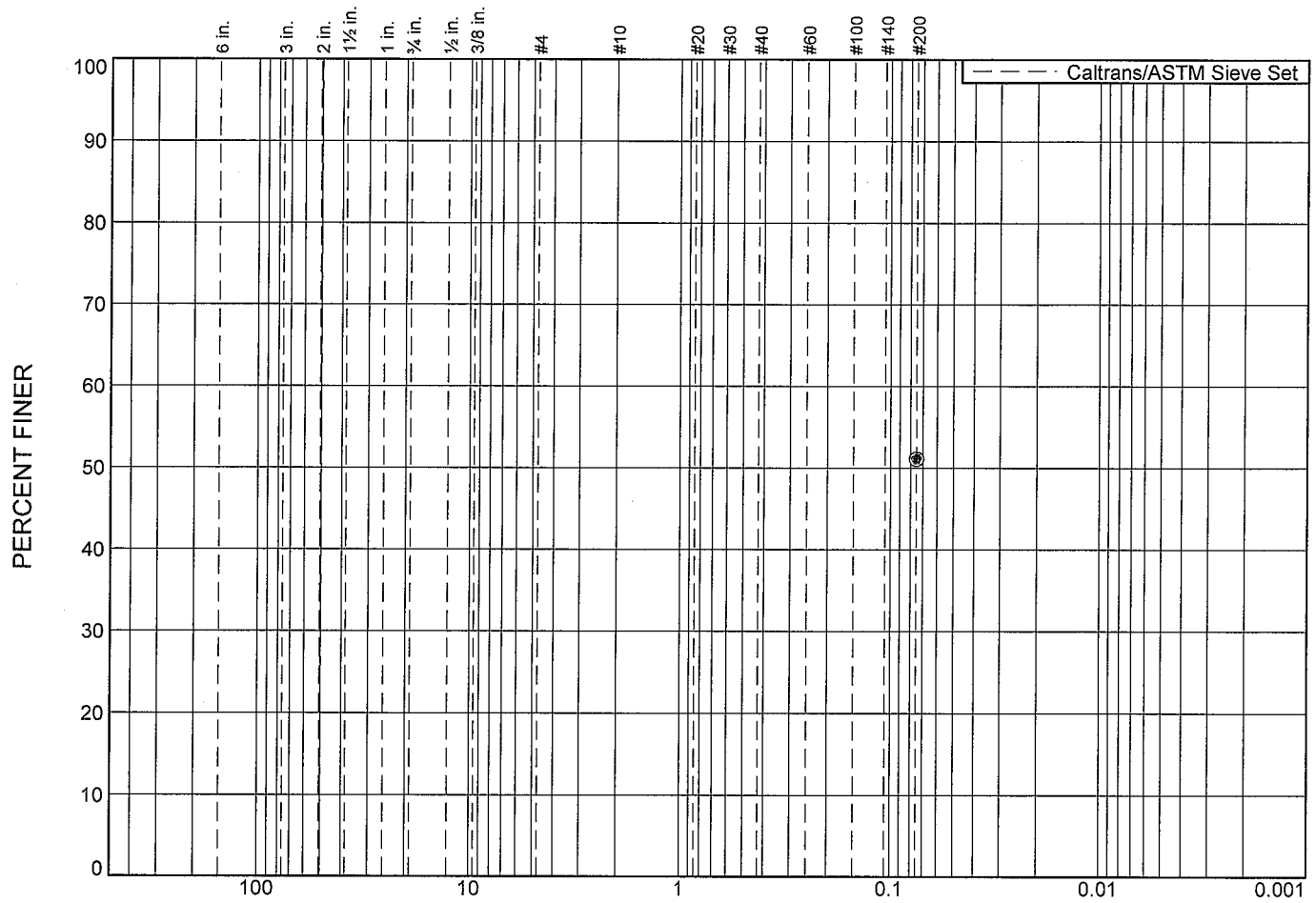
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-23



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						51	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-9		3	CLAYEY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

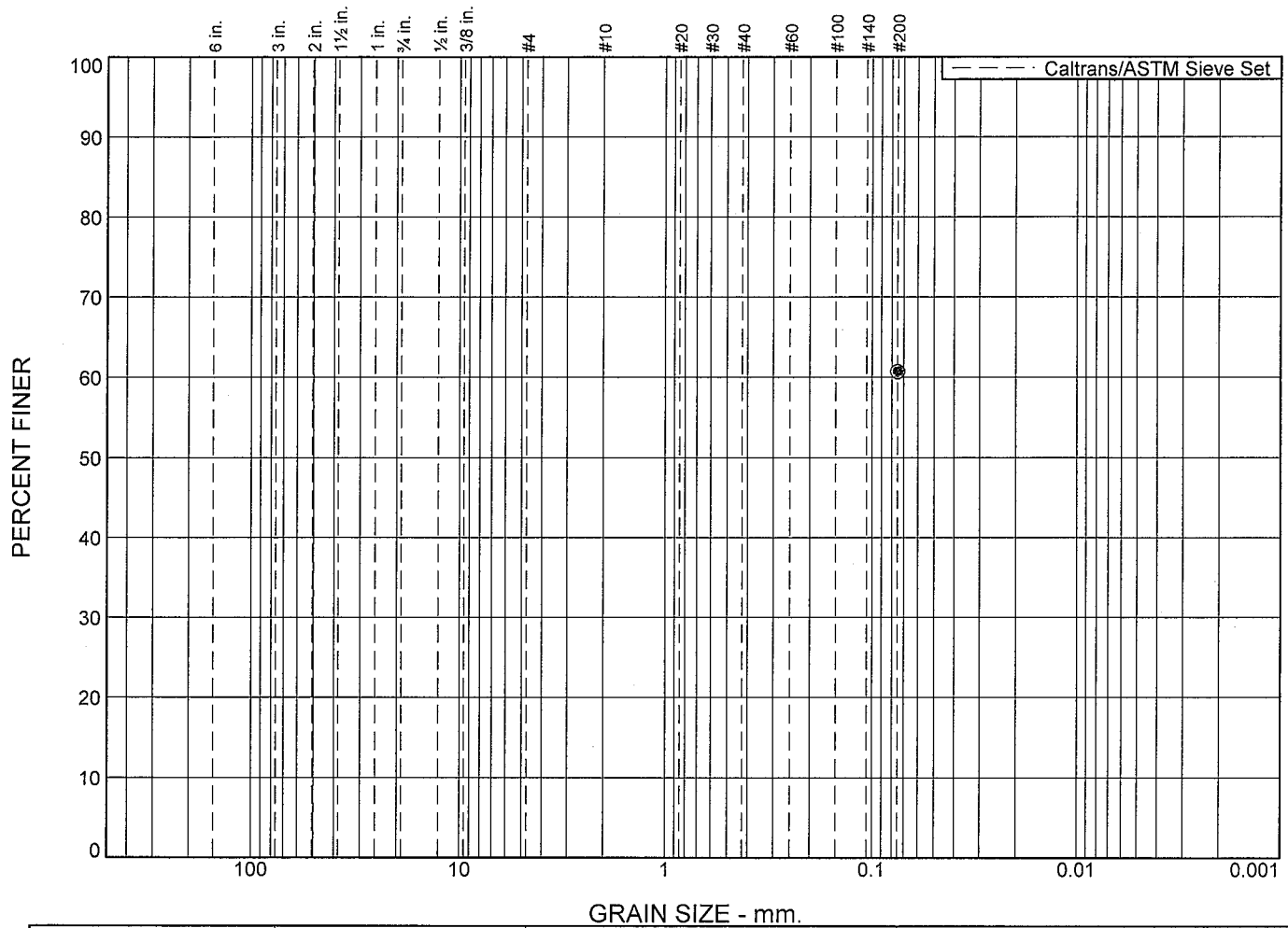
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-24



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						61	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-10		3	SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

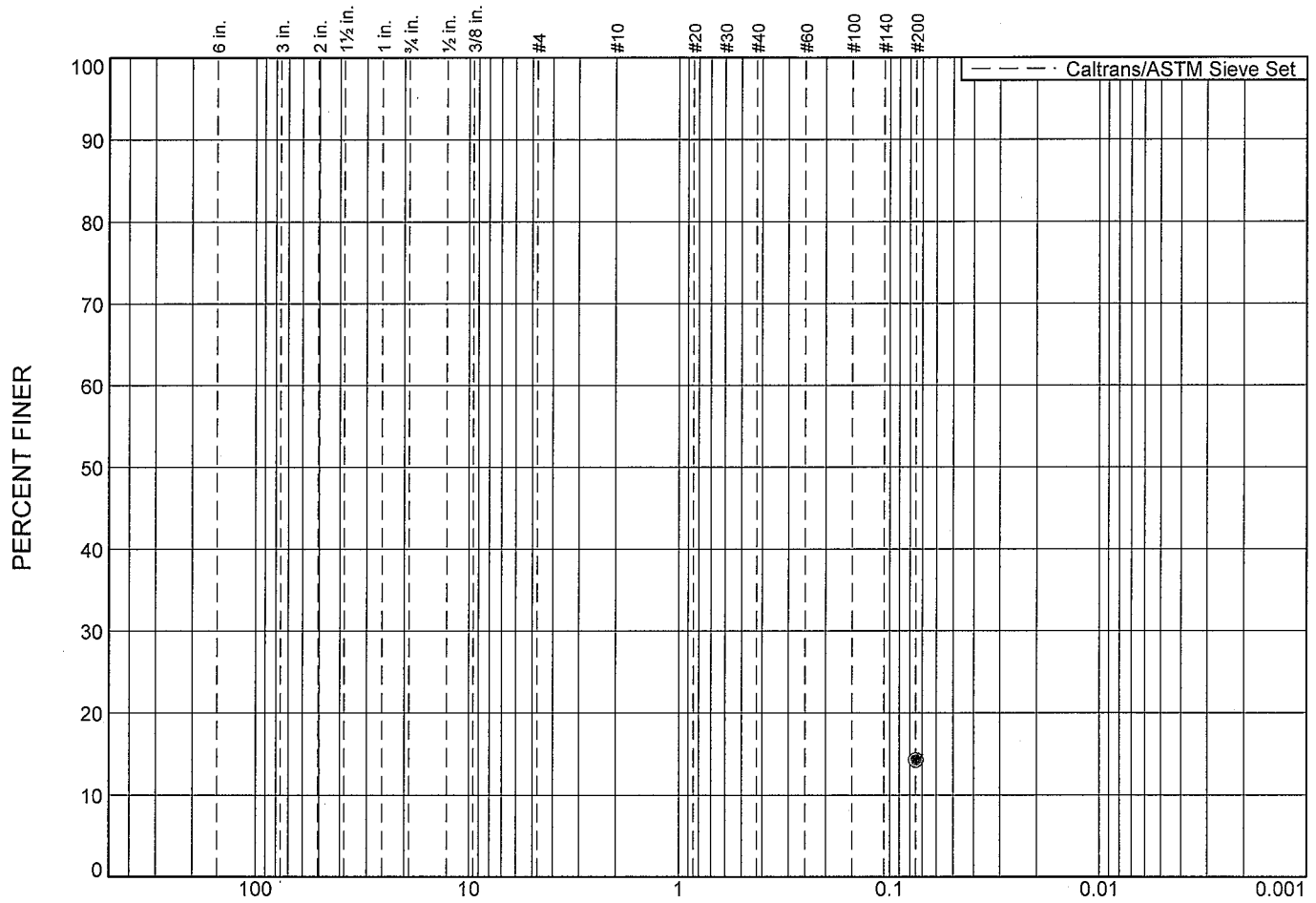
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-25



# Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						14	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-11		3	SILTY SAND	SM

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

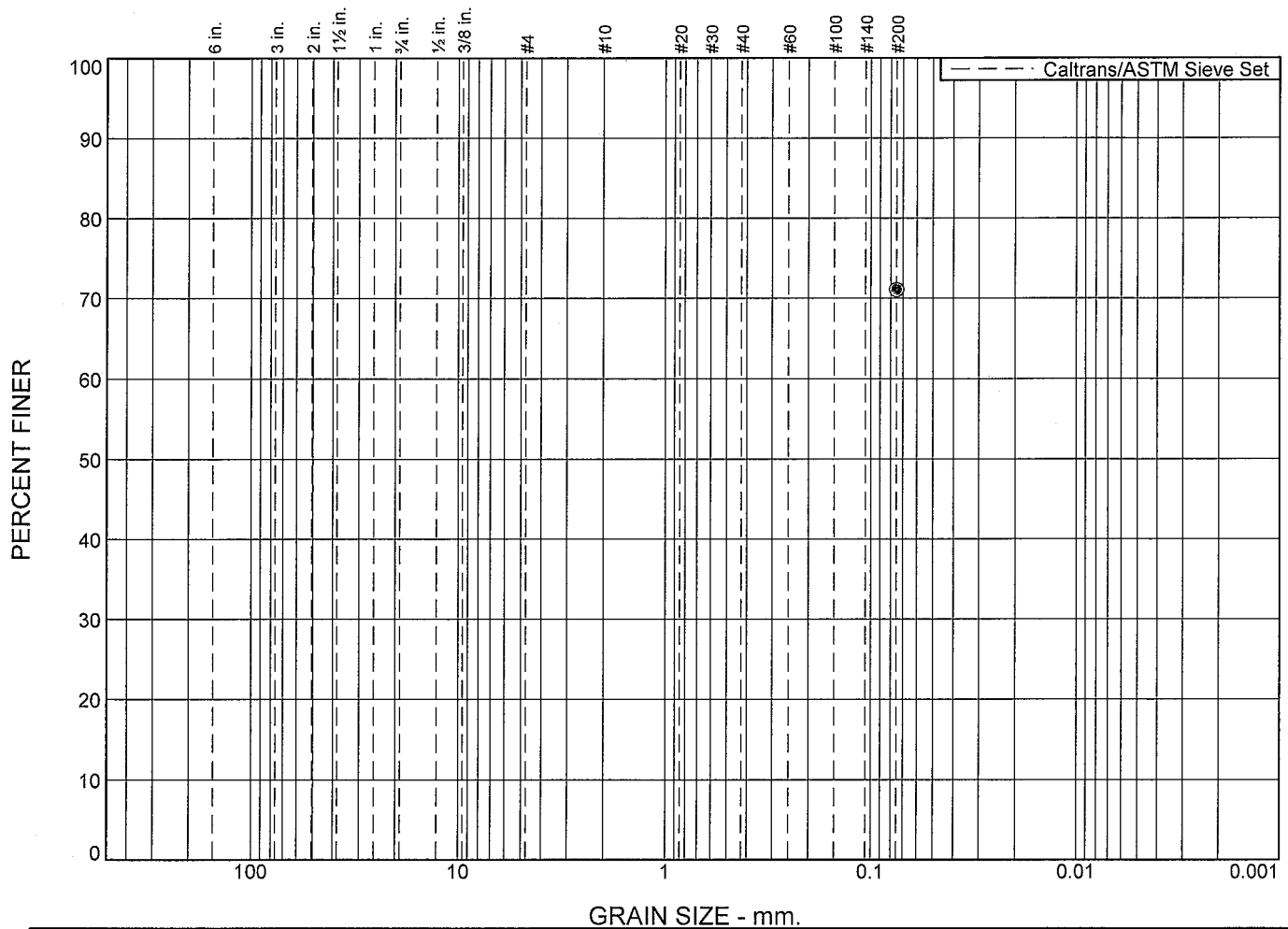
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-26



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						71	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-12		6	SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

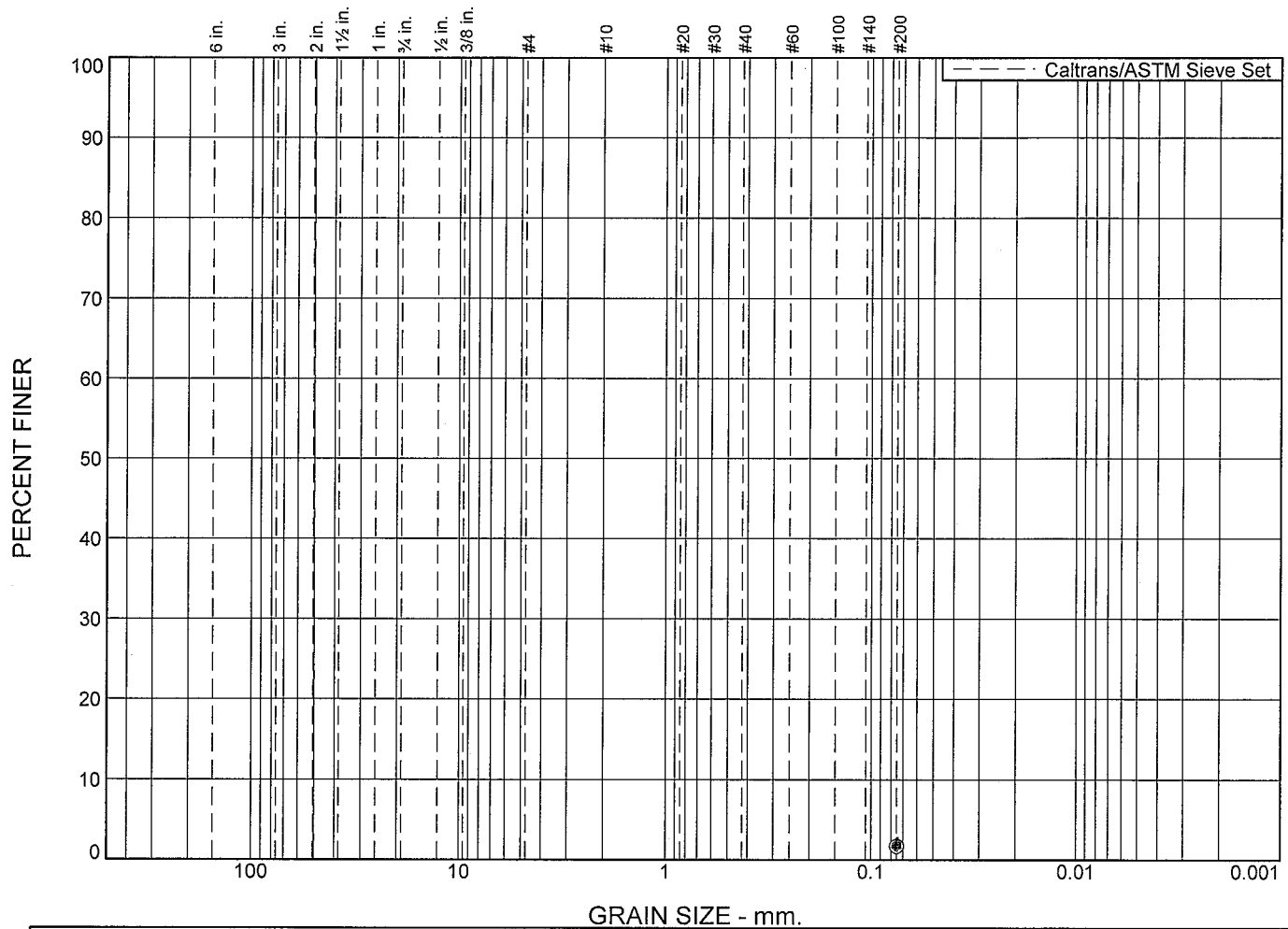
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-27



# Particle Size Distribution Report



GRAIN SIZE - mm.							
% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						1.7	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-13		3	POORLY GRADED SAND	SP

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

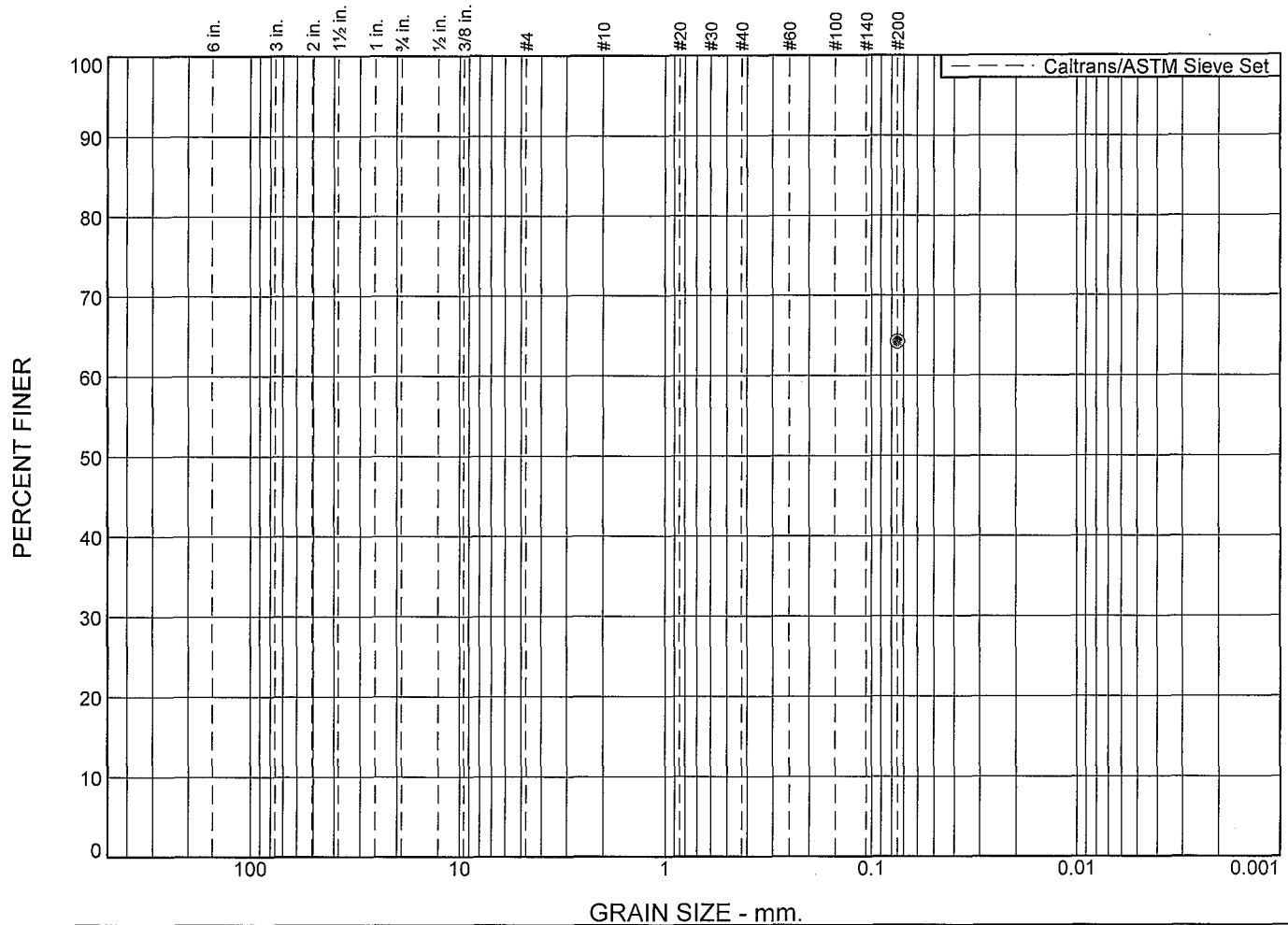
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-28



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						64	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-14		3	SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

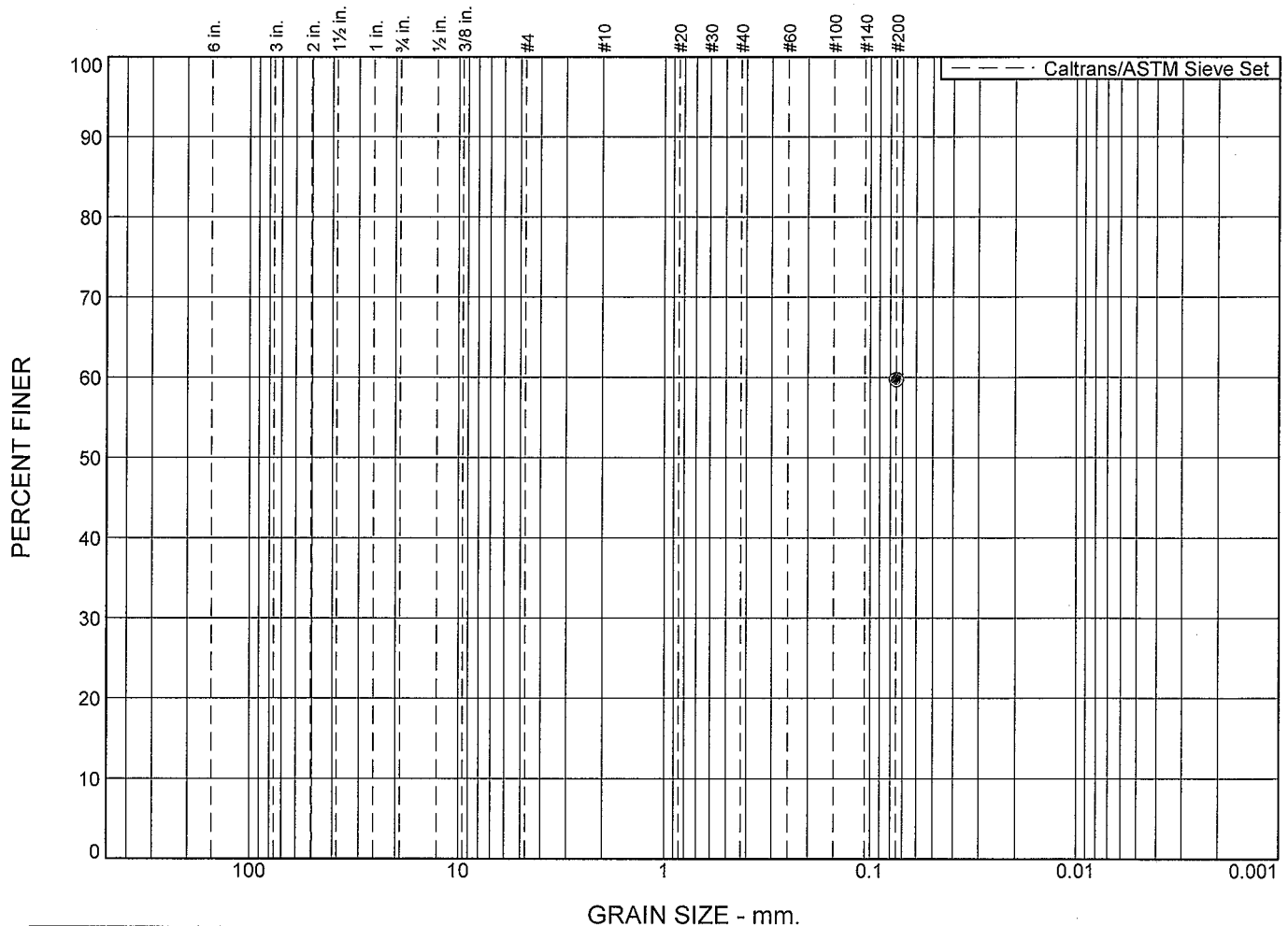
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-29



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						60	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-15		3	SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

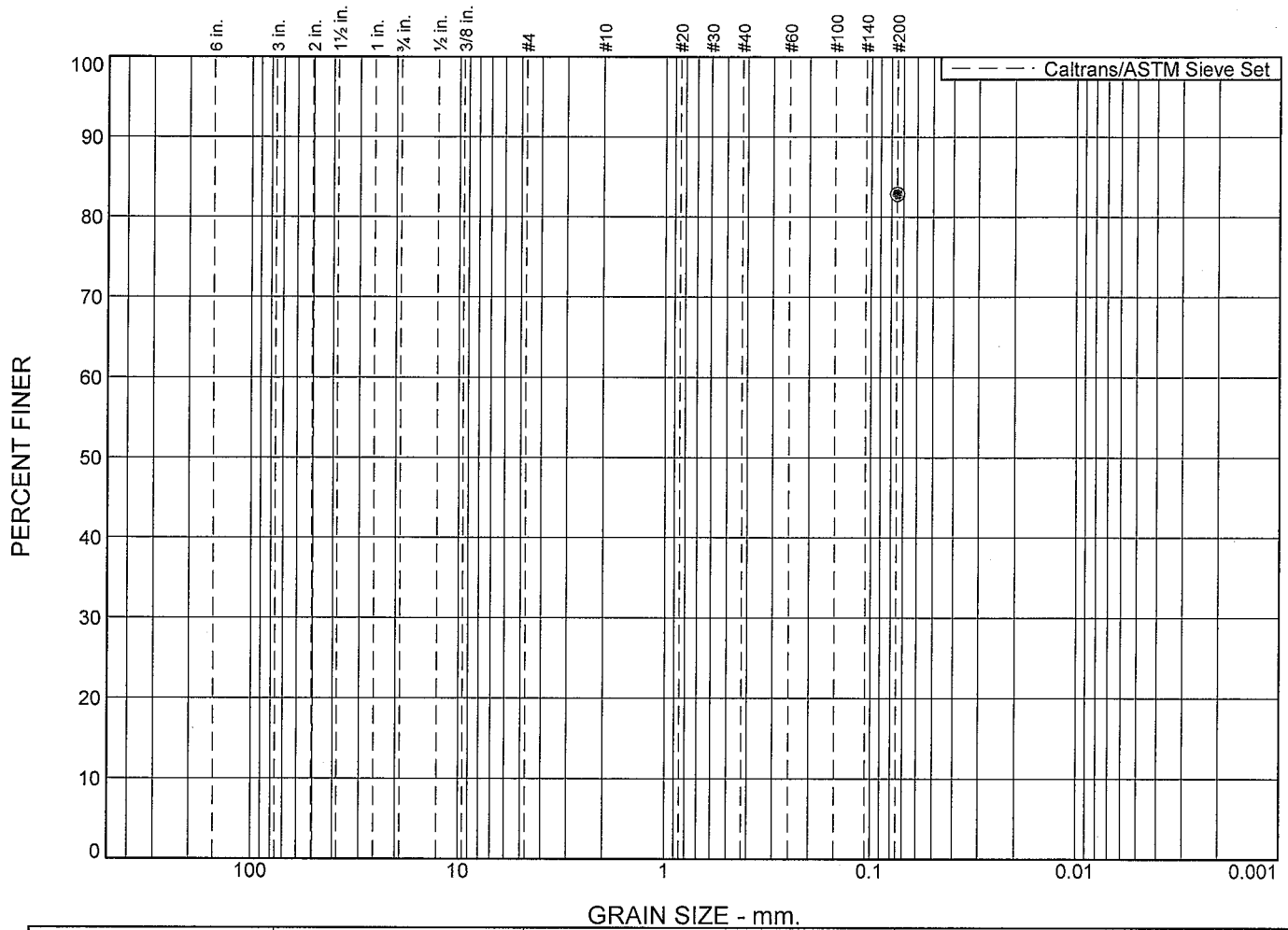
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-30



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						83	

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-16		3	SANDY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

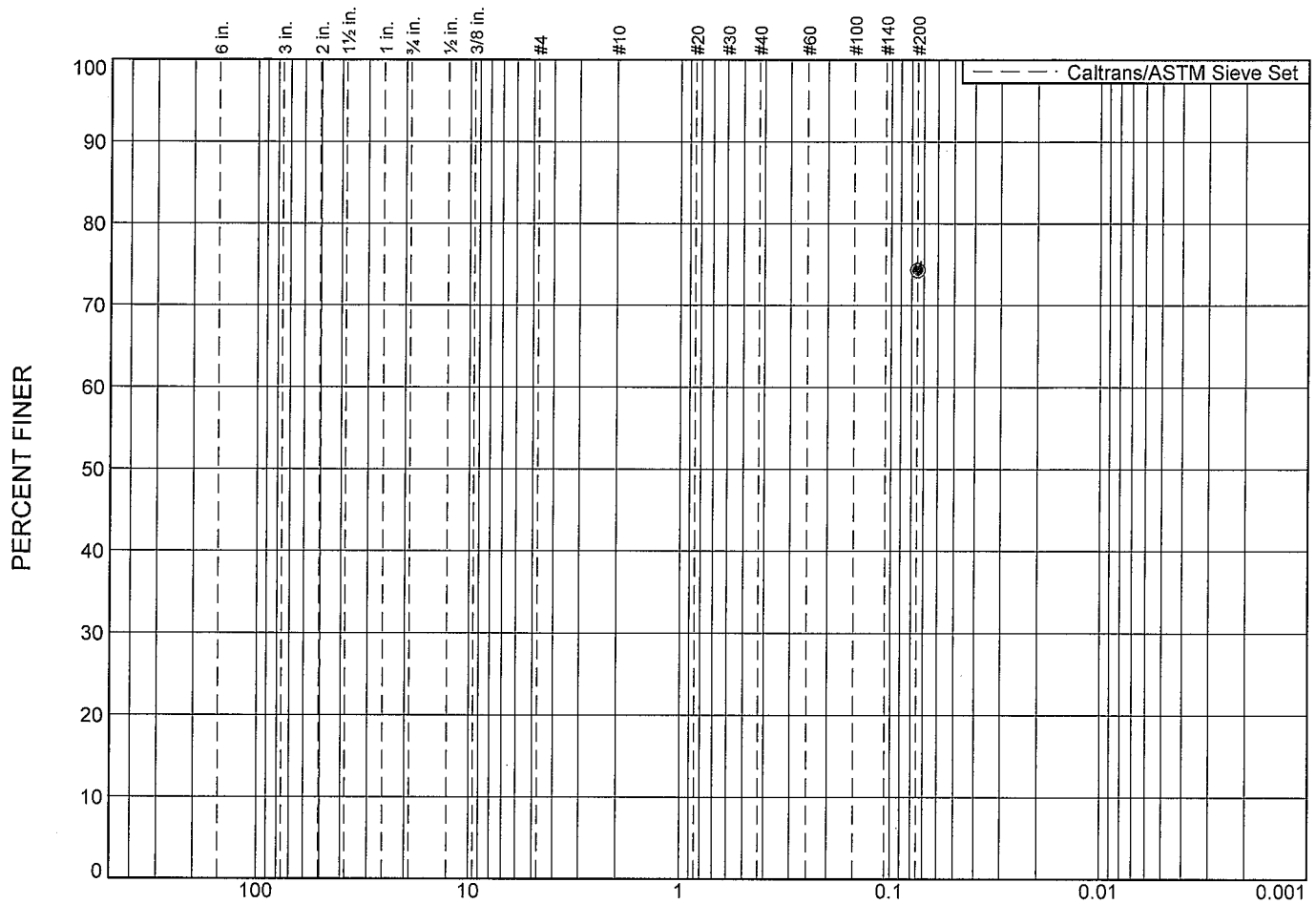
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-31



# Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						74	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-17		3	CLAYEY SILT	ML

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

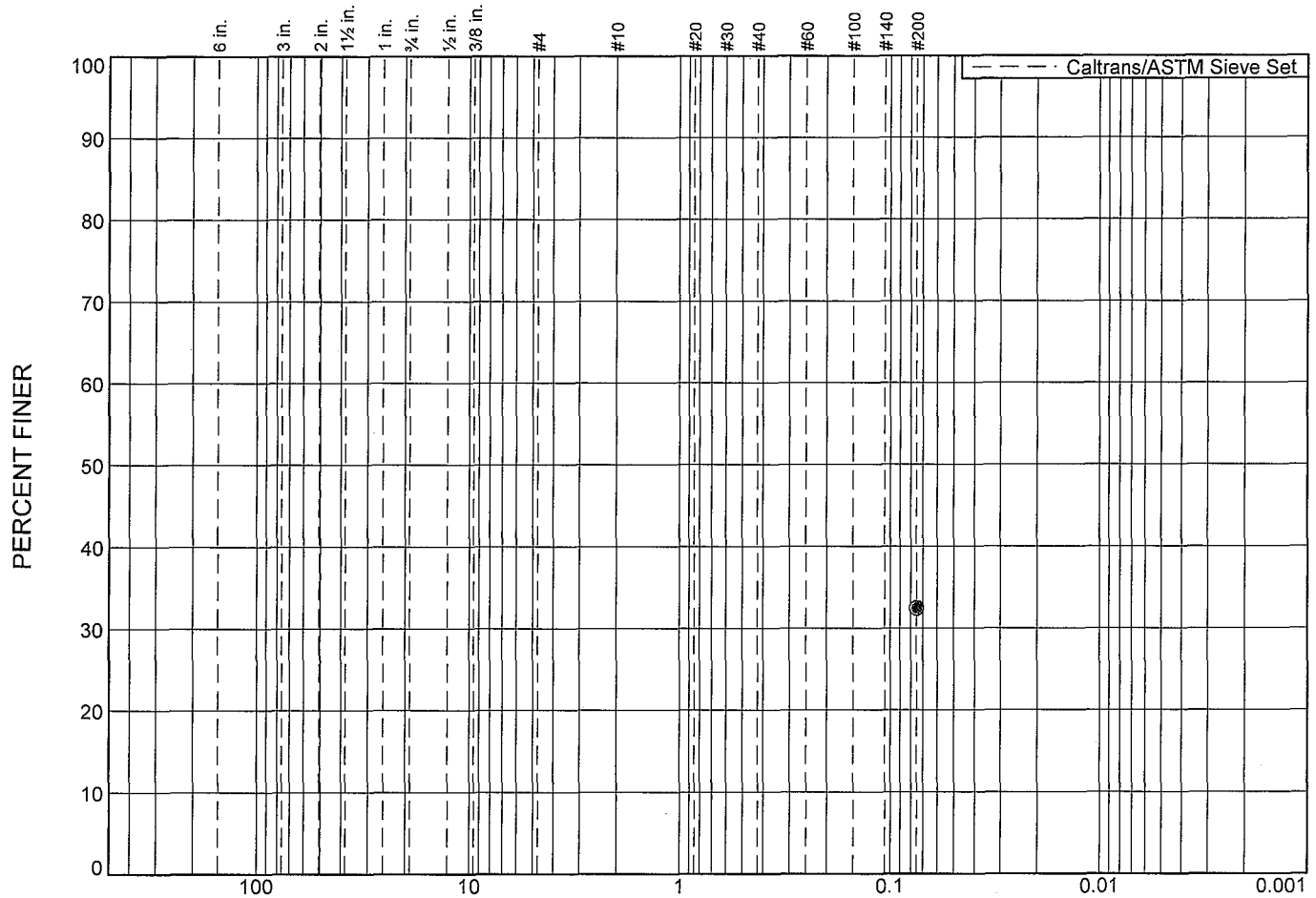
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-32



# Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○						32	

## SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-18		3	CLAYEY SILTY SAND	SC

**SOILS ENGINEERING, INC.**

**Client:** Kern High School District

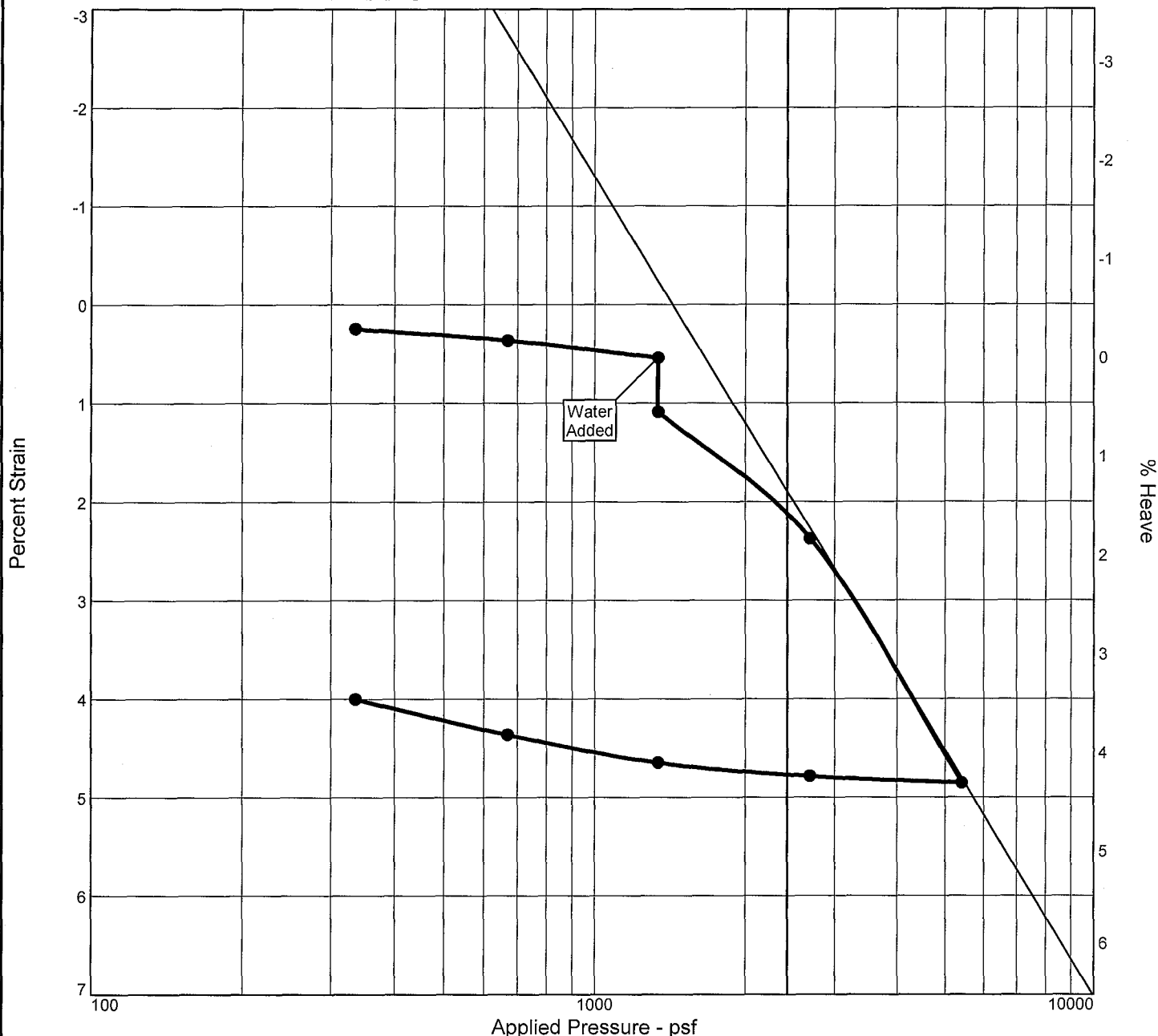
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Project No.:** 16608

**Figure** A-33



# CONSOLIDATION TEST REPORT



Natural Sat.	Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P <sub>c</sub> (psf)	C <sub>c</sub>	C <sub>s</sub>	Swell Press. (psf)	Heave %	e <sub>0</sub>
16.7 %	5.6 %	87.9	N/A	N/A	2.65	336	2642	0.16	0.01		-0.6	0.882

MATERIAL DESCRIPTION	USCS	AASHTO
CLAYEY SILTY SAND	SC	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-7 <b>Depth:</b> 3	<b>Remarks:</b> Test Date: 02/07/18 Sample No: 64886
SOILS ENGINEERING, INC.	

Figure B-1

Tested By: AP      Checked By: AL



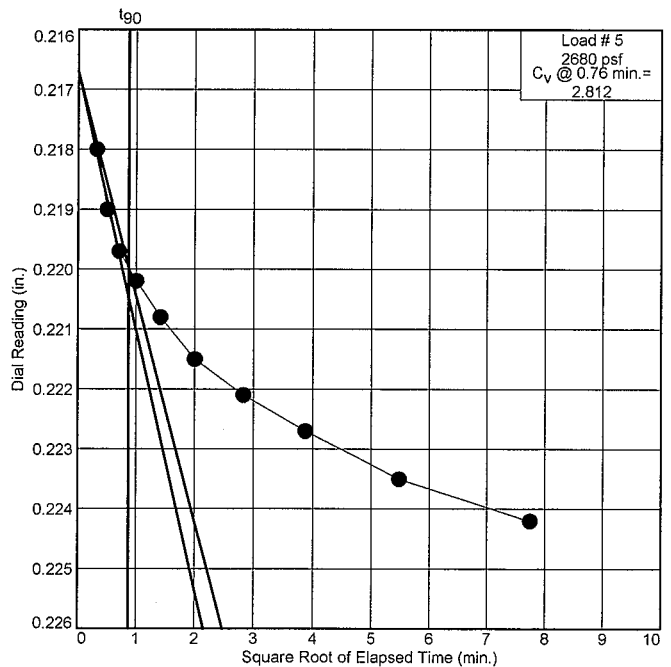
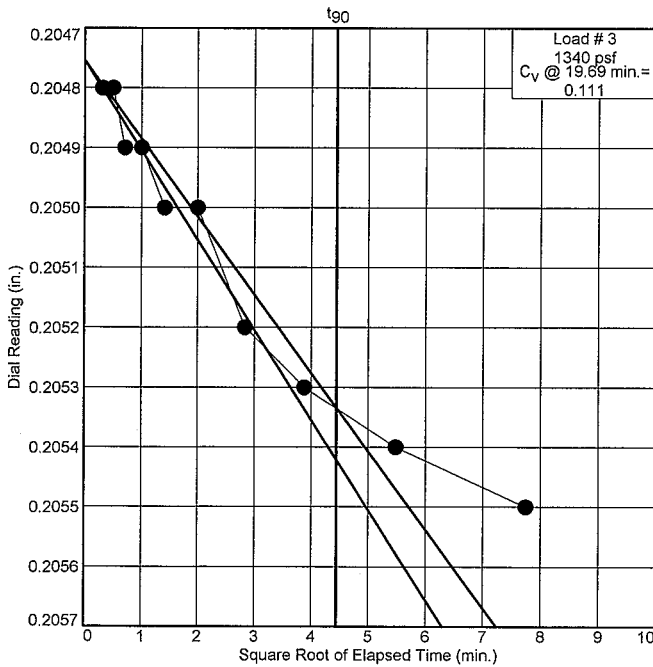
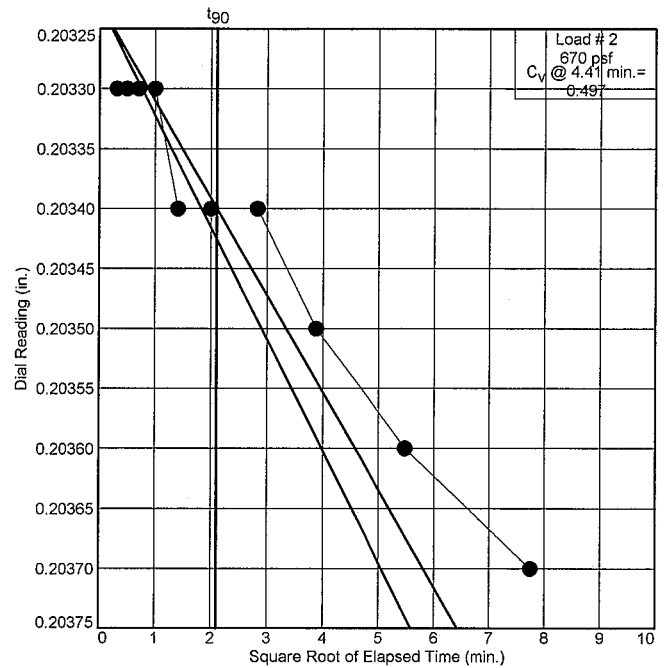
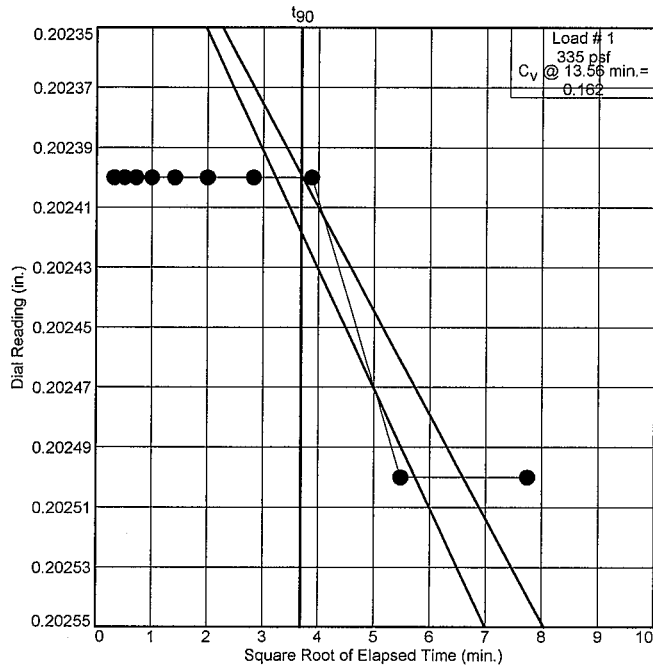
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-7

Depth: 3



**SOILS ENGINEERING, INC.**

Figure B-1



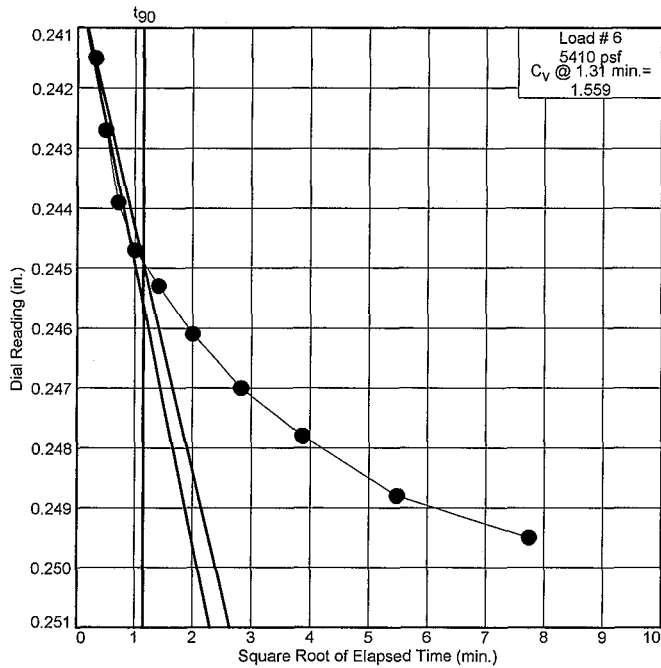
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-7

Depth: 3

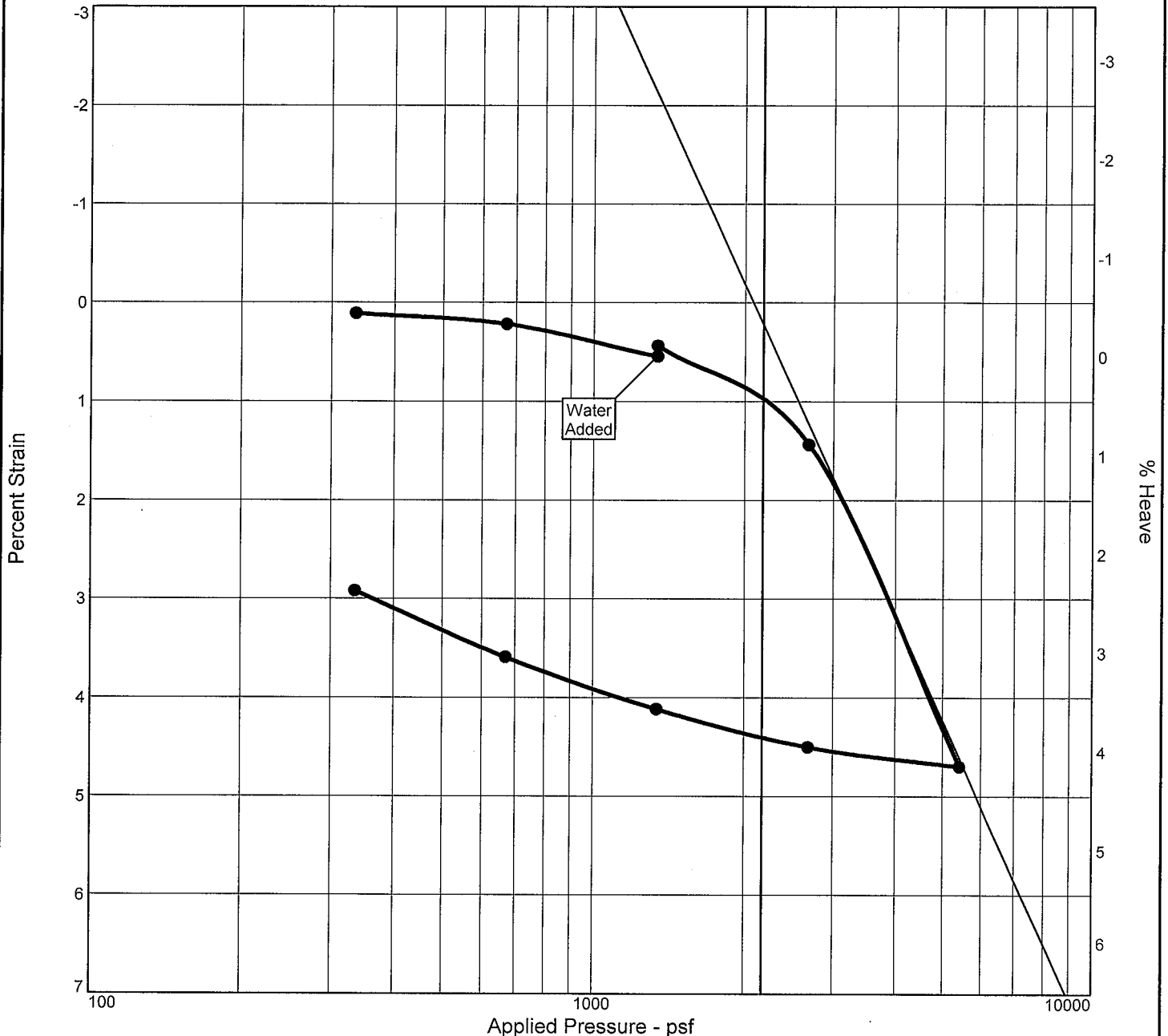


**SOILS ENGINEERING, INC.**

Figure B-1



# CONSOLIDATION TEST REPORT



Applied Pressure - psf

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	$P_c$ (psf)	$C_c$	$C_s$	Swell Press. (psf)	Heave %	$e_o$
Sat.	Moist.											
43.5 %	15.1 %	86.2	N/A	N/A	2.65	336	2604	0.21	0.03	120	0.1	0.920

## MATERIAL DESCRIPTION

CLAYEY SILT

USCS

ML

AASHTO

N/A

**Project No.** 16608

**Client:** Kern High School District

**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Source of Sample:** B-8

**Depth:** 6

## Remarks:

Test Date: 03/07/18

Sample No: 64896

# SOILS ENGINEERING, INC.

Figure B-2

Tested By: AP

Checked By: AL



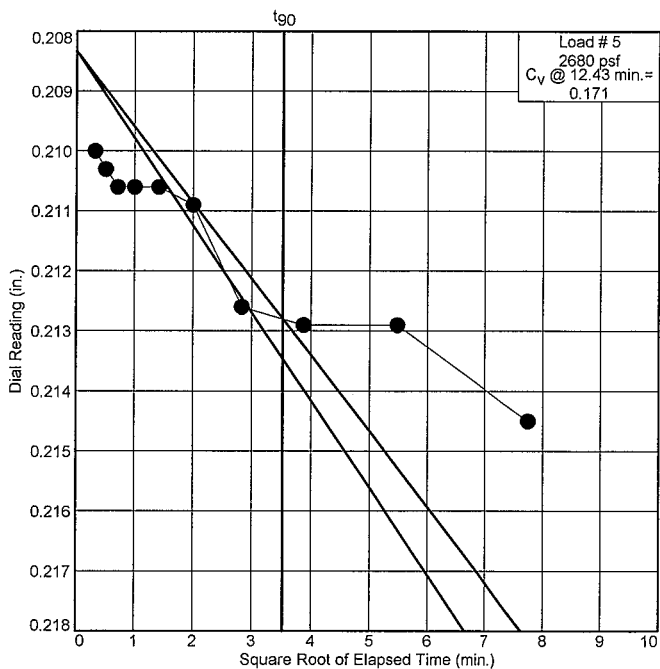
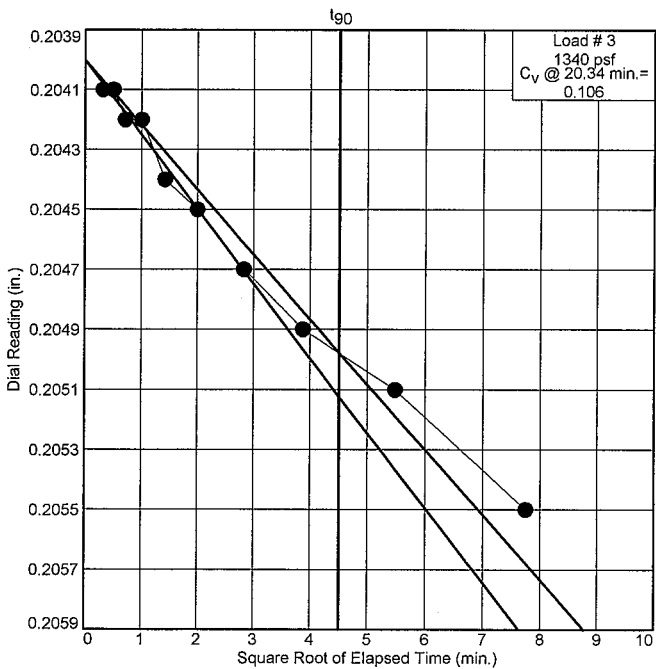
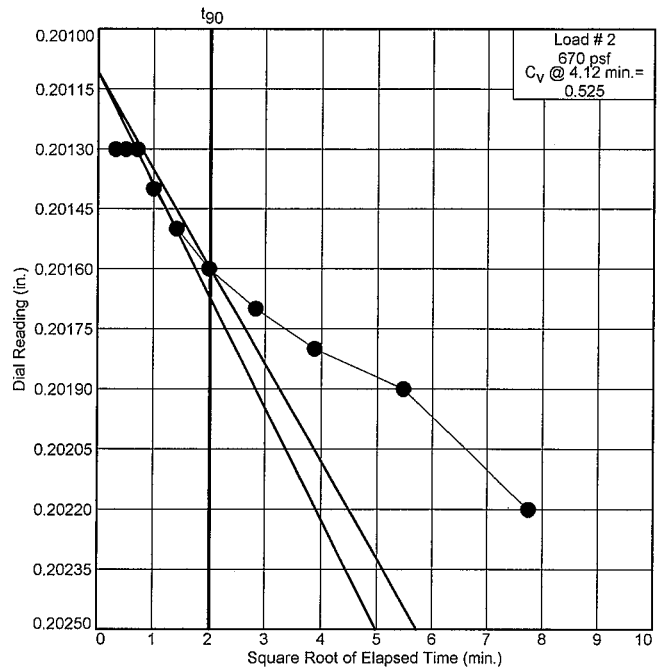
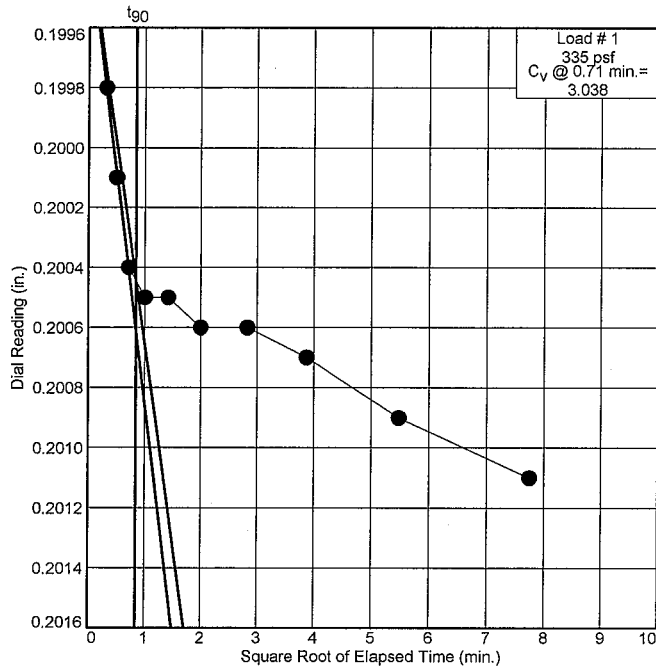
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-8

Depth: 6



**SOILS ENGINEERING, INC.**

Figure B-2



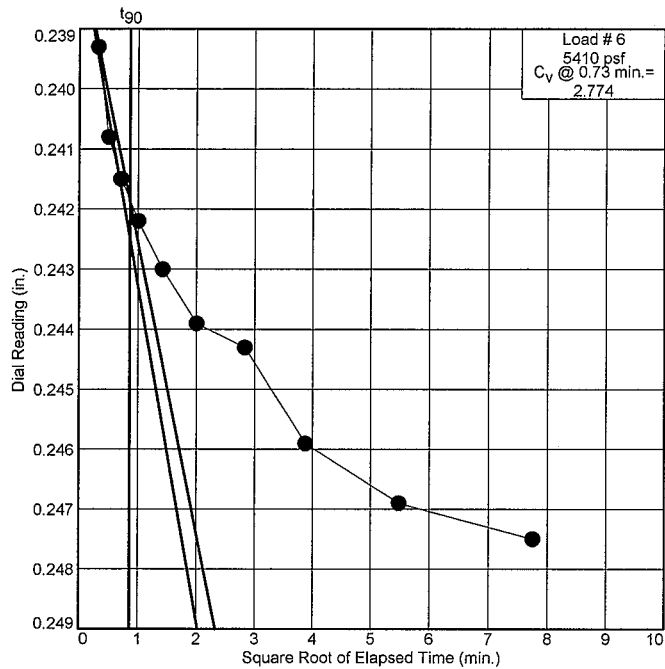
## Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-8

Depth: 6

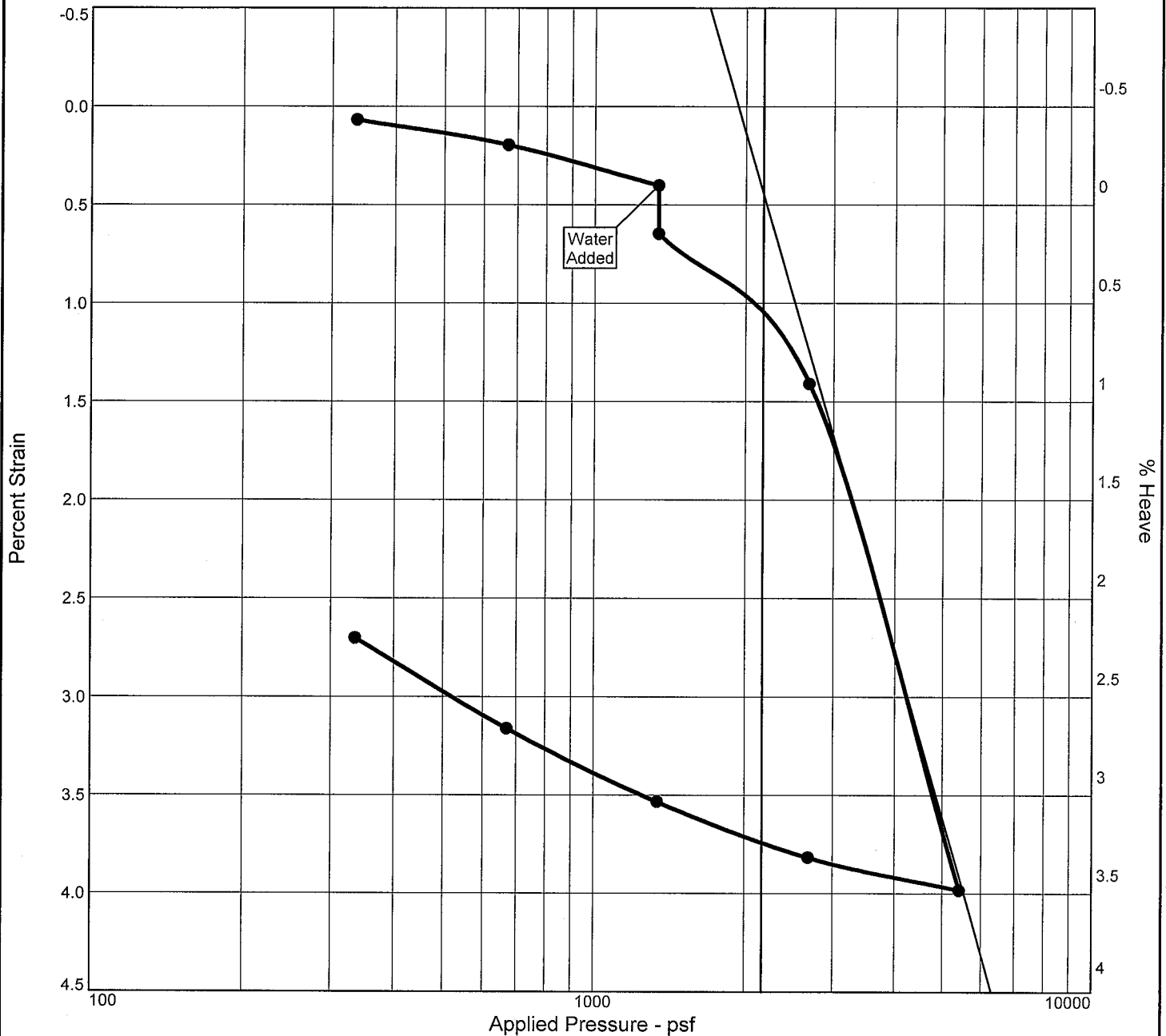


**SOILS ENGINEERING, INC.**

Figure B-2



# CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	$P_c$ (psf)	$C_c$	$C_s$	Swell Press. (psf)	Heave %	$e_o$
Sat.	Moist.											
24.8 %	7.5 %	91.7	N/A	N/A	2.65	336	2607	0.16	0.02		-0.2	0.805

MATERIAL DESCRIPTION										USCS	AASHTO
CLAYEY SILT										ML	N/A

**Project No.** 16608      **Client:** Kern High School District  
**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW  
**Source of Sample:** B-9      **Depth:** 3

**Remarks:**  
 Test Date: 03/07/18  
 Sample No: 64905

## SOILS ENGINEERING, INC.

Figure B-3

Tested By: AP      Checked By: AL



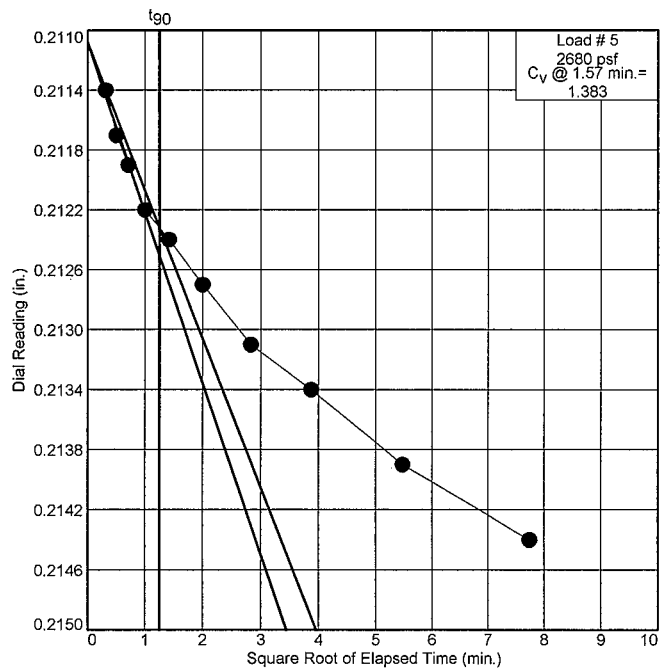
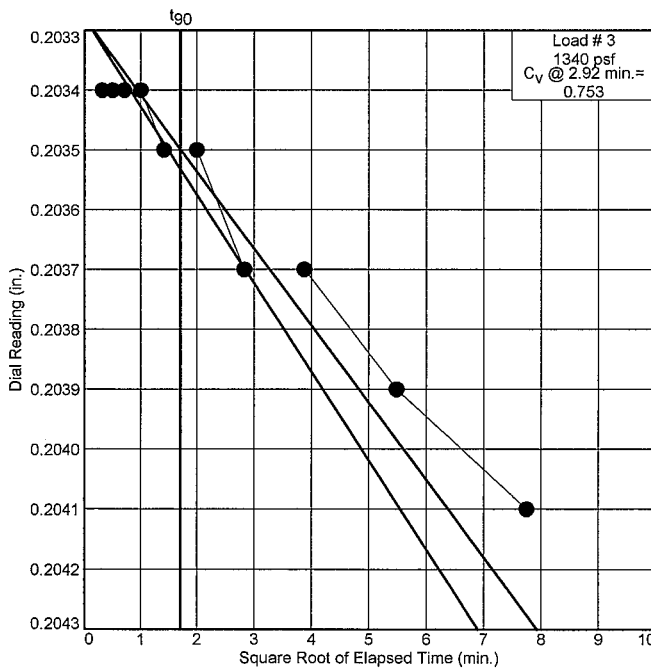
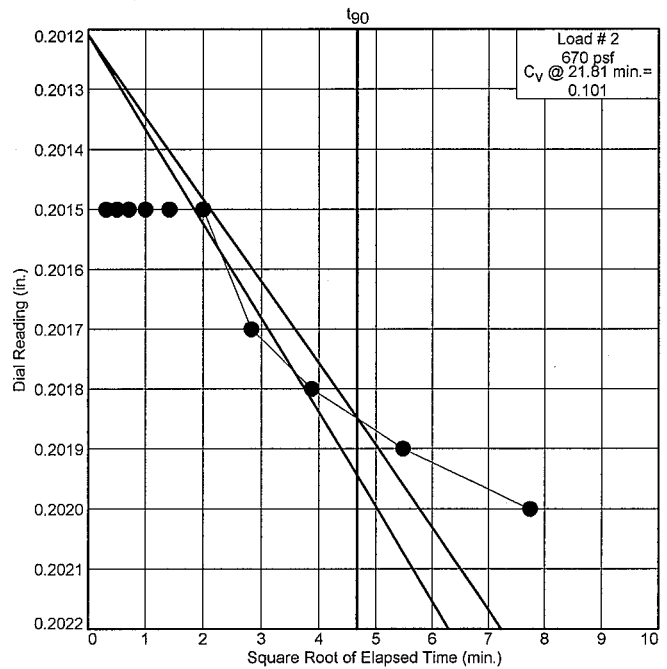
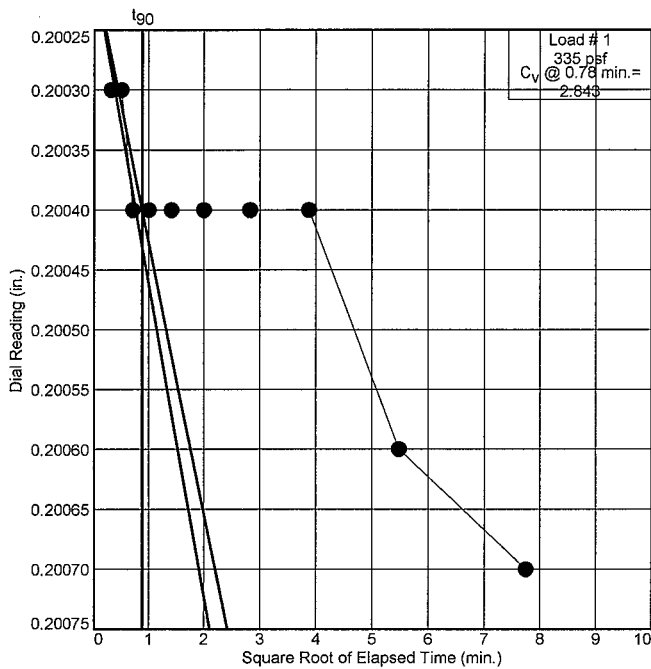
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-9

Depth: 3



**SOILS ENGINEERING, INC.**

Figure B-3



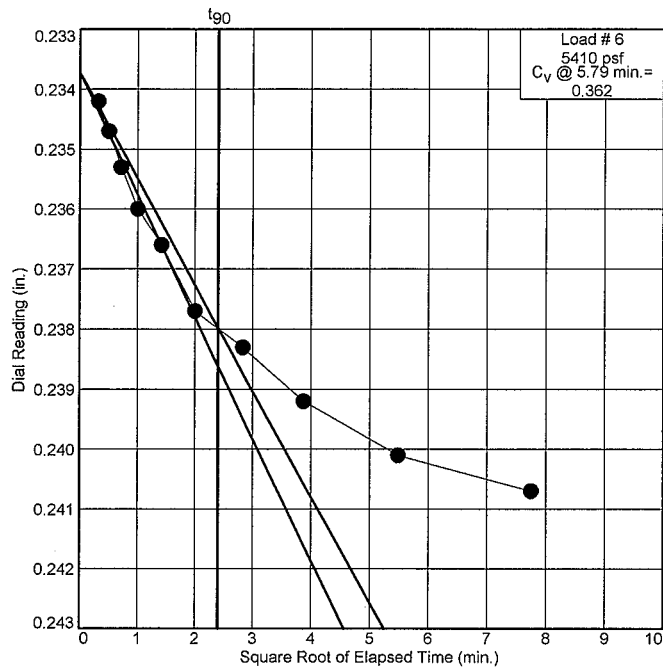
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-9

Depth: 3

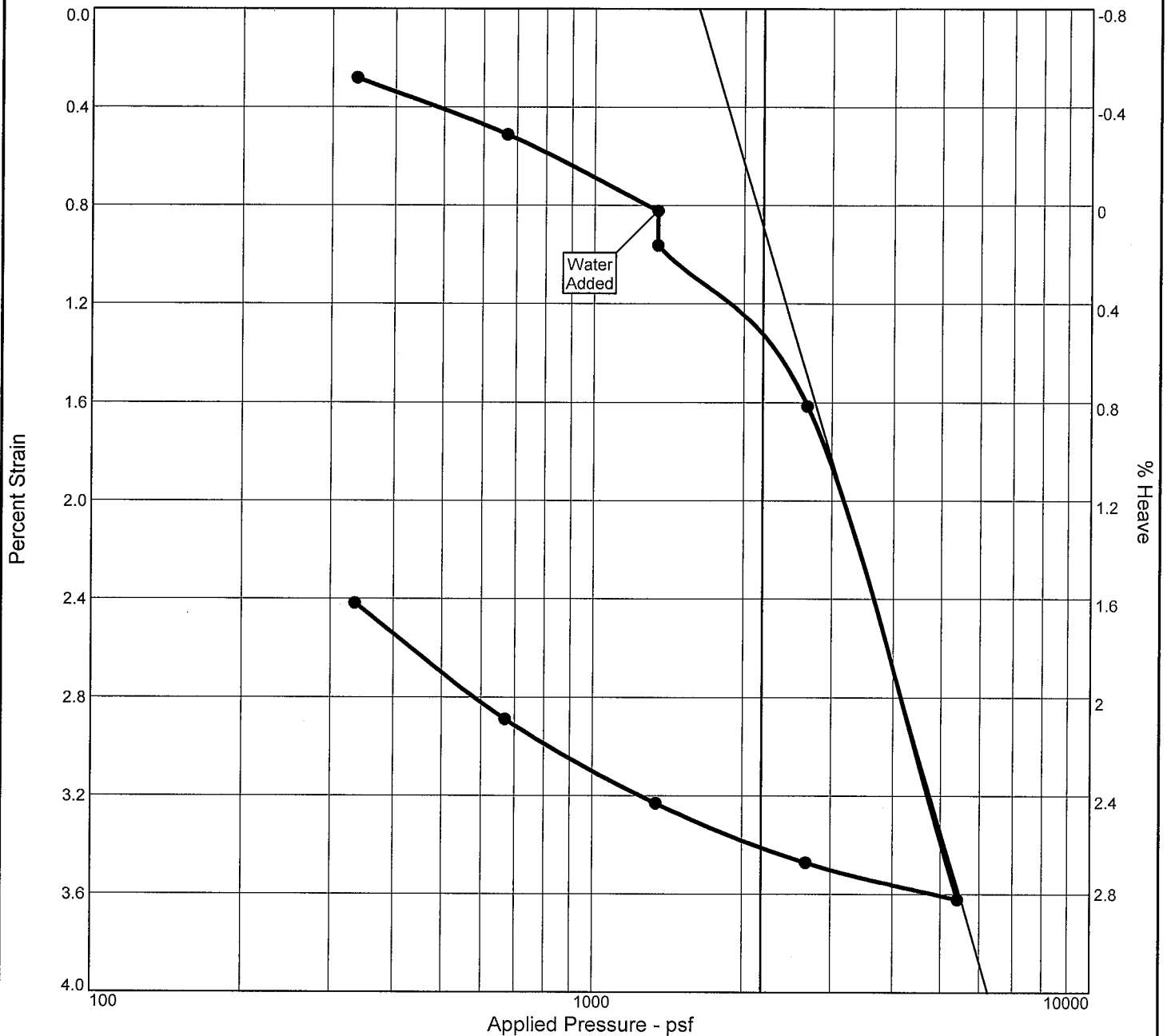


**SOILS ENGINEERING, INC.**

Figure B-3



# CONSOLIDATION TEST REPORT



Applied Pressure - psf

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P <sub>c</sub> (psf)	C <sub>c</sub>	C <sub>s</sub>	Swell Press. (psf)	Heave %	e <sub>o</sub>
Sat.	Moist.											
52.7 %	10.6 %	107.9	N/A	N/A	2.65	336	2601	0.10	0.02		-0.1	0.533

MATERIAL DESCRIPTION										USCS	AASHTO
SANDY SILT										ML	N/A

<b>Project No.</b> 16608		<b>Client:</b> Kern High School District		<b>Remarks:</b> Test Date: 02/07/18 Sample No: 64905
<b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW				
<b>Source of Sample:</b> B-10		<b>Depth:</b> 3		
<b>SOILS ENGINEERING, INC.</b>				

Figure B-4

Figure B-4

Tested By: AP Checked By: AL



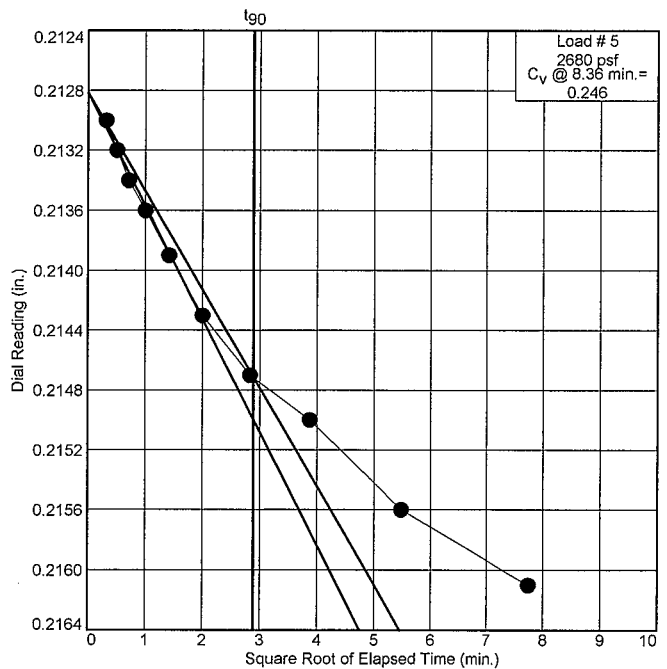
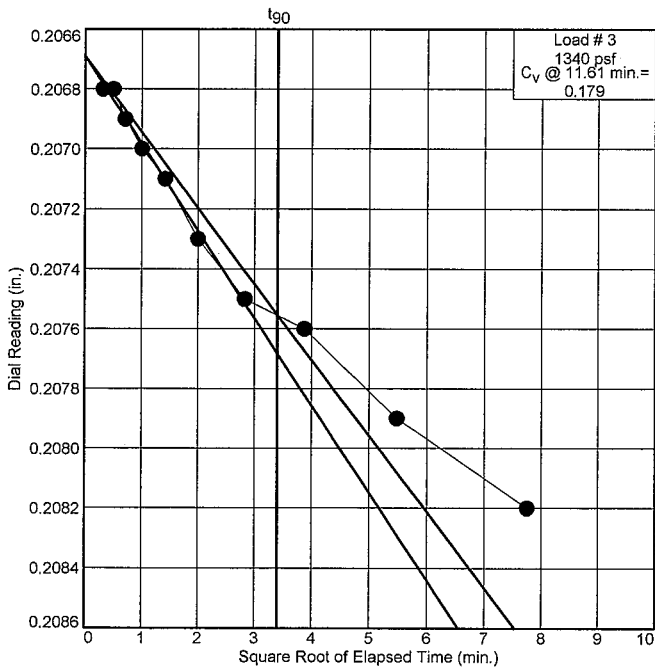
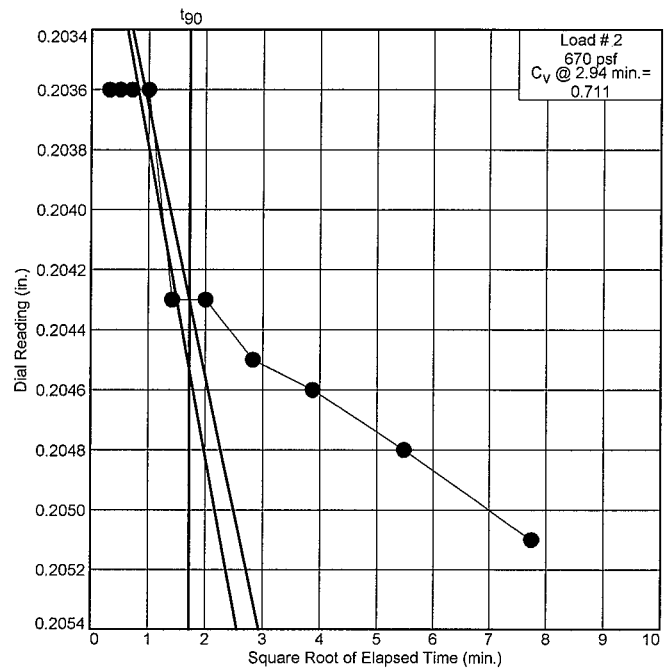
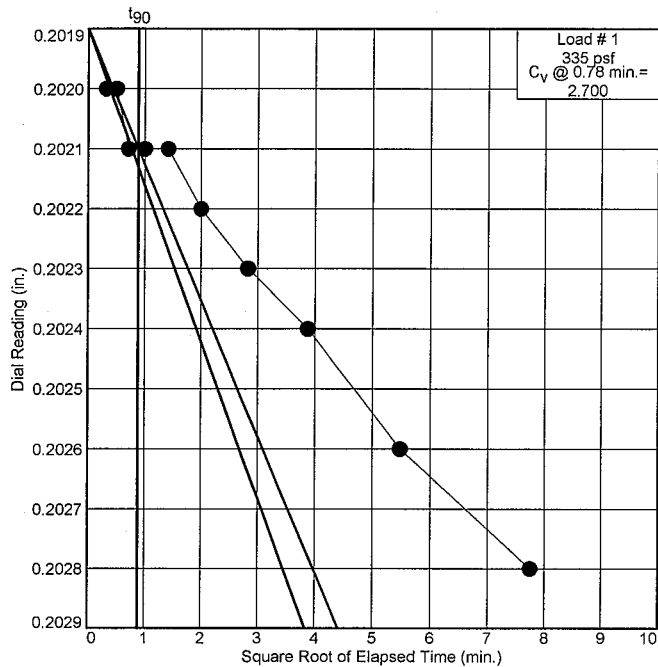
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-10

Depth: 3



## SOILS ENGINEERING, INC.

Figure B-4



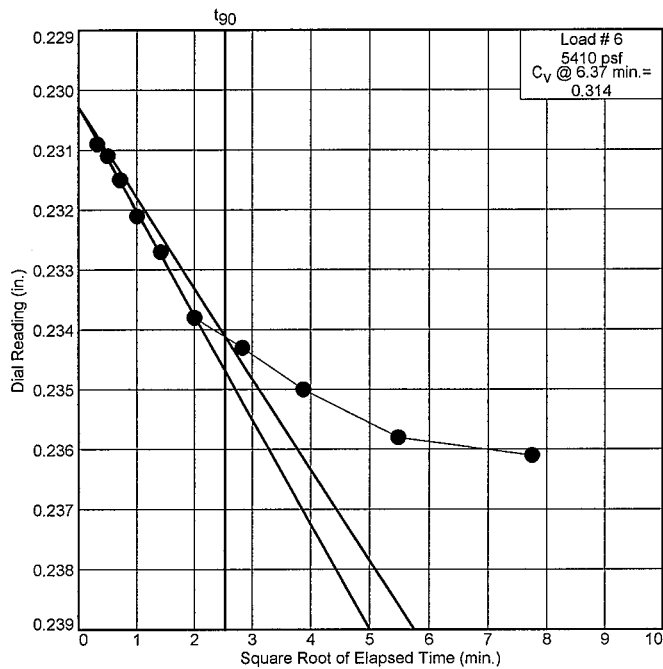
## Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-10

Depth: 3

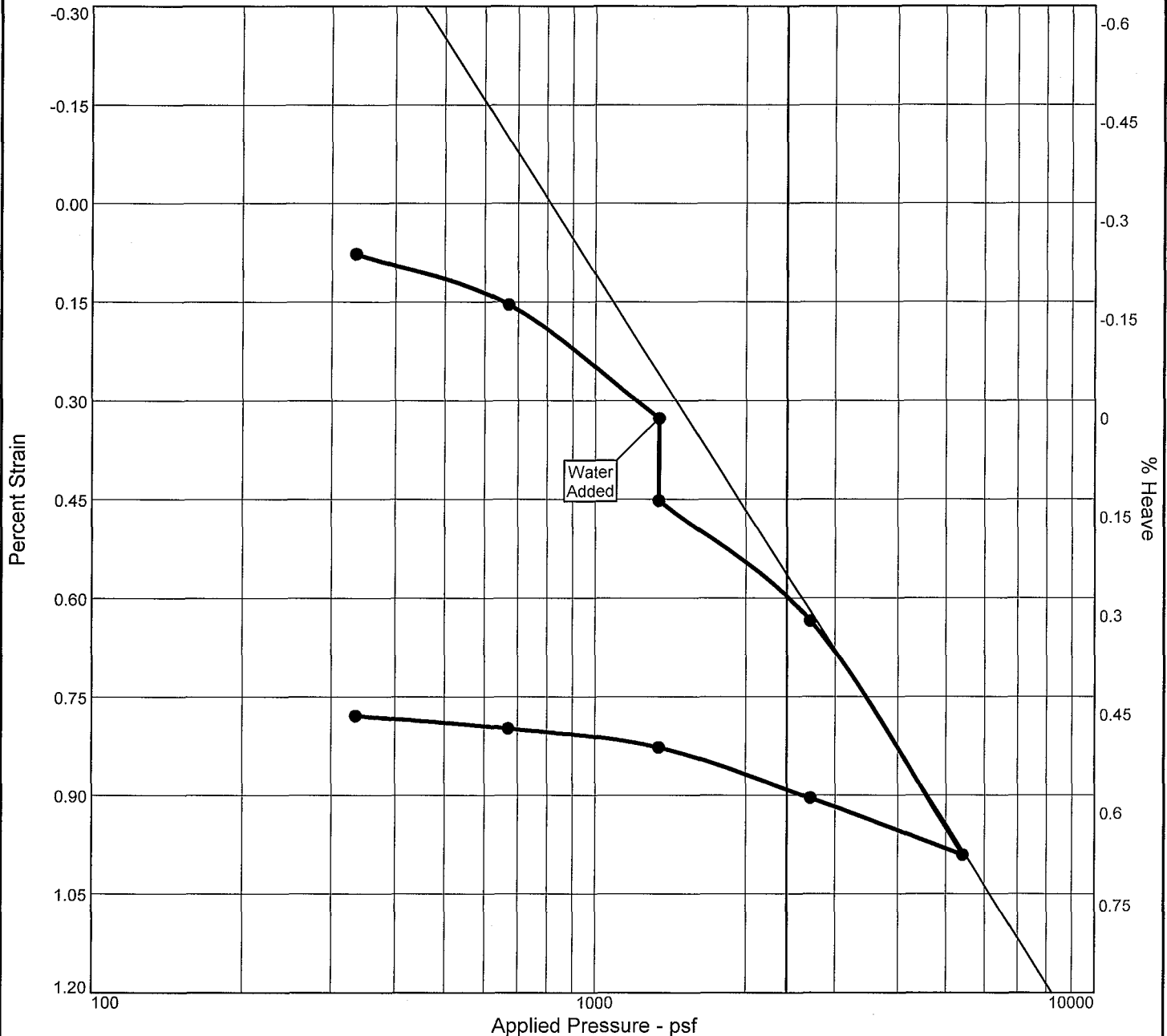


**SOILS ENGINEERING, INC.**

Figure B-4



# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp.	Overburden	P <sub>c</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave	e <sub>0</sub>
Sat.	Moist.	(pcf)		Gr.	(psf)	(psf)			(psf)	%	
22.1 %	4.9 %	104.4	N/A	N/A	336	2640	0.02	0.00		-0.1	0.585

MATERIAL DESCRIPTION	USCS	AASHTO
SILTY SAND	SM	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-11 <b>Depth:</b> 3	<b>Remarks:</b> Test Date: 03/07/18 Sample No: 64909
--	--

## SOILS ENGINEERING, INC.

Figure B-5

Tested By: AP      Checked By: AL



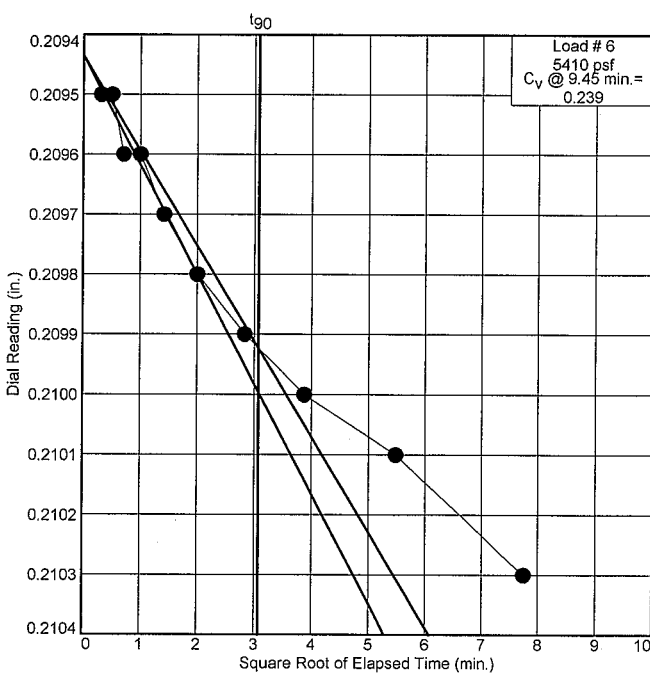
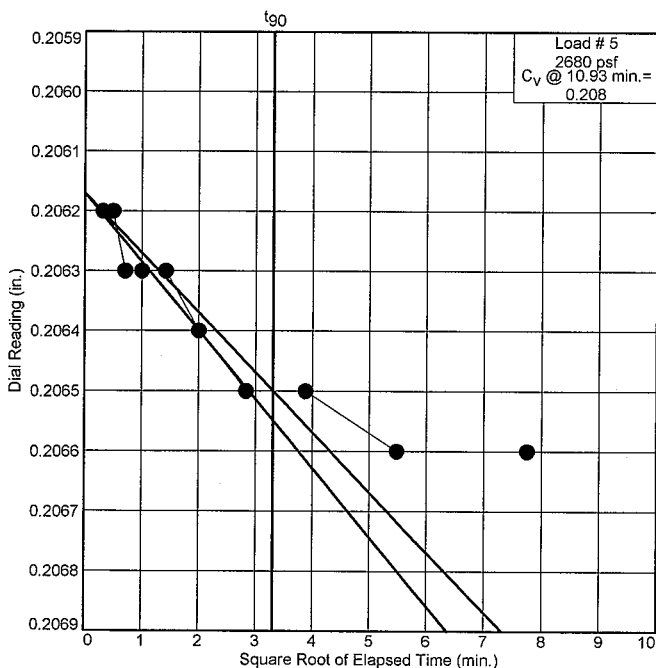
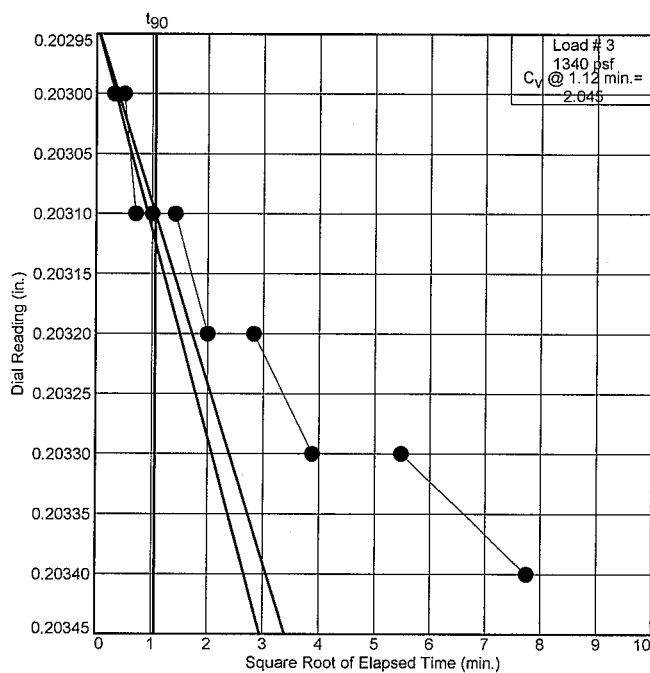
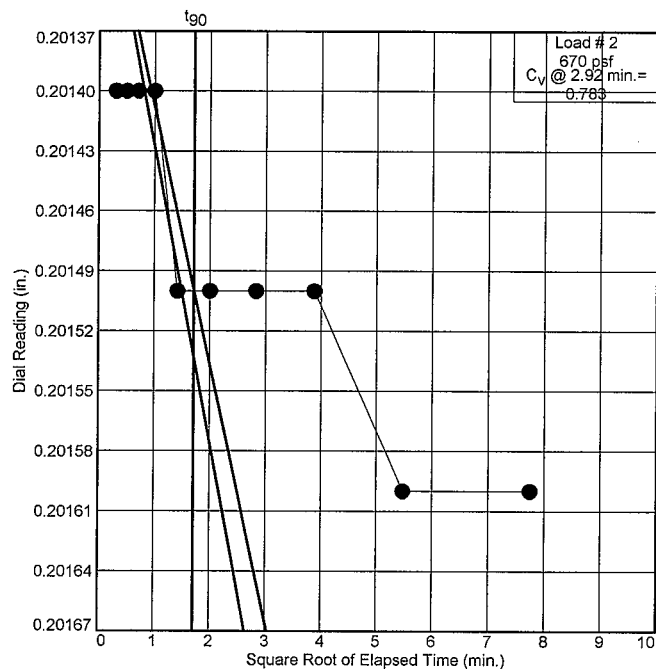
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-11

Depth: 3

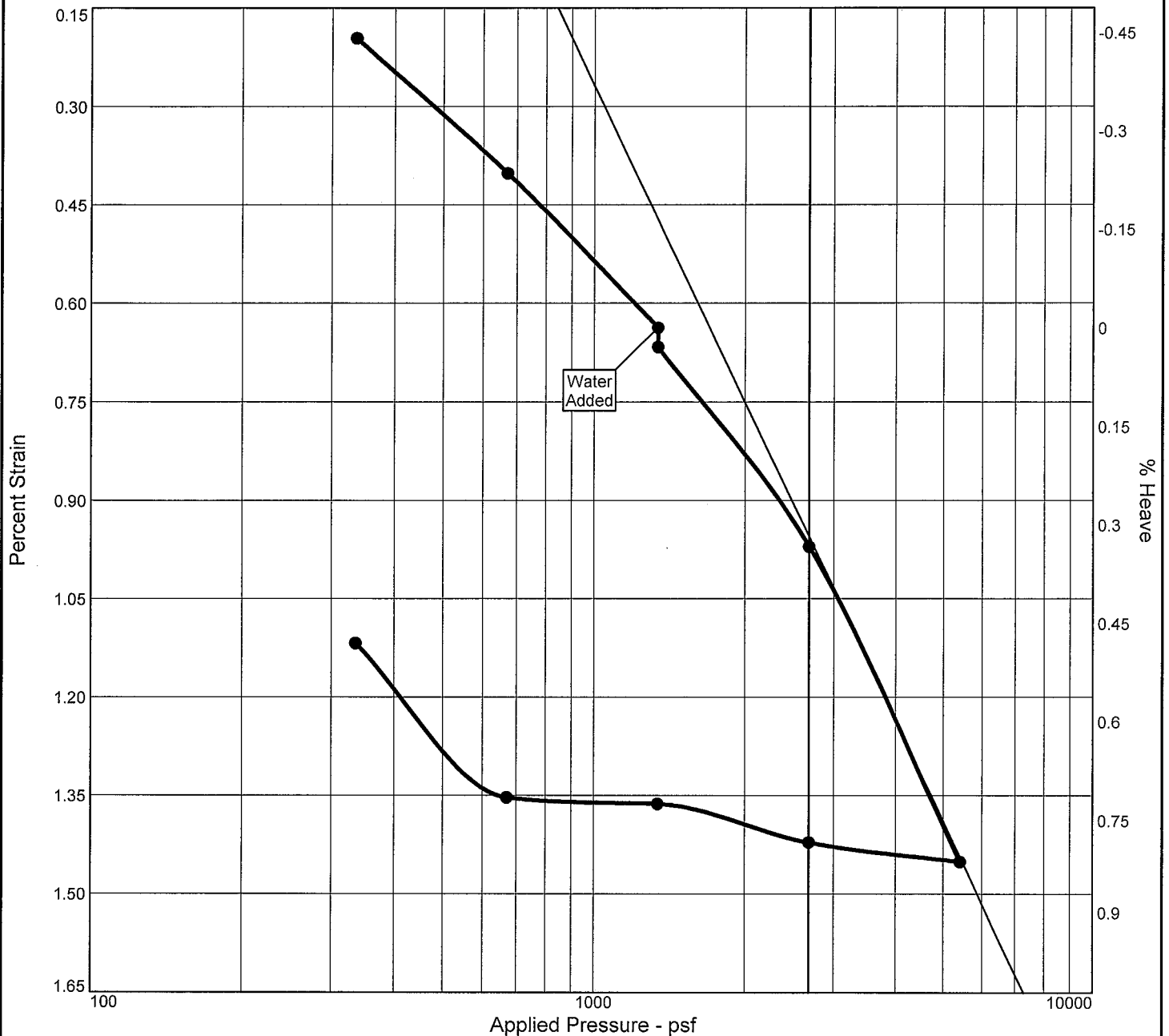


**SOILS ENGINEERING, INC.**

Figure B-5



# CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P <sub>c</sub> (psf)	C <sub>c</sub>	C <sub>s</sub>	Swell Press. (psf)	Heave %	e <sub>o</sub>
Sat.	Moist.											
43.3 %	9.4 %	105.2	N/A	N/A	2.65	336	2776	0.03	0.00		0.0	0.573

MATERIAL DESCRIPTION										USCS	AASHTO
SILTY SAND										SM	N/A

<b>Project No.</b> 16608		<b>Client:</b> Kern High School District		<b>Remarks:</b>  Test Date: 03/07/18 Sample No: 64910
<b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW				
<b>Source of Sample:</b> B-11		<b>Depth:</b> 6		
<b>SOILS ENGINEERING, INC.</b>				

Figure B-6

Figure B-6

Tested By: AP Checked By: AL



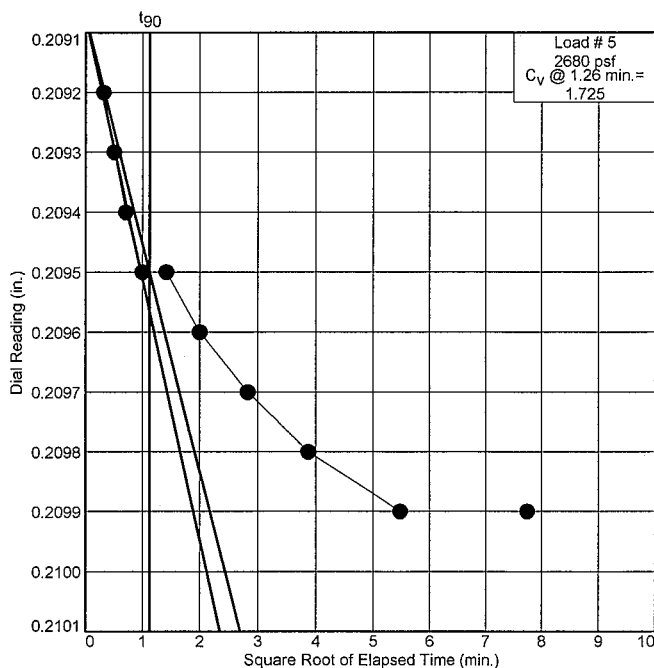
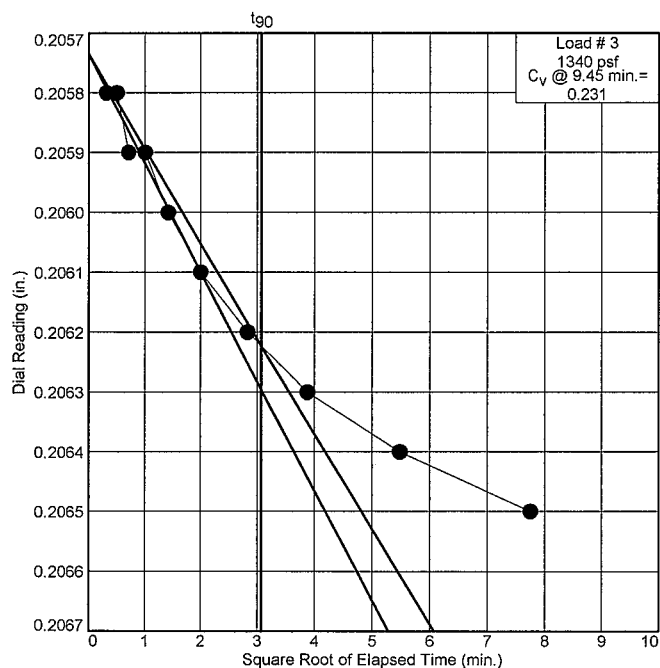
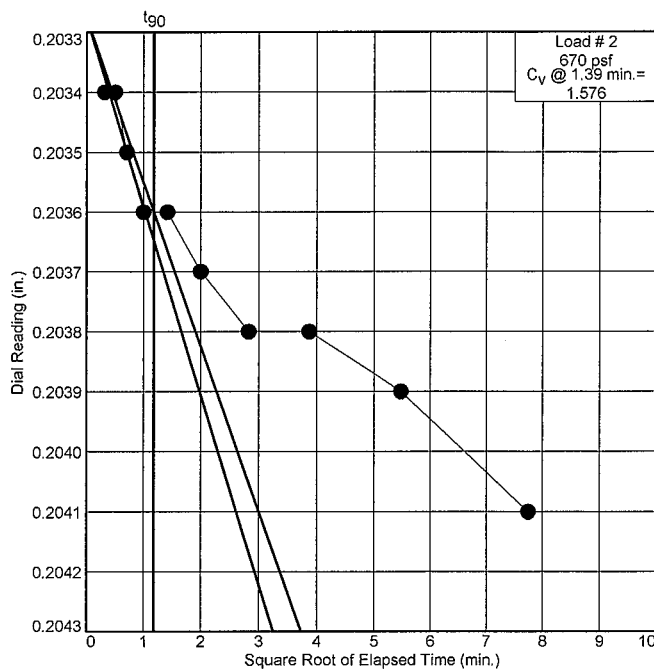
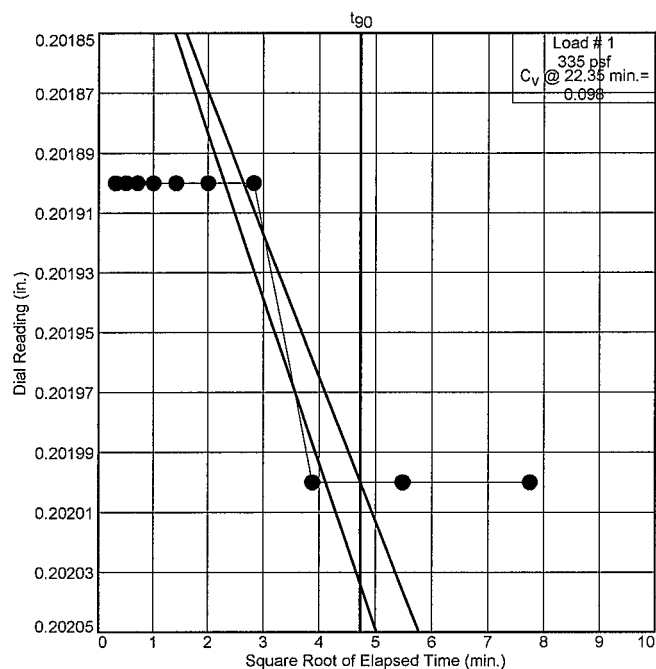
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-11

Depth: 6



**SOILS ENGINEERING, INC.**

Figure B-6



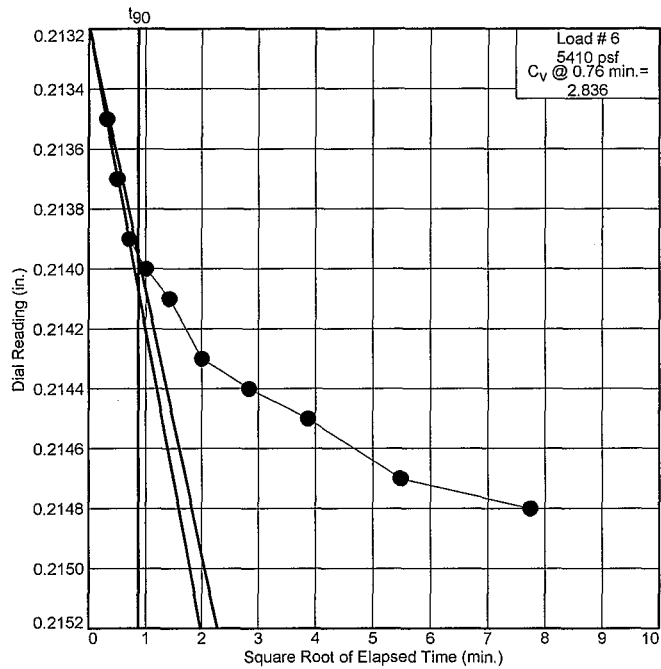
## Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-11

Depth: 6

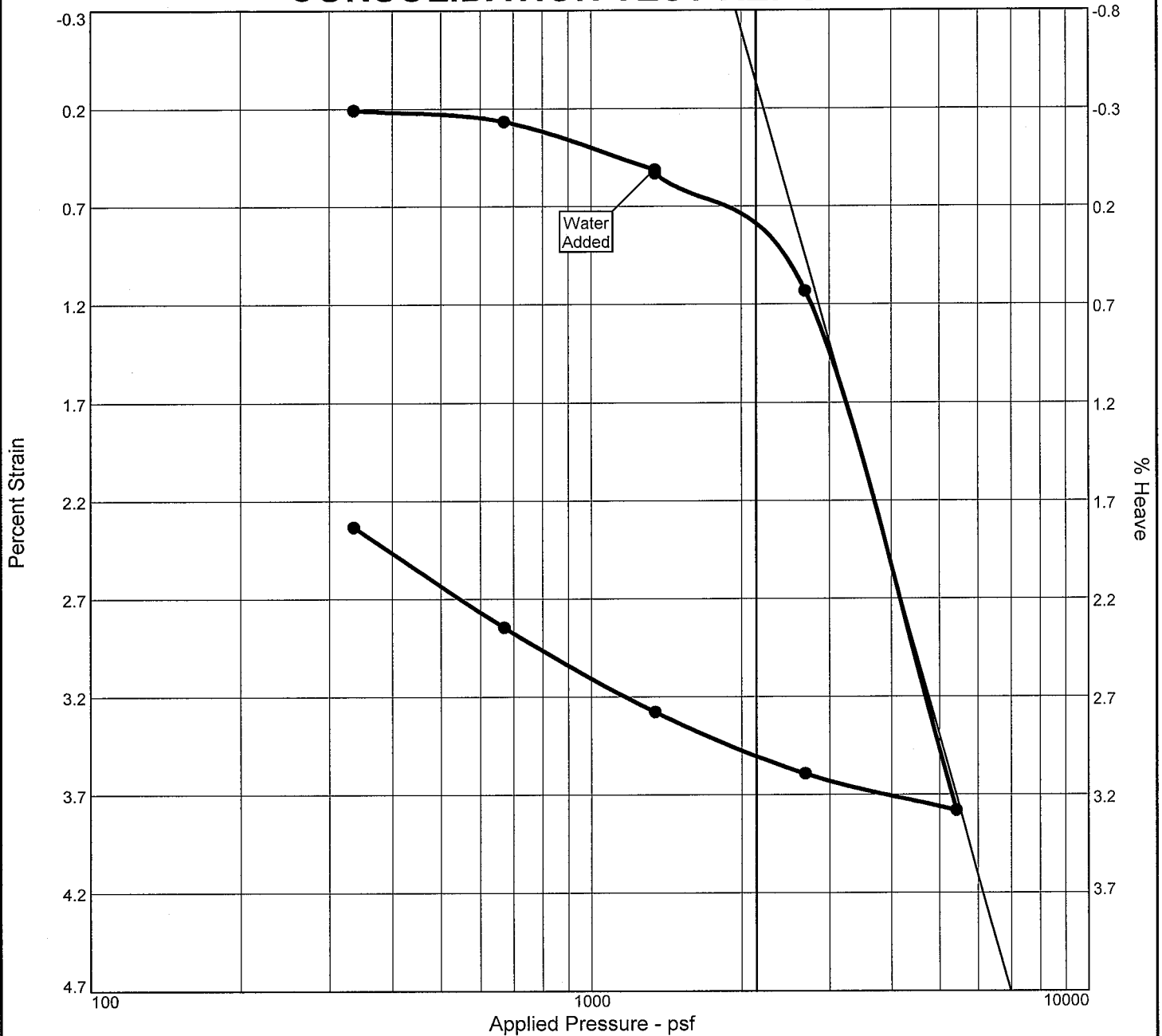


**SOILS ENGINEERING, INC.**

Figure B-6



# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp. Gr.	Overburden	P <sub>C</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave %	e <sub>o</sub>
Sat. Moist.	(pcf)				(psf)	(psf)			(psf)		
37.0 %	10.7 %	93.6	N/A	N/A	336	2624	0.16	0.02		0.0	0.768

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY SILT	ML	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-12 <b>Depth:</b> 6	<b>Remarks:</b> Test Date: 03/07/18 Sample No: 34914
SOILS ENGINEERING, INC.	

Figure B-7

Tested By: AP      Checked By: AL



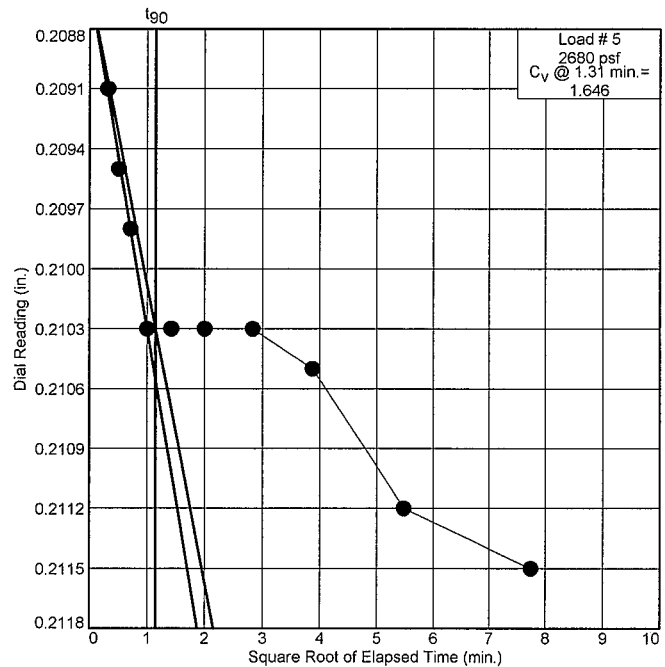
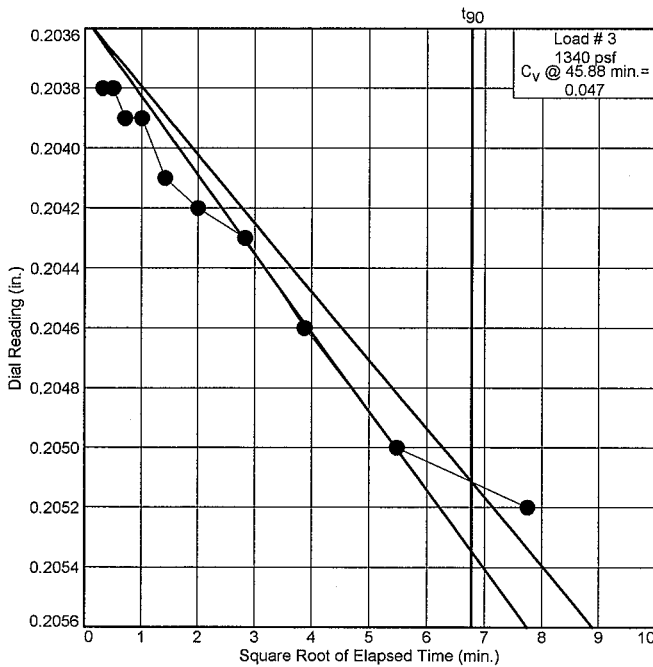
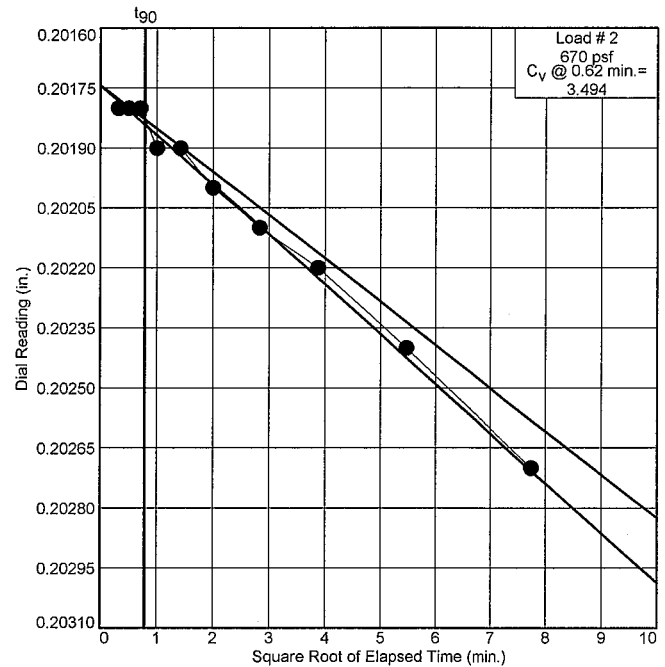
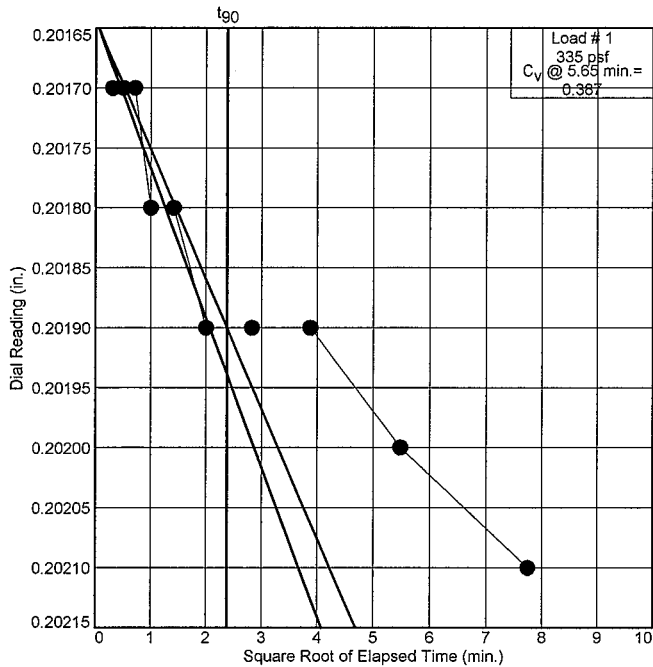
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-12

Depth: 6



**SOILS ENGINEERING, INC.**

Figure B-7



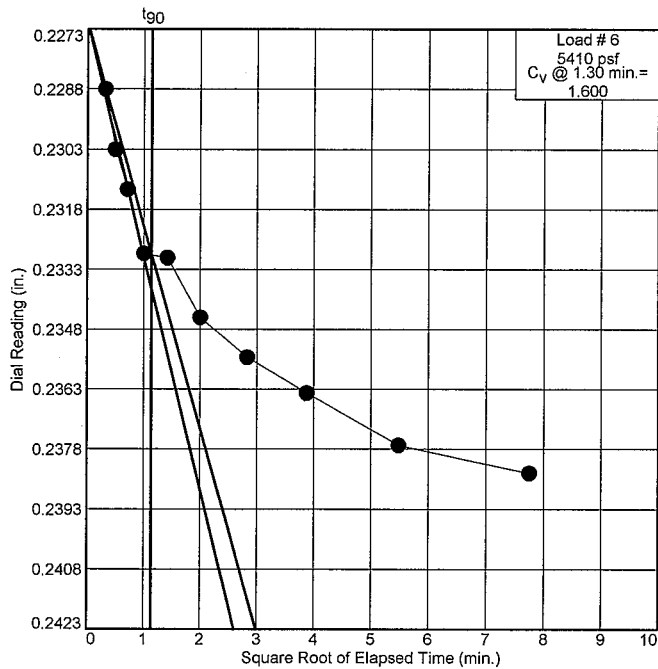
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-12

Depth: 6

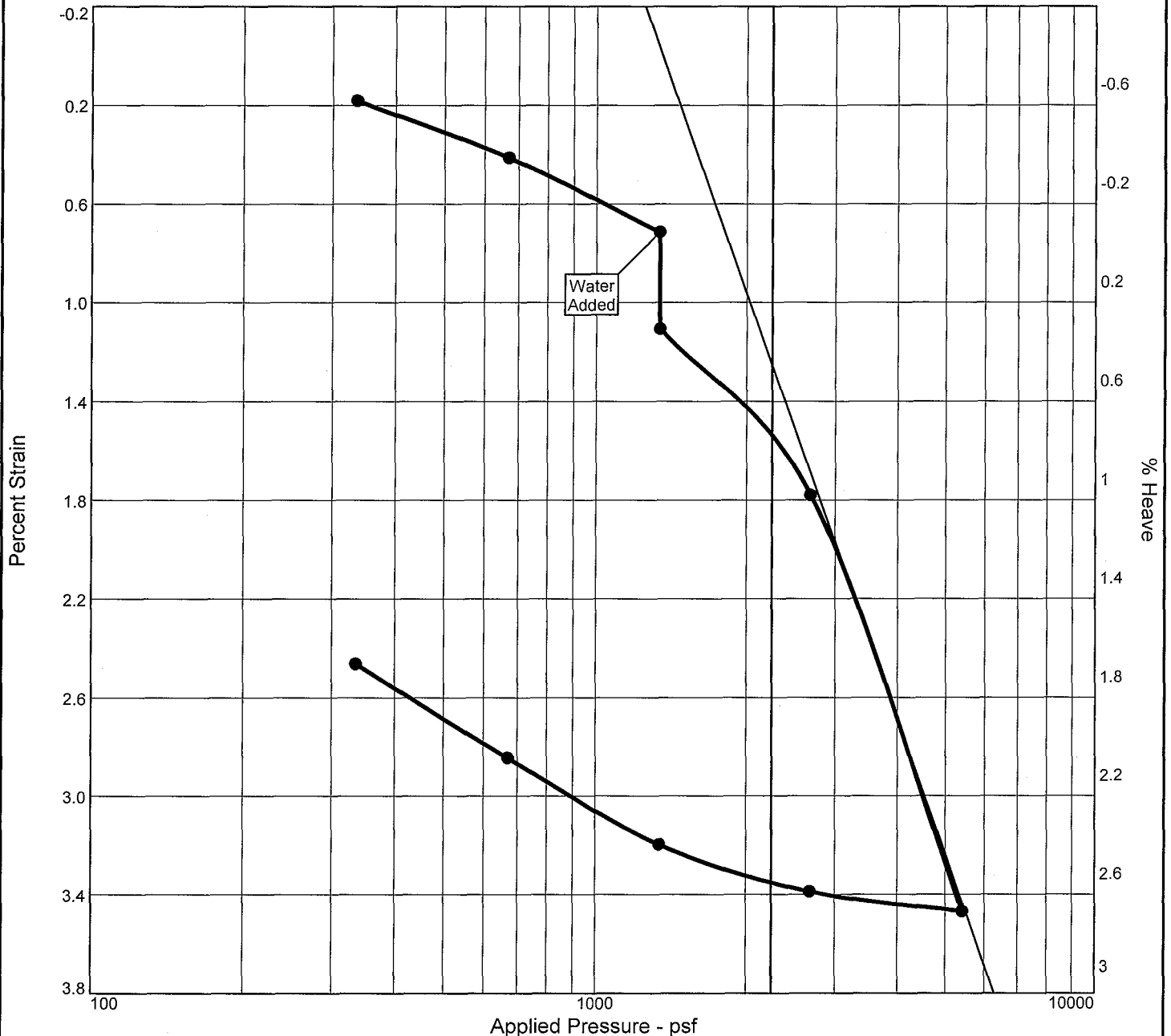


**SOILS ENGINEERING, INC.**

Figure B-7



# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp. Gr.	Overburden	P <sub>c</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave %	e <sub>o</sub>
Sat.	Moist.	(pcf)			(psf)	(psf)			(psf)		
31.7 %	7.7 %	100.7	N/A	N/A	336	2599	0.09	0.01		-0.4	0.643

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY SILT	ML	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-14 <b>Depth:</b> 3	<b>Remarks:</b> Test Date: 03/07/18 Sample No: 64925
<h2 style="margin: 0;">SOILS ENGINEERING, INC.</h2>	

Figure B-8

Tested By: AP      Checked By: AL



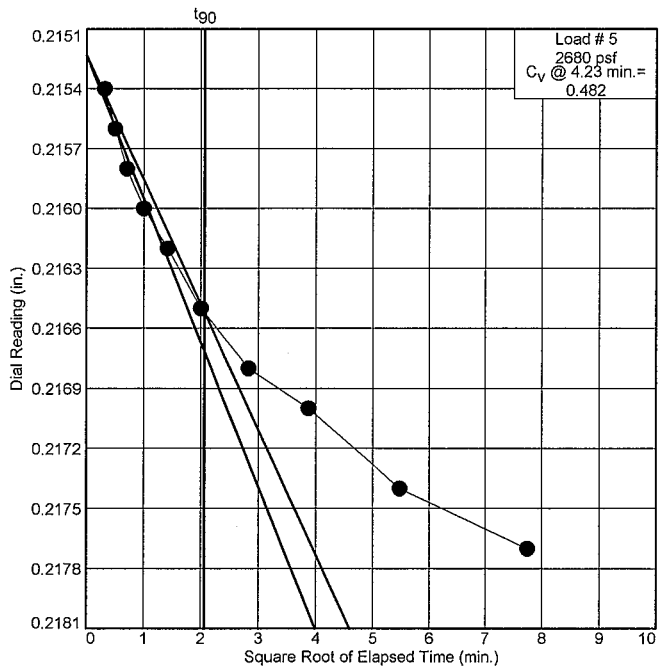
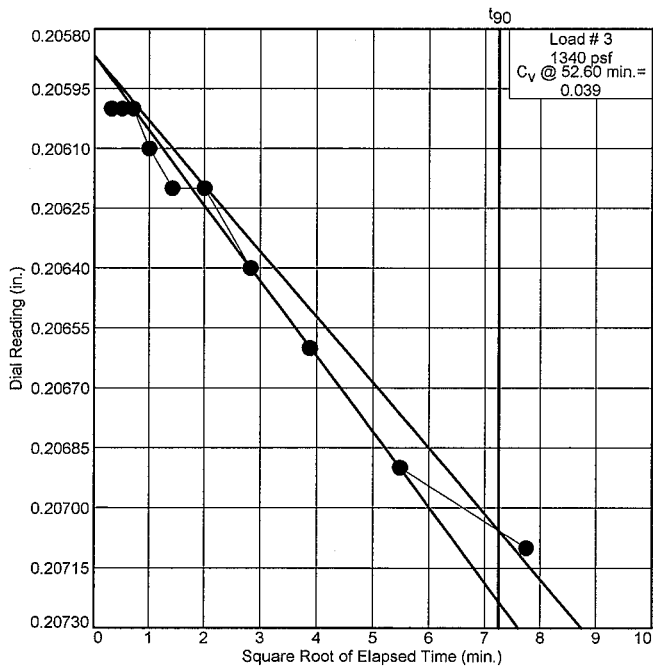
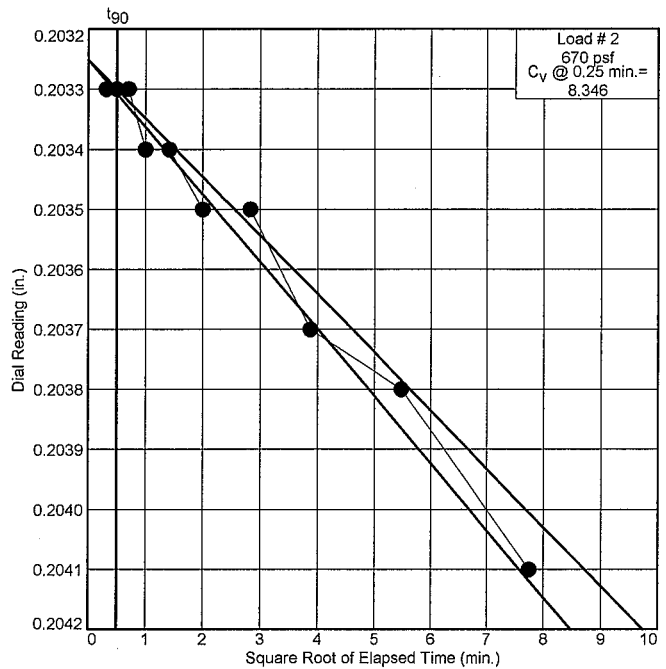
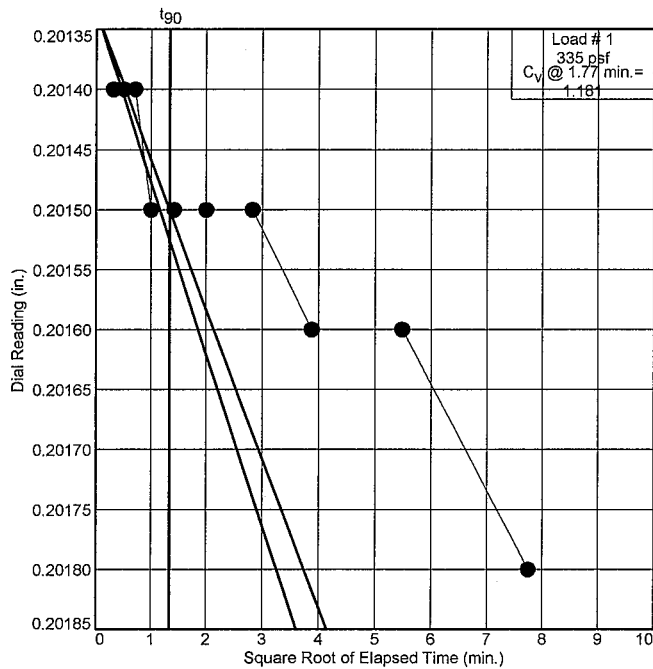
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-14

Depth: 3



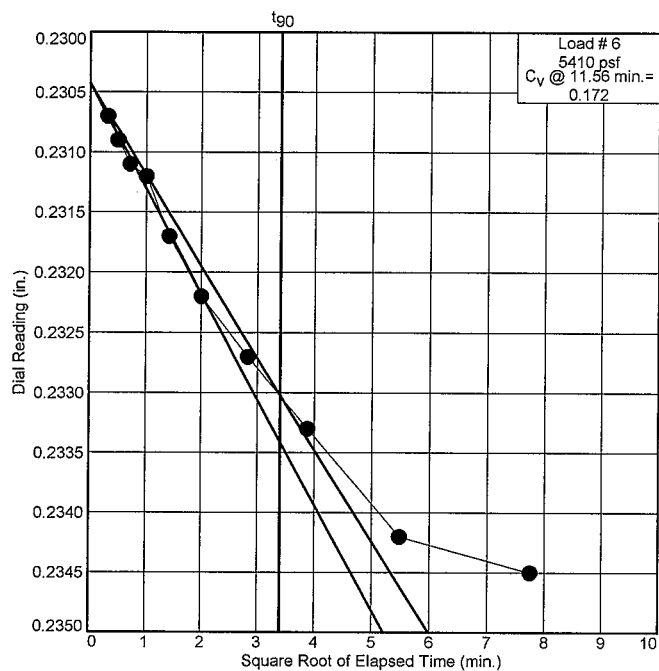
**SOILS ENGINEERING, INC.**

Figure B-8



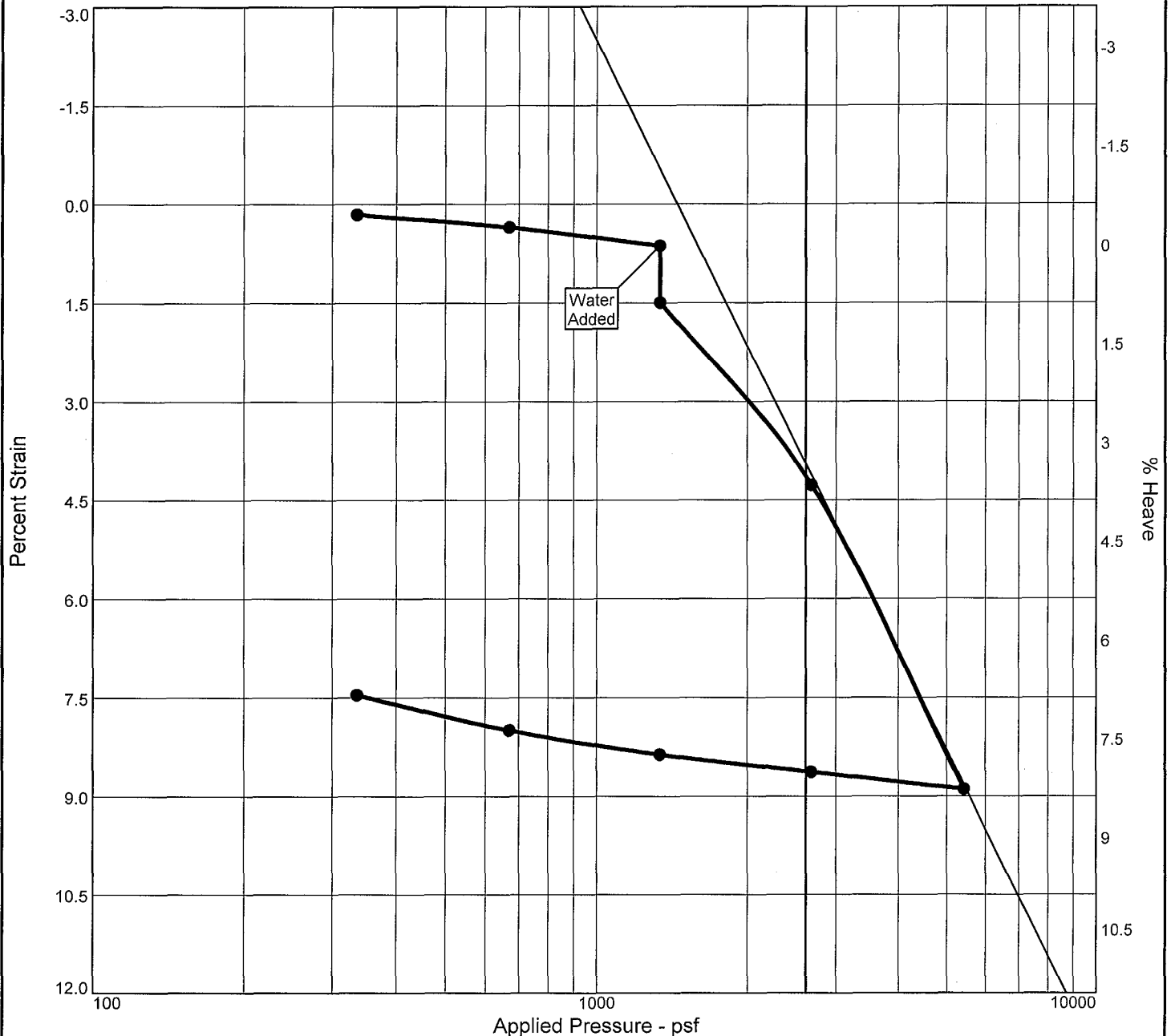
# Dial Reading vs. Time

Project No.: 16608  
Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in  
Source of Sample: B-14      Depth: 3





# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp. Gr.	Overburden	P <sub>c</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave %	e <sub>o</sub>
Sat.	Moist.	(pcf)			(psf)	(psf)			(psf)		
26.4 %	10.7 %	80.0	N/A	N/A	336	2740	0.32	0.02		-0.9	1.069

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY SILT	ML	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-15 <b>Depth:</b> 3	<b>Remarks:</b> Test Date: 03/07/18 Sample NO: 64928
SOILS ENGINEERING, INC.	

Figure B-9

Tested By: AP      Checked By: AL



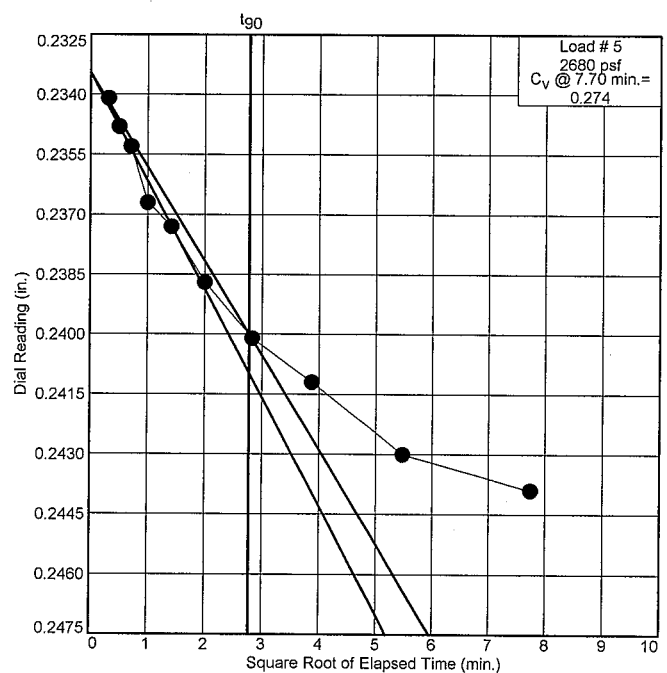
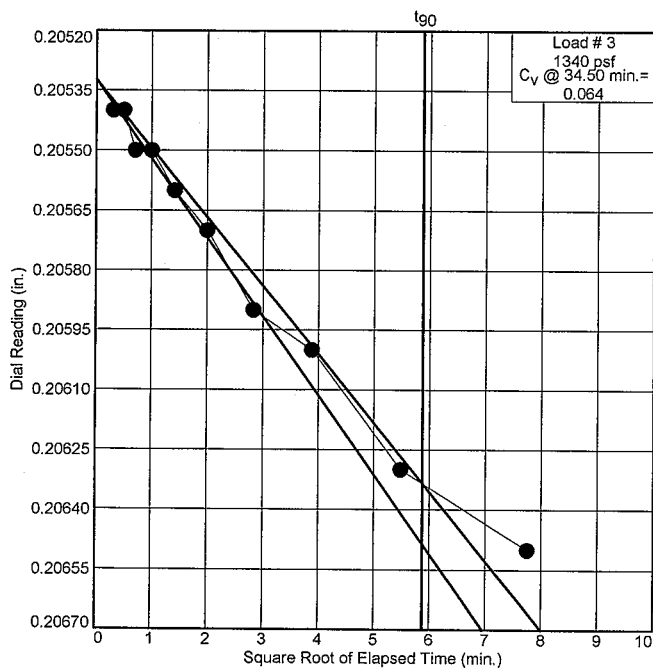
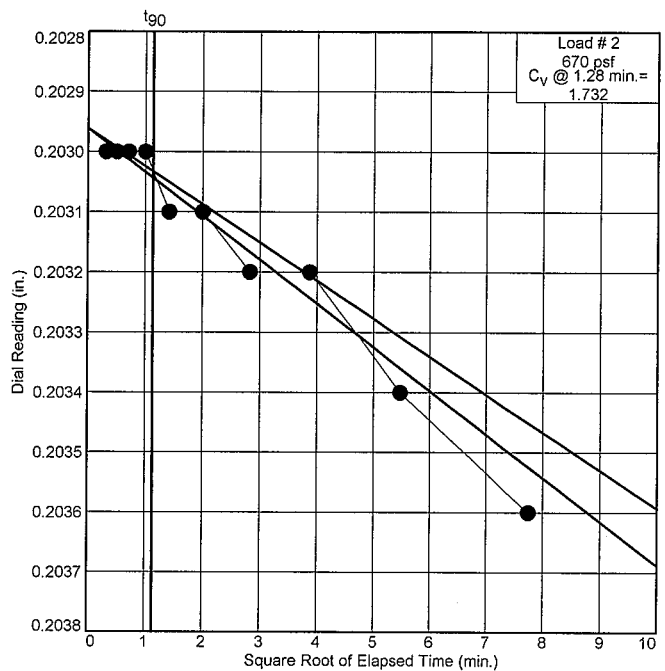
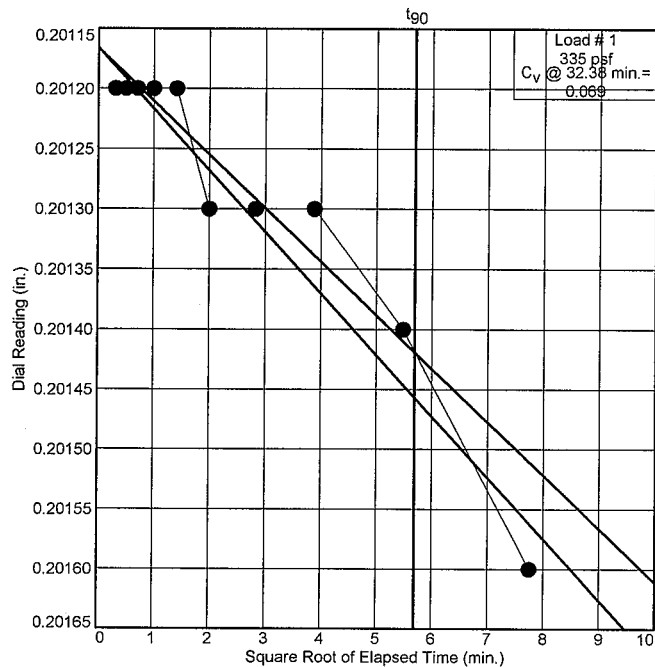
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-15

Depth: 3



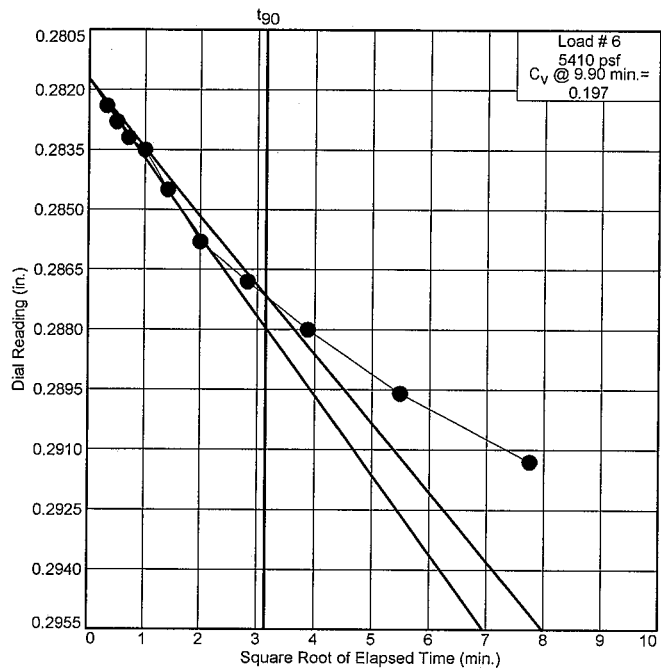
**SOILS ENGINEERING, INC.**

Figure B-9



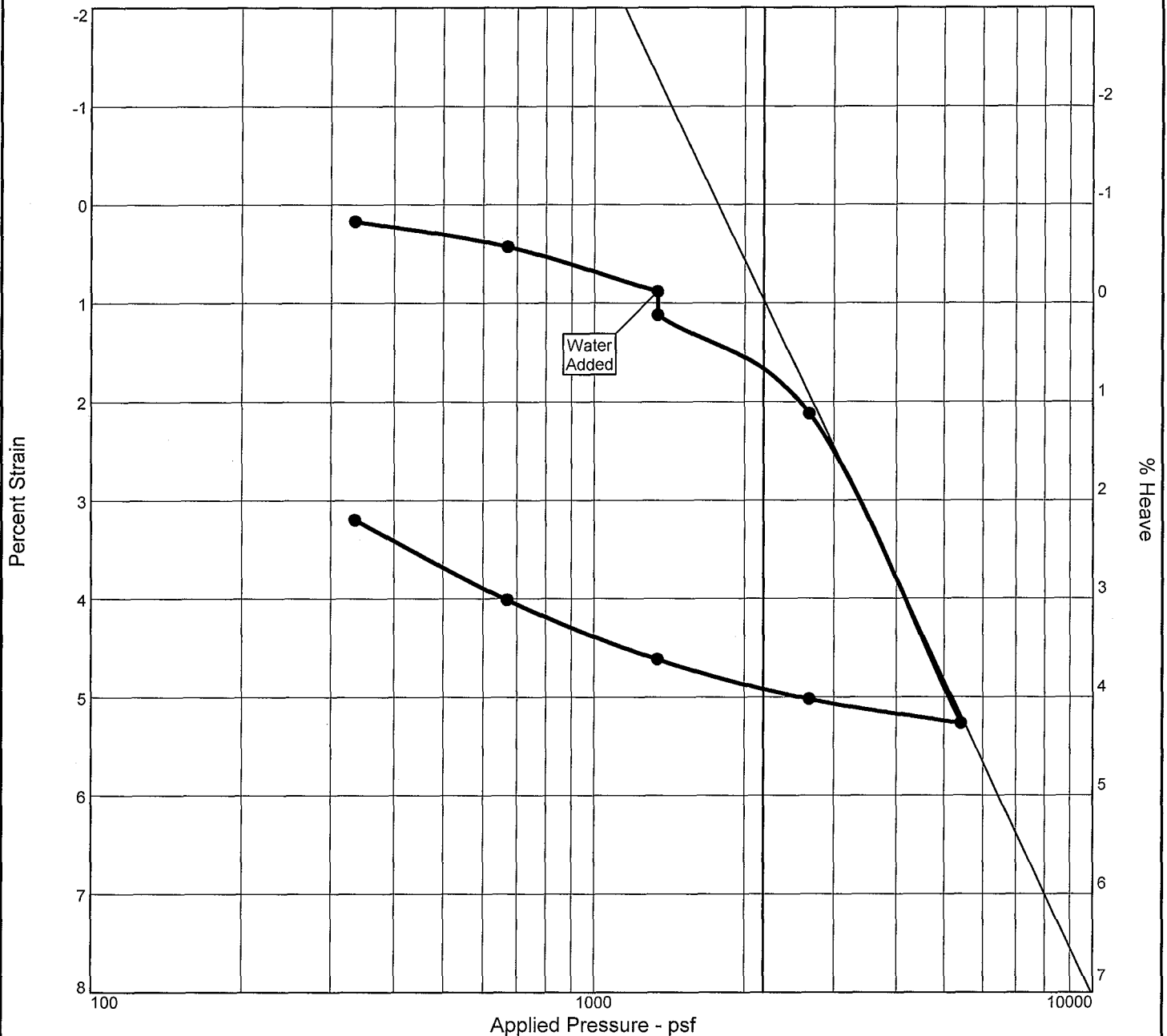
# Dial Reading vs. Time

Project No.: 16608  
Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in  
Source of Sample: B-15      Depth: 3





# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp. Gr.	Overburden	P <sub>c</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave	e <sub>o</sub>
Sat.	Moist.	(pcf)			(psf)	(psf)			(psf)	%	
38.6 %	16.1 %	78.7	N/A	N/A	336	2603	0.22	0.04		-0.2	1.102

MATERIAL DESCRIPTION	USCS	AASHTO
SANDY SILT	ML	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-16 <b>Depth:</b> 3	<b>Remarks:</b> Test Date: 03/22/18 Sample No: 64933
<h2 style="text-align: center;">SOILS ENGINEERING, INC.</h2>	

Figure B-10

Tested By: AP      Checked By: AL



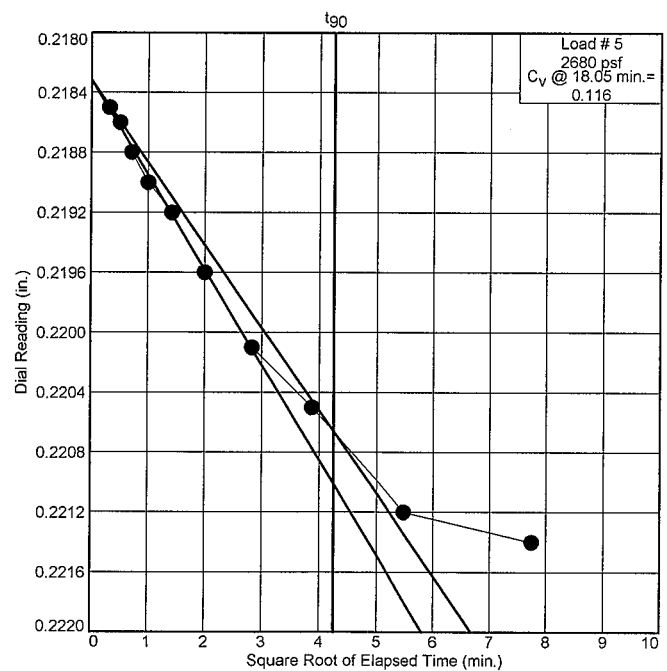
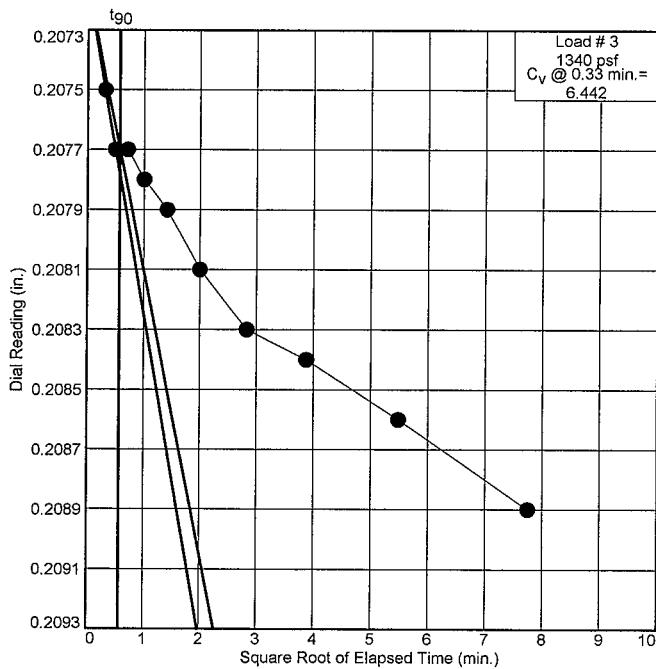
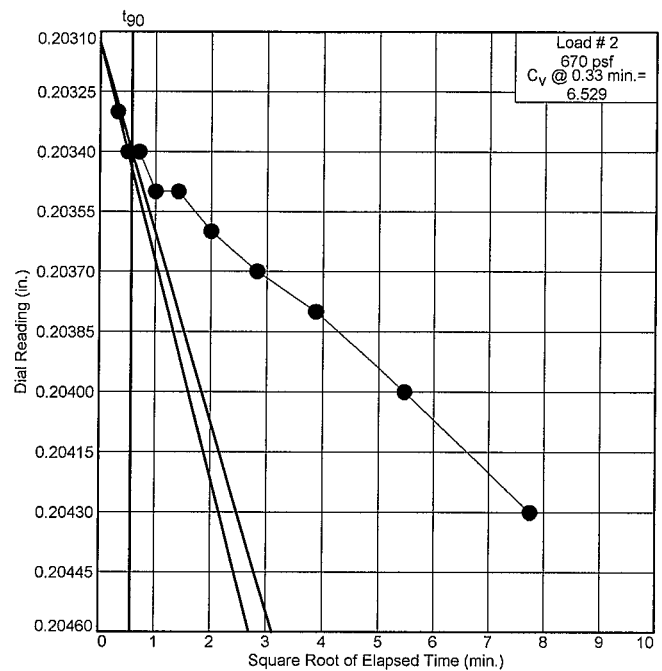
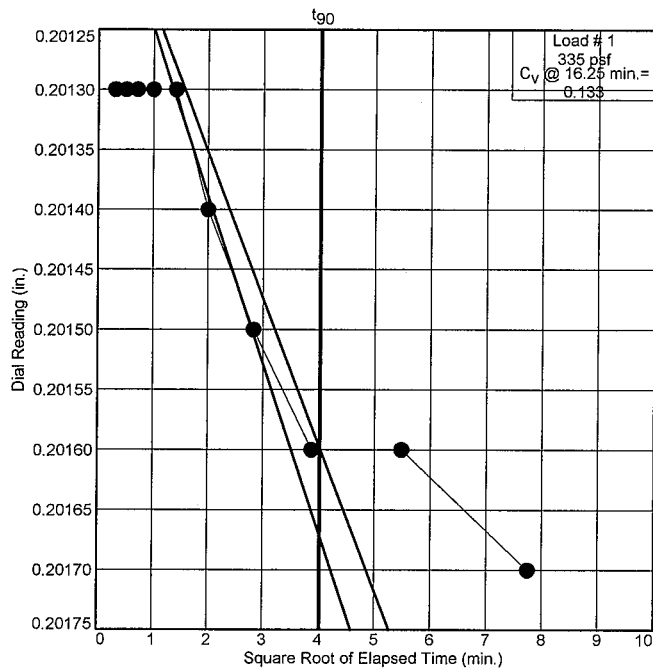
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-16

Depth: 3



**SOILS ENGINEERING, INC.**

Figure B-10



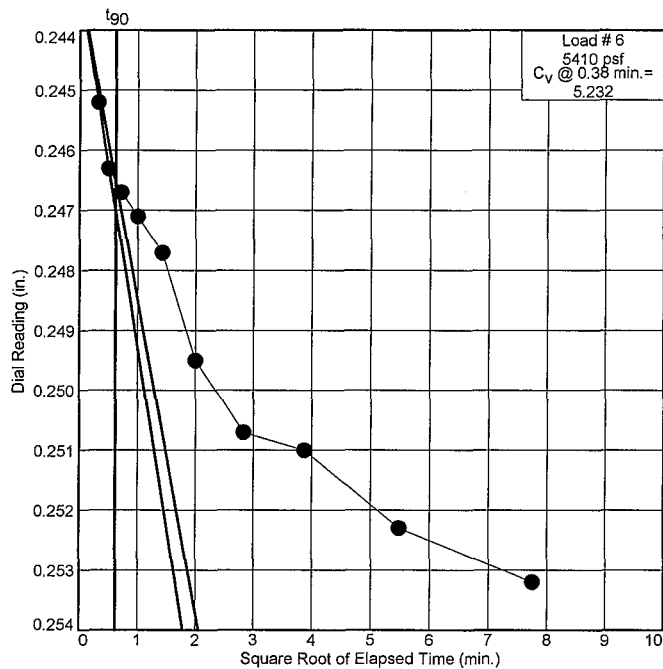
## Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-16

Depth: 3

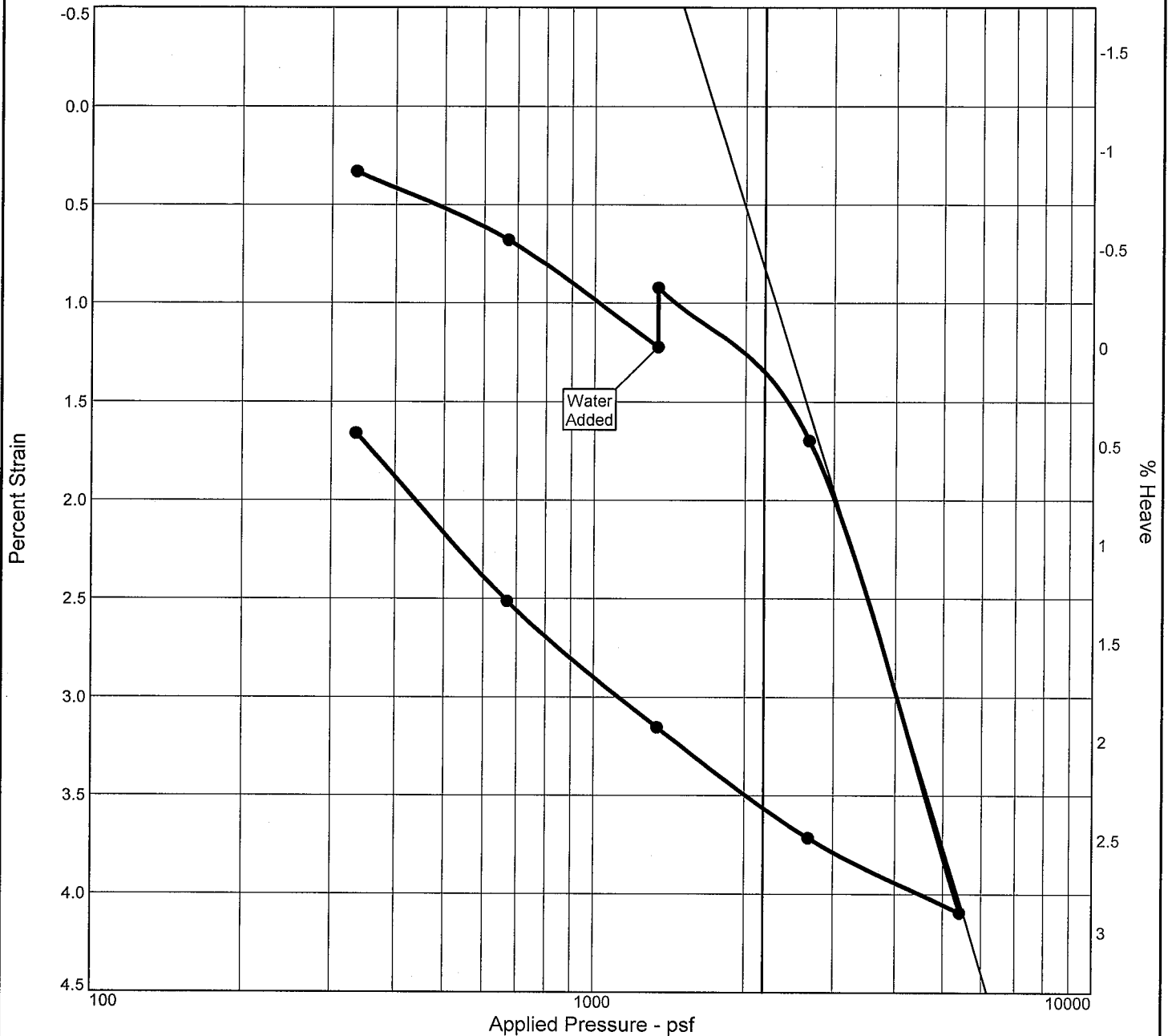


**SOILS ENGINEERING, INC.**

Figure B-10



# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp.	Overburden	P <sub>c</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave	e <sub>o</sub>
Sat.	Moist.	(pcf)		Gr.	(psf)	(psf)			(psf)	%	
57.2 %	16.8 %	92.9	N/A	2.65	336	2602	0.14	0.04	582	0.3	0.781

MATERIAL DESCRIPTION									USCS	AASHTO
CLAYEY SILT									ML	N/A

<b>Project No.</b> 16608		<b>Client:</b> Kern High School District		<b>Remarks:</b>  Test Date: 03/07/18 Sample No: 64938
<b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW				
<b>Source of Sample:</b> B-17		<b>Depth:</b> 3		
<b>SOILS ENGINEERING, INC.</b>				

Figure B-11

Figure B-11

Tested By: AP Checked By: AL



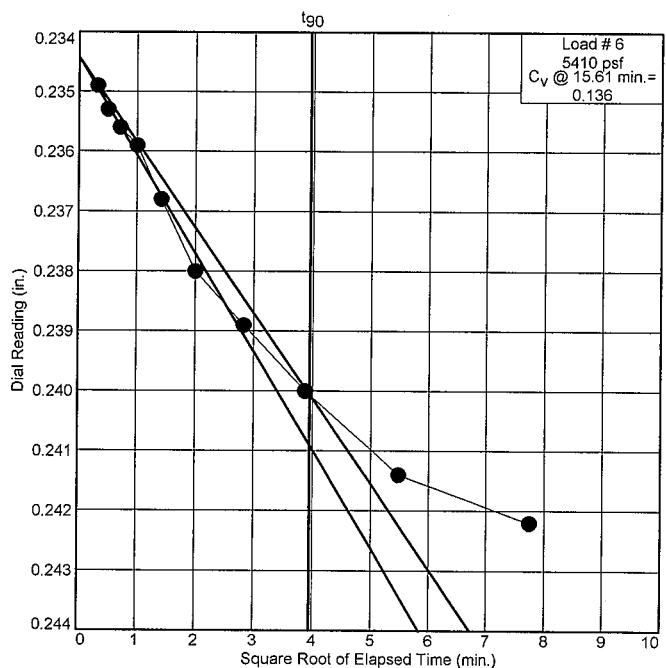
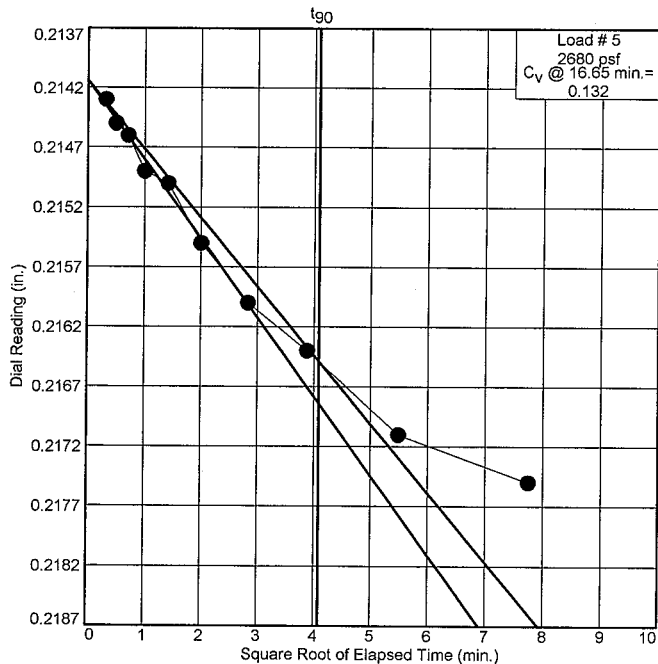
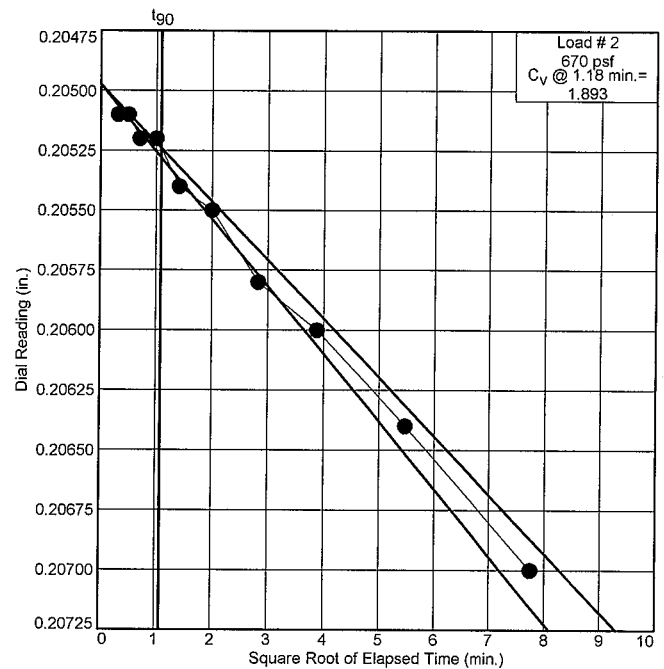
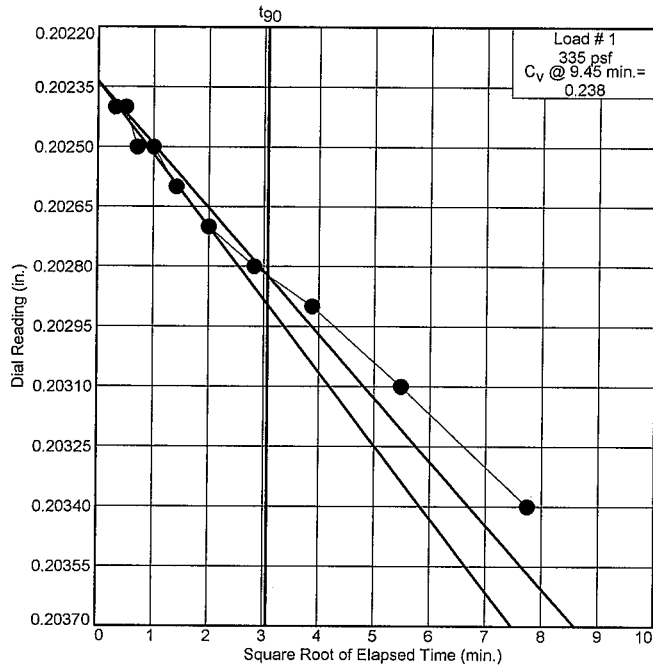
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-17

Depth: 3

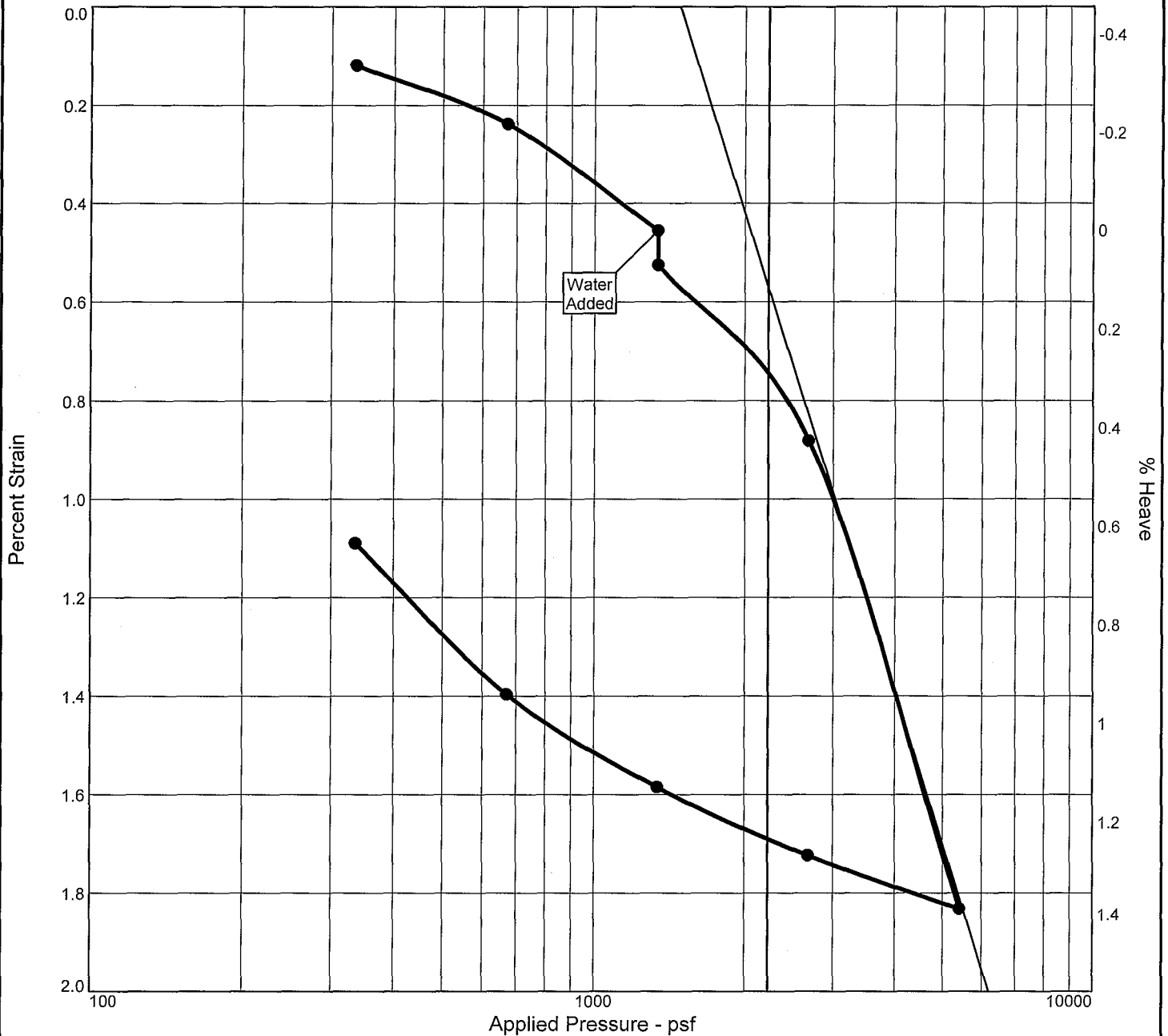


**SOILS ENGINEERING, INC.**

Figure B-11



# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp.	Overburden	P <sub>c</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave	e <sub>0</sub>
Sat.	Moist.	(pcf)		Gr.	(psf)	(psf)			(psf)	%	
36.3 %	8.7 %	101.0	N/A	2.65	336	2599	0.05	0.01		-0.1	0.637

MATERIAL DESCRIPTION	USCS	AASHTO
CLAYEY SILTY SAND	SC	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-18 <b>Depth:</b> 6	<b>Remarks:</b> Test Date: 03/22/18 Sample No: 64945
SOILS ENGINEERING, INC.	

Figure B-12

Tested By: AP      Checked By: AL



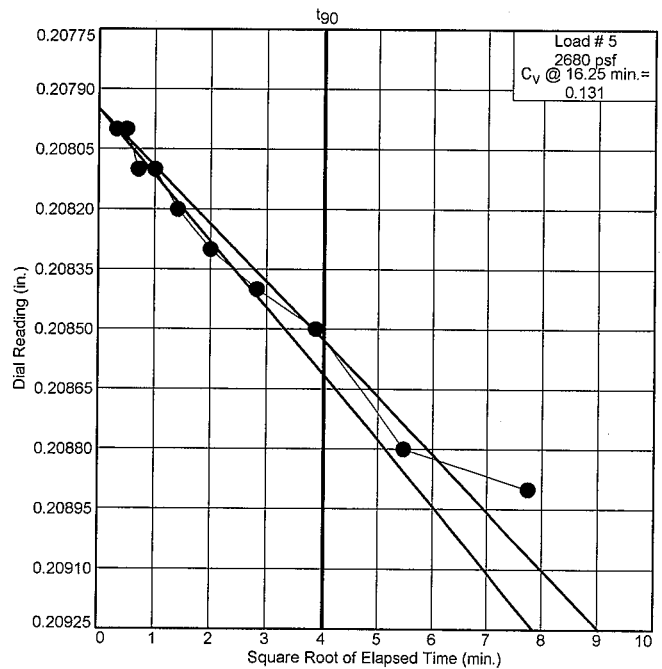
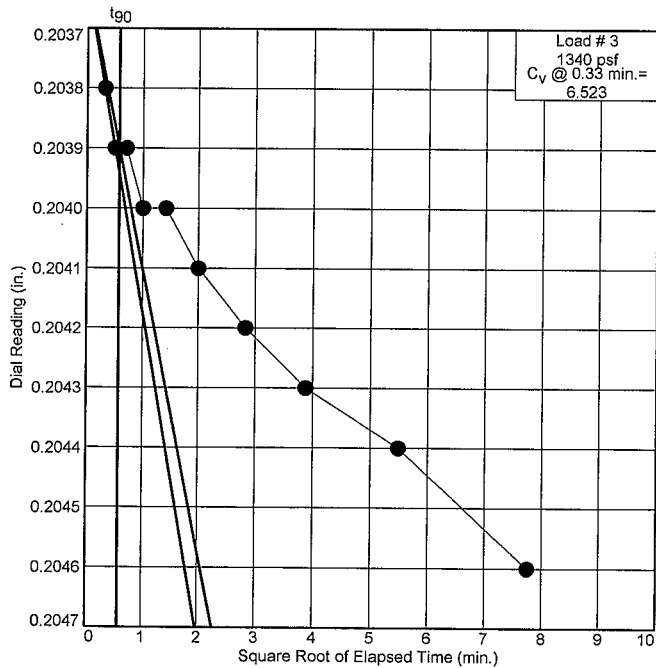
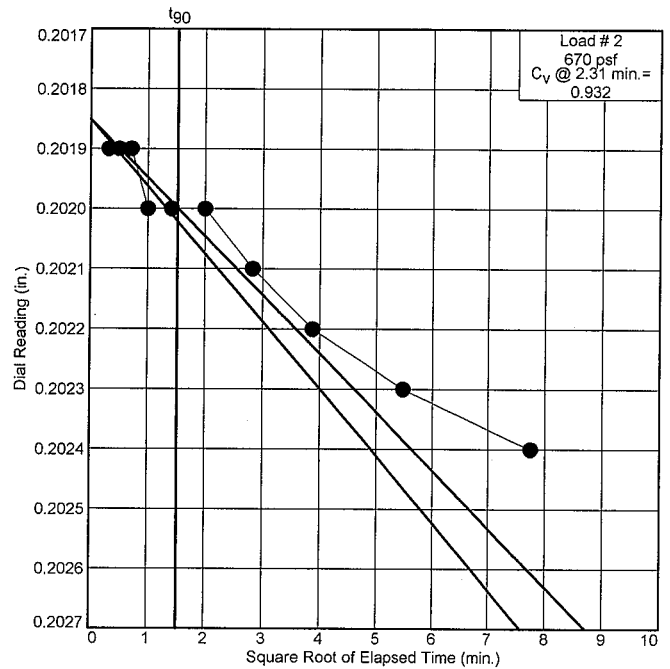
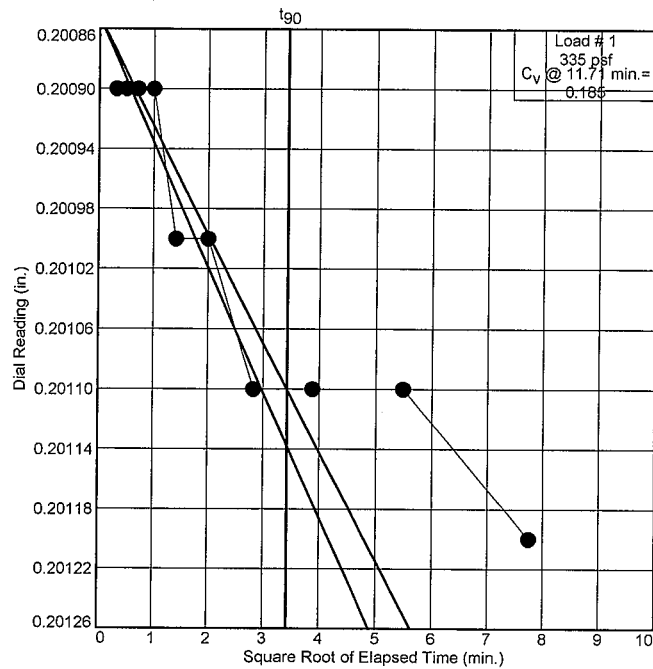
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-18

Depth: 6



**SOILS ENGINEERING, INC.**

Figure B-12



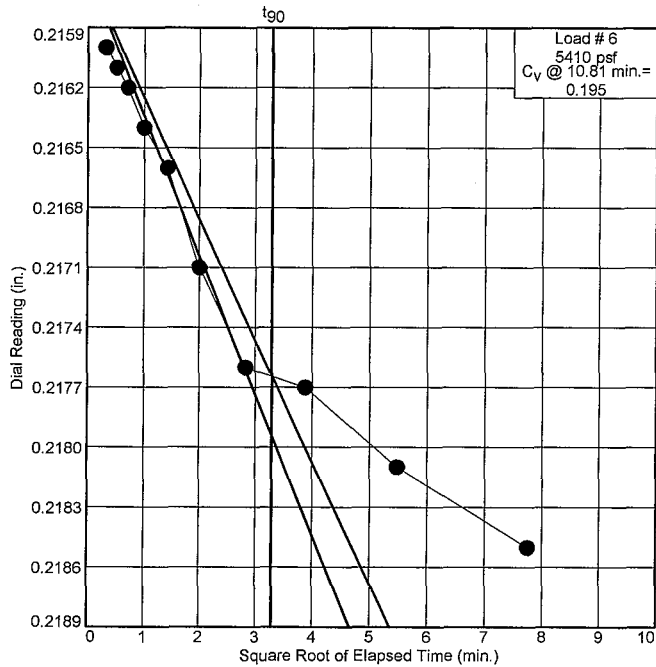
## Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-18

Depth: 6

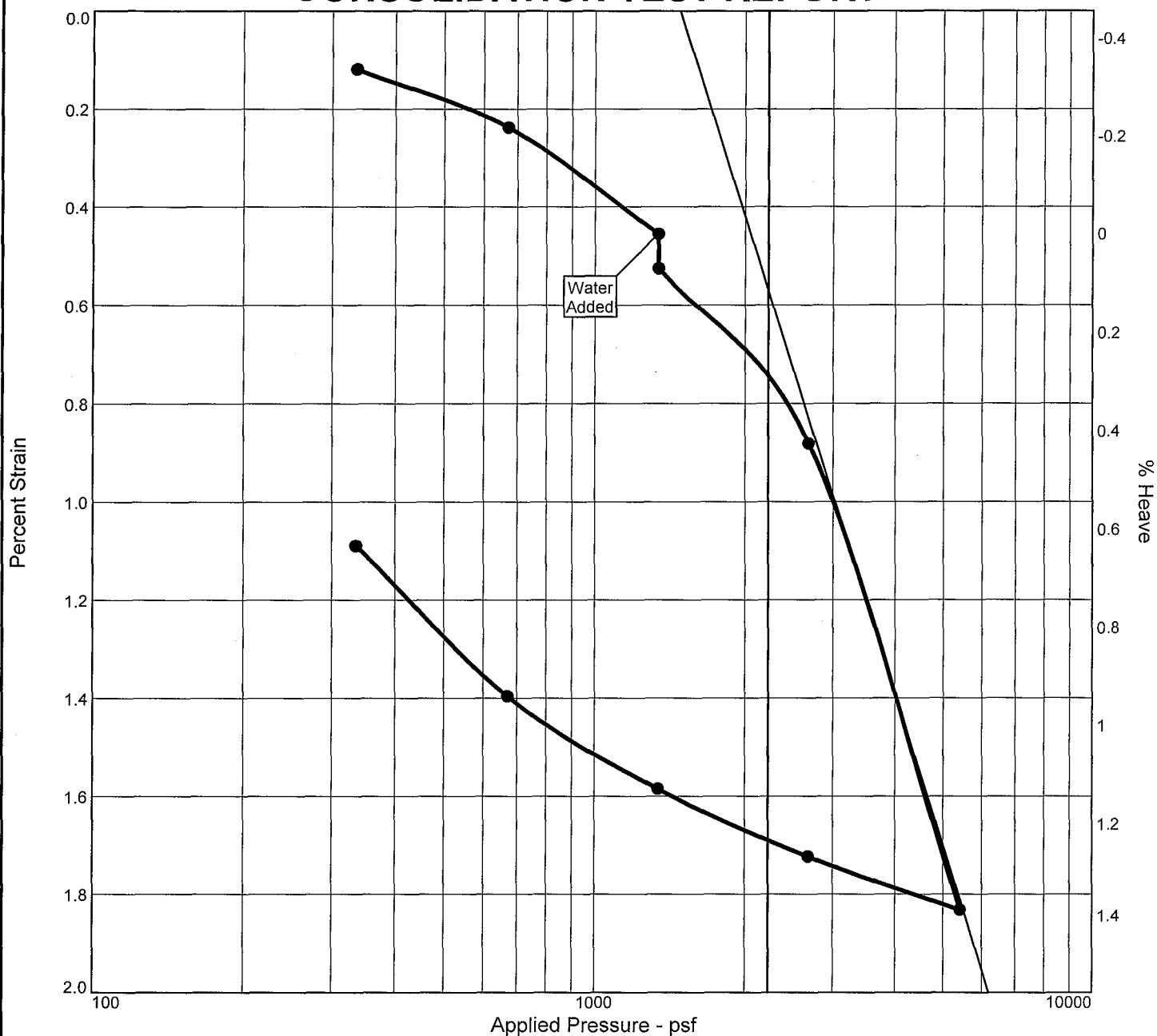


**SOILS ENGINEERING, INC.**

Figure B-12



# CONSOLIDATION TEST REPORT



Natural	Dry Dens.	LL	PI	Sp. Gr.	Overburden	P <sub>c</sub>	C <sub>c</sub>	C <sub>s</sub>	Swell Press.	Heave %	e <sub>o</sub>
Sat.	Moist.	(pcf)			(psf)	(psf)			(psf)		
36.3 %	8.7 %	101.0	N/A	N/A	336	2599	0.05	0.01		-0.1	0.637

MATERIAL DESCRIPTION	USCS	AASHTO
SILTY SAND	SM	N/A

<b>Project No.</b> 16608 <b>Client:</b> Kern High School District <b>Project:</b> KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW <b>Source of Sample:</b> B-18 <b>Depth:</b> 6	<b>Remarks:</b> Test Date: 03/22/18 Sample No: 64945
<h2 style="margin: 0;">SOILS ENGINEERING, INC.</h2>	

Figure B-12

Tested By: AP      Checked By: AL



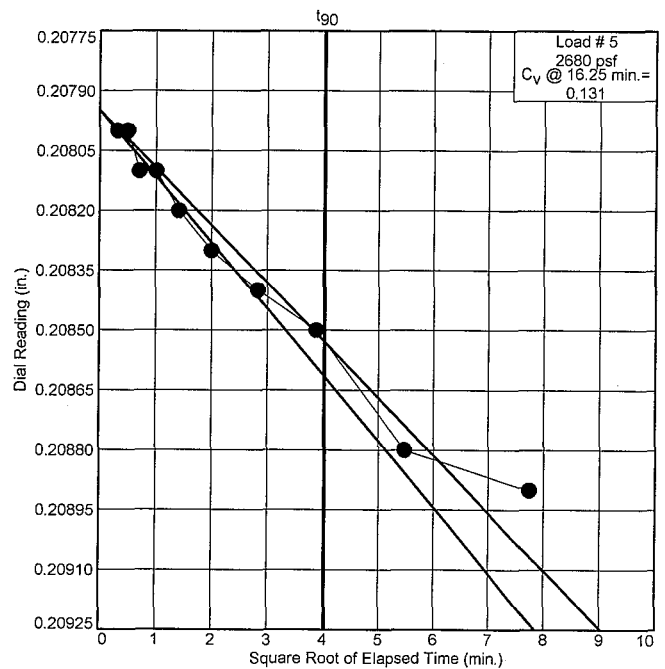
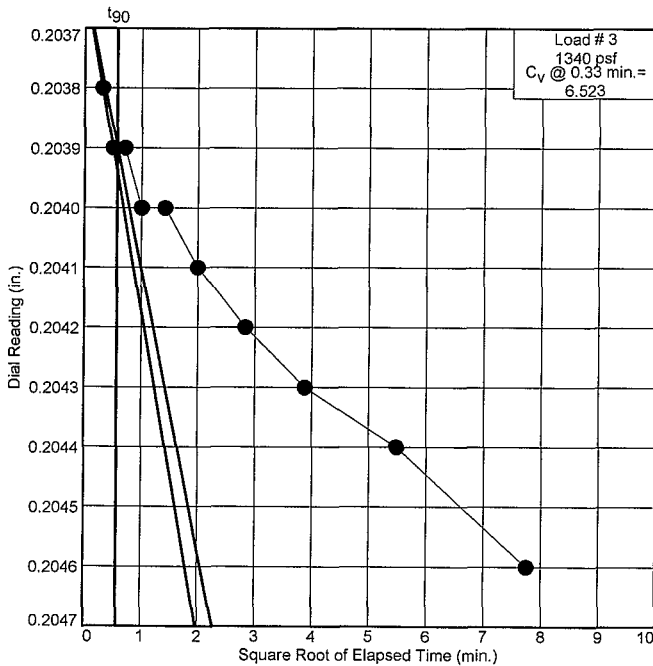
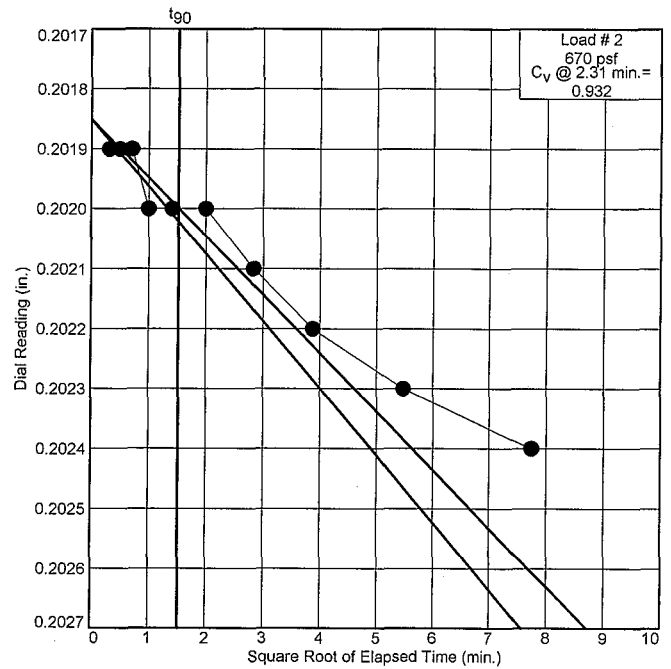
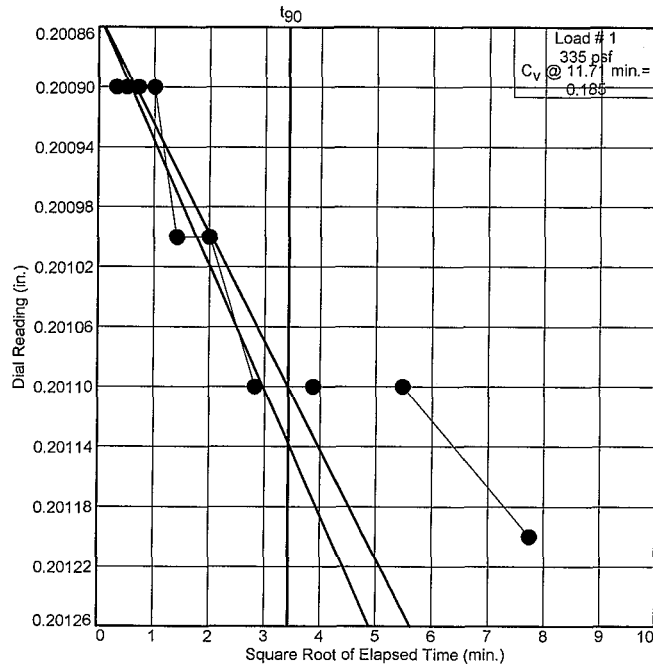
# Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-18

Depth: 6



## SOILS ENGINEERING, INC.

Figure B-12



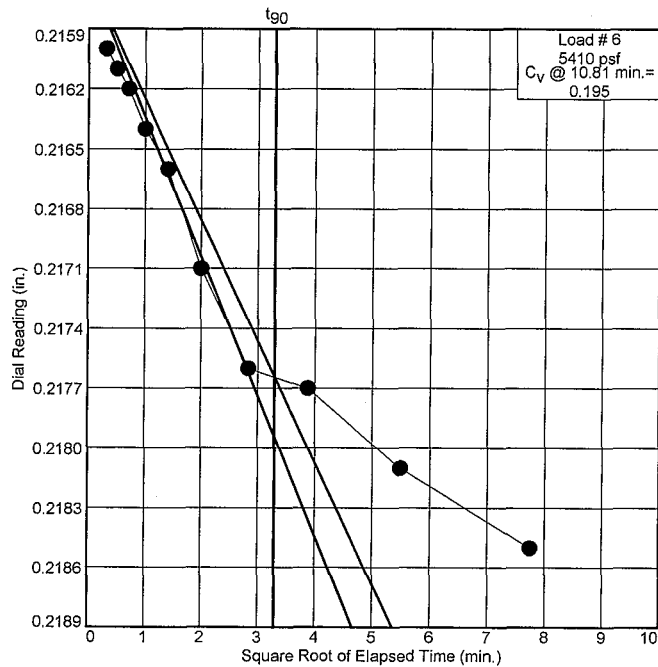
## Dial Reading vs. Time

Project No.: 16608

Project: KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in

Source of Sample: B-18

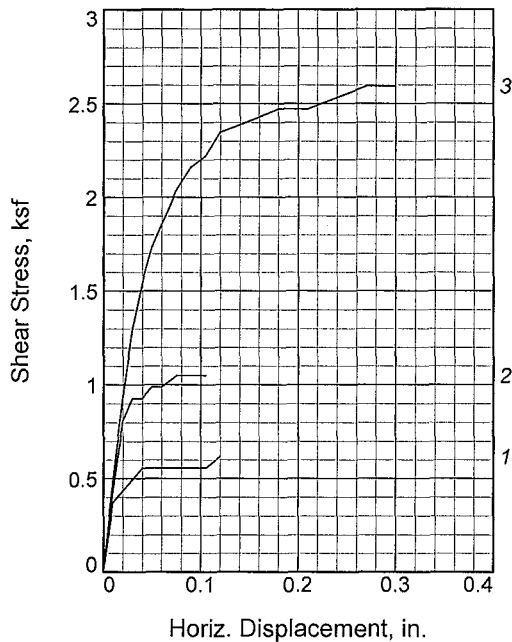
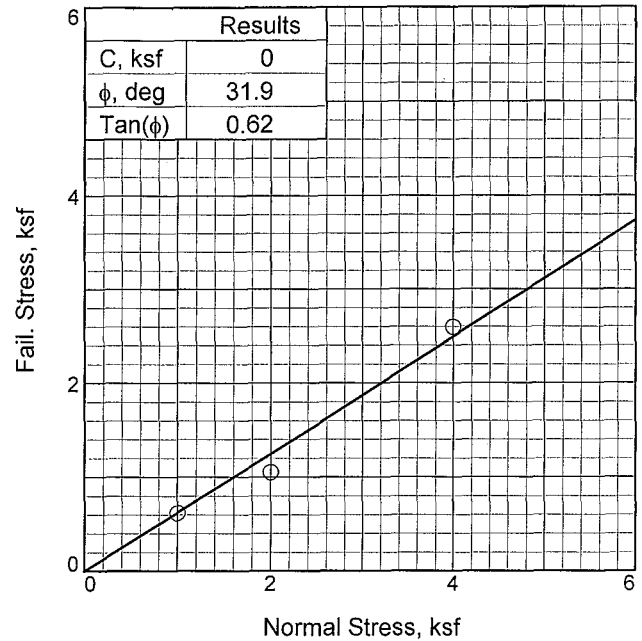
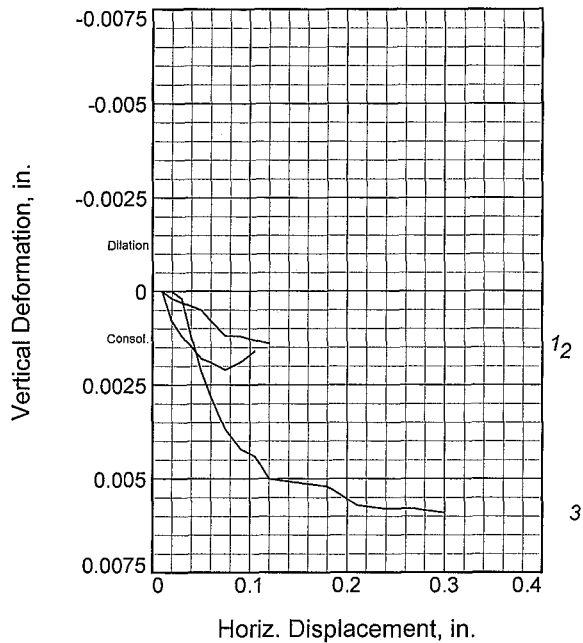
Depth: 6



**SOILS ENGINEERING, INC.**

Figure B-12





Sample No.		1	2	3
Initial	Water Content, %	6.5	7.3	7.3
	Dry Density, pcf	93.4	91.8	92.0
	Saturation, %	22.5	24.1	24.2
	Void Ratio	0.7715	0.8030	0.7980
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	26.4	26.2	24.1
	Dry Density, pcf	93.4	91.8	92.0
	Saturation, %	90.8	86.6	80.1
	Void Ratio	0.7715	0.8030	0.7980
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		1.00	2.00	4.00
Fail. Stress, ksf		0.62	1.05	2.59
Displacement, in.		0.12	0.08	0.27
Ult. Stress, ksf				
Displacement, in.				
Strain rate, in./min.		N/A	N/A	N/A

**Sample Type:** 2.5" x 6" TUBE

**Description:** SILTY SAND; olive brown, poorly graded, medium dense.

**LL=** N/A

**PI=** N/A

**Assumed Specific Gravity=** 2.65

**Remarks:** Test Date: 03/06/18

**Client:** Kern High School District

**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Source of Sample:** B-6 **Depth:** 3

**Proj. No.:** 16608

**Date Sampled:** 02/22/18

DIRECT SHEAR TEST REPORT

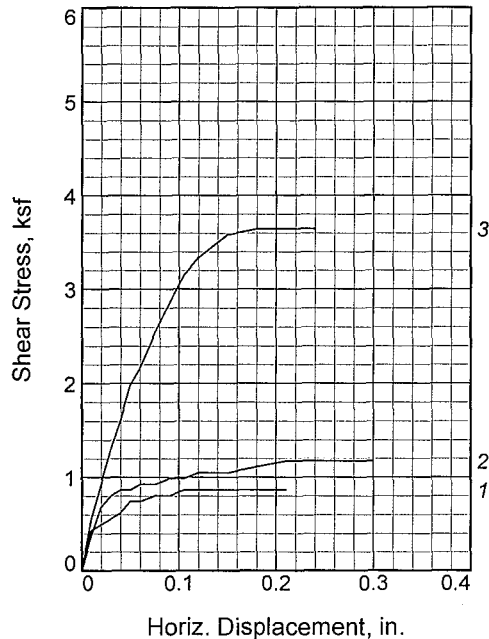
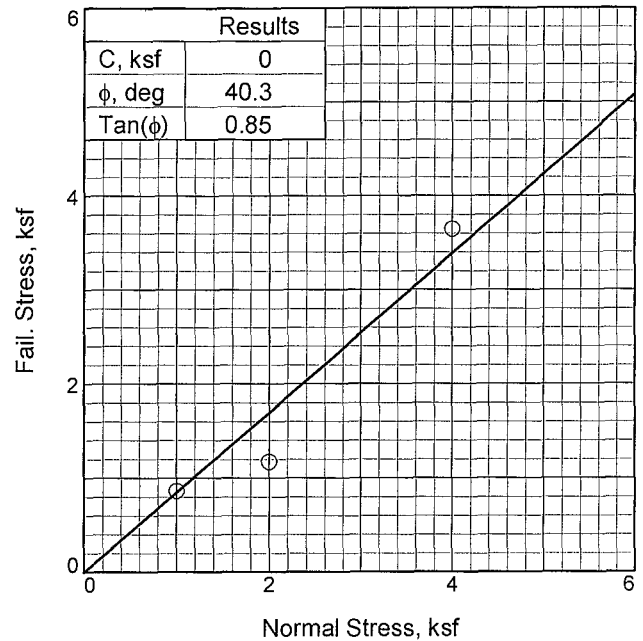
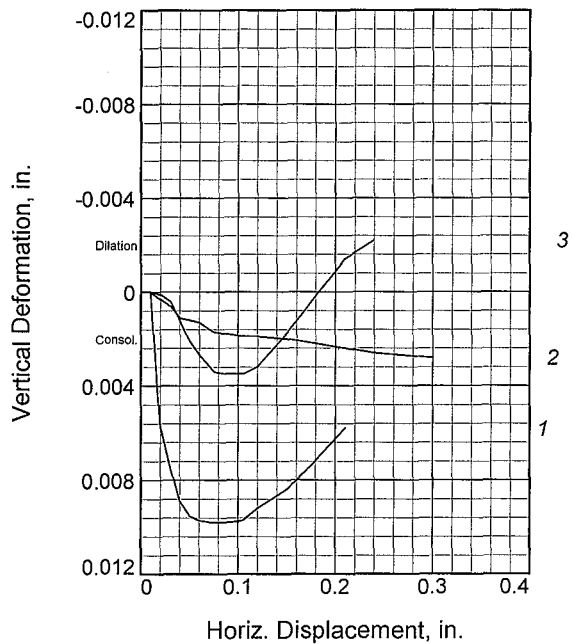
**SOILS ENGINEERING, INC.**

Figure C-1

Tested By: JMB

Checked By: AL





Sample No.		1	2	3
Initial	Water Content, %	5.1	4.5	4.0
	Dry Density, pcf	96.9	105.1	109.7
	Saturation, %	19.3	20.8	20.9
	Void Ratio	0.7070	0.5743	0.5077
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	24.1	21.3	18.7
	Dry Density, pcf	96.9	105.1	109.7
	Saturation, %	90.5	98.2	97.4
	Void Ratio	0.7070	0.5743	0.5077
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		1.00	2.00	4.00
Fail. Stress, ksf		0.86	1.17	3.64
Displacement, in.		0.11	0.21	0.18
Ult. Stress, ksf				
Displacement, in.				
Strain rate, in./min.		N/A	N/A	N/A

**Sample Type:** 2.5" x 6" TUBE

**Description:** POORLY GRADED SAND; yellowish brown, non cohesive, loose.

**LL=** N/A

**PI=** N/A

**Assumed Specific Gravity=** 2.65

**Remarks:** Test Date: 03/22/18

**Client:** Kern High School District

**Project:** KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW

**Source of Sample:** B-13

**Depth:** 3

**Proj. No.:** 16608

**Date Sampled:** 02/22/18

DIRECT SHEAR TEST REPORT

**SOILS ENGINEERING, INC.**

Figure C-2

Tested By: JMB

Checked By: AL



**APPENDIX D**

**GEOLOGICAL HAZARD STUDY**



**SOILS ENGINEERING, INC.**



**GEOLOGICAL HAZARD STUDY**

**For**

**Proposed High School Site**

**SE of Wible Road & Engle Road**

**APNs: 184-150-38, -39, -40 and -41  
in**

**Bakersfield, California**

**Prepared For:**

**Kern High School District**

**5801 Sundale Ave.**

**Bakersfield, CA. 93309**

**Attn: Ms. Jenny Hannah**

**File No. 18-16608**

**Prepared By:**

**Soils Engineering, Inc.**

**4400 Yeager Way**

**Bakersfield, CA. 93313**

**April 2018**



## SOILS ENGINEERING, INC.



April 13, 2018

File No. 18-16608

Ms. Jenny Hannah  
Kern High School District  
5801 Sundale Ave.  
Bakersfield, CA. 93309

Subject: Geological Hazard Study  
For Proposed High School Site  
Southeast of Wible Rd. & Engle Rd.  
Bakersfield, California

In accordance with your request and authorization, Soils Engineering, Inc. (SEI) has performed a Geological Hazards Study for the above described subject property in Bakersfield, California (site). This study was conducted in compliance with the California Code of Regulations, Title 24, Chapters 16, 18 and 33 of the 2016 California Building Code and per the California Education Code.

Our Geological Hazards Assessment indicates that there is a low to moderate probability for liquefaction to occur during a major earthquake at the site and that the maximum peak ground acceleration at the site would be 0.395g for a 7.3 magnitude earthquake on the White Wolf Fault approximately 14.5 kilometers away. The computer-modeling program Eqsearchwin estimated that a ground motion of 0.308g occurred at the site from a 7.7 magnitude earthquake on the White Wolf Fault in July 1952. The proposed structures should be built to withstand this magnitude of an earthquake and ground motions.

The site-specific design acceleration values to be utilized for the proposed improvements should be 0.826g for short periods ( $S_{Ds}$ ) and 0.471g for the 1 second period ( $S_{D1}$ ). The seismic design category is a D for both short and 1-second periods per the 2016 CBC.

In the event of a major earthquake, there is a very low potential for rock falls or landslides to impact the site. The site is located within the potential flood zone of an upstream disaster (dam failure) with an estimated 10 to 12 hours of warning prior to the flood waters arrival. The estimated amount of total dynamic settlement that would occur at this site during a major earthquake is approximately 1.27" to 5.04" and the range of differential settlement is 0.635" (B-4) to 2.521" (B-5)". If 7 feet of soil improvement is conducted in the area of boring B-5 the amount of dynamic settlement falls from 5.04" to an estimated 2.97" and differential settlement decreases from 2.521" to 1.483".

No high-pressure natural gas pipelines or petroleum pipelines appear to be present within 1500' of the site.



*Geologic Hazard Study  
Proposed High School Site  
SE of Wible Rd. & Engle Rd., Bakersfield, CA.*

*File No. 18-16608  
April 13, 2018  
Page 2*

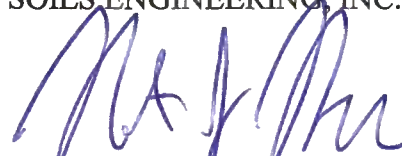
Mitigation of soil with elevated petroleum hydrocarbons and semi-volatile organic compounds (SVOCs) concentrations within the southwestern tail-water sump will be required prior to construction. The nearest oil wells (dry holes) ever drilled is approximately  $\frac{3}{4}$  of a mile away from the site and it is not likely that any significant subsurface oilfield related gases (hydrogen sulfide, methane etc.) are present beneath the site.

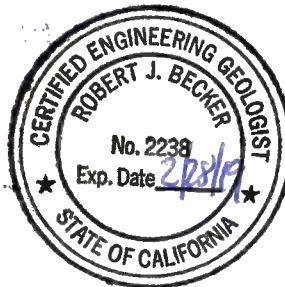
The soil in the area of boring B-5 will likely require deeper removal (~7') and replacement with engineered fill then the other areas of the site to reduce potential settlement issues. No other geological assessment or mitigation is recommended at this time.

The accompanying report is an instrument of service of **Soils Engineering, Inc.**. The report summarizes our findings and relates our opinions with respect to the potential for geological hazards to affect the site. Note that our findings and opinions are based on information that we obtained on given dates, through records review, site review, and related activities. It is possible that other information exists or subsequently has become known, just as it is possible for conditions we observed to have changed after our observation.

Soils Engineering, Inc. will be pleased to provide more information in this regard. Please call us for assistance at (661) 831-5100.

Sincerely,  
SOILS ENGINEERING, INC.

  
Robert J. Becker, P.G. 5076, C.E.G. 2238  
Expires 2/28/19



Distribution: Addressee (3)



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### I. LIST OF ILLUSTRATIONS

Plate 1 -	Site Location
Plate 2 -	Plot Plan
Plate 2A-	Geologic Map & Boring Locations
Plate 2B -	Geologic Cross-Section A to A'
Plate 3 -	Seismic Atlas Map - Conner and Gosford Quad
Plate 3A-	Earthquake Epicenter Map
Plate 4 -	Depth To Water Map
Plate 5 -	California Fault Map
Plate 5A-	Regional Faults From 2010 Fault Activity Map of California
Plate 5B-	Alquist-Priolo Earthquake Fault Map
Plate 6-	DOGGR Oil Well Map
Plate 7-	Regional Land Subsidence Map

Attachment A: Deterministic Site Parameters - EQFAULTWIN data, EQSEARCHWIN data, USGS Design Maps Summary Report and Detail Report. USGS Unified Hazard Tool results.

Attachment B - Boring Logs, Lake Isabella Flood Inundation Map, Flood Insurance Rate Map, LiquefyPro Plots and Calculation Sheets for Liquefaction and Settlement (6). Pipeline Certification Form, and Lab Results Table 3.





**GEOLOGICAL HAZARD STUDY**

For  
Kern High School District – Proposed High School Site  
Southeast of Wible Road & Engle Road  
in  
Bakersfield, California

April 2018

**1.0 Introduction**

Soils Engineering, Inc. (SEI) has conducted a Geological Hazards Study for a proposed High School site located at the southeast of Wible Road and Engle Road (site) in Bakersfield, California (see Location Map, Plate 1). The site location central coordinates are approximately 35.247072° north latitude and 119.034629° west longitude. The following is an Executive Summary of the investigation conducted between February and April 2018.

A site reconnaissance was conducted by SEI personnel in February and March 2018 consisting of walking the property and evaluating the surrounding geological features. The project site covers approximately 80 acres as shown on Plate 2 and is plowed agricultural land. Two (2) tail-water sumps are present along the southern border of the site area. Wible Road is the western border and the other site borders are dirt roads. Adjacent off-site properties are agricultural properties. Gas and electrical service is provided by PG & E in this area of Bakersfield.

**2.0 Geology and Hydrology**

**2.1 Geologic Setting**

The site area has a gentle slope to the southwest. The project site rests on thousands of feet of alluvial sediments identified as Quaternary Fan Deposits (Qf) on geologic maps within the southern portion of the San Joaquin Valley. See attached Geologic Map (Plate 2A) as interpreted from on-site soil borings and the Bakersfield Sheet of the Geologic Map of California (Smith, Department of Conservation Division of Mines and Geology (CDMG), 1964). The closest active fault is the White Wolf Fault located approximately 14.5 kilometers to the southeast. The Kern Front Fault is located approximately 20.9 kilometers to the northeast. The Pleito Thrust Fault is located approximately 26.7 kilometers to the south. The San Andreas Fault zone is located approximately 45 kilometers to the southwest. The Big Pine Fault is located approximately 47.4 kilometers to the southwest. Other major faults within 50 miles include; the Garlock (West) Fault (47.1 km), the San Gabriel Fault (61 km), and the Santa Ynez Fault (74.3 km). The site is not located in an Alquist-Priolo (AP) California Earthquake Fault Zone.

The Seismic Hazard Atlas map of the Conner and Gosford Quadrangles show no active faults



near the site (Plate 3). Nearby active faults are shown on the Fault Activity Map of California (CDMG, 2010) within the general area of the site (Plate 5A) and on the EQFault California Fault Map (Plate 5).

Near surface soils within the zone of influence of future developments consist of interbedded silty sand, sandy silt, sandy clay, clayey sand, and poorly graded sand layers overlying bedrock, which is located several thousand feet below the surface. These sediments were derived in the Sierra Nevada Mountains to the east of the site and deposited by local drainage and the meandering Kern River.

## **2.2 Surface Lithology**

Earth materials identified in the 18 onsite soil borings (B-1 to B-18) conducted in February and March 2018 consisted generally of intervals of Silty Sand (SM), Sandy Silt (ML), Poorly-Graded Sand (SP), Sandy Clay (CL), and Clayey Sand (SC), in the top 51 feet below ground surface (bgs). These soils are classified as SM, ML, SP, CL and SC respectively, in the Unified Soils Classification System. No groundwater was encountered in the soil borings conducted on-site. See attached boring logs for more detail in Attachment B.

## **2.3 Hydrology**

**Unconfined Aquifer** - The depth to the unconfined aquifer as shown on maps prepared by the Kern County Water Agency (KCWA), and dated Spring 2012, is approximately 130 feet below the ground surface. Historical depth to water data (Department of Water Resources (DWR) database and KCWA maps) indicates that the depth to groundwater has been as high as 47.1' (1960) within 1-mile of the site.

**Perched Water, Ground Water or Seepage** - No shallow ground water beneath the site is shown on groundwater maps dated Summer 2011. The nearest shallow groundwater water is approximately 1.5 miles east of the site.

## **3.0 Seismic and Fault Hazards**

### **3.1 Seismic History**

There have been a number of historic earthquakes that may have affected the Bakersfield area. The following is a short summary of the major known events:

- 1/9/1857 - Fort Tejon Earthquake- San Andreas Fault, Estimated Magnitude 8.2+, 30 feet of slippage over a 200 mile area, widespread damage.
- 7/21/1952 - Arvin/Tehachapi - White Wolf Fault, Magnitude 7.7, Extensive damage to buildings and highways.



- 8/22/1952 - Bakersfield Quake (Aftershock of Arvin/Tehachapi) - 6 miles ESE of Bakersfield, Magnitude 5.8. Closest aftershock to Bakersfield causing extensive damage to already weakened buildings. Multiple surface fissures were created from the 1952 earthquakes.

SEI utilized the software program EQSEARCHWIN vers. 3.0 (Thomas F. Blake) to evaluate historical earthquakes in the area of the site over the last 200 years. The Earthquake Epicenter Map (Plate 3A) shows earthquake magnitudes and the epicentral distance from the site. The majority of the seismic activity in the area of the site has been along the White Wolf Fault and the San Andreas Fault. The closest earthquake of at least 5.0 magnitude to the site was 12.6 kilometers away at a magnitude of 5.2 in May 1993. The largest magnitude earthquake within 100 miles was 7.9 on the San Andreas Fault in 1857. The largest estimated site acceleration is 0.308g from a 7.7 magnitude earthquake on the White Wolf Fault in July 1952. The EQSEARCHWIN estimation of Peak Acceleration from California Earthquake Catalogs Table, Earthquake Recurrence Curve, Earthquake Epicenter Map and a graph of the Number of Earthquakes (N) above Magnitude (M) are presented in Attachment A.

### **3.2 Seismic Evaluation**

The site is located within the Conner Quadrangle in the southern 1/2 of the northwestern 1/4 of Section 12, Township 31 South, Range 27 East and is not located in an Alquist-Priolo special studies zone (California Fault Zone). Local faults and general geology are also shown on the Gosford and Conner Quadrangle Seismic Hazard Atlas Maps prepared for the Kern County Council of Governments (Plate 3).

According to the Conner and Gosford Quadrangle Seismic Hazard Atlas maps, no active faults are present near the site. The nearest active fault as indicated by the computer-modeling program EQFault version 2.01, is the White Wolf Fault, which is approximately 14.5 kilometers to the southeast. The Kern Front Fault is located approximately 20.9 kilometers to the northeast. The Pleito Thrust Fault is located approximately 26.7 kilometers to the south. The San Andreas Fault zone is located approximately 45 kilometers to the southwest. The Big Pine Fault is located approximately 47.4 kilometers to the southwest. Other major faults within 50 miles include; the Garlock (West) Fault (47.1 km), the San Gabriel Fault (61 km), and the Santa Ynez Fault (74.3 km). Regional faults in relation to the site location are presented on Plate 5A and are from the Fault Activity Map of California (CDMG 2010).

### **3.3 Seismic Design**

The seismic design values are presented in the table below based on the 2016 California Building Code (CBC). The Site Class for the proposed improvements located southeast of Wible Road and Engle Road in Bakersfield, Kern County, California, were determined using



standard penetration test data obtained at the site and are provided in the attached Boring Logs.

SEISMIC DESIGN CRITERIA	VALUE	SOURCE
Risk Category	III	2016 CBC Table 1604.5
Site Class	D	Site Specific Soils Report 2016 CBC Section 1613.3.2, ASCE 7-10 Table 20.3-1
Mapped $MCE_R$ Spectral Response Acceleration, short period, $S_s$	1.228	USGS maps/Software - 2016 CBC Figure 1613.3.1 (1)
Mapped $MCE_R$ Spectral Response Acceleration, at 1-sec. Period, $S_1$	0.458	USGS Maps/Software - 2016 CBC Figure 1613.3.1 (2)
Site Coefficient, $F_a$	1.009	USGS Software - 2016 CBC Table 1613.3.3 (1)
Site Coefficient, $F_v$	1.542	USGS Software - 2016 CBC Table 1613.3.3 (2)
Adjusted $MCE_R$ Spectral Response Acceleration, Short periods, $S_{MS} = F_a S_s$	1.239	USGS Software - 2016 CBC Section 1613.3.3
Adjusted $MCE_R$ Spectral Response Acceleration, 1-sec. Period, $S_{M1} = F_v S_1$	0.706	USGS Software - 2016 CBC Section 1613.3.3
Design Spectral Response Acceleration, short periods, $S_{DS} = 2/3 S_{MS}$	0.826	USGS Software - 2016 CBC Section 1613.3.4
Design Spectral Response Acceleration, 1-sec period, $S_{D1} = 2/3 S_{M1}$	0.471	USGS Software - 2016 CBC Section 1613.3.4
Peak Ground Acceleration (PGA) for Max. Considered Earthquake ( $MCE_G$ )	0.458g	USGS Software - ASCE 7-10 Fig 22-7
Site Coefficient, $F_{PGA} = 1.042$ , $PGA_M = F_{PGA} * PGA =$	0.477g	USGS Software - ASCE 7-10 Table 11.8-1
Site-Specific Ground Motion Procedures for Seismic Design, $C_{RS}$	1.033	USGS Software - ASCE 7-10 Fig 22-17
Site-Specific Ground Motion Procedures for Seismic Design, $C_{R1}$	1.042	USGS Software - ASCE 7-10 Fig 22-18
Seismic Design Category short periods ( $S_{DS}$ )	D	2016 CBC Table 1613.3.5 (1)
Seismic Design Category, 1-sec period ( $S_{D1}$ )	D	2016 CBC Table 1613.3.5 (2)

$MCE_R$  = Maximum Considered Earthquake (risk targeted),  
 $MCE_G$  = Maximum Considered Earthquake (geometric mean)

See attached USGS Design Maps Summary and Detail Report in Attachment A.



### **3.4     *Seismology & Calculation of Earthquake Ground Motion***

Because the site is not located within or directly adjacent to a mapped Alquist-Priolo (AP) Earthquake Zone, is not a Seismic Design Category E or F and is not required by ASCE 7 §11.4.7, a site-specific ground motion analysis was not conducted for this site. The above seismic design information will be utilized for this project.

### **3.5     *Possible Earthquake Effects***

A number of active faults are located within a 50-mile radius of the subject site. To evaluate the affect a major earthquake might have on the site, the computer modeling programs EQFaultwin vers. 3.0 (Thomas Blake) and FRISKSPWIN vers. 4.0 (Thomas Blake) were utilized. Site-specific parameters were inputted, and the programs computed the maximum peak site ground accelerations resulting from an earthquake. Because ground accelerations are based largely on fault distance and magnitude, we have focused our analysis on those faults which are close to the site, or that have large maximum credible magnitudes, or a combination of the two. The result of this analysis is presented below in Table A.

This analysis estimates that a maximum peak ground acceleration of 0.395g would be felt at the site as a result of a maximum earthquake of magnitude 7.3 on the White Wolf Fault approximately 14.5 kilometers away. A maximum probable earthquake of magnitude 7.0 on the Plieto Fault approximately 26.7 kilometers away would create a peak site ground acceleration of 0.218g at the site. A maximum probable earthquake of magnitude 8.0 on the San Andreas Fault (Whole M-1a segment) approximately 45 kilometers away would create a peak site ground acceleration of 0.204g at the site. See attached Deterministic Site Parameters for a full listing of computed values for faults within a 100-mile radius of the site in Attachment A. Also attached is a California Fault Map showing nearby faults in relationship to the site (Plate 5).

Utilizing the USGS Unified Hazard Tool program the Probabilistic Seismic Hazard Deaggregation for the Site was calculated to be 0.692g for a 2% chance every 50 years of exceedance based on a 8.1 magnitude earthquake occurring 45 kilometers away. See Attachment A for this calculation results page.



TABLE A

FAULT	Approximate Distance (Km)	Maximum Earthquake Magnitude (Mw)	Maximum Peak Ground Acceleration (g)	Estimated Site Intensity (MM)
White Wolf	14.5	7.3	0.395	X
Kern Front	20.9	6.3	0.180	VIII
Pleito Thrust	26.7	7.0	0.218	VIII
San Andreas (1857 Rupture, Whole M-1a, Carrizo) M-1c-2, Cho-Moj M-1b-1	45	7.2 to 8.0	0.149 to 0.204	VIII
Big Pine	47.4	6.9	0.110	VII
Garlock (West)	47.1	7.3	0.136	VII
San Gabriel	61	7.2	0.106	VII
Santa Ynz (East)	74.3	7.1	0.086	VII

### 3.6 Potential For Ground Rupture, Ground Shaking, Ground Failure

Ground rupture may occur along a fault trace in a major earthquake. It is unlikely that ground rupture could occur at this site since it is not located within 500 feet of a suspected active fault. Some ground shaking is likely at this site in the event of a major earthquake on one of the nearby faults. Based on the predicted maximum horizontal accelerations at the site and the soil types identified in this investigation ground failure is highly unlikely at this site.

### 3.7 Potential for Earthquake-Induced Flooding and Flood Zone

The potential for earthquake-induced flooding at the site appears to be low since groundwater has been historically over 20' below the ground surface. The site is located within flood Zone X with minimal potential flooding according to the Flood Insurance Rate Map covering the site area (see Attachment B for map). The Lake Isabella Dam Flood Plain & Dam Inundation Area Map for the Bakersfield Area indicates it would take approximately 10 to 12 hours for the flood waters to reach the Site area (see Attachment B for map). During this 10 to 12



hour period the site could be evacuated and preventive measures (sand bagging, etc.) could be conducted to limit the damage to the school grounds.

According to the City of Bakersfield and Kern County Emergency Services there is a system of emergency sirens that are supposed to go off as an early warning system if the dam breaks. They are in the process of updating and testing this emergency warning system. In addition, an emergency broadcast over the radio networks would occur and a phone chain from the City or County to the Kern High School District and then to the schools that might be impacted would be conducted.

Repair and improvements to the Lake Isabella Dam by the Army Corps of Engineers is in the beginning of the construction period to further lessen the potential for a major dam release. The amount of water that is stored in the lake is also restricted until these repairs are complete.

The proposed school will have a detailed Emergency Response Plan prepared which will include protocols for responses to earthquakes, flooding, fire and other hazards. This emergency response plan will include a response to the Lake Isabella dam collapsing.

### ***3.8 Liquefaction Potential***

No groundwater was encountered in the recent geotechnical soil borings conducted on-site to depths as great as 51' bgs. The unconfined aquifer is not shown to be less than 47 feet below ground surface at the site based on current and historical information from the Kern County Water Agency and the DWR water library database (see Plate 4A for historical depth to water in wells near the site). SPT or SPT equivalent blowcounts in the SEI soil borings ranged from 4 to 50 blowcounts per foot to a depth of 51'. The lithology encountered in the subsurface includes multiple silty sand and sandy silt layers along with occasional clay zones in the borings. A liquefaction analysis was performed on the deep borings B-1 to B-5 utilizing the program LiquefyPro (version 5.9b). Site-specific information was used in this analysis including; SPT or SPT equivalent blowcounts per foot, grain-size analysis, dry weight densities, historic depth to water of 45' and the PGA for the MCEg earthquake motion (0.477g) with a magnitude of 7.8. The liquefaction potential at this site appears to be low to moderate in boring B-1 at a depth below 45'. The analysis of the other 4 deep soil borings did not indicate any liquefaction potential of concern. See attached LiquefyPro data in Attachment B and boring logs for more detail.



### **3.9     *Slope Stability***

The site is located in an area with <0.5 percent slopes across the site. No bedrock outcrops are present within 1/2 mile of the site. No evidence of historic landslides or creep was observed in this area. There is a very low potential for rockfalls or landslides to impact the site in the event of a major earthquake. Overall the site appears to be stable.

### **3.10   *Settlement***

The estimated amount of dynamic settlement that would occur at this site during a major earthquake is approximately 1.27" (B-4) to 5.04" (B-5) based on the lithology encountered, the SPT blowcounts recorded during sampling and the settlement analysis conducted on borings B-1 to B-5 utilizing the program LiquefyPro. The estimated amount of differential settlement is 0.635" (B-4) to 2.521" (B-5) according to the program LiquefyPro. If 7 feet of soil improvement is conducted in the area of boring B-5 the amount of dynamic settlement falls from 5.04" to an estimated 2.97" and differential settlement decreases from 2.521" to 1.483". See attached Liquefaction Analysis Calculation Sheets and graphs in Attachment B for more detail.

### **3.11   *Expansive Soil and Hydrocollapse Potential***

Based on the lithology encountered in the top 10 feet in the soil borings it appears unlikely that highly expansive surface soils will be present at this site. Four (4) expansion index tests were conducted on the top 5' of soil at the site with the results ranging from 0 to 18, indicating a low expansive potential. Consolidation tests were conducted on 12 soil samples with results ranging from -0.6" to 0.3" which is an acceptable range for potential hydrocollapse. See Lab Result Table 3 in Attachment B for more detail.

The City of Bakersfield Safety Element includes a discussion on land subsidence potential in the Bakersfield area. The main causes of land subsidence are Tectonic Subsidence, Oil & Gas Fluid Extraction, Groundwater Withdrawal and Hydrocompaction of Moisture Deficient Alluvial Deposits. Figure 15 in the Safety Element shows the areas of significant subsidence within the Bakersfield area. The proposed school site is located within the area where the lowest amount of historic land subsidence has occurred and outside of the area of hydrocompaction as shown on attached Plate 7. In addition, the school site is in an area where oil & gas activity is minor, agricultural use is present but is expected to decrease overtime and no public water wells are present nearby so groundwater withdrawal appears to be moderate in the area. Based on this information and the results of the consolidation tests of on-site soil, it appears that regional subsidence should not be an issue at this site requiring any special mitigation or requirements.



#### **4.0 High-Pressure Pipelines & Hazardous Materials**

##### **4.1 High-Pressure Pipelines**

According to field observations and representatives of Pacific Gas & Electric, The Gas Company and the State Fire Marshal's Office, there are no high-pressure natural gas lines or petroleum high-pressure pipelines within 1500' of the site. The nearest high-pressure natural gas pipelines are over 1700' to the northeast and to the southwest of the site borders. See Attachment B for a CDE Pipeline Certification form.

##### **4.2 Hazardous Materials**

The site is undergoing a Preliminary Environmental Assessment (PEA) which evaluates the near surface soils for petroleum hydrocarbons (by tail-water sumps), pesticides and metals from historical agricultural use. Mitigation of a minor amount of soil with elevated and semi-volatile organic compounds (SVOCs) within the southwestern tail-water sump will be required prior to construction.

The nearest oil wells ever drilled are approximately  $\frac{3}{4}$  of a mile away from the site and was a dry hole (see Plate 6). The nearest oil field is over 4 miles away from the site. It is not likely that any significant subsurface oilfield related gases (hydrogen sulfide, methane etc.) are present at elevated concentrations, since no on-site or adjacent producing oil wells are present.

#### **5.0 Conclusions & Recommendations**

Our Geological Hazards Assessment indicates that there is a low to moderate probability for liquefaction to occur during a major earthquake at the site and that the maximum peak ground acceleration at the site would be 0.395g for a 7.3 magnitude earthquake on the White Wolf Fault approximately 14.5 kilometers away. The computer-modeling program Eqsearchwin estimated that a ground motion of 0.308g occurred at the site from a 7.7 magnitude earthquake on the White Wolf Fault in July 1952. The proposed structures should be built to withstand this magnitude of an earthquake and ground motions.

The site-specific design acceleration values to be utilized for the proposed improvements should be 0.826g for short periods ( $S_{Ds}$ ) and 0.471g for the 1 second period ( $S_{D1}$ ). The seismic design category is a D for both short and 1-second periods per the 2016 CBC.

In the event of a major earthquake, there is a very low potential for rock falls or landslides to impact the site. The site is located within the potential flood zone of an upstream disaster (dam failure) with an estimated 10 to 12 hours of warning prior to the flood waters arrival. The estimated amount of total dynamic settlement that would occur at this site during a major earthquake is approximately 1.27" to 5.04" and the range of differential settlement is 0.635" (B-4) to 2.521" (B-5)". If 7 feet of soil improvement is conducted in the area of boring B-5 the amount of dynamic settlement falls from



5.04" to an estimated 2.97" and differential settlement decreases from 2.521" to 1.483".

No high-pressure natural gas pipelines or petroleum pipelines appear to be present within 1500' of the site.

Mitigation of soil with elevated petroleum hydrocarbons and semi-volatile organic compounds (SVOCs) concentrations within the southwestern tail-water sump will be required prior to construction. The nearest oil wells (dry holes) ever drilled is approximately  $\frac{3}{4}$  of a mile away from the site and it is not likely that any significant subsurface oilfield related gases (hydrogen sulfide, methane etc.) are present beneath the site.

The soil in the area of boring B-5 will likely require deeper removal (~7') and replacement with engineered fill then the other areas of the site to reduce potential settlement issues. No other geological assessment or mitigation is recommended at this time.

## **5.0 Attachments**

- 5.1** Location Map- Plate 1, "Location Map" shows the location of the site with relationship to roads and land features.
- 5.2** Plot Plan - Plate 2, "PLOT PLAN" shows the location and lot configuration of the property.
- 5.2.1** Plate 2A, Geologic Map shows the site geology related to local topography, streets and nearby surficial features.
- 5.2.2** Plate 2B, Geologic Cross-Section A to A', shows the subsurface lithology encountered in some of the soil borings at the site.
- 5.3** Seismic Hazard Atlas Map- Plate 3, Shows local geology and faults within the Gosford and Conner Quadrangle near the site.
- 5.3.1** Earthquake Epicenter Map - Plate 3A, Shows the site location on an earthquake epicenter map of historical earthquakes with magnitudes >5.0, from the Eqsearchwin computer modeling program.
- 5.4** Depth To Groundwater Map - Plate 4, Shows the site location in relation to a Depth To Water Map of the regional area prepared by the Kern County Water Agency.
- 5.4.1** Historical Depth to Water Map – Plate 4A, Shows the site location in relation to water wells with historical depth to water information from the DWR Water Data Library.
- 5.5** Fault Location Map- Plate 5, Shows the site in relation to the nearest active faults within 100 miles based on the EQFault program.
- 5.5.1** Plate 5A shows the Regional Faults based on the Fault Activity Map of California 2010.
- 5.6** DOGGR Oil Well Map - Plate 6, Shows the site in relation to the nearest oil wells drilled near the site.
- 5.7** Plate 7, Regional Land Subsidence Map – Shows the site location on a Map that presents the areas of known regional subsidence and hydrocompaction in the Bakersfield area.



- 5.8 Attachment A - Deterministic Site Parameters - EQFAULTWIN data determined for the site for faults within 100 miles. EQSEARCHWIN data concerning the distance and magnitude of earthquakes within 100 miles of the site is attached. USGS Unified Hazard Tool results are attached.
- 5.9 Attachment B - Presents the Boring Logs, the Flood Inundation Map for Lake Isabella, the Flood Insurance Rate Map and the LiquefyPro plots and calculation sheets for liquefaction and settlement. CDE Pipeline Certification form. Lab Result Table 3.

## 6.0 References

- Water Supply Reports, Kern County Water Agency, Bakersfield, California, 1983 to 2017.
- USGS Quadrangle Maps, Gosford & Conner
- Smith, Arthur, California Division of Mines and Geology - Geologic Map of California-Bakersfield Sheet, 1964, Olaf P. Jennings Edition.
- Jennings, Charles and Bryant, William, Fault Activity Map of California, CDMG, 2010.
- U.S. Dept. of Agricultural Soil Surveys, 1942, 1945, 1946.
- EQFaultwin, ver. 3.0, Thomas F. Blake; FRISKSPWIN, ver. 4.0, Thomas F. Blake;
- USGS, Design Maps, <http://geohazards.usgs.gov/designmaps/us>
- EQSEARCHWIN, ver. 3.0, Thomas F. Blake
- LiquefyPro (version 5.9b), CivilTech Software.
- DOGGR, Online Mapping System.
- Blake, Thomas, Empirical Prediction of Earthquake Induced Liquefaction Potential.
- Seismic Hazard Atlas Map, Gosford & Conner Quadrangles, Kern County
- California Fault Parameters, 1996 Draft, California Department of Conservation, Division of Mines and Geology.
- N. Bolton Seed, Kotiji Tokimatsu, A.M., A.S.C.E, Evaluation of Settlement in Sands Due to Earthquake Shaking; Journal of Geotechnical Engineering A.S.C.E. Vol. 113, No. 8, August, 1987.
- URS, California Department of Education (CDE), Guidance Protocol for School Site Pipeline Risk Analysis, Volumes 1 & 2, February 2007.
- Department of Water Resources, Groundwater Data Module, web page: [http://wdl.water.ca.gov/gw/admin/main\\_menu\\_gw.asp](http://wdl.water.ca.gov/gw/admin/main_menu_gw.asp)





**SOILS ENGINEERING, INC.**  
4400 Yeager Way  
Bakersfield, CA 93313  
(661) 831 - 5100

DATE: 4/10/18  
PROJECT: 16608

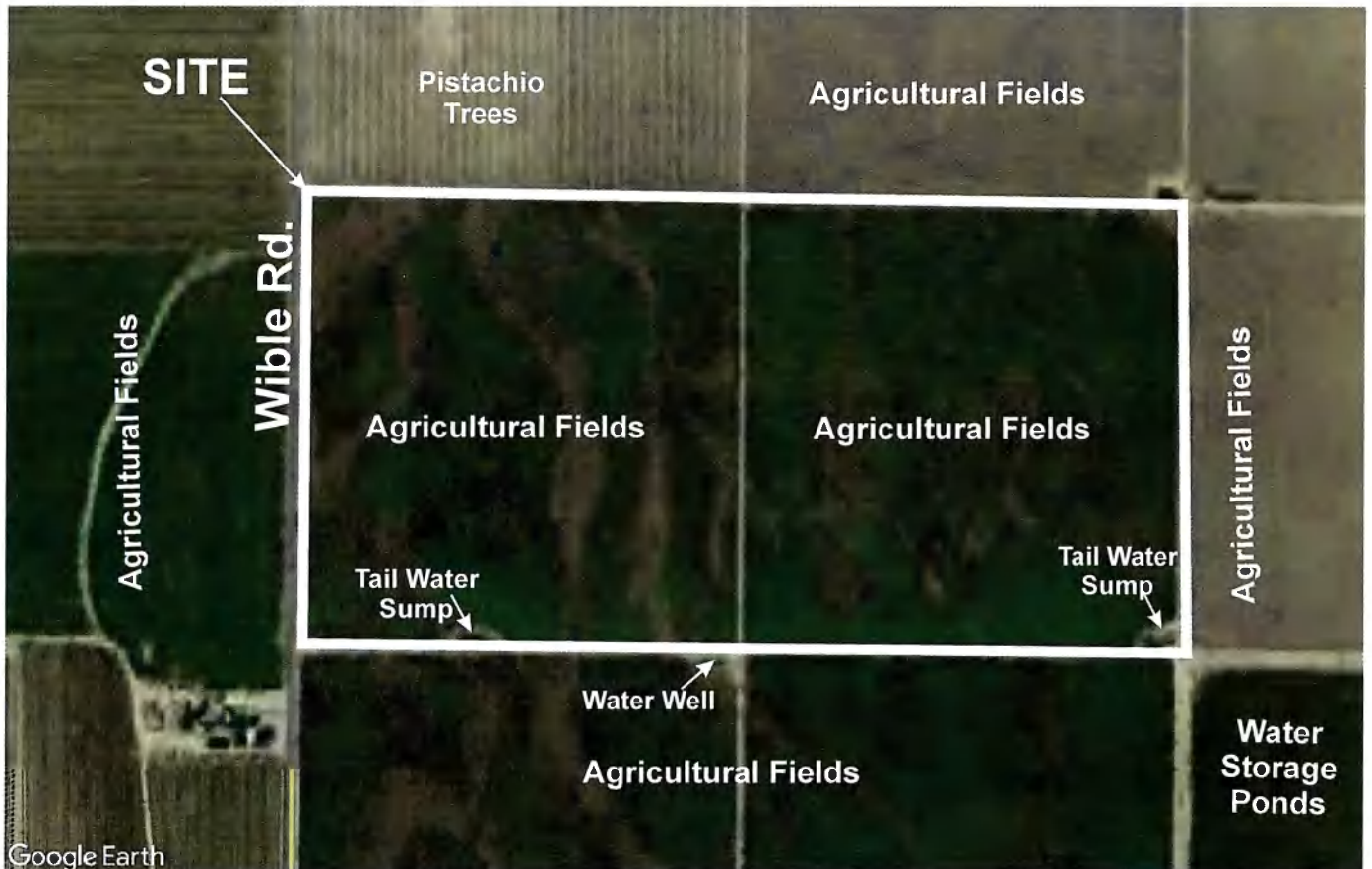
**Proposed High School Site**  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

**LOCATION MAP**

**PLATE**

**1**





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**PLOT PLAN**

**PLATE**  
**2**



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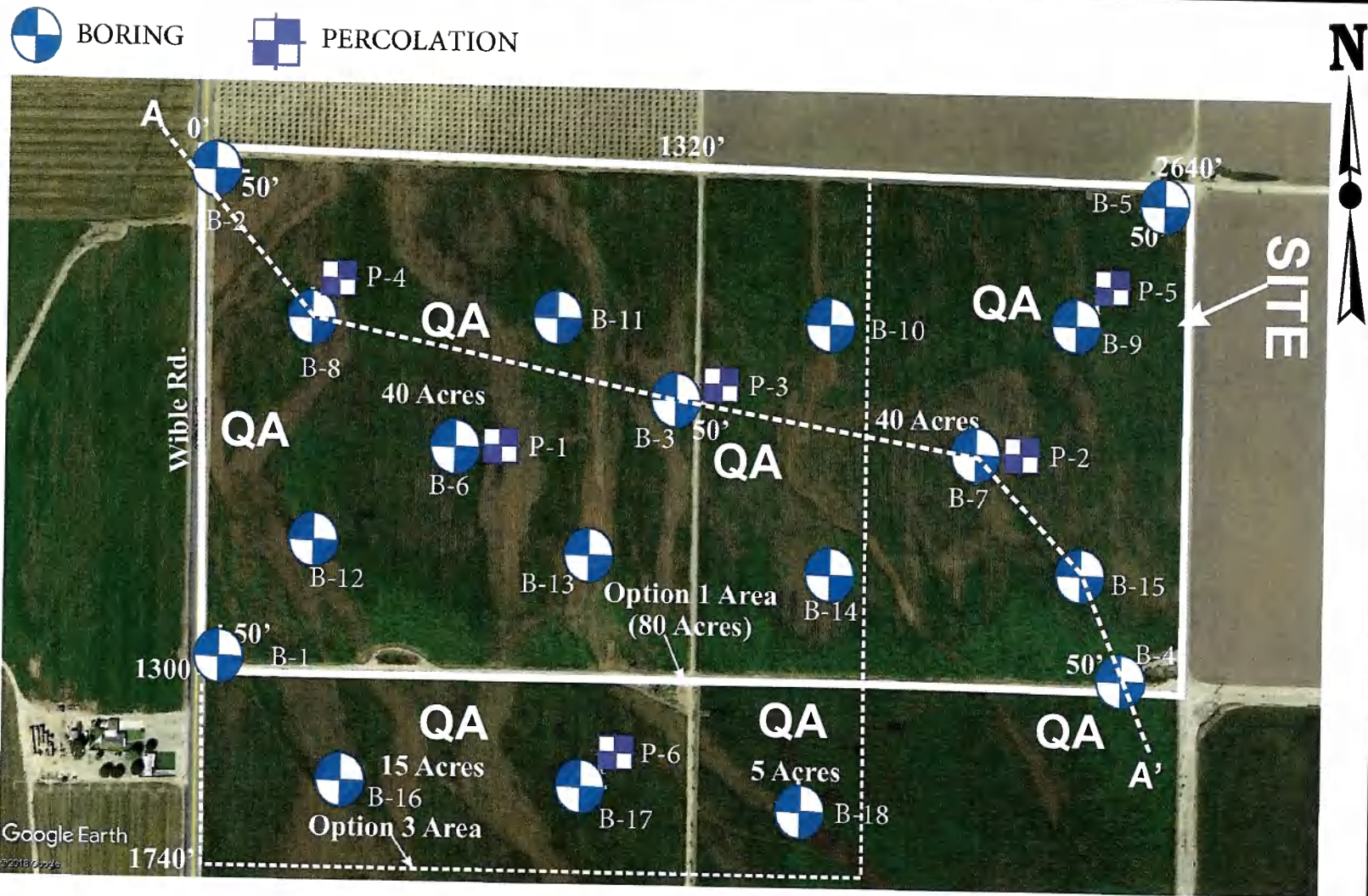
DATE: 4/10/18  
PROJECT: 16608

Proposed High School Site  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

**GEOLOGIC MAP**

**2A**

**PLATE**



# **Proposed SW HS Site - Likely School Area**

SE of Engle Rd. & Wible Rd.

Bakersfield, CA

File # 18-16608

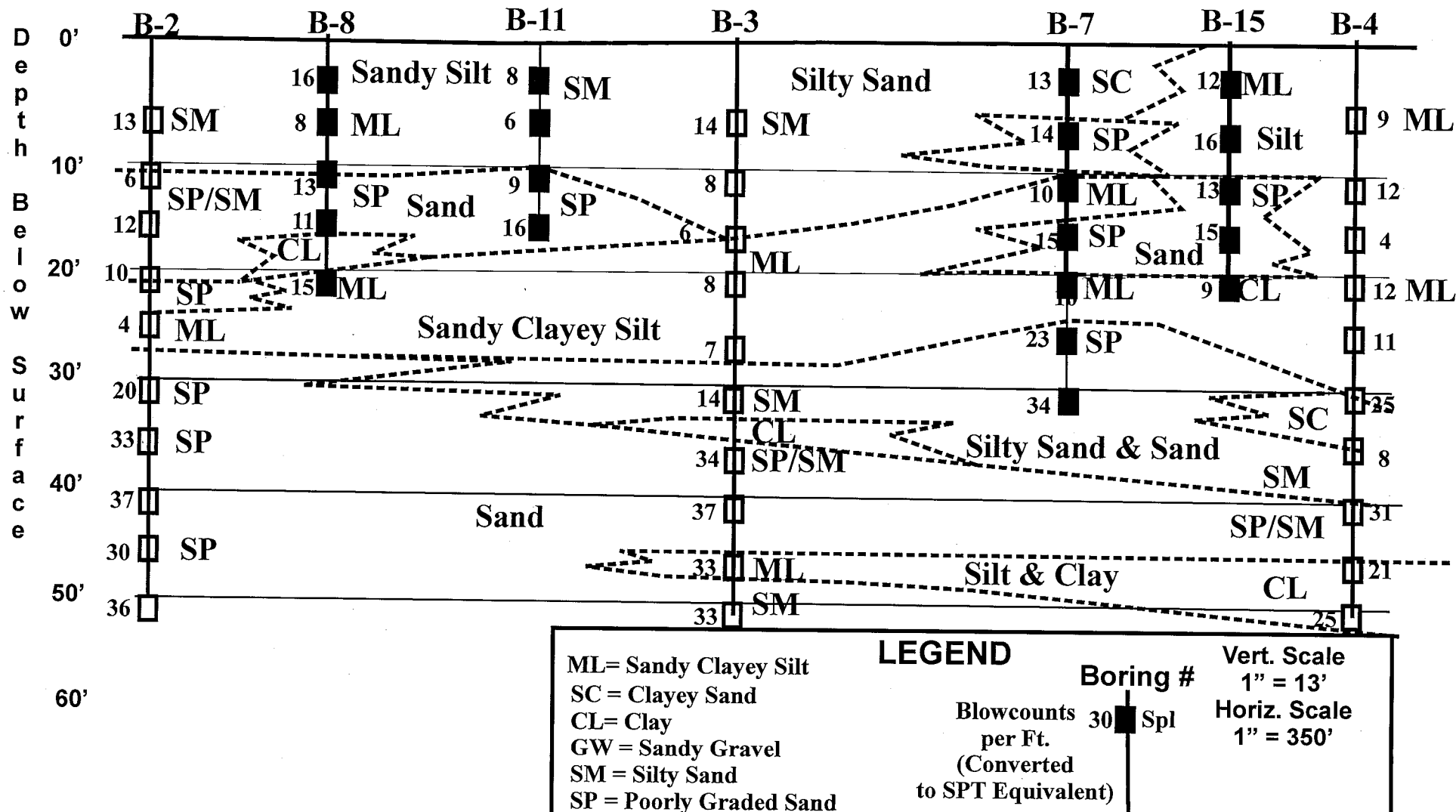
QA = Quarternary Alluvium: Silty Sand, Sand, Silt & Clay

----- **Cross-Section Line A-A'**  
(See Plate 2B)



**A**  
Northwest

**A'**  
Southeast



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File No. 18-16608  
Date: 4/18

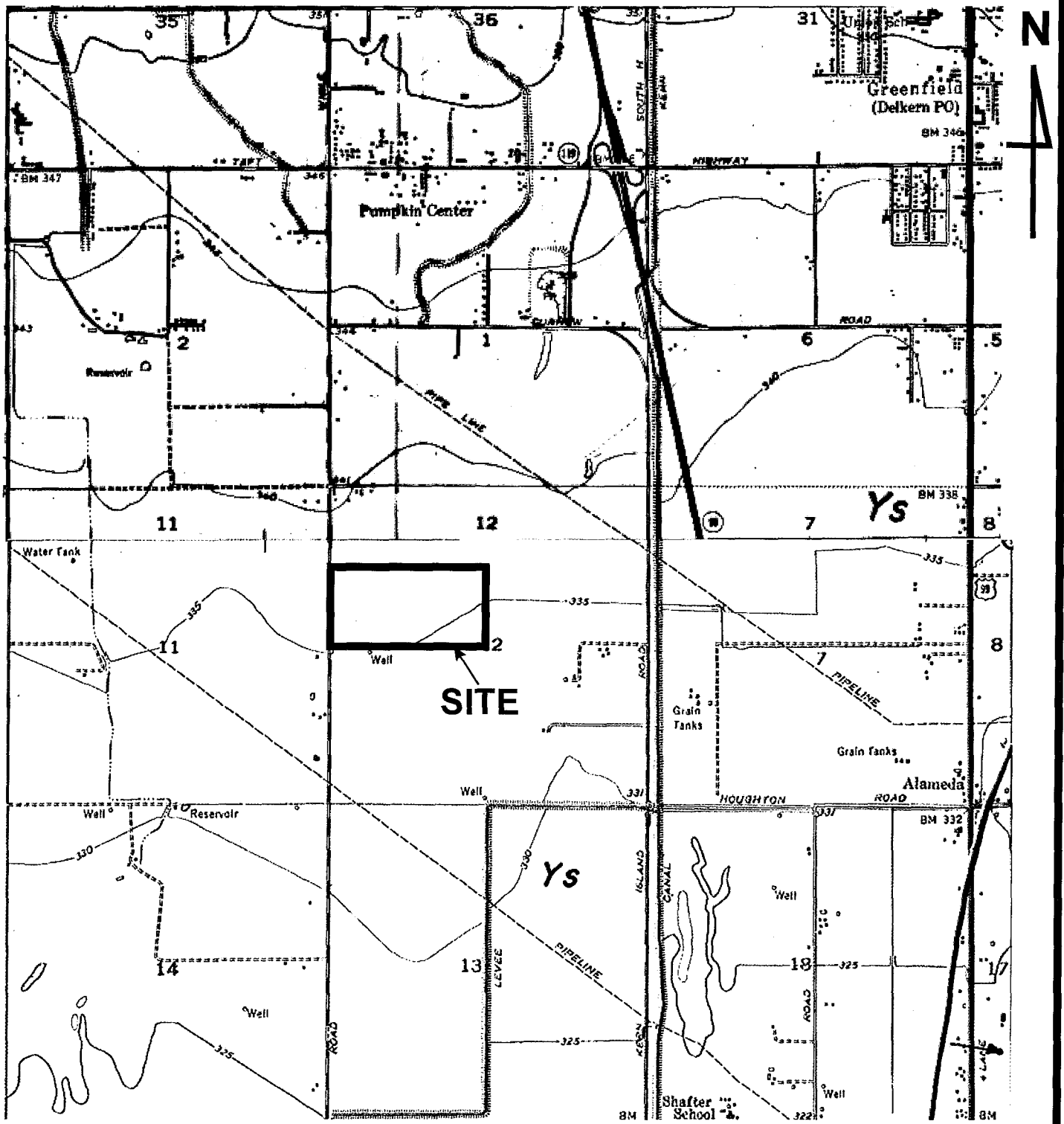
**Proposed SW HS Site**  
SE of Engle Road & Wible Road  
Bakersfield, CA

**Geologic Cross-section A to A'**

PLATE

**2B**





YS = Younger Sediments

SOURCE: Conner Quadrangles, Seismic Hazard Atlas Maps, Kern County Council of Govt.

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PROJECT: 16608

Proposed High School Site  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

Seismic Hazard Zone  
Atlas Map

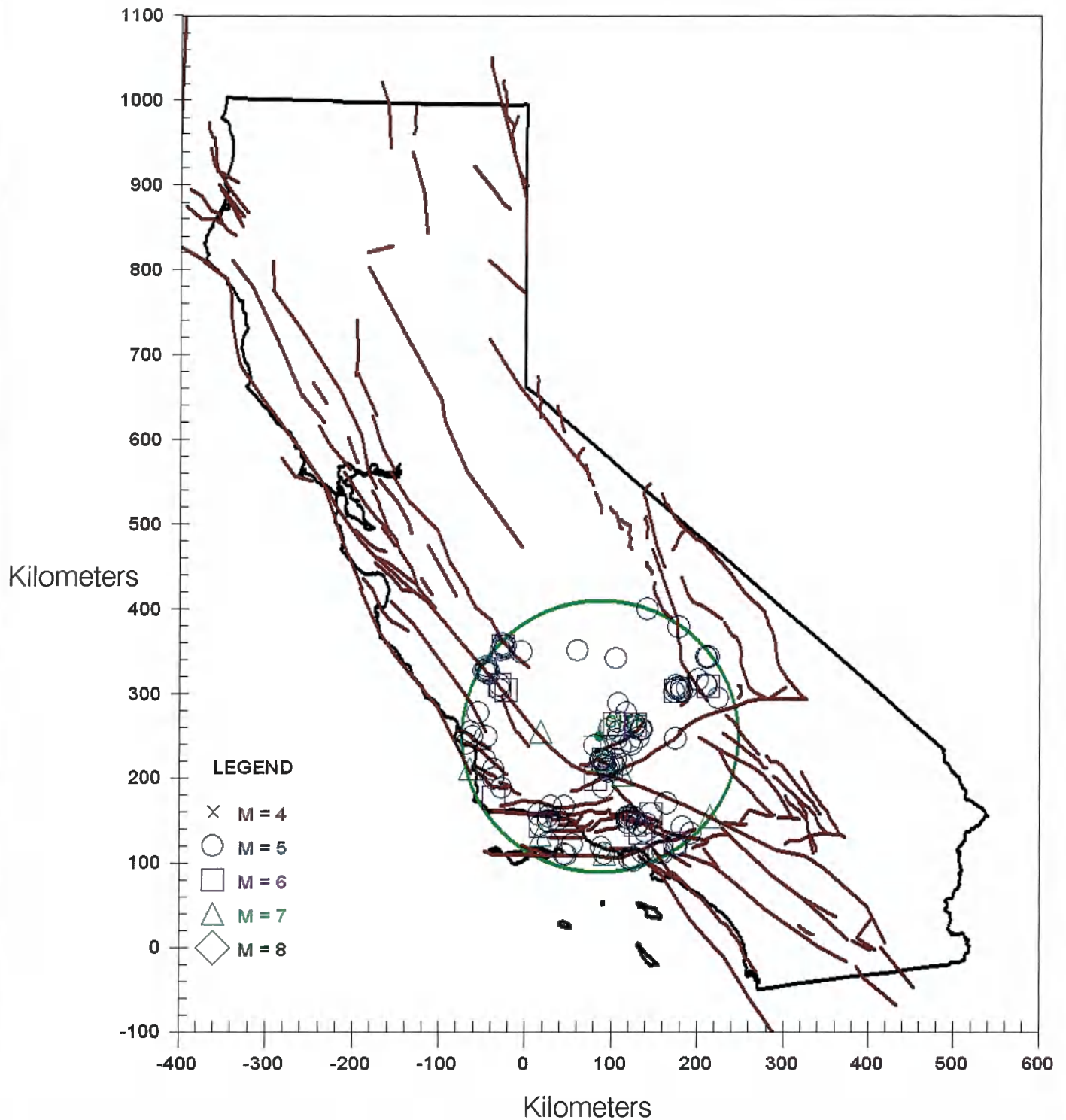
PLATE

3



# EARTHQUAKE EPICENTER MAP

16608 SW HS



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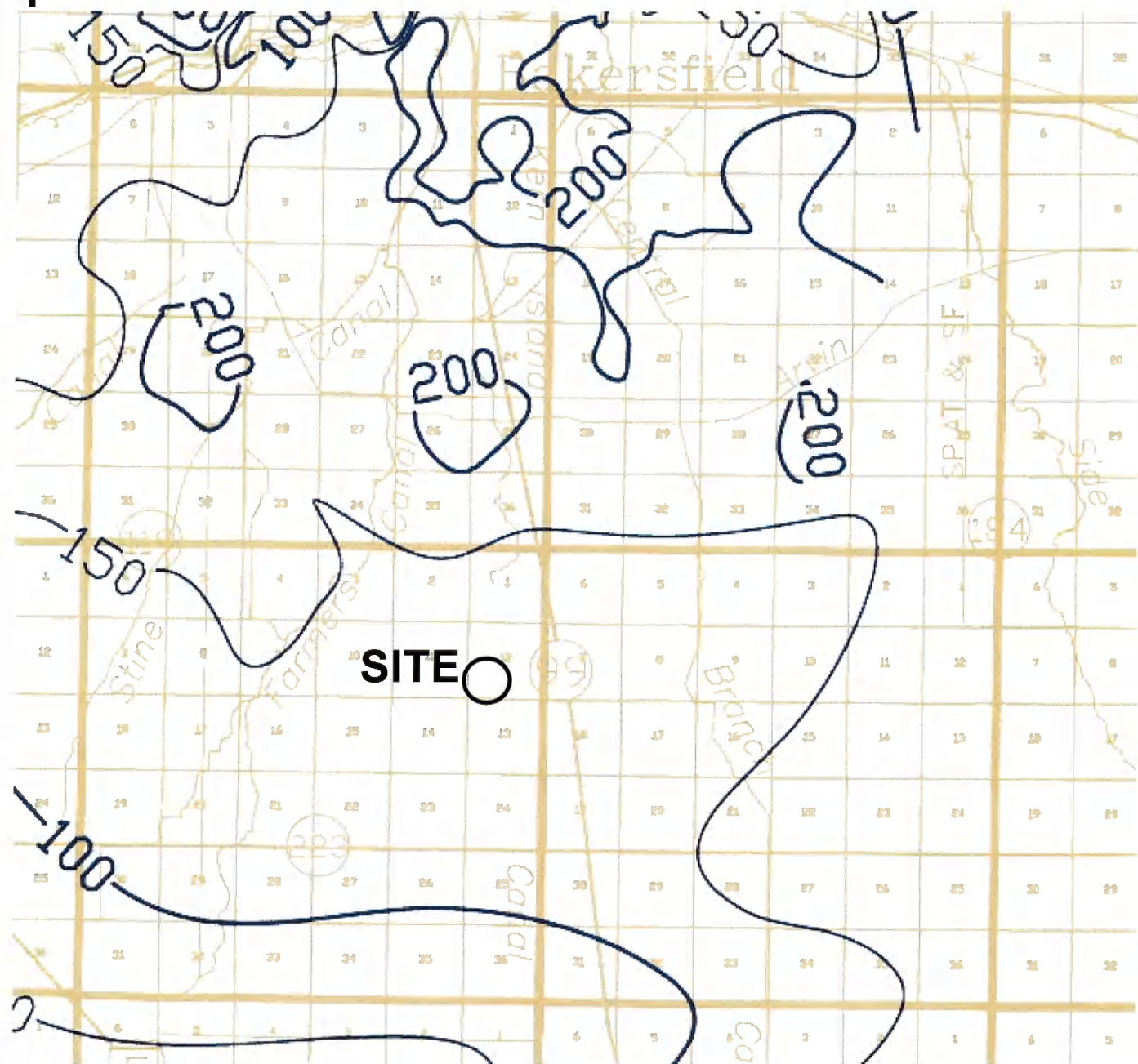
DATE: 4/10/18  
PROJECT: 16608

**Proposed High School Site**  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

**Earthquake Epicenter Map**

**PLATE**  
**3A**





KCWA Depth To Water Map Spring 2012

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BAKERSFIELD, CA 93313

DATE: 4/10/18  
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SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

**DEPTH TO WATER MAP**

**PLATE**  
**4**



Please note (02/09/2018): due to changes in the DWR's network and server configuration, portions of the Water Data Library portal may not function properly. We are working to resolve any issues with the site as soon as possible. The station map below currently works only with Chrome, Edge, and Safari browsers. If you receive an error message, please try one of these browsers to access the WDL site. If you have a specific data request, please refer to our [contacts page](#). Thank you for your patience.

WDL STATION MAP



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# Proposed High School Site

SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

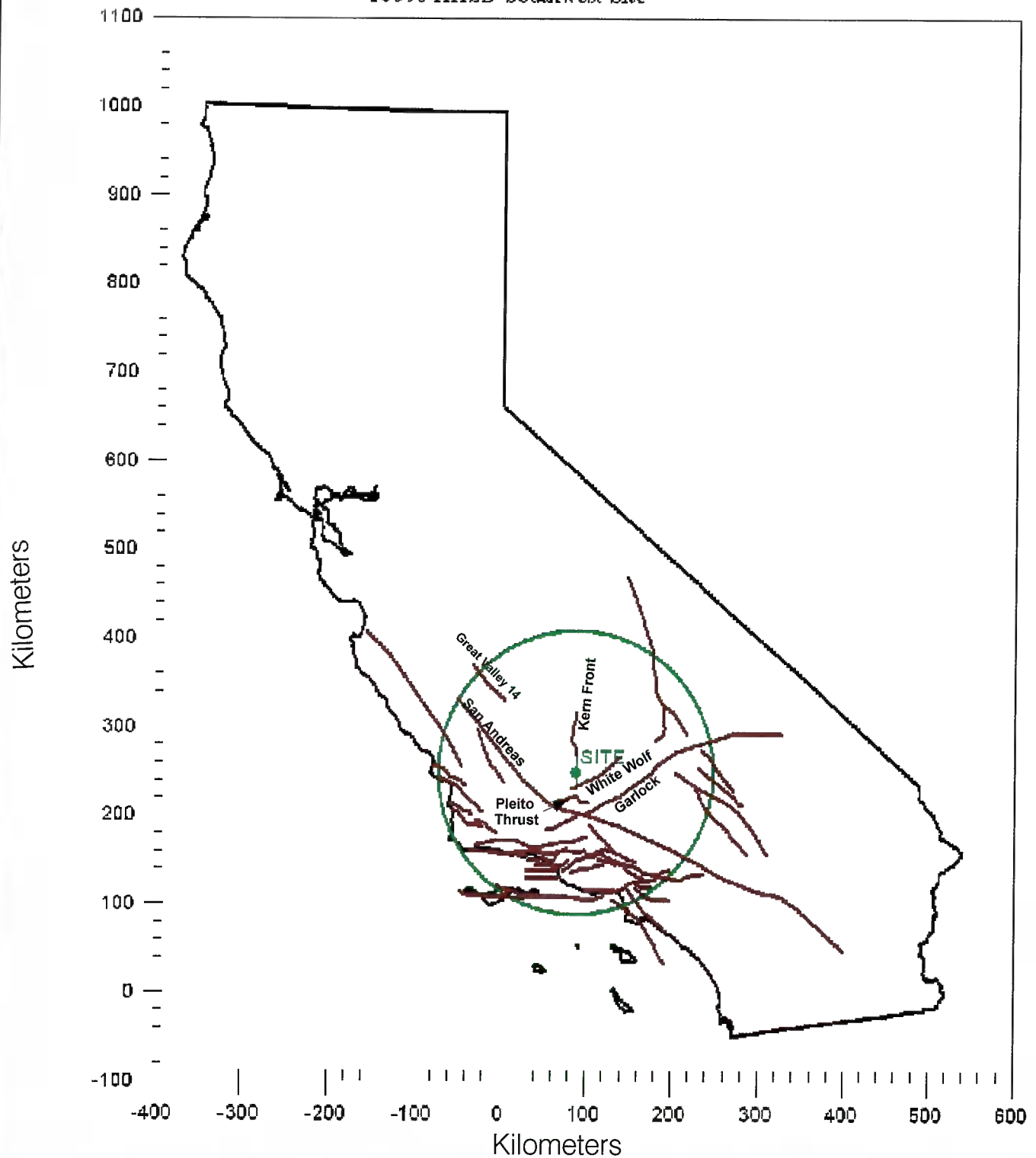
## HISTORICAL DEPTH TO WATER MAP

PLATE  
4A



# CALIFORNIA FAULT MAP

16608 KHSD Southwest Site



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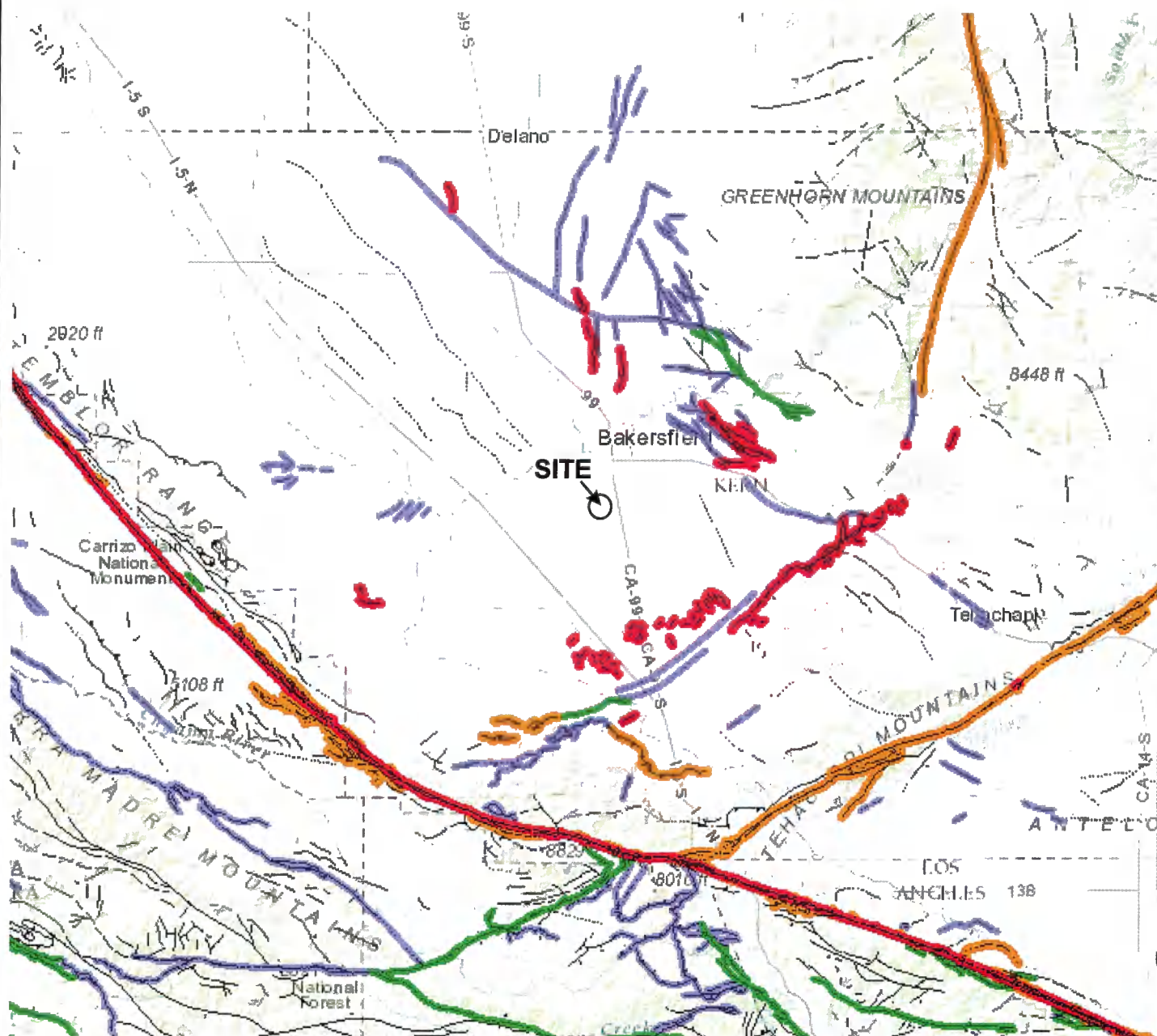
DATE: 4/10/18  
PROJECT: 16608

Proposed High School Site  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

Fault Location Map

PLATE  
5





SOURCE: Fault Activity Map of California 2010, CDMG

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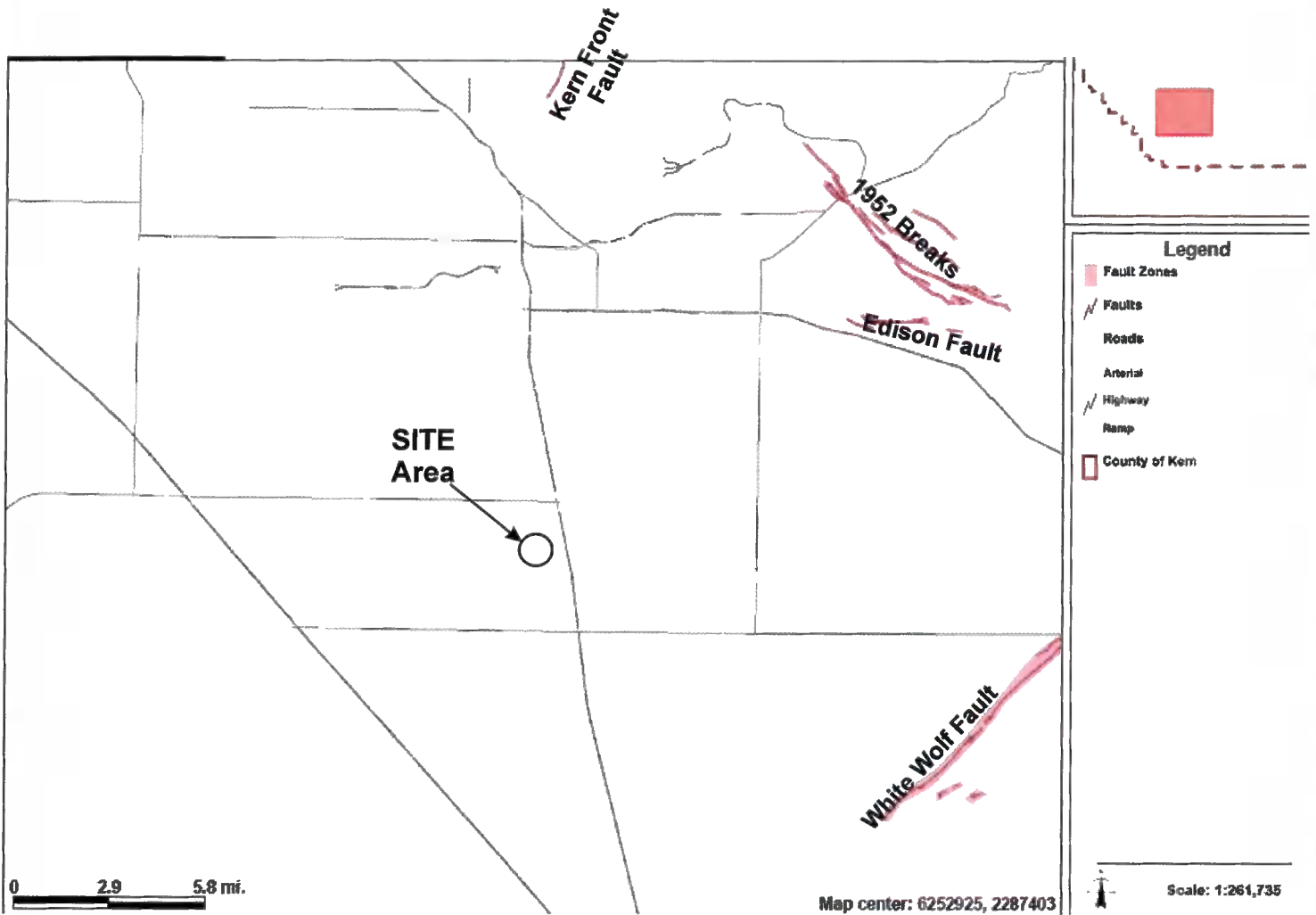
DATE: 4/10/18  
PROJECT: 16608

**Proposed High School Site**  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

**REGIONAL FAULT MAP**

**PLATE**  
**5A**





SOURCE: County of Kern Online Mapping System

AP Fault Zone

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PROJECT: 16608

Proposed High School Site  
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Bakersfield, CA.

**AP FAULT MAP**

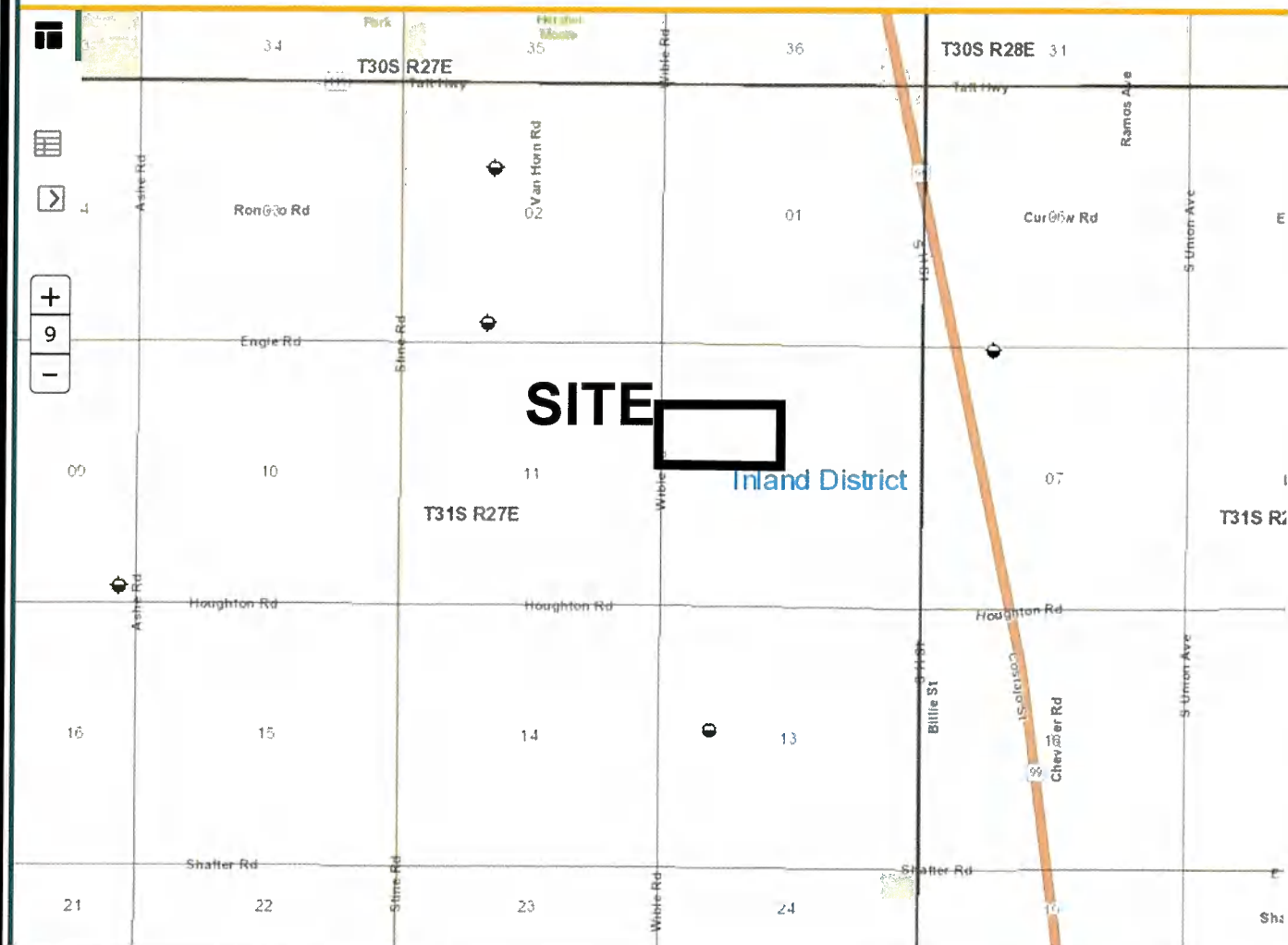
PLATE  
**5B**





Department of  
Conservation

Division of Oil, Gas & Geothermal Resources - Well Finder



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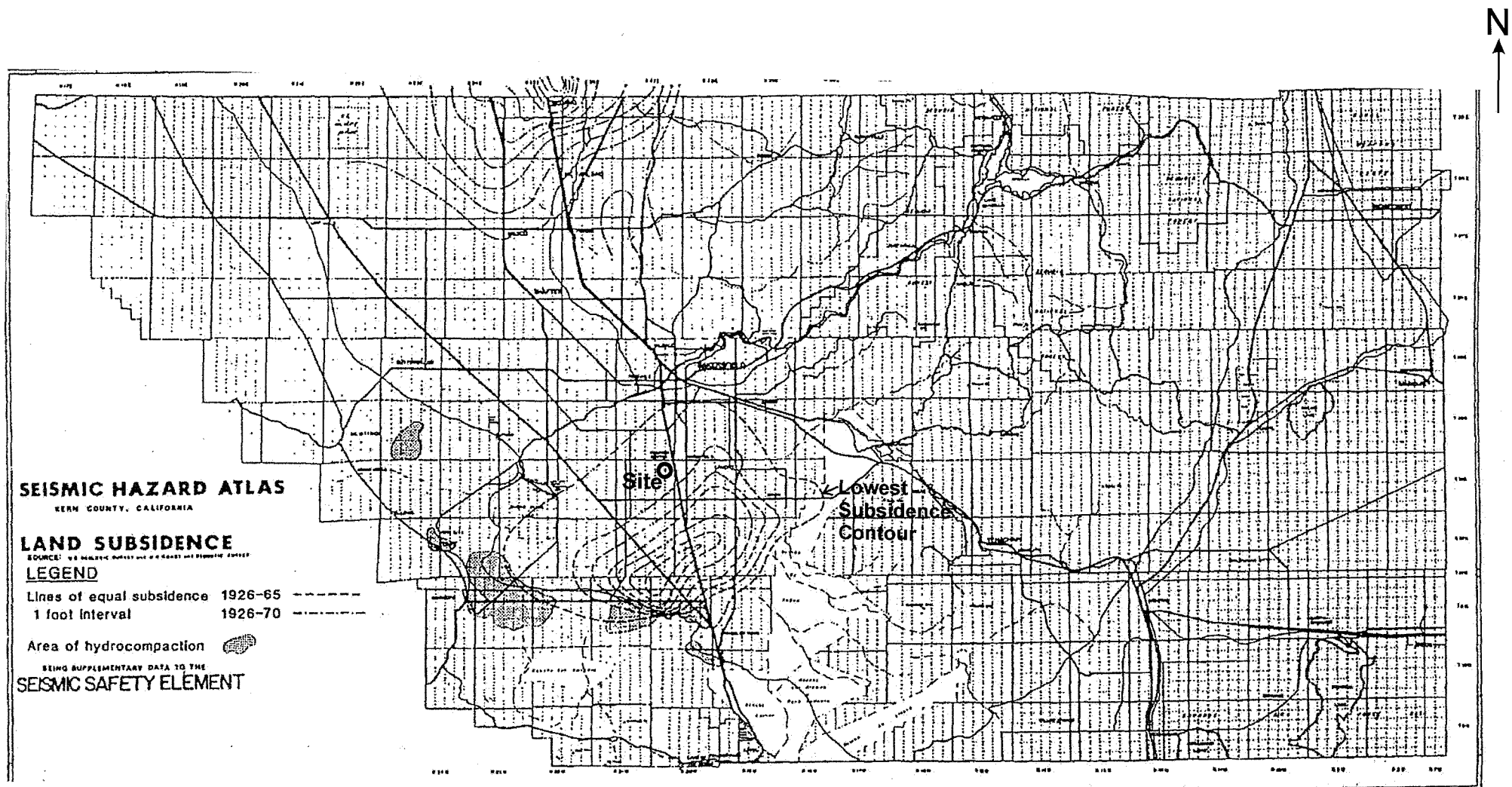
DATE: 4/10/18  
PROJECT: 16608

**Proposed High School Site**  
SE of Wible Rd. & Engle Rd.  
Bakersfield, CA.

**DOGGR MAP**

**PLATE**  
**6**





**Regional Land Subsidence Map**  
From City of Bakersfield Safety Element (Figure 15)



**Attachment A**

**Deterministic Site Parameters - EQFAULTWIN data,  
EQSEARCHWIN data, USGS Design Maps Summary Report  
and Detail Report. USGS Unified Hazard Tool**



16608 eqf

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*****  
*                                     *  
*   E Q F A U L T                   *  
*                                     *  
*   Version 3.00                     *  
*                                     *  
*****
```

DETERMINISTIC ESTIMATION OF  
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 16608

DATE: 04-11-2018

JOB NAME: 16608 KHSD SW

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: CGSFLTE.DAT

SITE COORDINATES:

SITE LATITUDE: 35.2471

SITE LONGITUDE: 119.0346

SEARCH RADIUS: 100 mi

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)

UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0

DISTANCE MEASURE: cd\_2drp

SCOND: 0

Basement Depth: 5.00 km Campbell SSR: Campbell SHR:

COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CGSFLTE.DAT

MINIMUM DEPTH VALUE (km): 0.0



-----  
EQFAULT SUMMARY  
-----

-----  
DETERMINISTIC SITE PARAMETERS  
-----

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT		
		MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
=====	=====	=====	=====	=====
WHITE WOLF	9.0( 14.5)	7.3	0.395	X
Kern Front	13.0( 20.9)	6.3	0.180	VIII
PLEITO THRUST	16.6( 26.7)	7.0	0.218	VIII
SAN ANDREAS - 1857 Rupture M-2a	28.0( 45.0)	7.8	0.184	VIII
SAN ANDREAS - Whole M-1a	28.0( 45.0)	8.0	0.204	VIII
SAN ANDREAS - Carrizo M-1c-2	28.0( 45.0)	7.4	0.149	VIII
SAN ANDREAS - Cho-Moj M-1b-1	28.0( 45.0)	7.8	0.184	VIII
GARLOCK (West)	29.3( 47.1)	7.3	0.136	VIII
BIG PINE	29.5( 47.4)	6.9	0.110	VII
SAN GABRIEL	37.9( 61.0)	7.2	0.106	VII
SANTA YNEZ (East)	46.2( 74.3)	7.1	0.086	VII
SAN ANDREAS - Cholame M-1c-1	47.2( 75.9)	7.3	0.094	VII
SAN ANDREAS - Mojave M-1c-3	48.2( 77.5)	7.4	0.098	VII
SAN CAYETANO	50.8( 81.7)	7.0	0.093	VII
M.RIDGE-ARROYO PARIDA-SANTA ANA	50.8( 81.8)	7.2	0.103	VII
SAN JUAN	52.7( 84.8)	7.1	0.078	VII

Page 2



16608 eqf					
GARLOCK (East)	57.1( 91.9)	7.5	0.090	VII	
NORTH CHANNEL SLOPE	57.2( 92.0)	7.4	0.104	VII	
SANTA SUSANA	58.0( 93.4)	6.7	0.071	VI	
HOLSER	58.1( 93.5)	6.5	0.064	VI	
RED MOUNTAIN	58.3( 93.9)	7.0	0.083	VII	
OAK RIDGE (Onshore)	60.3( 97.0)	7.0	0.081	VII	
SANTA YNEZ (West)	60.5( 97.4)	7.1	0.070	VI	
VENTURA - PITAS POINT	61.1( 98.3)	6.9	0.076	VII	
NORTHRIDGE (E. Oak Ridge)	61.1( 98.3)	7.0	0.080	VII	
So. SIERRA NEVADA	62.8( 101.0)	7.3	0.092	VII	
SIMI-SANTA ROSA	63.1( 101.5)	7.0	0.078	VII	
OAK RIDGE MID-CHANNEL STRUCTURE	64.8( 104.3)	6.6	0.062	VI	
SIERRA MADRE (San Fernando)	65.1( 104.8)	6.7	0.065	VI	
SAN LUIS RANGE (S. Margin)	68.5( 110.2)	7.2	0.082	VII	
CHANNEL IS. THRUST (Eastern)	68.8( 110.7)	7.5	0.095	VII	
LENWOOD-LOCKHART-OLD WOMAN SPRGS	71.8( 115.6)	7.5	0.076	VII	
LOS ALAMOS-W. BASELINE	72.0( 115.9)	6.9	0.067	VI	
VERDUGO	73.0( 117.5)	6.9	0.066	VI	
GREAT VALLEY 14	73.1( 117.6)	6.4	0.051	VI	
ANACAPA-DUME	75.0( 120.7)	7.5	0.089	VII	
OAK RIDGE(Blind Thrust Offshore)	75.2( 121.1)	7.1	0.072	VI	
LIONS HEAD	76.6( 123.3)	6.6	0.055	VI	
SIERRA MADRE	76.7( 123.5)	7.2	0.075	VII	
SAN ANDREAS - Parkfield	79.5( 127.9)	6.5	0.041	V	

-----  
 DETERMINISTIC SITE PARAMETERS  
 -----

Page 2

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT		
		MAXIMUM EARTHQUAKE MAG. (Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
=====	=====	=====	=====	=====
LITTLE LAKE	79.7( 128.2)	6.9	0.051	VI
MALIBU COAST	80.7( 129.8)	6.7	0.055	VI
LOS OSOS	80.7( 129.9)	7.0	0.065	VI
CASMALIA (Orcutt Frontal Fault)	80.9( 130.2)	6.5	0.050	VI
RINCONADA	83.3( 134.1)	7.5	0.067	VI
HOLLYWOOD	84.8( 136.4)	6.4	0.045	VI
SANTA MONICA	85.3( 137.2)	6.6	0.050	VI
CLAMSHELL-SAWPIT	86.1( 138.6)	6.5	0.047	VI
UPPER ELYSIAN PARK BLIND THRUST	87.1( 140.1)	6.4	0.044	VI

Page 3



	16608 eqf				
HELENDAL - S. LOCKHARDT	87.5( 140.8)	7.3	0.058	VI	
OWENS VALLEY	88.1( 141.8)	7.6	0.068	VI	
GREAT VALLEY 13	88.1( 141.8)	6.5	0.046	VI	
PUNTE HILLS BLIND THRUST	88.4( 142.2)	7.1	0.064	VI	
RAYMOND	88.4( 142.3)	6.5	0.046	VI	
GRAVEL HILLS - HARPER LAKE	89.2( 143.5)	7.1	0.052	VI	
NEWPORT-INGLEWOOD (L.A.Basin)	90.8( 146.1)	7.1	0.051	VI	
SANTA CRUZ ISLAND	91.0( 146.5)	7.0	0.059	VI	
BLACKWATER	92.6( 149.0)	7.1	0.050	VI	
PALOS VERDES	93.4( 150.3)	7.3	0.056	VI	
SANTA ROSA ISLAND	97.8( 157.4)	7.1	0.059	VI	
CUCAMONGA	99.4( 160.0)	6.9	0.052	VI	

\*\*\*\*\*

-END OF SEARCH- 61 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

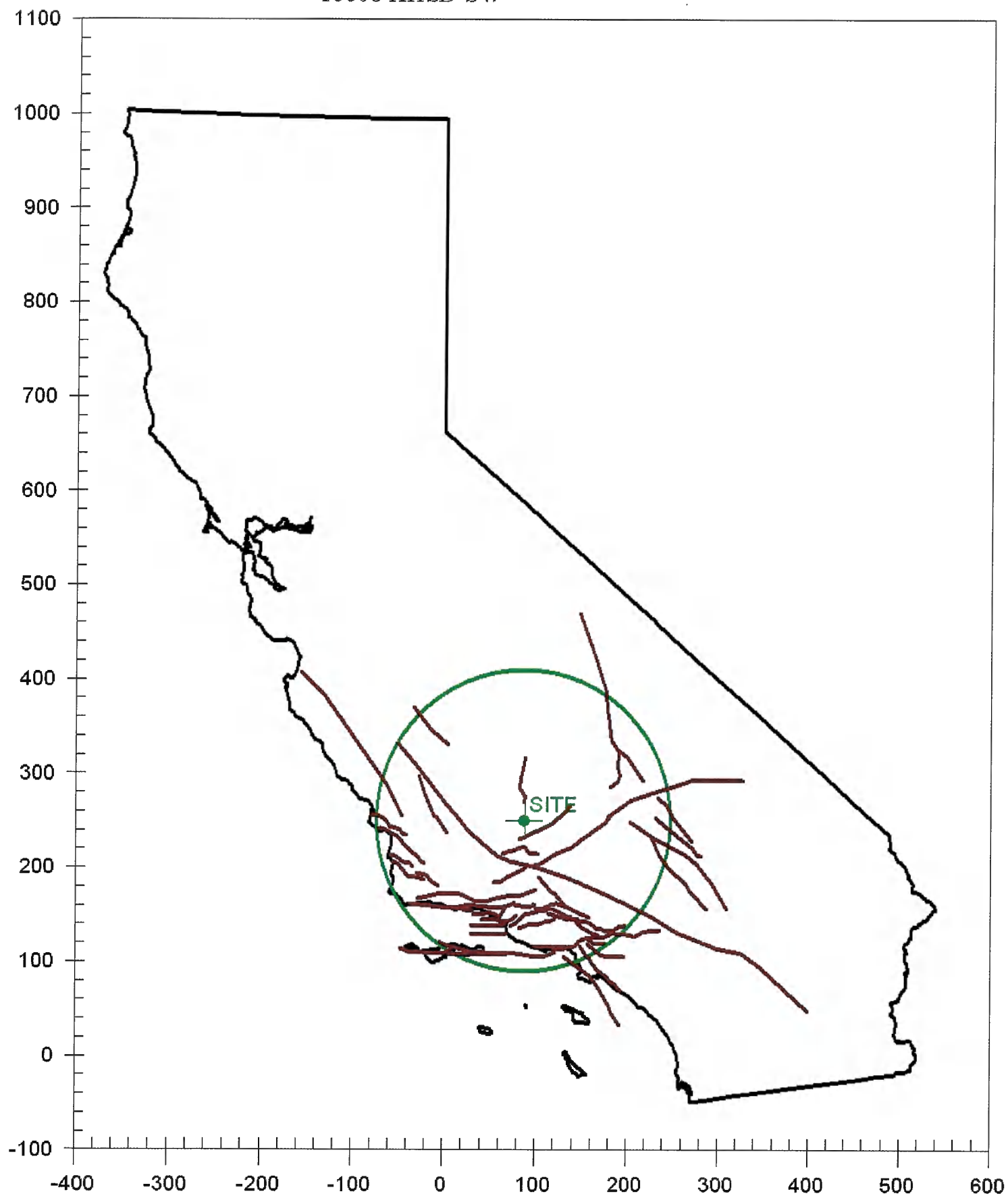
THE WHITE WOLF FAULT IS CLOSEST TO THE SITE.  
IT IS ABOUT 9.0 MILES (14.5 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.3954 g



# CALIFORNIA FAULT MAP

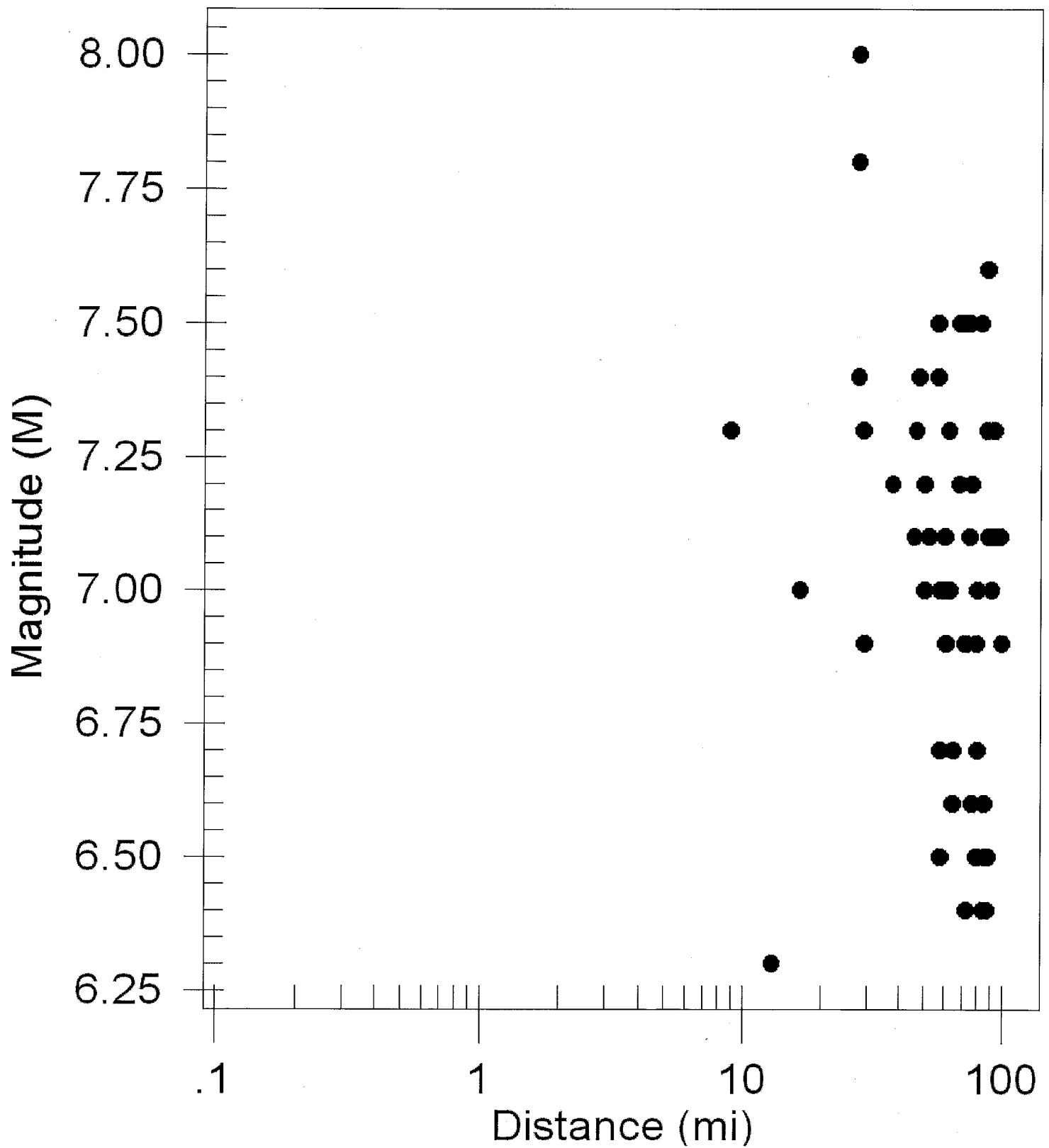
16608 KHSD SW





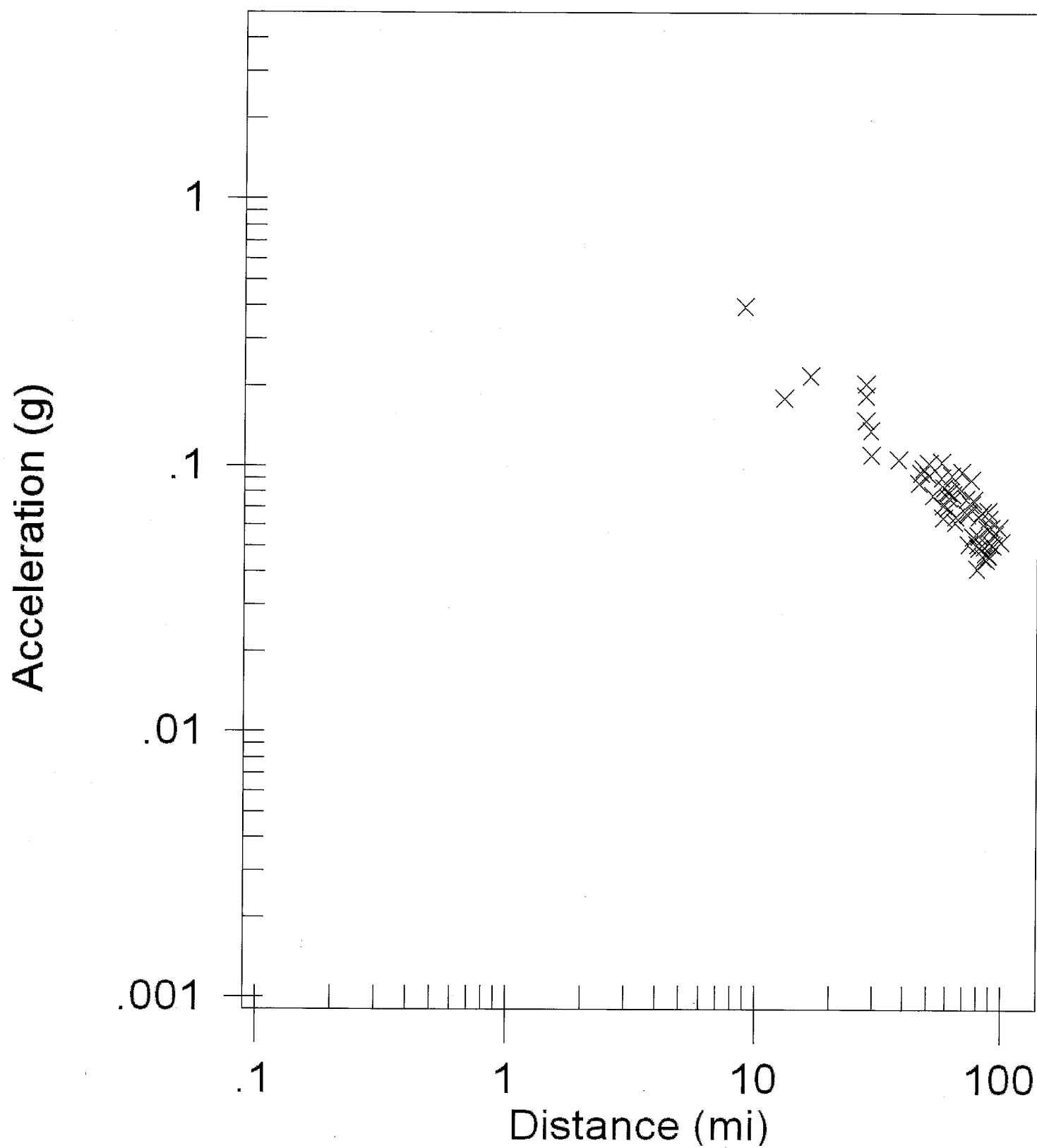
# EARTHQUAKE MAGNITUDES & DISTANCES

16608 KHSD SW





16608 KHSD SW





\*\*\*\*\*  
\*  
\* E Q S E A R C H \*  
\*  
\* Version 3.00 \*  
\*  
\*\*\*\*\*

ESTIMATION OF  
PEAK ACCELERATION FROM  
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 16608

DATE: 04-11-2018

JOB NAME: 16608 SW HS

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

SITE COORDINATES:

SITE LATITUDE: 35.2471

SITE LONGITUDE: 119.0346

SEARCH DATES:

START DATE: 1800

END DATE: 2010

SEARCH RADIUS:

100.0 mi

160.9 km

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)

UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0

ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]

SCOND: 0 Depth Source: A

Basement Depth: 5.00 km Campbell SSR: Campbell SHR:

COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 0.0



-----  
EARTHQUAKE SEARCH RESULTS  
-----

Page 1

FILE	LAT.	LONG.	DATE	TIME	DEPTH	QUAKE	SITE	SITE	APPROX.
CODE	NORTH	WEST		(UTC) H M Sec	(km)	MAG.	ACC. g	MM INT.	DISTANCE mi [km]
GSP	35.1490	119.1040	05/28/1993	044740.6	21.0	5.20	0.144	VIII	7.8( 12.6)
DMG	35.3330	118.9170	08/22/1952	224124.0	0.0	5.80	0.181	VIII	8.9( 14.3)
DMG	35.2170	118.8170	07/23/1952	1317 5.0	0.0	5.70	0.136	VIII	12.4( 20.0)
DMG	35.3000	118.8000	12/23/1905	2223 0.0	0.0	5.00	0.087	VII	13.7( 22.1)
DMG	35.3830	118.8500	07/29/1952	7 347.0	0.0	6.10	0.154	VIII	14.0( 22.5)
DMG	35.4000	118.8170	07/29/1952	8 146.0	0.0	5.10	0.082	VII	16.2( 26.0)
DMG	35.1330	118.7670	07/21/1952	194122.0	0.0	5.50	0.097	VII	17.0( 27.4)
DMG	35.0000	119.0330	07/21/1952	12 2 0.0	0.0	5.60	0.102	VII	17.1( 27.4)
DMG	35.0000	119.0170	01/12/1954	233349.0	0.0	5.90	0.119	VII	17.1( 27.5)
DMG	35.0000	119.0170	07/21/1952	115214.0	0.0	7.70	0.308	IX	17.1( 27.5)
DMG	35.0000	119.0000	02/16/1919	1557 0.0	0.0	5.00	0.074	VII	17.2( 27.6)
DMG	35.0000	119.0000	07/21/1952	12 531.0	0.0	6.40	0.155	VIII	17.2( 27.6)
DMG	34.9830	118.9830	05/23/1954	235243.0	0.0	5.10	0.074	VII	18.5( 29.7)
DMG	35.0000	118.8330	07/23/1952	181351.0	0.0	5.20	0.072	VI	20.5( 33.0)
DMG	35.0000	118.8330	07/23/1952	75319.0	0.0	5.40	0.080	VII	20.5( 33.0)
DMG	34.9410	118.9870	11/15/1961	53855.5	10.7	5.00	0.063	VI	21.3( 34.3)
DMG	34.9320	118.9760	03/01/1963	02557.9	13.9	5.00	0.061	VI	22.0( 35.4)
DMG	35.1830	118.6500	07/21/1952	151358.0	0.0	5.10	0.064	VI	22.1( 35.6)
DMG	34.9500	118.8670	07/21/1952	121936.0	0.0	5.30	0.070	VI	22.6( 36.4)
T-A	34.9200	118.9200	05/23/1857	0 0 0.0	0.0	5.00	0.058	VI	23.5( 37.8)
T-A	34.9200	118.9200	01/20/1857	0 0 0.0	0.0	5.00	0.058	VI	23.5( 37.8)
DMG	35.1500	118.6330	01/27/1954	141948.0	0.0	5.00	0.058	VI	23.6( 38.0)
DMG	34.9000	118.9500	08/01/1952	13 430.0	0.0	5.10	0.060	VI	24.4( 39.3)
DMG	34.9000	118.9000	10/23/1916	244 0.0	0.0	6.00	0.094	VII	25.1( 40.5)
DMG	35.3330	118.6000	07/31/1952	12 9 9.0	0.0	5.80	0.084	VII	25.2( 40.5)
DMG	35.5000	118.7000	01/06/1905	1430 0.0	0.0	5.00	0.055	VI	25.7( 41.3)
PAS	34.9430	118.7430	06/10/1988	23 643.0	6.8	5.40	0.065	VI	26.7( 42.9)
DMG	35.3670	118.5830	07/23/1952	03832.0	0.0	6.10	0.094	VII	26.8( 43.1)
DMG	35.3670	118.5830	07/23/1952	31923.0	0.0	5.00	0.053	VI	26.8( 43.1)
DMG	34.8670	118.9330	09/21/1941	1953 7.2	0.0	5.20	0.059	VI	26.9( 43.2)
DMG	35.6000	118.8000	06/30/1926	1331 0.0	0.0	5.00	0.051	VI	27.7( 44.6)
DMG	35.2330	118.5330	07/21/1952	174244.0	0.0	5.10	0.053	VI	28.3( 45.5)
DMG	35.3150	118.5160	07/25/1952	194323.7	11.2	5.70	0.071	VI	29.6( 47.6)
DMG	35.3110	118.4990	07/25/1952	1313 8.2	2.8	5.00	0.048	VI	30.5( 49.1)
DMG	35.3170	118.4940	07/25/1952	19 944.6	5.5	5.70	0.069	VI	30.8( 49.6)
DMG	34.8000	119.1000	09/05/1883	1230 0.0	0.0	6.00	0.080	VII	31.1( 50.0)
T-A	34.8300	118.7500	11/27/1852	0 0 0.0	0.0	7.00	0.129	VIII	33.0( 53.1)
DMG	34.7000	119.0000	10/23/1916	254 0.0	0.0	5.50	0.053	VI	37.8( 60.9)
DMG	35.3000	119.8000	01/09/1857	16 0 0.0	0.0	7.90	0.168	VIII	43.3( 69.7)
GSP	35.2100	118.0660	07/11/1992	181416.2	10.0	5.70	0.044	VI	54.7( 88.0)
DMG	34.5000	119.5000	08/05/1930	1125 0.0	0.0	5.00	0.029	V	57.9( 93.2)
DMG	34.5000	119.5000	06/29/1926	2321 0.0	0.0	5.50	0.038	V	57.9( 93.2)
DMG	36.0800	118.8200	05/29/1915	646 0.0	0.0	5.00	0.029	V	58.8( 94.5)
GSP	34.3940	118.6690	06/26/1995	084028.9	13.0	5.00	0.027	V	62.4(100.5)
GSB	34.3790	118.7110	01/19/1994	210928.6	14.0	5.50	0.036	V	62.7(100.9)
T-A	34.5000	119.6700	06/01/1893	12 0 0.0	0.0	5.00	0.027	V	62.9(101.2)
DMG	35.7150	118.0740	03/15/1946	14 035.4	0.0	5.30	0.032	V	62.9(101.3)
GSP	34.3770	118.6980	01/18/1994	004308.9	11.0	5.20	0.030	V	63.0(101.4)
GSP	34.3690	118.6720	04/26/1997	103730.7	16.0	5.10	0.028	V	64.0(103.0)
DMG	35.7250	118.0550	03/15/1946	134935.9	22.0	6.30	0.053	VI	64.2(103.3)
GSP	34.3780	118.6180	01/19/1994	211144.9	11.0	5.10	0.028	V	64.5(103.8)
DMG	35.7450	118.0390	03/16/1946	94617.9	0.0	5.10	0.028	V	65.7(105.7)
T-A	36.1700	119.3200	07/25/1868	230 0.0	0.0	5.00	0.026	V	65.7(105.7)



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EARTHQUAKE SEARCH RESULTS  
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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	35.7510	118.0290	03/15/1946	215433.4	0.0	5.20	0.029	V	66.4(106.8)
GSP	34.3260	118.6980	01/17/1994	233330.7	9.0	5.60	0.036	V	66.4(106.8)
DMG	35.7780	118.0490	01/28/1961	81246.2	5.5	5.30	0.031	V	66.4(106.9)
DMG	35.7140	117.9770	03/15/1946	191853.6	0.0	5.40	0.032	V	67.6(108.8)
DMG	34.4110	118.4010	02/09/1971	14 244.0	8.0	5.80	0.039	V	68.0(109.4)
DMG	34.4110	118.4010	02/09/1971	14 041.8	8.4	6.40	0.054	VI	68.0(109.4)
DMG	34.4110	118.4010	02/09/1971	14 1 8.0	8.0	5.80	0.039	V	68.0(109.4)
DMG	34.4110	118.4010	02/09/1971	141028.0	8.0	5.30	0.030	V	68.0(109.4)
DMG	34.3670	119.5830	07/01/1941	75054.8	0.0	5.90	0.041	V	68.3(109.8)
DMG	35.7530	117.9860	03/15/1946	1321 0.9	0.0	5.20	0.028	V	68.5(110.3)
DMG	34.5190	118.1980	08/23/1952	10 9 7.1	13.1	5.00	0.025	V	69.1(111.2)
MGI	34.4000	119.7000	03/25/1806	8 0 0.0	0.0	5.00	0.025	V	69.6(112.0)
DMG	34.3000	118.6000	04/04/1893	1940 0.0	0.0	6.00	0.043	VI	69.9(112.5)
GSP	34.3050	118.5790	01/29/1994	112036.0	1.0	5.10	0.027	V	70.0(112.6)
GSB	34.3010	118.5650	01/17/1994	204602.4	9.0	5.20	0.028	V	70.5(113.5)
DMG	35.7470	117.9080	03/18/1946	155042.6	4.4	5.30	0.029	V	72.1(116.1)
T-A	34.4200	119.8200	00/00/1862	0 0 0.0	0.0	5.70	0.035	V	72.4(116.5)
PAS	34.3470	119.6960	08/13/1978	225453.4	12.8	5.10	0.026	V	72.6(116.8)
DMG	34.3080	118.4540	02/09/1971	144346.7	6.2	5.20	0.027	V	72.7(117.0)
DMG	35.7500	120.2500	03/10/1922	112120.0	0.0	6.50	0.052	VI	76.6(123.3)
GSP	34.2130	118.5370	01/17/1994	123055.4	18.0	6.70	0.057	VI	76.8(123.6)
GSP	34.2310	118.4750	03/20/1994	212012.3	13.0	5.30	0.027	V	77.0(123.9)
MGI	34.3000	119.8000	07/03/1925	1821 0.0	0.0	5.30	0.027	V	78.5(126.3)
MGI	34.3000	119.8000	07/03/1925	1638 0.0	0.0	5.30	0.027	V	78.5(126.3)
DMG	34.3000	119.8000	06/29/1925	144216.0	0.0	6.25	0.044	VI	78.5(126.3)
DMG	35.7500	120.3300	08/18/1922	512 0.0	0.0	5.00	0.023	IV	80.7(129.8)
MGI	34.9000	120.4000	03/29/1928	625 0.0	0.0	5.30	0.026	V	80.8(130.0)
DMG	34.7000	120.3000	07/31/1902	920 0.0	0.0	5.50	0.029	V	80.9(130.3)
DMG	34.7000	120.3000	01/12/1915	431 0.0	0.0	5.50	0.029	V	80.9(130.3)
DMG	34.0650	119.0350	02/21/1973	144557.3	8.0	5.90	0.036	V	81.6(131.3)
DMG	34.1000	119.4000	05/19/1893	035 0.0	0.0	5.50	0.029	V	81.9(131.8)
DMG	35.8310	117.7610	10/19/1961	5 943.9	-2.0	5.20	0.025	V	82.1(132.2)
DMG	35.8000	120.3300	06/08/1934	447 0.0	0.0	6.00	0.038	V	82.2(132.3)
DMG	35.8000	120.3300	06/08/1934	430 0.0	0.0	5.00	0.022	IV	82.2(132.3)
DMG	35.8000	120.3300	12/28/1939	121538.0	0.0	5.00	0.022	IV	82.2(132.3)
DMG	35.8000	120.3300	06/05/1934	2148 0.0	0.0	5.00	0.022	IV	82.2(132.3)
MGI	35.2500	120.5000	07/10/1917	045 0.0	0.0	5.30	0.026	V	82.6(133.0)
MGI	35.2500	120.5000	07/10/1917	043 0.0	0.0	5.30	0.026	V	82.6(133.0)
MGI	35.2500	120.5000	07/09/1917	2222 0.0	0.0	5.00	0.022	IV	82.6(133.0)
MGI	35.2500	120.5000	07/09/1917	2238 0.0	0.0	5.30	0.026	V	82.6(133.0)
MGI	34.8000	120.4000	12/12/1902	0 0 0.0	0.0	5.70	0.032	V	83.1(133.8)
DMG	34.2000	119.8000	12/21/1812	19 0 0.0	0.0	7.00	0.062	VI	84.3(135.7)
PAS	36.1510	120.0490	08/04/1985	12 156.0	6.0	5.80	0.033	V	84.4(135.9)
MGI	35.0000	120.5000	11/19/1927	332 0.0	0.0	5.00	0.022	IV	84.5(136.0)
GSP	35.7760	117.6620	08/17/1995	223959.0	5.0	5.40	0.027	V	85.3(137.3)
GSP	35.7660	117.6490	01/07/1996	143253.1	5.0	5.20	0.024	IV	85.7(137.9)
GSB	35.7610	117.6390	09/20/1995	232736.3	5.0	6.10	0.038	V	86.1(138.5)
MGI	34.0000	119.0000	12/14/1912	0 0 0.0	0.0	5.70	0.031	V	86.1(138.6)
DMG	34.0000	119.0000	09/24/1827	4 0 0.0	0.0	7.00	0.061	VI	86.1(138.6)
DMG	34.1180	119.7020	07/05/1968	04517.2	5.9	5.20	0.024	IV	86.7(139.5)
MGI	34.6000	120.4000	08/01/1902	330 0.0	0.0	6.30	0.041	V	89.3(143.7)
MGI	34.6000	120.4000	07/28/1902	657 0.0	0.0	6.30	0.041	V	89.3(143.7)
DMG	35.6310	117.5130	09/17/1938	1423 4.1	-2.0	5.00	0.021	IV	89.6(144.2)



## EARTHQUAKE SEARCH RESULTS

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FILE	LAT.	LONG.	DATE	TIME (UTC)	DEPTH	QUAKE	SITE ACC.	SITE MM	APPROX. DISTANCE
CODE	NORTH	WEST		H M Sec	(km)	MAG.	g	INT.	mi [km]
GSP	34.2620	118.0020	06/28/1991	144354.5	11.0	5.40	0.026	V	89.8(144.4)
MGI	35.5000	120.6000	01/01/1830	0 0 0.0	0.0	5.00	0.021	IV	89.8(144.6)
DMG	34.0000	119.5000	02/18/1926	1818 0.0	0.0	5.00	0.021	IV	90.1(144.9)
DMG	33.9860	119.4750	08/06/1973	232917.0	16.9	5.00	0.021	IV	90.6(145.8)
MGI	34.0000	118.5000	11/19/1918	2018 0.0	0.0	5.00	0.020	IV	91.3(146.9)
DMG	34.0000	118.5000	08/04/1927	1224 0.0	0.0	5.00	0.020	IV	91.3(146.9)
MGI	34.0800	118.2600	07/16/1920	18 8 0.0	0.0	5.00	0.020	IV	91.8(147.7)
PAS	33.9440	118.6810	01/01/1979	231438.9	11.3	5.00	0.020	IV	92.2(148.4)
T-A	35.2500	120.6700	00/00/1830	0 0 0.0	0.0	5.70	0.029	V	92.2(148.4)
T-A	35.2500	120.6700	12/17/1852	0 0 0.0	0.0	5.70	0.029	V	92.2(148.4)
DMG	33.9500	118.6320	08/31/1930	04036.0	0.0	5.20	0.023	IV	92.4(148.7)
GSB	35.9170	120.4650	12/20/1994	102747.2	8.0	5.00	0.020	IV	92.7(149.2)
DMG	35.9300	120.4800	12/24/1934	1626 0.0	0.0	5.00	0.020	IV	93.9(151.0)
MGI	35.3000	120.7000	12/07/1906	640 0.0	0.0	5.90	0.032	V	93.9(151.2)
DMG	35.9500	120.4700	11/16/1956	323 9.0	0.0	5.00	0.020	IV	94.1(151.4)
PAS	33.9190	118.6270	01/19/1989	65328.8	11.9	5.00	0.020	IV	94.6(152.2)
PAS	36.1820	120.2680	02/14/1987	72650.8	6.0	5.10	0.021	IV	94.6(152.2)
MGI	34.1000	118.1000	07/11/1855	415 0.0	0.0	6.30	0.039	V	95.3(153.4)
DMG	35.9500	120.5000	06/28/1966	42613.4	0.0	5.50	0.026	V	95.5(153.7)
MGI	34.0000	118.3000	09/03/1905	540 0.0	0.0	5.30	0.023	IV	95.7(154.0)
BRK	36.2200	120.2600	09/09/1983	91614.0	0.0	5.40	0.024	V	96.1(154.6)
DMG	36.1700	120.3200	12/27/1926	919 0.0	0.0	5.00	0.020	IV	96.2(154.8)
DMG	35.9700	120.5000	06/28/1966	4 856.2	0.0	5.10	0.021	IV	96.2(154.8)
GSP	36.0750	117.6500	11/27/1996	201724.1	1.0	5.30	0.023	IV	96.4(155.2)
GSP	36.0670	117.6380	03/06/1998	054740.3	1.0	5.20	0.022	IV	96.7(155.5)
DMG	34.2000	117.9000	08/28/1889	215 0.0	0.0	5.50	0.025	V	96.8(155.8)
MGI	35.1700	120.7500	12/01/1916	2253 0.0	0.0	5.70	0.028	V	96.9(156.0)
PAS	34.0730	118.0980	10/04/1987	105938.2	8.2	5.30	0.023	IV	97.0(156.0)
T-A	34.0000	118.2500	01/10/1856	0 0 0.0	0.0	5.00	0.020	IV	97.0(156.0)
T-A	34.0000	118.2500	09/23/1827	0 0 0.0	0.0	5.00	0.020	IV	97.0(156.0)
T-A	34.0000	118.2500	03/26/1860	0 0 0.0	0.0	5.00	0.020	IV	97.0(156.0)
DMG	35.9500	120.5300	06/29/1966	195325.9	0.0	5.00	0.020	IV	97.0(156.0)
DMG	34.9000	120.7000	11/04/1927	135053.0	0.0	7.50	0.073	VII	97.1(156.3)
BRK	36.2200	120.2900	05/02/1983	234239.0	0.0	6.70	0.048	VI	97.3(156.5)
BRK	36.2200	120.2900	05/02/1983	2346 6.0	0.0	5.60	0.027	V	97.3(156.5)
DMG	36.0000	120.5000	02/02/1881	011 0.0	0.0	5.60	0.027	V	97.3(156.6)
DMG	36.0000	120.5000	03/03/1901	745 0.0	0.0	5.50	0.025	V	97.3(156.6)
GSP	36.0760	117.6180	03/07/1998	003646.8	1.0	5.00	0.019	IV	97.9(157.6)
BRK	36.2400	120.2900	05/09/1983	24912.0	0.0	5.20	0.021	IV	98.2(158.1)
PAS	34.0610	118.0790	10/01/1987	144220.0	9.5	5.90	0.031	V	98.2(158.1)
DMG	36.4000	118.0000	07/05/1871	21 6 0.0	0.0	5.20	0.021	IV	98.4(158.4)
DMG	34.3700	117.6500	12/08/1812	15 0 0.0	0.0	7.00	0.055	VI	99.1(159.5)
MGI	36.6000	118.4000	09/04/1868	0 0 0.0	0.0	5.00	0.019	IV	99.9(160.8)

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-END OF SEARCH- 149 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2010

LENGTH OF SEARCH TIME: 211 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 7.8 MILES (12.6 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.9

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.308 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:

a-value= 1.604  
b-value= 0.399  
beta-value= 0.919

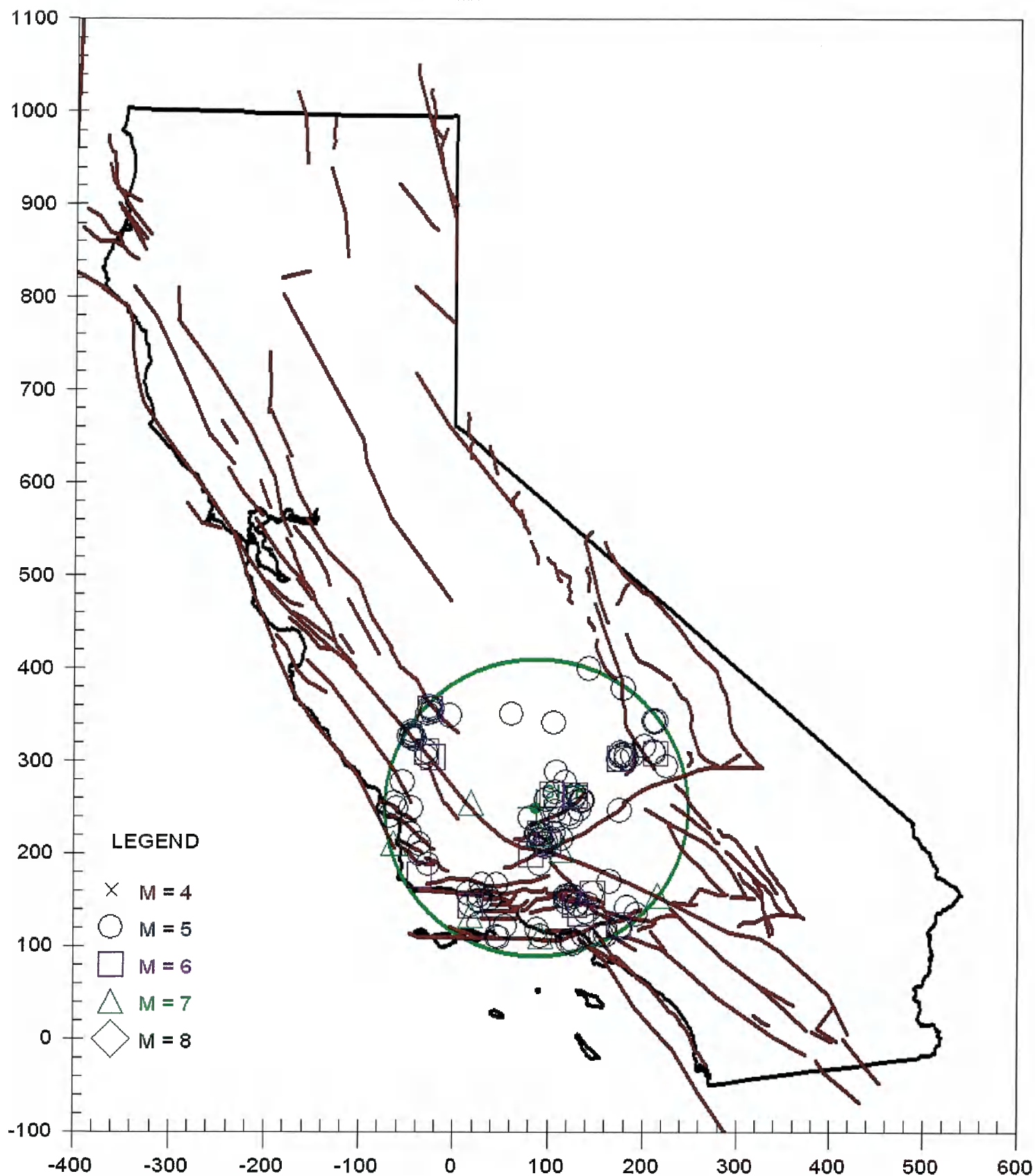
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TABLE OF MAGNITUDES AND EXCEEDANCES:  
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Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	149	0.70952
4.5	149	0.70952
5.0	149	0.70952
5.5	58	0.27619
6.0	24	0.11429
6.5	10	0.04762
7.0	7	0.03333
7.5	3	0.01429



# EARTHQUAKE EPICENTER MAP

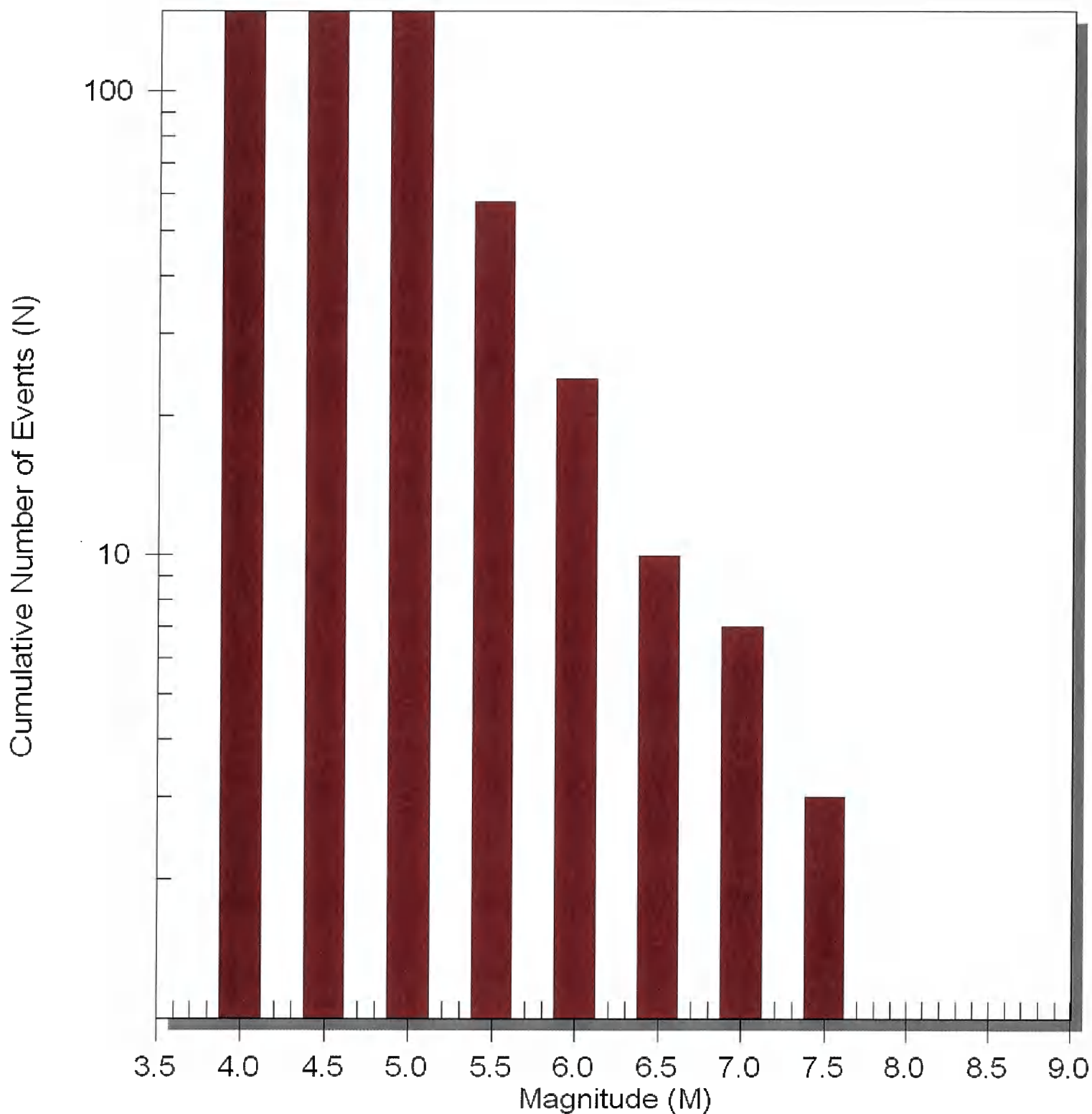
16608 SW HS





# Number of Earthquakes (N) Above Magnitude (M)

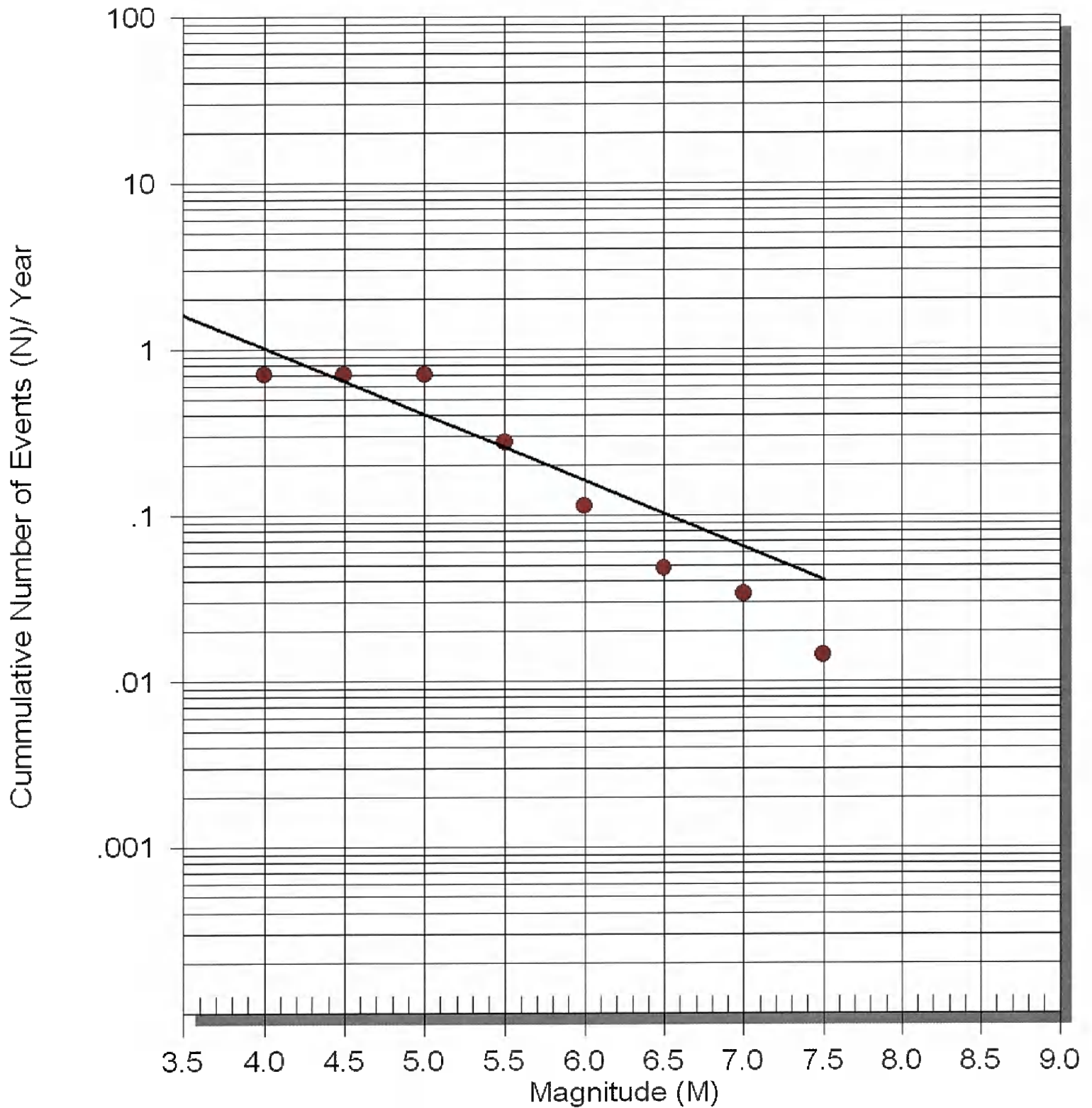
16608 SW HS





# EARTHQUAKE RECURRENCE CURVE

16608 SW HS





**USGS Design Maps Summary Report**

**User-Specified Input**

**Report Title** 16608 KHSD SW  
Wed April 11, 2018 18:48:18 UTC

**Building Code Reference Document** ASCE 7-10 Standard  
(which utilizes USGS hazard data available in 2008)

**Site Coordinates** 35.24707°N, 119.03463°W

**Site Soil Classification** Site Class D – “Stiff Soil”

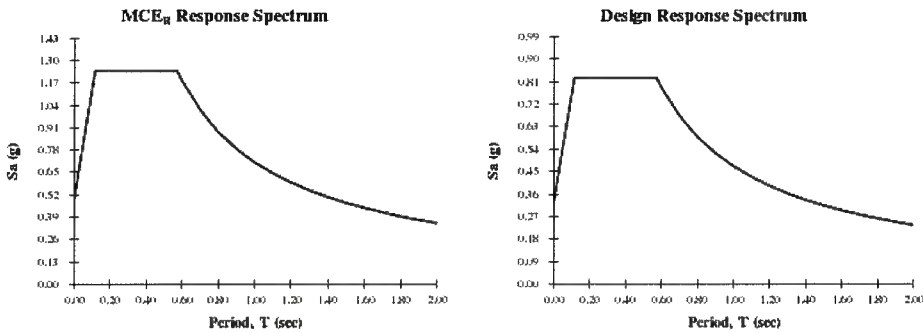
**Risk Category** I/II/III



**USGS-Provided Output**

$S_s = 1.228\text{ g}$        $S_{MS} = 1.239\text{ g}$        $S_{DS} = 0.826\text{ g}$   
 $S_1 = 0.458\text{ g}$        $S_{M1} = 0.706\text{ g}$        $S_{D1} = 0.471\text{ g}$

For information on how the  $S_s$  and  $S_1$  values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.



For  $PGA_M$ ,  $T_L$ ,  $C_{RS}$ , and  $C_{R1}$  values, please [view the detailed report](#).

Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.





ASCE 7-10 Standard (35.24707°N, 119.03463°W)

Site Class D – “Stiff Soil”, Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain  $S_s$ ) and 1.3 (to obtain  $S_1$ ). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From [Figure 22-1](#) <sup>[1]</sup>  $S_s = 1.228\text{ g}$

From [Figure 22-2](#) <sup>[2]</sup>  $S_1 = 0.458\text{ g}$

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
Any profile with more than 10 ft of soil having the characteristics:			
<ul style="list-style-type: none"><li>• Plasticity index <math>PI &gt; 20</math>,</li><li>• Moisture content <math>w \geq 40\%</math>, and</li><li>• Undrained shear strength <math>\bar{s}_u &lt; 500\text{ psf}</math></li></ul>			
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft<sup>2</sup> = 0.0479 kN/m<sup>2</sup>



### Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake ( $MCE_R$ ) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient  $F_s$ 

Site Class	Mapped $MCE_R$ Spectral Response Acceleration Parameter at Short Period				
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of  $S_s$

For Site Class = D and  $S_s = 1.228$  g,  $F_s = 1.009$

Table 11.4-2: Site Coefficient  $F_v$ 

Site Class	Mapped $MCE_R$ Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of  $S_1$

For Site Class = D and  $S_1 = 0.458$  g,  $F_v = 1.542$



---

**Equation (11.4-1):**  $S_{MS} = F_a S_s = 1.009 \times 1.228 = 1.239 \text{ g}$

---

**Equation (11.4-2):**  $S_{M1} = F_v S_1 = 1.542 \times 0.458 = 0.706 \text{ g}$

---

#### Section 11.4.4 — Design Spectral Acceleration Parameters

**Equation (11.4-3):**  $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.239 = 0.826 \text{ g}$

---

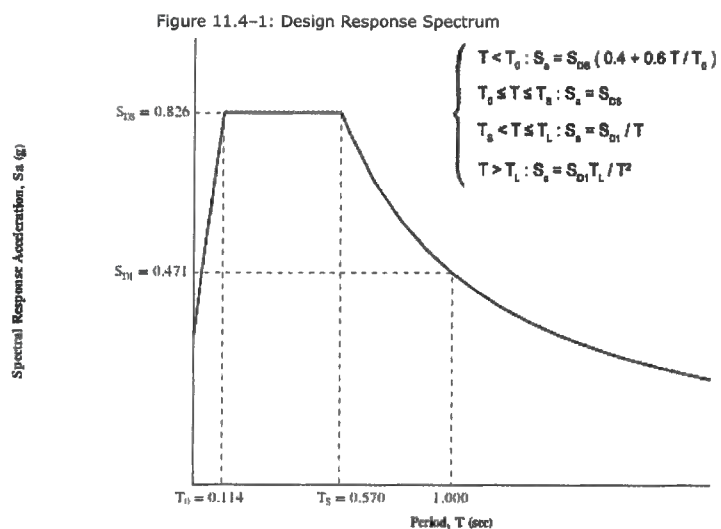
**Equation (11.4-4):**  $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.706 = 0.471 \text{ g}$

---

#### Section 11.4.5 — Design Response Spectrum

**From Figure 22-12**<sup>[3]</sup>  $T_L = 12 \text{ seconds}$

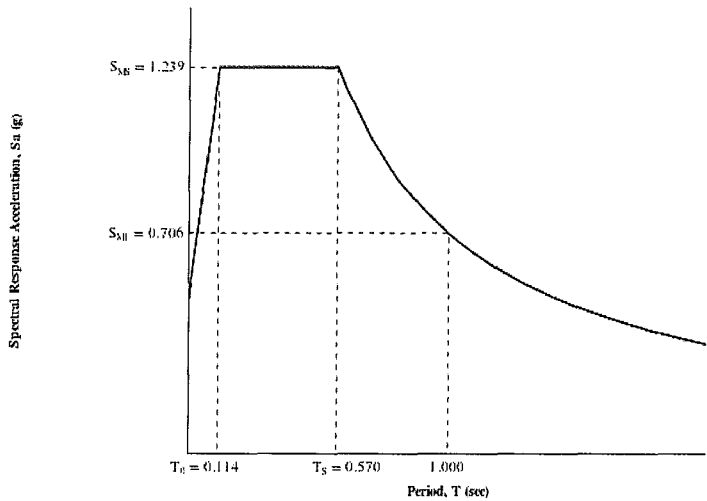
---





Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE<sub>R</sub>) Response Spectrum

The MCE<sub>R</sub> Response Spectrum is determined by multiplying the design response spectrum above by 1.5.





Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From [Figure 22-7](#) <sup>[4]</sup>

PGA = 0.458

Equation (11.8-1):

$$PGA_M = F_{PGA}PGA = 1.042 \times 0.458 = 0.477 \text{ g}$$

Table 11.8-1: Site Coefficient  $F_{PGA}$

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.458 g,  $F_{PGA} = 1.042$

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From [Figure 22-17](#) <sup>[5]</sup>

$C_{RS} = 1.033$

From [Figure 22-18](#) <sup>[6]</sup>

$C_{R1} = 1.042$



## Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF $S_{DS}$	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \leq S_{DS} < 0.33g$	B	B	C
$0.33g \leq S_{DS} < 0.50g$	C	C	D
$0.50g \leq S_{DS}$	D	D	D

For Risk Category = I and  $S_{DS} = 0.826g$ , Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF $S_{D1}$	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \leq S_{D1} < 0.133g$	B	B	C
$0.133g \leq S_{D1} < 0.20g$	C	C	D
$0.20g \leq S_{D1}$	D	D	D

For Risk Category = I and  $S_{D1} = 0.471g$ , Seismic Design Category = D

Note: When  $S_1$  is greater than or equal to  $0.75g$ , the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category = "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

## References

1. Figure 22-1: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-1.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf)
2. Figure 22-2: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-2.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf)
3. Figure 22-12: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-12.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf)
4. Figure 22-7: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-7.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf)
5. Figure 22-17: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-17.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf)
6. Figure 22-18: [https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010\\_ASCE-7\\_Figure\\_22-18.pdf](https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf)



# Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the [U.S. Seismic Design Maps web tools](#) (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

## ^ Input

Edition

Dynamic: Conterminous U.S. 2014 (v4.1.1)

Spectral Period

Peak ground acceleration

Latitude

Decimal degrees

35.2471

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

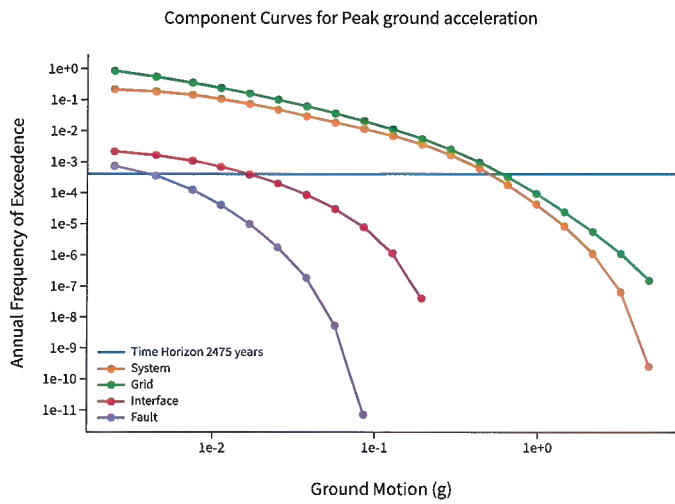
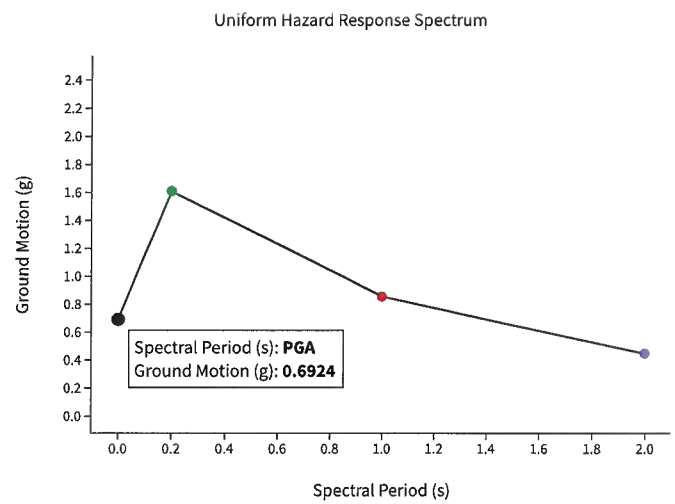
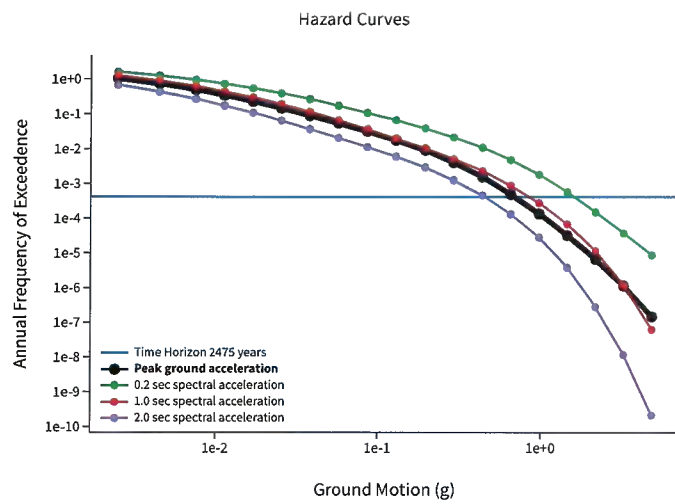
-119.0346

Site Class

259 m/s (Site class D)



^ Hazard Curve



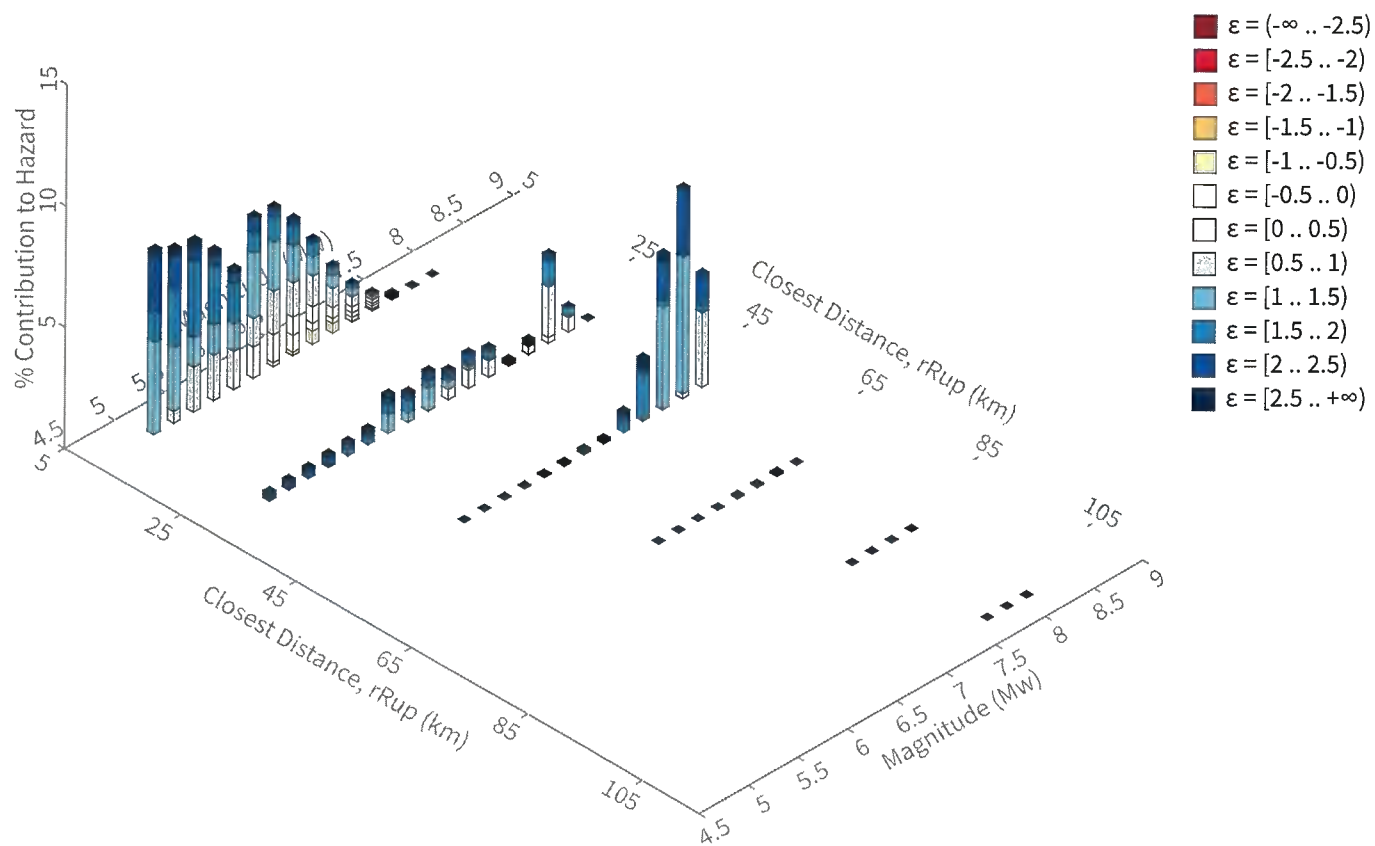
[View Raw Data](#)



^ Deaggregation

Component

Total





Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs  
Exceedance rate: 0.0004040404 yr<sup>-1</sup>  
PGA ground motion: 0.69237602 g

Recovered targets

Return period: 2853.5469 yrs  
Exceedance rate: 0.00035044106 yr<sup>-1</sup>

Totals

Binned: 100 %  
Residual: 0 %  
Trace: 0.14 %

Mean (for all sources)

r: 20.96 km  
m: 6.58  
ε<sub>0</sub>: 1.36 σ

Mode (largest r-m bin)

r: 45.26 km  
m: 8.1  
ε<sub>0</sub>: 1.47 σ  
Contribution: 8.61 %

Mode (largest ε<sub>0</sub> bin)

r: 45.26 km  
m: 8.09  
ε<sub>0</sub>: 1.12 σ  
Contribution: 5.64 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km  
m: min = 4.4, max = 9.4, Δ = 0.2  
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

- ε0: [-∞ .. -2.5)
- ε1: [-2.5 .. -2.0)
- ε2: [-2.0 .. -1.5)
- ε3: [-1.5 .. -1.0)
- ε4: [-1.0 .. -0.5)
- ε5: [-0.5 .. 0.0)
- ε6: [0.0 .. 0.5)
- ε7: [0.5 .. 1.0)
- ε8: [1.0 .. 1.5)
- ε9: [1.5 .. 2.0)
- ε10: [2.0 .. 2.5)
- ε11: [2.5 .. +∞]



## Deaggregation Contributors

Source Set	Source	Type	r	m	$\epsilon_0$	lon	lat	az	%
UC33brAvg_FM31 (opt)		Grid							33.13
	PointSourceFinite: -119.035, 35.306		7.73	5.81	1.10	119.035°W	35.306°N	0.00	5.83
	PointSourceFinite: -119.035, 35.306		7.73	5.81	1.10	119.035°W	35.306°N	0.00	5.83
	PointSourceFinite: -119.035, 35.315		8.36	5.84	1.15	119.035°W	35.315°N	0.00	2.78
	PointSourceFinite: -119.035, 35.315		8.36	5.84	1.15	119.035°W	35.315°N	0.00	2.78
	PointSourceFinite: -119.035, 35.324		9.01	5.88	1.20	119.035°W	35.324°N	0.00	1.71
	PointSourceFinite: -119.035, 35.324		9.01	5.88	1.20	119.035°W	35.324°N	0.00	1.71
	PointSourceFinite: -119.035, 35.369		12.64	6.00	1.42	119.035°W	35.369°N	0.00	1.61
	PointSourceFinite: -119.035, 35.369		12.64	6.00	1.42	119.035°W	35.369°N	0.00	1.60
UC33brAvg_FM32 (opt)		Grid							33.09
	PointSourceFinite: -119.035, 35.306		7.73	5.81	1.11	119.035°W	35.306°N	0.00	5.82
	PointSourceFinite: -119.035, 35.306		7.73	5.81	1.11	119.035°W	35.306°N	0.00	5.82
	PointSourceFinite: -119.035, 35.315		8.36	5.84	1.15	119.035°W	35.315°N	0.00	2.77
	PointSourceFinite: -119.035, 35.315		8.36	5.84	1.15	119.035°W	35.315°N	0.00	2.77
	PointSourceFinite: -119.035, 35.324		9.01	5.87	1.20	119.035°W	35.324°N	0.00	1.70
	PointSourceFinite: -119.035, 35.324		9.01	5.87	1.20	119.035°W	35.324°N	0.00	1.70
	PointSourceFinite: -119.035, 35.369		12.64	6.00	1.42	119.035°W	35.369°N	0.00	1.60
	PointSourceFinite: -119.035, 35.369		12.64	6.00	1.42	119.035°W	35.369°N	0.00	1.60
UC33brAvg_FM31		System							16.94
	San Andreas (Big Bend) [3]		45.14	8.05	1.51	119.147°W	34.852°N	193.18	9.77
	Pleito [2]		28.09	7.86	1.07	119.058°W	34.996°N	184.44	2.48
	White Wolf [1]		21.53	6.89	1.32	118.895°W	35.091°N	143.90	1.77
UC33brAvg_FM32		System							16.83
	San Andreas (Big Bend) [3]		45.14	8.05	1.51	119.147°W	34.852°N	193.18	9.74
	Pleito [2]		28.09	7.87	1.07	119.058°W	34.996°N	184.44	2.41
	White Wolf [1]		21.53	6.87	1.33	118.895°W	35.091°N	143.90	1.79



**Attachment B**

**Boring Logs, Lake Isabella Flood Inundation Map, Flood Insurance Rate Map, LiquefyPro Plots and Calculation Sheets for Liquefaction and Settlement (6), Pipeline Certification Form and Lab Results Table 3.**





# LOG OF TEST BORING BORING B-1

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; yellow brown; dry to damp; fine grained			
325 5	4/6 6/6 8/6		medium dense		96.8	4.4
320 10	4/6 7/6 7/6		brown; damp		109.5	7.4
315 15	4/6 6/6 10/6	SM	SILTY SAND; brown; damp; fine grained medium dense		105.4	7.3
310 20	6/6 9/6 10/6		brown; damp; cohesive.		92.8	23.3
305 25	4/6 13/6 18/6		CLAYEY SILT; brown; damp; hard; low plasticity		113.8	15.6
300 30	11/6 18/6 28/6	SP-SM	POORLY-GRADED SAND with low fine content; light yellowish brown; dry to damp; fine grained dense		105.8	3.1
295 35						

Figure Number 2





# LOG OF TEST BORING BORING B-1

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	12/6 22/6 35/6		very dense		106.3	3.0
285 45	12/6 23/6 30/6				104.4	3.2
280 50	11/6 20/6 24/6	SP	POORLY GRADED SAND; yellowish brown; non cohesive; dense		102.9	5.2
275 55	14/6 33/6 50/6		very dense		103.3	3.0
270 60			BOTTOM			
265 65						
260 70						

Figure Number 2





# LOG OF TEST BORING BORING B-2

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; yellow brown; dry; fine grained			
325 5	5/6 6/6 7/6		medium dense		89.2	4.7
320 10	5/6 3/6 3/6	SP- SM	POORLY-GRADED SAND with low fine content; light yellowish brown; dry to damp; fine grained loose		96.2	3.4
315 15	4/6 6/6 6/6		medium dense		99.2	7.7
310 20	4/6 5/6 5/6	SP	POORLY GRADED SAND; olive; low cohesion; loose		99.1	4.5
305 25	1/6 1/6 3/6	ML	CLAYEY SANDY SILT; olive brown; v moist; low plasticity		105.3	22.3
300 30	7/6 8/6 12/6	SP	soft POORLY-GRADED SAND; light yellowish brown; dry to damp; fine graded medium dense		110	4.5
295 35						

Figure Number 3





# LOG OF TEST BORING BORING B-2

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

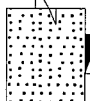



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	 9/6 16/6 17/6		dense		99.4	4.7
285 45	 10/6 17/6 20/6				110	3.7
280 50	 7/6 7/6 13/6 17/6				114	4.7
275 55	 9/6 16/6 20/6		BOTTOM		116.9	4.3
270 60						
265 65						
260 70						

Figure Number 3





# LOG OF TEST BORING BORING B-3

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; brown; dry; fine grained; cohesive.			
325 5	5/6 8/6 6/6		medium dense		107.1	4.8
320 10	3/6 4/6 4/6		loose		105.2	8.9
315 15	2/6 3/6 3/6	ML	SANDY CLAYEY SILT; olive; high plasticity medium stiff.		99.6	20.0
310 20	2/6 3/6 5/6		stiff		94.5	20.7
305 25	1/6 3/6 4/6		medium stiff		95.2	24.0
300 30	10/6 8/6 6/6	SM	SILTY SAND; light brown; damp; fine grained			
		CL	CLAY; olive brown; damp; stiff; low plasticity		104.8	9.5
295 35		SP-SM	POORLY GRADED SAND with low fine content; light yellowish			

Figure Number 4





# LOG OF TEST BORING BORING B-3

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/22/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	9/6 16/6 18/6		brown; dry; fine grained dense		103.1	3.2
285 45	11/6 17/6 20/6				112.6	2.3
280 50	6/6 8/6 25/6	ML	SANDY CLAYEY SILT; olive; damp; low plasticity; hard		105.5	20.2
		SM	SILTY SAND; light brown; damp; fine grained			
275 55	17/6 17/6 16/6	CL	SITLY CLAY; olive brown; damp; low plasticity		102.8	20.2
		SM	SILTY SAND; light brown; dry to damp; dense; fine grained			
270 60			BOTTOM			
265 65						
260 70						

Figure Number 4





# LOG OF TEST BORING BORING B-4

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  : N/A

CAVING -  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS



















ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; brown; dry; low plasticity			
325 5	 3/6  4/6  5/6		stiff		97	11.1
320 10	 4/6  5/6  7/6				107	16.8
315 15	 2/6  2/6  2/6		soft; traces of clay		102	16.4
310 20	 3/6  5/6  7/6		stiff		108.4	15.8
305 25	 2/6  5/6  6/6				106.1	20.8
300 30	 4/6  6/6  19/6	SC	CLAYEY SILTY SAND; light yellowish brown; dry; medium dense; fine grained		111.8	15.8
295 35						

Figure Number 5





# LOG OF TEST BORING BORING B-4

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

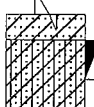
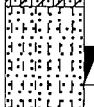
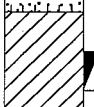

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	 6/6 4/6 4/6	SM	SILTY SAND; olive brown; damp; loose; cohesive.		110	13.3
285 45	 11/6 15/6 16/6	SP- SM	POORLY GRADED SAND with low fine content; light yellowish brown; dry to damp; low cohesion. dense		106.2	3.5
280 50	 8/6 9/6 12/6	CL	SILTY CLAY; olive brown; damp to wet; low plasticity very stiff		108.4	29.0
275 55	 4/6 11/6 14/6		BOTTOM		100.1	30.8
270 60						
265 65						
260 70						

Figure Number 5





# LOG OF TEST BORING BORING B-5

Page 1 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine			
325 5	2/6 4/6 4/6		loose		94.6	3.3
320 10	3/6 6/6 6/6		medium dense; fine to medium grained		91.3	2.1
315 15	5/6 9/6 11/6	SM	SILTY SAND; light brown; dry to damp; fine medium dense		96.4	7.0
310 20	3/6 4/6 11/6	CL ML SM	SILTY CLAY; brown; damp to v moist; low plasticity SANDY SILT; brown; damp; low plasticity		122.5	6.6
305 25	2/6 8/6 17/6	ML	SILTY SAND; yellow brown; damp; medium dense; fine grained CLAYEY SANDY SILT; olive brown; damp; low plasticity very stiff		114.6	14.9
300 30	9/6 13/6 28/6	SM	SILTY SAND; light red brown; dry to damp; dense; fine grained		121.0	2.7
295 35		CL	CLAY; olive brown; damp to			

Figure Number 6





# LOG OF TEST BORING BORING B-5

Page 2 of 2

PROJECT: KHSD Potential High School Site

BORING DATE: 02/23/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
290 40	5/6 11/6 18/6	SM	wet; low plasticity SILTY SAND; light brown; damp; medium dense; fine grained		101.0	14.7
285 45	14/6 12/6 22/6	CL ML	SILTY CLAY; olive brown; damp; low plasticity CLAYEY SANDY SILT; olive brown; hard; low plasticity		113.1	18.4
280 50	18/6 32/6 50/6	SM	SILTY SAND; light yellowish brown; dry to damp; fine grained very dense		100.4	3.7
275 55	13/6 23/6 34/6	CL SM	SILTY CLAY; olive brown; wet; low plasticity SITLY SAND; yellow brown; damp; very dense; fine grained BOTTOM		114.4	7.3
270 60						
265 65						
260 70						

Figure Number 6





# LOG OF TEST BORING BORING B-6

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; light yellowish brown; dry; fine grained			
	6/6 6/6 9/6		medium dense		99.4	2.9
325 5		ML	SANDY SILT; light yellowish brown; dry; very stiff; low plasticity		90.1	7.6
	7/6 9/6 13/6					
320 10		SM	SITY SAND; yellow brown; damp; medium dense; fine grained		111.4	5.2
	5/6 9/6 12/6					
315 15		CL	SILTY CLAY; brown; damp; low plasticity		115.9	14.1
	3/6 7/6 11/6	ML	very stiff			
			SANDY SILT; brown; damp; low plasticity; trace clay;			
310 20			hard		110.8	8.7
	6/6 11/6 20/6					
305 25		CL	CLAY; olive brown; damp; low plasticity		97.9	19.0
	3/6 8/6 11/6		very stiff			
300 30		SM	SILTY SAND; light yellowish brown; dry; fine		98.9	9.6
	9/6 18/6 25/6		dense			
			BOTTOM			
295 35						

Figure Number 7





# LOG OF TEST BORING BORING B-7

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

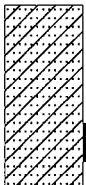
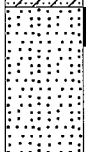

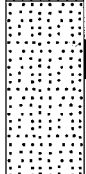

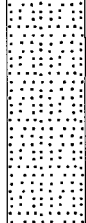

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SC	CLAYEY SILTY SAND; light yellowish brown; dry; low plasticity.			
	6/6 8/6 13/6		medium dense		100.6	3.1
325 5		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained		98.1	1.7
	8/6 11/6 12/6					
320 10		ML	SANDY SILT; brown; damp; low plasticity; traces clay stiff		111.3	13.7
	4/6 7/6 8/6					
315 15		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained; trace silt medium dense		109.4	2.9
	5/6 11/6 14/6					
310 20		ML	CLAYEY SILT; olive brown; damp; stiff low plasticity; traces sand		106.3	18.9
	4/6 6/6 9/6					
305 25		SP	POORLY-GRADED SAND; gray; damp; fine; trace clay dense		120.3	8.1
	10/6 17/6 22/6					
300 30			fine grained		95.8	6.3
	14/6 17/6 17/6		BOTTOM			
295 35						

Figure Number 8





# LOG OF TEST BORING

## BORING B-8

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	CLAYEY SILT; light yellowish brown; dry to damp; low plasticity			
	8/6 10/6 16/6		very stiff		102.9	7.6
325 5	5/6 5/6 8/6		brown; stiff		92.8	13.5
320 10	3/6 7/6 14/6	SP	POORLY-GRADED SAND; light brown; damp; medium dense; fine grained		116.8	4.4
315 15	3/6 5/6 13/6	CL	SILTY CLAY; brown; damp; low plasticity		110.9	15.5
			very stiff			
310 20	5/6 10/6 15/6	ML	SANDY SILT; light brown; dry to damp; fine grained		105.3	14.8
			very stiff			
			BOTTOM			
305 25						
300 30						
295 35						

Figure Number 9





# LOG OF TEST BORING BORING B-9

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/26/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	CLAYEY SILT; yellow brown; dry; low plasticity			
	8/6 10/6 12/6		very stiff		96.8	5.7
325 5						
	6/6 9/6 12/6				95.2	4.1
320 10						
	4/6 5/6 8/6		brown; damp; stiff		108.6	14.2
		CL	SILTY CLAY; olive brown; damp; low plasticity			
315 15		ML	CLAYEY SILT; yellow brown; damp; low plasticity stiff		99.6	23.5
	3/6 4/6 6/6					
310 20						
	5/6 9/6		very stiff; trace sand		114.4	8.4
			BOTTOM			
305 25						
300 30						
295 35						

Figure Number 10





# LOG OF TEST BORING

## BORING B-10

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/27/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; dark brown; damp; low plasticity			
	7/6 15/6 17/6		yellow brown; hard		104.4	6.4
325 5						
	10/6 14/6 18/6		SILTY SAND; light yellowish brown; dry; fine grained; traces clay; dense		120.1	4.6
320 10		CL	SILTY CLAY; brown; damp; low plasticity			
	5/6 10/6 14/6	SP	POORLY-GRADED SAND; yellow brown; damp; fine grained medium dense		122.3	3.0
315 15		ML	SANDY SILT; yellow brown; damp; low plasticity very stiff		103.9	13.2
	4/6 10/6 9/6		BOTTOM			
310 20						
305 25						
300 30						
295 35						

Figure Number 11





# LOG OF TEST BORING

## BORING B-11

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SM	SILTY SAND; light yellowish brown; dry to damp; fine grained			
	7/6 7/6 7/6		medium dense		104.2	5.5
325 5	4/6 4/6 6/6		damp; brown; loose		106.6	7.8
320 10	5/6 6/6 9/6	SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained		95.5	2.3
			medium dense			
315 15	7/6 12/6 15/6		BOTTOM		103.6	5.1
310 20						
305 25						
300 30						
295 35						

Figure Number 12





# LOG OF TEST BORING

## BORING B-12

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; light yellowish brown; dry; low plasticity			
	11/6 14/6 16/6		hard			
325 5						
	5/6 7/6 9/6		brown; dry; low plasticity; stiff		96.7	10.7
320 10		CL	SILTY CLAY; brown; damp; low plasticity			
	3/6 5/6 9/6		stiff		100.2	19.8
315 15						
	6/6 9/6 12/6		CLAYEY SILTY SAND; yellowish brown; poorly graded; low plasticity; very stiff		109.2	10.6
310 20			BOTTOM			
305 25						
300 30						
295 35						

Figure Number 13





# LOG OF TEST BORING BORING B-13

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SP	POORLY-GRADED SAND; yellow brown; dry to damp; fine grained			
	2/6 3/6 4/6		loose		97.7	1.9
325 5						
	2/6 3/6 6/6				98.6	2.1
320 10						
	3/6 6/6 8/6		medium dense		100.9	1.9
315 15						
	4/6 9/6 10/6	SM	SILTY SAND; light brown; damp; fine grained		92.6	9.5
310 20		ML				
	3/6 5/6 7/6	CL	SILTY CLAY; olive brown; damp; low plasticity stiff		91.9	27.6
			BOTTOM			
305 25						
300 30						
295 35						

Figure Number 14





# LOG OF TEST BORING BORING B-14

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; light yellowish brown; dry; low plasticity			
	8/6 10/6 14/6		very stiff		97.9	6.3
325 5						
	7/6 11/6 14/6	SM	SILTY SAND; dark olive brown; poorly-graded; cohesive.		114.8	4.0
320 10						
	7/6 11/6 14/6	SP	POORLY-GRADED SAND; brown; damp; fine grained		109.5	3.7
			light yellowish brown; medium dense			
315 15						
	2/6 3/6 5/6	CL	SILTY CLAY; olive brown; damp; low plasticity		109.3	17.1
			stiff			
			BOTTOM			
310 20						
305 25						
300 30						
295 35						

Figure Number 15





# LOG OF TEST BORING

## BORING B-15

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; light brown; dry; cohesive			
	4/6 7/6 11/6		very stiff		89.3	5.0
325 5						
	7/6 10/6 14/6				105.7	4.3
320 10		SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained medium dense		103.4	2.1
	6/6 9/6 12/6					
315 15						
	5/6 11/6 15/6				97.4	1.6
310 20		CL	SILTY CLAY; olive brown; damp; low plasticity CLAYEY SILTY SAND; brown; poorly graded; low to medium plasticity; stiff BOTTOM		109.1	18.7
	3/6 5/6 9/6					
305 25						
300 30						
295 35						

Figure Number 16





# LOG OF TEST BORING BORING B-16

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/28/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	SANDY SILT; yellow brown; dry to damp; low plasticity			
	6/6 9/6 9/6		very stiff		88.2	5.8
325 5	3/6 4/6 5/6	SP	POORLY-GRADED SAND; light yellowish brown; dry; fine grained loose		95.9	2.3
320 10	4/6 8/6 10/6		medium dense		101.9	2.0
315 15	7/6 9/6 14/6				101.8	3.4
310 20	1/6 2/6 7/6	ML	SILTY CLAY; brown; damp to dry; low plasticity stiff BOTTOM		96.7	24.7
305 25						
300 30						
295 35						

Figure Number 17





# LOG OF TEST BORING BORING B-17

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/27/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		ML	CLAYEY SILT; dark brown; damp; low plasticity			
	8/6 15/6 19/6		light brown; dry to damp; hard		110.9	7.5
325 5	8/6 13/6 14/6		very stiff		103.2	10.1
320 10	7/6 11/6 14/6		light yellowish brown		119.7	10.9
315 15	10/6 14/6 16/6	SM	SILTY SAND; yellow brown; damp; fine grained dense BOTTOM		121.2	6.5
310 20						
305 25						
300 30						
295 35						

Figure Number 18





# LOG OF TEST BORING BORING B-18

Page 1 of 1

PROJECT: KHSD Potential High School Site

BORING DATE: 02/27/2018

BORING LOCATION: See Boring Location Map, Figure 1

DRILL METHOD: 4-1/4 Inch I.D. Hollow-Stem Auger

DESCRIPTION: Geotech & Sewage Feasibility and Geohazard for High School Site

DEPTH TO WATER -  $\nabla$  : N/A

CAVING -  $\blacktriangleright$  : N/A

FILE NO: 16608

ELEV.: 330'

START: 02/22/2018

FINISH: 02/28/2018

LOGGER: M. WATTS

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
330 0		SC	CLAYEY SILTY SAND; dark brown; damp to wet; cohesive.			
	11/6 17/6 22/6		light brown; dry to damp; dense.		118.8	3.1
325 5	11/6 17/6 20/6				119.8	5.0
320 10	3/6 7/6 12/6	SM	SILTY SAND; yellowish brown; medium dense; fine grained; traces clay		118.9	10.7
315 15	6/6 8/6 7/6	CL	SILTY CLAY; brown; damp; low plasticity; stiff		98.0	8.6
310 20	4/6 7/6 12/6	ML	SANDY SILT; brown; damp; low plasticity very stiff BOTTOM		110.4	15.4
305 25						
300 30						
295 35						

Figure Number 19



# KEY TO SYMBOLS

## Symbol Description

### Strata symbols



Poorly graded sand



Silty sand



Poorly graded sand  
with silt



Silt



Low plasticity  
clay



Clayey sand

### Misc. Symbols



Boring continues

### Soil Samplers



California sampler



Standard penetration test

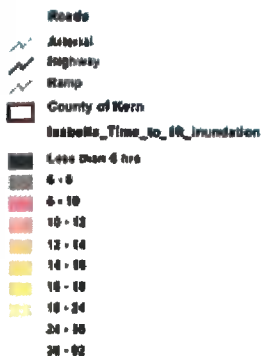
### Notes:

1. Eighteen (18) exploratory borings were drilled between 2/22/2018 and 2/28/2018, using an 8-inch outside diameter hollow-stem auger.
2. No free groundwater was encountered to the maximum depth drilled of 51.5'.
3. Boring locations are shown on the Boring Location Map, Figure 1.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs.

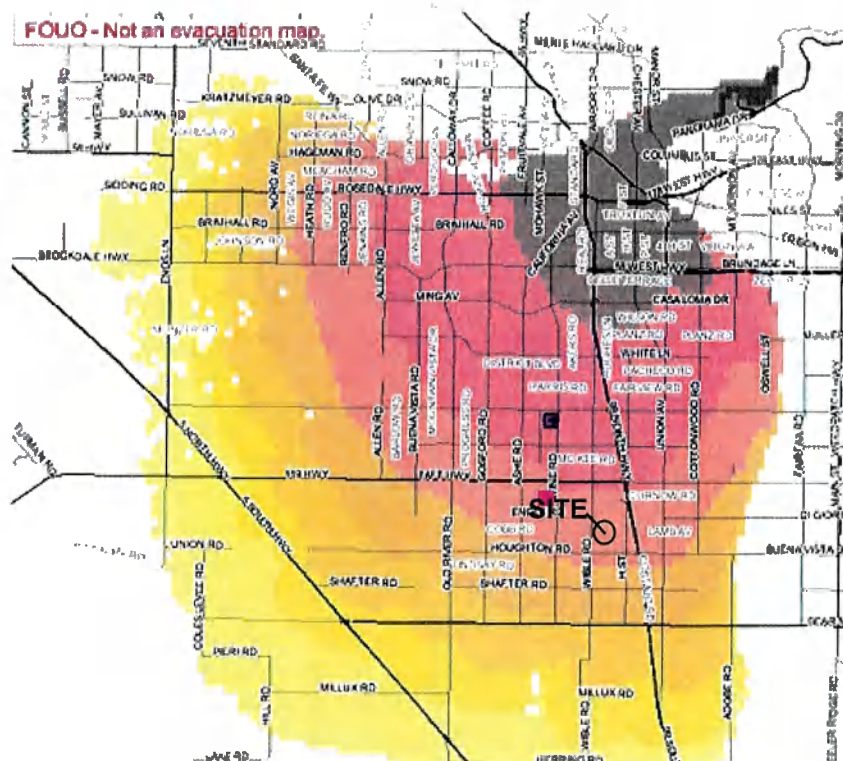


Map Legend

Settings

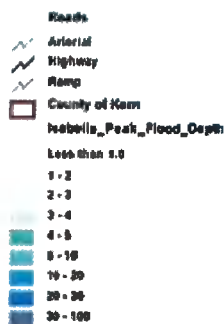


FOUO - Not an evacuation map.

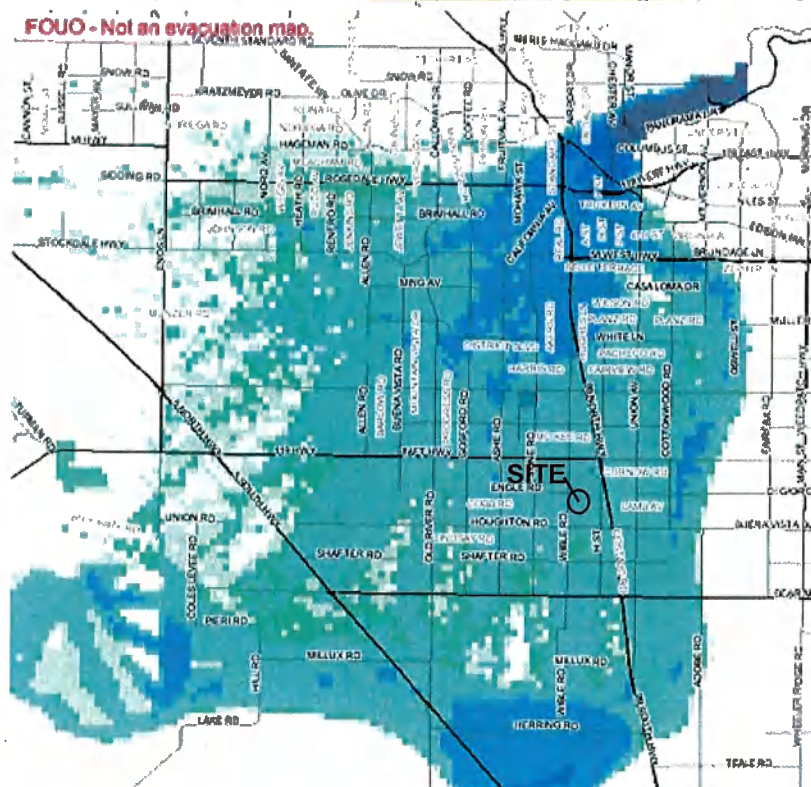


Map Legend

Settings



FOUO - Not an evacuation map.



Source: Kern County Map Info System. US Army Corps of Engineers Preliminary Flood Results

**SOILS ENGINEERING, INC.**  
 4400 Yeager Way  
 Bakersfield, CA 93313  
 (661) 831 - 5100

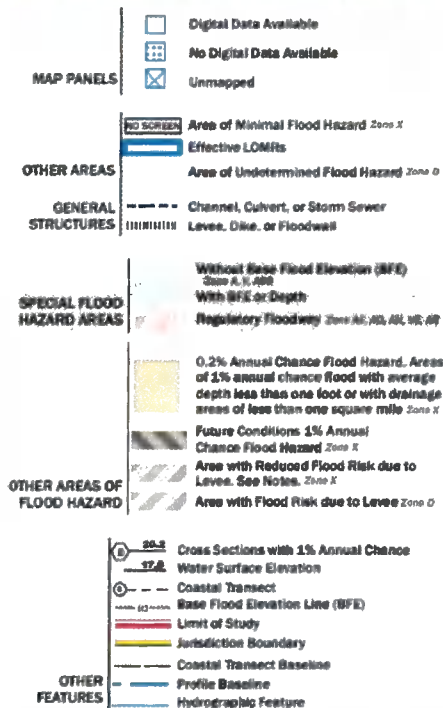
**Proposed High School Site**  
 SE of Wible Rd. & Engle Rd.  
 Bakersfield, CA.

DATE: 4/10/18  
 PROJECT: 16608

**Lake Isabella Dam Inundation Maps**



You can choose a new flood map or move the location pin by selecting a different location on the locator map below or by entering a new location in the search field above. NOTE: Please be sure to enable popups for this site.



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DATE: 4/10/18  
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**Proposed High School Site**  
 SE of Wible Rd. & Engle Rd.  
 Bakersfield, CA.

**Flood Rate Insurance Map**

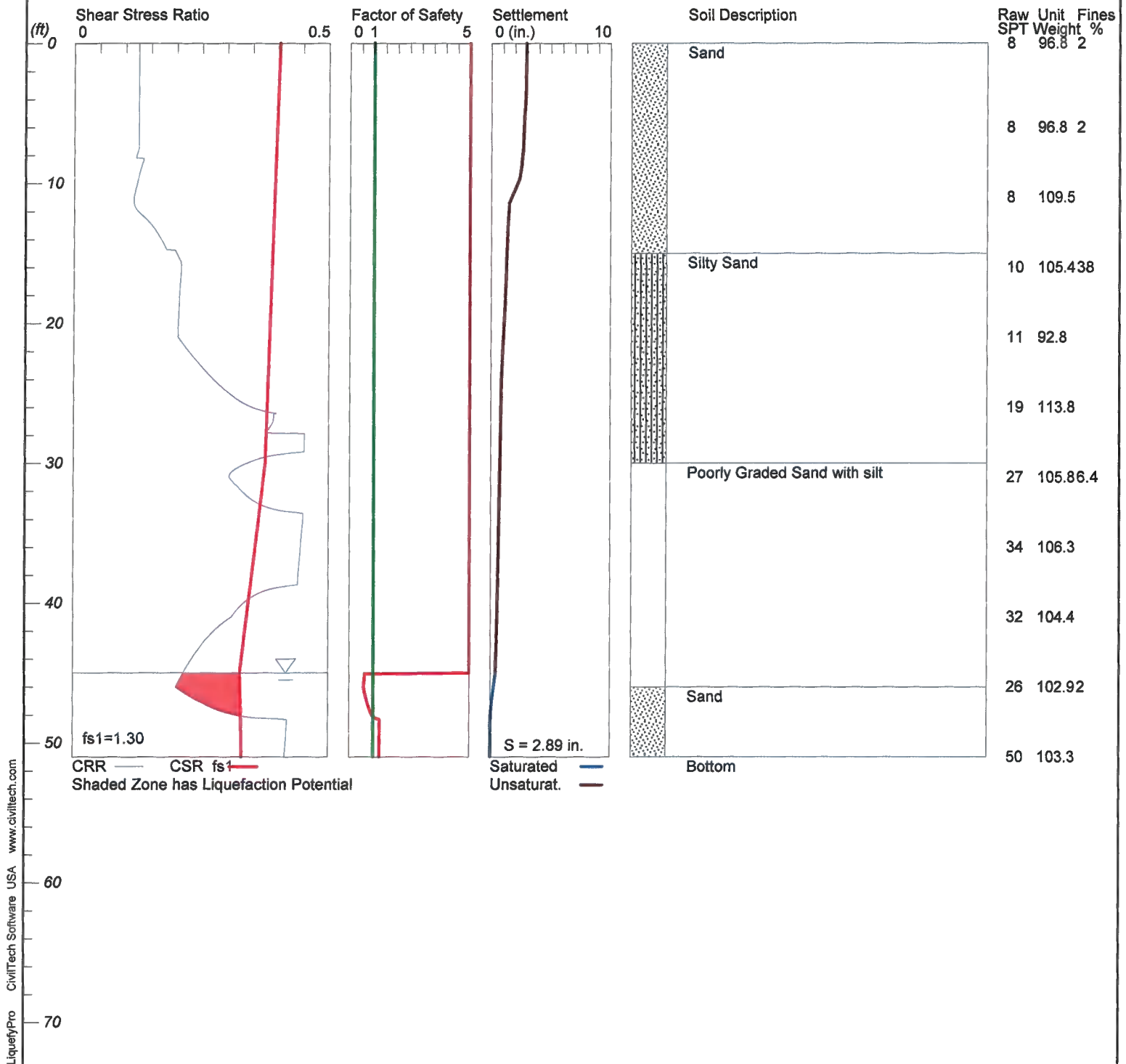


# LIQUEFACTION ANALYSIS

KHSD - SW HS

Hole No.=B-1 Water Depth=45 ft

Magnitude=7.8  
Acceleration=0.477g





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\*\*\*\*\*  
LIQUEFACTION ANALYSIS SUMMARY  
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Input File Name: O:\b. PROJECT FILES (ACTIVE)\16600-16699\16608  
KHSD, SW School Site Geotech & GeoHazard\OFFICE REPORTS\Geohaz\16608  
LiquefyPro files\B1 16608 LiquefyPro.liq

Title: KHSD - SW HS  
Subtitle: 16608

Surface Elev.=  
Hole No.=B-1  
Depth of Hole= 51.00 ft  
Water Table during Earthquake= 45.00 ft  
Water Table during In-Situ Testing= 100.00 ft  
Max. Acceleration= 0.48 g  
Earthquake Magnitude= 7.80

Input Data:

Surface Elev.=  
Hole No.=B-1  
Depth of Hole=51.00 ft  
Water Table during Earthquake= 45.00 ft  
Water Table during In-Situ Testing= 100.00 ft  
Max. Acceleration=0.48 g  
Earthquake Magnitude=7.80  
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction\*
5. Settlement Calculation in: All zones\*
6. Hammer Energy Ratio,
7. Borehole Diameter,
8. Sampling Method,
9. User request factor of safety (apply to CSR) , User= 1.3  
Plot one CSR curve (fsl=User)
10. Use Curve Smoothing: Yes\*

\* Recommended Options

Ce = 1.25

Cb= 1

Cs= 1



In-Situ Test Data:

Depth SPT gamma Fines  
ft pcf %

0.00	8.00	96.80	2.00
6.00	8.00	96.80	2.00
11.00	8.00	109.50	2.00
16.00	10.00	105.40	38.00
21.00	11.00	92.80	38.00
26.00	19.00	113.80	38.00
31.00	27.00	105.80	6.40
36.00	34.00	106.30	6.40
41.00	32.00	104.40	6.40
46.00	26.00	102.90	2.00
51.00	50.00	103.30	2.00

Output Results:

Settlement of Saturated Sands=0.42 in.

Settlement of Unsaturated Sands=2.47 in.

Total Settlement of Saturated and Unsaturated Sands=2.89 in.

Differential Settlement=1.446 to 1.909 in.

Depth CRRm CSRfs F.S. S\_sat.S\_dryS\_all  
ft in. in. in.

0.00	0.12	0.40	5.00	0.42	2.47	2.89
0.05	0.12	0.40	5.00	0.42	2.47	2.89
0.10	0.12	0.40	5.00	0.42	2.47	2.89
0.15	0.12	0.40	5.00	0.42	2.47	2.89
0.20	0.12	0.40	5.00	0.42	2.47	2.89
0.25	0.12	0.40	5.00	0.42	2.47	2.89
0.30	0.12	0.40	5.00	0.42	2.47	2.89
0.35	0.12	0.40	5.00	0.42	2.47	2.89
0.40	0.12	0.40	5.00	0.42	2.47	2.89
0.45	0.12	0.40	5.00	0.42	2.47	2.89
0.50	0.12	0.40	5.00	0.42	2.47	2.89
0.55	0.12	0.40	5.00	0.42	2.47	2.89
0.60	0.12	0.40	5.00	0.42	2.47	2.89
0.65	0.12	0.40	5.00	0.42	2.47	2.89
0.70	0.12	0.40	5.00	0.42	2.47	2.89
0.75	0.12	0.40	5.00	0.42	2.47	2.89
0.80	0.12	0.40	5.00	0.42	2.47	2.89
0.85	0.12	0.40	5.00	0.42	2.47	2.89
0.90	0.12	0.40	5.00	0.42	2.46	2.89
0.95	0.12	0.40	5.00	0.42	2.46	2.89
1.00	0.12	0.40	5.00	0.42	2.46	2.89
1.05	0.12	0.40	5.00	0.42	2.46	2.89
1.10	0.12	0.40	5.00	0.42	2.46	2.89
1.15	0.12	0.40	5.00	0.42	2.46	2.89
1.20	0.12	0.40	5.00	0.42	2.46	2.89
1.25	0.12	0.40	5.00	0.42	2.46	2.89
1.30	0.12	0.40	5.00	0.42	2.46	2.88
1.35	0.12	0.40	5.00	0.42	2.46	2.88
1.40	0.12	0.40	5.00	0.42	2.46	2.88
1.45	0.12	0.40	5.00	0.42	2.46	2.88
1.50	0.12	0.40	5.00	0.42	2.46	2.88
1.55	0.12	0.40	5.00	0.42	2.46	2.88
1.60	0.12	0.40	5.00	0.42	2.46	2.88



1.65	0.12	0.40	5.00	0.42	2.46	2.88
1.70	0.12	0.40	5.00	0.42	2.46	2.88
1.75	0.12	0.40	5.00	0.42	2.46	2.88
1.80	0.12	0.40	5.00	0.42	2.46	2.88
1.85	0.12	0.40	5.00	0.42	2.45	2.88
1.90	0.12	0.40	5.00	0.42	2.45	2.88
1.95	0.12	0.40	5.00	0.42	2.45	2.88
2.00	0.12	0.40	5.00	0.42	2.45	2.88
2.05	0.12	0.40	5.00	0.42	2.45	2.88
2.10	0.12	0.40	5.00	0.42	2.45	2.88
2.15	0.12	0.40	5.00	0.42	2.45	2.87
2.20	0.12	0.40	5.00	0.42	2.45	2.87
2.25	0.12	0.40	5.00	0.42	2.45	2.87
2.30	0.12	0.40	5.00	0.42	2.45	2.87
2.35	0.12	0.40	5.00	0.42	2.45	2.87
2.40	0.12	0.40	5.00	0.42	2.45	2.87
2.45	0.12	0.40	5.00	0.42	2.45	2.87
2.50	0.12	0.40	5.00	0.42	2.45	2.87
2.55	0.12	0.40	5.00	0.42	2.44	2.87
2.60	0.12	0.40	5.00	0.42	2.44	2.87
2.65	0.12	0.40	5.00	0.42	2.44	2.87
2.70	0.12	0.40	5.00	0.42	2.44	2.87
2.75	0.12	0.40	5.00	0.42	2.44	2.87
2.80	0.12	0.40	5.00	0.42	2.44	2.86
2.85	0.12	0.40	5.00	0.42	2.44	2.86
2.90	0.12	0.40	5.00	0.42	2.44	2.86
2.95	0.12	0.40	5.00	0.42	2.44	2.86
3.00	0.12	0.40	5.00	0.42	2.44	2.86
3.05	0.12	0.40	5.00	0.42	2.44	2.86
3.10	0.12	0.40	5.00	0.42	2.44	2.86
3.15	0.12	0.40	5.00	0.42	2.43	2.86
3.20	0.12	0.40	5.00	0.42	2.43	2.86
3.25	0.12	0.40	5.00	0.42	2.43	2.86
3.30	0.12	0.40	5.00	0.42	2.43	2.85
3.35	0.12	0.40	5.00	0.42	2.43	2.85
3.40	0.12	0.40	5.00	0.42	2.43	2.85
3.45	0.12	0.40	5.00	0.42	2.43	2.85
3.50	0.12	0.40	5.00	0.42	2.43	2.85
3.55	0.12	0.40	5.00	0.42	2.43	2.85
3.60	0.12	0.40	5.00	0.42	2.42	2.85
3.65	0.12	0.40	5.00	0.42	2.42	2.85
3.70	0.12	0.40	5.00	0.42	2.42	2.85
3.75	0.12	0.40	5.00	0.42	2.42	2.84
3.80	0.12	0.40	5.00	0.42	2.42	2.84
3.85	0.12	0.40	5.00	0.42	2.42	2.84
3.90	0.12	0.40	5.00	0.42	2.42	2.84
3.95	0.12	0.40	5.00	0.42	2.41	2.84
4.00	0.12	0.40	5.00	0.42	2.41	2.83
4.05	0.12	0.40	5.00	0.42	2.41	2.83
4.10	0.12	0.40	5.00	0.42	2.41	2.83
4.15	0.12	0.40	5.00	0.42	2.40	2.83
4.20	0.12	0.40	5.00	0.42	2.40	2.83
4.25	0.12	0.40	5.00	0.42	2.40	2.82
4.30	0.12	0.40	5.00	0.42	2.40	2.82
4.35	0.12	0.40	5.00	0.42	2.39	2.82
4.40	0.12	0.40	5.00	0.42	2.39	2.81
4.45	0.12	0.40	5.00	0.42	2.39	2.81
4.50	0.12	0.40	5.00	0.42	2.38	2.81
4.55	0.12	0.40	5.00	0.42	2.38	2.80



4.60	0.12	0.40	5.00	0.42	2.37	2.80
4.65	0.12	0.40	5.00	0.42	2.37	2.79
4.70	0.12	0.40	5.00	0.42	2.36	2.79
4.75	0.12	0.40	5.00	0.42	2.36	2.78
4.80	0.12	0.40	5.00	0.42	2.35	2.78
4.85	0.12	0.40	5.00	0.42	2.35	2.77
4.90	0.12	0.40	5.00	0.42	2.34	2.76
4.95	0.12	0.40	5.00	0.42	2.33	2.75
5.00	0.12	0.40	5.00	0.42	2.32	2.75
5.05	0.12	0.40	5.00	0.42	2.31	2.74
5.10	0.12	0.40	5.00	0.42	2.31	2.74
5.15	0.12	0.40	5.00	0.42	2.31	2.73
5.20	0.12	0.40	5.00	0.42	2.31	2.73
5.25	0.12	0.40	5.00	0.42	2.31	2.73
5.30	0.12	0.40	5.00	0.42	2.31	2.73
5.35	0.12	0.40	5.00	0.42	2.31	2.73
5.40	0.12	0.40	5.00	0.42	2.30	2.73
5.45	0.12	0.40	5.00	0.42	2.30	2.73
5.50	0.12	0.40	5.00	0.42	2.30	2.73
5.55	0.12	0.40	5.00	0.42	2.30	2.72
5.60	0.12	0.40	5.00	0.42	2.30	2.72
5.65	0.12	0.40	5.00	0.42	2.30	2.72
5.70	0.12	0.40	5.00	0.42	2.30	2.72
5.75	0.12	0.40	5.00	0.42	2.29	2.72
5.80	0.12	0.40	5.00	0.42	2.29	2.72
5.85	0.12	0.40	5.00	0.42	2.29	2.72
5.90	0.12	0.40	5.00	0.42	2.29	2.71
5.95	0.12	0.40	5.00	0.42	2.29	2.71
6.00	0.12	0.40	5.00	0.42	2.29	2.71
6.05	0.12	0.40	5.00	0.42	2.29	2.71
6.10	0.12	0.40	5.00	0.42	2.28	2.71
6.15	0.12	0.40	5.00	0.42	2.28	2.71
6.20	0.12	0.40	5.00	0.42	2.28	2.70
6.25	0.12	0.40	5.00	0.42	2.28	2.70
6.30	0.12	0.40	5.00	0.42	2.28	2.70
6.35	0.12	0.40	5.00	0.42	2.27	2.70
6.40	0.12	0.40	5.00	0.42	2.27	2.70
6.45	0.12	0.40	5.00	0.42	2.27	2.69
6.50	0.12	0.40	5.00	0.42	2.27	2.69
6.55	0.12	0.40	5.00	0.42	2.27	2.69
6.60	0.12	0.40	5.00	0.42	2.26	2.69
6.65	0.12	0.40	5.00	0.42	2.26	2.69
6.70	0.12	0.40	5.00	0.42	2.26	2.68
6.75	0.12	0.40	5.00	0.42	2.26	2.68
6.80	0.12	0.40	5.00	0.42	2.26	2.68
6.85	0.12	0.40	5.00	0.42	2.25	2.68
6.90	0.12	0.40	5.00	0.42	2.25	2.67
6.95	0.12	0.40	5.00	0.42	2.25	2.67
7.00	0.12	0.40	5.00	0.42	2.25	2.67
7.05	0.12	0.40	5.00	0.42	2.24	2.67
7.10	0.12	0.40	5.00	0.42	2.24	2.66
7.15	0.12	0.40	5.00	0.42	2.24	2.66
7.20	0.12	0.40	5.00	0.42	2.23	2.66
7.25	0.12	0.40	5.00	0.42	2.23	2.65
7.30	0.12	0.40	5.00	0.42	2.23	2.65
7.35	0.12	0.40	5.00	0.42	2.22	2.65
7.40	0.12	0.40	5.00	0.42	2.22	2.65
7.45	0.12	0.40	5.00	0.42	2.22	2.64
7.50	0.12	0.40	5.00	0.42	2.21	2.64



7.55	0.12	0.40	5.00	0.42	2.21	2.64
7.60	0.12	0.40	5.00	0.42	2.21	2.63
7.65	0.12	0.40	5.00	0.42	2.20	2.63
7.70	0.12	0.40	5.00	0.42	2.20	2.62
7.75	0.12	0.40	5.00	0.42	2.20	2.62
7.80	0.12	0.40	5.00	0.42	2.19	2.62
7.85	0.12	0.40	5.00	0.42	2.19	2.61
7.90	0.12	0.40	5.00	0.42	2.18	2.61
7.95	0.12	0.40	5.00	0.42	2.18	2.60
8.00	0.12	0.40	5.00	0.42	2.17	2.60
8.05	0.12	0.40	5.00	0.42	2.17	2.59
8.10	0.12	0.40	5.00	0.42	2.16	2.58
8.15	0.12	0.40	5.00	0.42	2.15	2.58
8.20	0.12	0.40	5.00	0.42	2.15	2.57
8.25	0.13	0.40	5.00	0.42	2.14	2.57
8.30	0.13	0.40	5.00	0.42	2.14	2.56
8.35	0.13	0.40	5.00	0.42	2.13	2.56
8.40	0.13	0.40	5.00	0.42	2.13	2.55
8.45	0.13	0.40	5.00	0.42	2.13	2.55
8.50	0.13	0.40	5.00	0.42	2.12	2.54
8.55	0.13	0.40	5.00	0.42	2.12	2.54
8.60	0.13	0.39	5.00	0.42	2.11	2.53
8.65	0.13	0.39	5.00	0.42	2.11	2.53
8.70	0.13	0.39	5.00	0.42	2.10	2.52
8.75	0.13	0.39	5.00	0.42	2.09	2.52
8.80	0.13	0.39	5.00	0.42	2.09	2.51
8.85	0.13	0.39	5.00	0.42	2.08	2.51
8.90	0.13	0.39	5.00	0.42	2.07	2.50
8.95	0.13	0.39	5.00	0.42	2.07	2.49
9.00	0.13	0.39	5.00	0.42	2.06	2.48
9.05	0.13	0.39	5.00	0.42	2.05	2.48
9.10	0.13	0.39	5.00	0.42	2.04	2.47
9.15	0.13	0.39	5.00	0.42	2.04	2.46
9.20	0.13	0.39	5.00	0.42	2.03	2.45
9.25	0.13	0.39	5.00	0.42	2.02	2.44
9.30	0.13	0.39	5.00	0.42	2.01	2.43
9.35	0.13	0.39	5.00	0.42	2.00	2.42
9.40	0.13	0.39	5.00	0.42	1.98	2.41
9.45	0.13	0.39	5.00	0.42	1.97	2.40
9.50	0.13	0.39	5.00	0.42	1.96	2.38
9.55	0.12	0.39	5.00	0.42	1.95	2.37
9.60	0.12	0.39	5.00	0.42	1.93	2.35
9.65	0.12	0.39	5.00	0.42	1.92	2.34
9.70	0.12	0.39	5.00	0.42	1.90	2.32
9.75	0.12	0.39	5.00	0.42	1.88	2.31
9.80	0.12	0.39	5.00	0.42	1.87	2.29
9.85	0.12	0.39	5.00	0.42	1.85	2.27
9.90	0.12	0.39	5.00	0.42	1.83	2.25
9.95	0.12	0.39	5.00	0.42	1.80	2.23
10.00	0.12	0.39	5.00	0.42	1.78	2.20
10.05	0.12	0.39	5.00	0.42	1.76	2.18
10.10	0.12	0.39	5.00	0.42	1.73	2.16
10.15	0.12	0.39	5.00	0.42	1.71	2.13
10.20	0.12	0.39	5.00	0.42	1.68	2.11
10.25	0.12	0.39	5.00	0.42	1.66	2.08
10.30	0.12	0.39	5.00	0.42	1.63	2.06
10.35	0.12	0.39	5.00	0.42	1.61	2.03
10.40	0.12	0.39	5.00	0.42	1.58	2.01
10.45	0.12	0.39	5.00	0.42	1.56	1.98



10.50	0.12	0.39	5.00	0.42	1.53	1.96
10.55	0.12	0.39	5.00	0.42	1.51	1.93
10.60	0.12	0.39	5.00	0.42	1.48	1.91
10.65	0.12	0.39	5.00	0.42	1.46	1.88
10.70	0.12	0.39	5.00	0.42	1.43	1.86
10.75	0.12	0.39	5.00	0.42	1.41	1.83
10.80	0.12	0.39	5.00	0.42	1.38	1.81
10.85	0.12	0.39	5.00	0.42	1.36	1.78
10.90	0.12	0.39	5.00	0.42	1.33	1.75
10.95	0.12	0.39	5.00	0.42	1.30	1.73
11.00	0.12	0.39	5.00	0.42	1.28	1.70
11.05	0.12	0.39	5.00	0.42	1.25	1.68
11.10	0.12	0.39	5.00	0.42	1.23	1.65
11.15	0.12	0.39	5.00	0.42	1.20	1.62
11.20	0.12	0.39	5.00	0.42	1.18	1.60
11.25	0.12	0.39	5.00	0.42	1.15	1.57
11.30	0.12	0.39	5.00	0.42	1.12	1.55
11.35	0.12	0.39	5.00	0.42	1.10	1.52
11.40	0.12	0.39	5.00	0.42	1.07	1.50
11.45	0.12	0.39	5.00	0.42	1.07	1.49
11.50	0.12	0.39	5.00	0.42	1.06	1.49
11.55	0.12	0.39	5.00	0.42	1.06	1.48
11.60	0.12	0.39	5.00	0.42	1.06	1.48
11.65	0.12	0.39	5.00	0.42	1.05	1.47
11.70	0.12	0.39	5.00	0.42	1.05	1.47
11.75	0.12	0.39	5.00	0.42	1.04	1.47
11.80	0.12	0.39	5.00	0.42	1.04	1.46
11.85	0.12	0.39	5.00	0.42	1.04	1.46
11.90	0.12	0.39	5.00	0.42	1.03	1.45
11.95	0.12	0.39	5.00	0.42	1.03	1.45
12.00	0.12	0.39	5.00	0.42	1.02	1.45
12.05	0.13	0.39	5.00	0.42	1.02	1.44
12.10	0.13	0.39	5.00	0.42	1.02	1.44
12.15	0.13	0.39	5.00	0.42	1.01	1.44
12.20	0.13	0.39	5.00	0.42	1.01	1.43
12.25	0.13	0.39	5.00	0.42	1.01	1.43
12.30	0.13	0.39	5.00	0.42	1.00	1.43
12.35	0.13	0.39	5.00	0.42	1.00	1.42
12.40	0.14	0.39	5.00	0.42	1.00	1.42
12.45	0.14	0.39	5.00	0.42	0.99	1.42
12.50	0.14	0.39	5.00	0.42	0.99	1.41
12.55	0.14	0.39	5.00	0.42	0.99	1.41
12.60	0.14	0.39	5.00	0.42	0.98	1.41
12.65	0.14	0.39	5.00	0.42	0.98	1.40
12.70	0.14	0.39	5.00	0.42	0.98	1.40
12.75	0.14	0.39	5.00	0.42	0.97	1.40
12.80	0.15	0.39	5.00	0.42	0.97	1.39
12.85	0.15	0.39	5.00	0.42	0.97	1.39
12.90	0.15	0.39	5.00	0.42	0.97	1.39
12.95	0.15	0.39	5.00	0.42	0.96	1.39
13.00	0.15	0.39	5.00	0.42	0.96	1.38
13.05	0.15	0.39	5.00	0.42	0.96	1.38
13.10	0.15	0.39	5.00	0.42	0.95	1.38
13.15	0.15	0.39	5.00	0.42	0.95	1.38
13.20	0.15	0.39	5.00	0.42	0.95	1.37
13.25	0.16	0.39	5.00	0.42	0.95	1.37
13.30	0.16	0.39	5.00	0.42	0.94	1.37
13.35	0.16	0.39	5.00	0.42	0.94	1.37
13.40	0.16	0.39	5.00	0.42	0.94	1.36



13.45	0.16	0.39	5.00	0.42	0.94	1.36
13.50	0.16	0.39	5.00	0.42	0.93	1.36
13.55	0.16	0.39	5.00	0.42	0.93	1.36
13.60	0.16	0.39	5.00	0.42	0.93	1.35
13.65	0.16	0.39	5.00	0.42	0.93	1.35
13.70	0.16	0.39	5.00	0.42	0.93	1.35
13.75	0.16	0.39	5.00	0.42	0.92	1.35
13.80	0.17	0.39	5.00	0.42	0.92	1.34
13.85	0.17	0.39	5.00	0.42	0.92	1.34
13.90	0.17	0.39	5.00	0.42	0.92	1.34
13.95	0.17	0.39	5.00	0.42	0.91	1.34
14.00	0.17	0.39	5.00	0.42	0.91	1.34
14.05	0.17	0.39	5.00	0.42	0.91	1.33
14.10	0.17	0.39	5.00	0.42	0.91	1.33
14.15	0.17	0.39	5.00	0.42	0.90	1.33
14.20	0.17	0.39	5.00	0.42	0.90	1.33
14.25	0.17	0.39	5.00	0.42	0.90	1.32
14.30	0.17	0.39	5.00	0.42	0.90	1.32
14.35	0.17	0.39	5.00	0.42	0.90	1.32
14.40	0.17	0.39	5.00	0.42	0.89	1.32
14.45	0.18	0.39	5.00	0.42	0.89	1.32
14.50	0.18	0.39	5.00	0.42	0.89	1.31
14.55	0.18	0.39	5.00	0.42	0.89	1.31
14.60	0.18	0.39	5.00	0.42	0.89	1.31
14.65	0.18	0.39	5.00	0.42	0.88	1.31
14.70	0.18	0.39	5.00	0.42	0.88	1.30
14.75	0.18	0.39	5.00	0.42	0.88	1.30
14.80	0.20	0.39	5.00	0.42	0.88	1.30
14.85	0.20	0.39	5.00	0.42	0.87	1.30
14.90	0.20	0.39	5.00	0.42	0.87	1.30
14.95	0.20	0.39	5.00	0.42	0.87	1.30
15.00	0.20	0.39	5.00	0.42	0.87	1.29
15.05	0.20	0.39	5.00	0.42	0.87	1.29
15.10	0.20	0.39	5.00	0.42	0.87	1.29
15.15	0.20	0.39	5.00	0.42	0.86	1.29
15.20	0.20	0.39	5.00	0.42	0.86	1.29
15.25	0.20	0.39	5.00	0.42	0.86	1.28
15.30	0.20	0.39	5.00	0.42	0.86	1.28
15.35	0.20	0.39	5.00	0.42	0.86	1.28
15.40	0.20	0.39	5.00	0.42	0.86	1.28
15.45	0.21	0.39	5.00	0.42	0.85	1.28
15.50	0.21	0.39	5.00	0.42	0.85	1.28
15.55	0.21	0.39	5.00	0.42	0.85	1.27
15.60	0.21	0.39	5.00	0.42	0.85	1.27
15.65	0.21	0.39	5.00	0.42	0.85	1.27
15.70	0.21	0.39	5.00	0.42	0.85	1.27
15.75	0.21	0.39	5.00	0.42	0.84	1.27
15.80	0.21	0.39	5.00	0.42	0.84	1.27
15.85	0.21	0.39	5.00	0.42	0.84	1.26
15.90	0.21	0.39	5.00	0.42	0.84	1.26
15.95	0.21	0.39	5.00	0.42	0.84	1.26
16.00	0.21	0.39	5.00	0.42	0.84	1.26
16.05	0.21	0.39	5.00	0.42	0.83	1.26
16.10	0.21	0.39	5.00	0.42	0.83	1.26
16.15	0.21	0.39	5.00	0.42	0.83	1.25
16.20	0.21	0.39	5.00	0.42	0.83	1.25
16.25	0.21	0.39	5.00	0.42	0.83	1.25
16.30	0.21	0.39	5.00	0.42	0.83	1.25
16.35	0.21	0.39	5.00	0.42	0.82	1.25



16.40	0.21	0.39	5.00	0.42	0.82	1.25
16.45	0.21	0.39	5.00	0.42	0.82	1.24
16.50	0.21	0.39	5.00	0.42	0.82	1.24
16.55	0.21	0.39	5.00	0.42	0.82	1.24
16.60	0.21	0.39	5.00	0.42	0.81	1.24
16.65	0.21	0.39	5.00	0.42	0.81	1.24
16.70	0.21	0.39	5.00	0.42	0.81	1.23
16.75	0.21	0.39	5.00	0.42	0.81	1.23
16.80	0.21	0.39	5.00	0.42	0.81	1.23
16.85	0.21	0.39	5.00	0.42	0.81	1.23
16.90	0.21	0.39	5.00	0.42	0.80	1.23
16.95	0.21	0.39	5.00	0.42	0.80	1.23
17.00	0.21	0.39	5.00	0.42	0.80	1.22
17.05	0.21	0.39	5.00	0.42	0.80	1.22
17.10	0.21	0.39	5.00	0.42	0.80	1.22
17.15	0.21	0.39	5.00	0.42	0.79	1.22
17.20	0.21	0.39	5.00	0.42	0.79	1.22
17.25	0.21	0.39	5.00	0.42	0.79	1.21
17.30	0.21	0.39	5.00	0.42	0.79	1.21
17.35	0.21	0.39	5.00	0.42	0.79	1.21
17.40	0.21	0.39	5.00	0.42	0.78	1.21
17.45	0.21	0.39	5.00	0.42	0.78	1.20
17.50	0.21	0.39	5.00	0.42	0.78	1.20
17.55	0.21	0.39	5.00	0.42	0.78	1.20
17.60	0.21	0.39	5.00	0.42	0.77	1.20
17.65	0.21	0.39	5.00	0.42	0.77	1.20
17.70	0.21	0.39	5.00	0.42	0.77	1.19
17.75	0.21	0.39	5.00	0.42	0.77	1.19
17.80	0.21	0.39	5.00	0.42	0.77	1.19
17.85	0.21	0.39	5.00	0.42	0.76	1.19
17.90	0.21	0.39	5.00	0.42	0.76	1.19
17.95	0.20	0.39	5.00	0.42	0.76	1.18
18.00	0.20	0.39	5.00	0.42	0.76	1.18
18.05	0.20	0.39	5.00	0.42	0.76	1.18
18.10	0.20	0.39	5.00	0.42	0.75	1.18
18.15	0.20	0.39	5.00	0.42	0.75	1.17
18.20	0.20	0.39	5.00	0.42	0.75	1.17
18.25	0.20	0.39	5.00	0.42	0.75	1.17
18.30	0.20	0.39	5.00	0.42	0.74	1.17
18.35	0.20	0.39	5.00	0.42	0.74	1.17
18.40	0.20	0.39	5.00	0.42	0.74	1.16
18.45	0.20	0.39	5.00	0.42	0.74	1.16
18.50	0.20	0.39	5.00	0.42	0.73	1.16
18.55	0.20	0.39	5.00	0.42	0.73	1.16
18.60	0.20	0.39	5.00	0.42	0.73	1.15
18.65	0.20	0.39	5.00	0.42	0.73	1.15
18.70	0.20	0.39	5.00	0.42	0.72	1.15
18.75	0.20	0.39	5.00	0.42	0.72	1.15
18.80	0.20	0.39	5.00	0.42	0.72	1.14
18.85	0.20	0.39	5.00	0.42	0.72	1.14
18.90	0.20	0.39	5.00	0.42	0.72	1.14
18.95	0.20	0.39	5.00	0.42	0.71	1.14
19.00	0.20	0.39	5.00	0.42	0.71	1.13
19.05	0.20	0.39	5.00	0.42	0.71	1.13
19.10	0.20	0.39	5.00	0.42	0.71	1.13
19.15	0.20	0.39	5.00	0.42	0.70	1.13
19.20	0.20	0.39	5.00	0.42	0.70	1.12
19.25	0.20	0.38	5.00	0.42	0.70	1.12
19.30	0.20	0.38	5.00	0.42	0.69	1.12



19.35	0.20	0.38	5.00	0.42	0.69	1.12
19.40	0.20	0.38	5.00	0.42	0.69	1.11
19.45	0.20	0.38	5.00	0.42	0.69	1.11
19.50	0.20	0.38	5.00	0.42	0.68	1.11
19.55	0.20	0.38	5.00	0.42	0.68	1.11
19.60	0.20	0.38	5.00	0.42	0.68	1.10
19.65	0.20	0.38	5.00	0.42	0.68	1.10
19.70	0.20	0.38	5.00	0.42	0.67	1.10
19.75	0.20	0.38	5.00	0.42	0.67	1.09
19.80	0.20	0.38	5.00	0.42	0.67	1.09
19.85	0.20	0.38	5.00	0.42	0.67	1.09
19.90	0.20	0.38	5.00	0.42	0.66	1.09
19.95	0.20	0.38	5.00	0.42	0.66	1.08
20.00	0.20	0.38	5.00	0.42	0.66	1.08
20.05	0.20	0.38	5.00	0.42	0.65	1.08
20.10	0.20	0.38	5.00	0.42	0.65	1.07
20.15	0.20	0.38	5.00	0.42	0.65	1.07
20.20	0.20	0.38	5.00	0.42	0.65	1.07
20.25	0.20	0.38	5.00	0.42	0.64	1.07
20.30	0.20	0.38	5.00	0.42	0.64	1.06
20.35	0.20	0.38	5.00	0.42	0.64	1.06
20.40	0.20	0.38	5.00	0.42	0.63	1.06
20.45	0.20	0.38	5.00	0.42	0.63	1.05
20.50	0.20	0.38	5.00	0.42	0.63	1.05
20.55	0.20	0.38	5.00	0.42	0.63	1.05
20.60	0.20	0.38	5.00	0.42	0.62	1.05
20.65	0.20	0.38	5.00	0.42	0.62	1.04
20.70	0.20	0.38	5.00	0.42	0.62	1.04
20.75	0.20	0.38	5.00	0.42	0.61	1.04
20.80	0.20	0.38	5.00	0.42	0.61	1.03
20.85	0.20	0.38	5.00	0.42	0.61	1.03
20.90	0.20	0.38	5.00	0.42	0.60	1.03
20.95	0.20	0.38	5.00	0.42	0.60	1.02
21.00	0.20	0.38	5.00	0.42	0.60	1.02
21.05	0.20	0.38	5.00	0.42	0.59	1.02
21.10	0.20	0.38	5.00	0.42	0.59	1.01
21.15	0.21	0.38	5.00	0.42	0.59	1.01
21.20	0.21	0.38	5.00	0.42	0.59	1.01
21.25	0.21	0.38	5.00	0.42	0.58	1.01
21.30	0.21	0.38	5.00	0.42	0.58	1.00
21.35	0.21	0.38	5.00	0.42	0.58	1.00
21.40	0.21	0.38	5.00	0.42	0.57	1.00
21.45	0.21	0.38	5.00	0.42	0.57	0.99
21.50	0.21	0.38	5.00	0.42	0.57	0.99
21.55	0.21	0.38	5.00	0.42	0.56	0.99
21.60	0.21	0.38	5.00	0.42	0.56	0.99
21.65	0.22	0.38	5.00	0.42	0.56	0.98
21.70	0.22	0.38	5.00	0.42	0.56	0.98
21.75	0.22	0.38	5.00	0.42	0.55	0.98
21.80	0.22	0.38	5.00	0.42	0.55	0.97
21.85	0.22	0.38	5.00	0.42	0.55	0.97
21.90	0.22	0.38	5.00	0.42	0.55	0.97
21.95	0.22	0.38	5.00	0.42	0.54	0.97
22.00	0.22	0.38	5.00	0.42	0.54	0.96
22.05	0.22	0.38	5.00	0.42	0.54	0.96
22.10	0.23	0.38	5.00	0.42	0.53	0.96
22.15	0.23	0.38	5.00	0.42	0.53	0.96
22.20	0.23	0.38	5.00	0.42	0.53	0.95
22.25	0.23	0.38	5.00	0.42	0.53	0.95



22.30	0.23	0.38	5.00	0.42	0.52	0.95
22.35	0.23	0.38	5.00	0.42	0.52	0.95
22.40	0.23	0.38	5.00	0.42	0.52	0.94
22.45	0.23	0.38	5.00	0.42	0.52	0.94
22.50	0.23	0.38	5.00	0.42	0.51	0.94
22.55	0.24	0.38	5.00	0.42	0.51	0.93
22.60	0.24	0.38	5.00	0.42	0.51	0.93
22.65	0.24	0.38	5.00	0.42	0.51	0.93
22.70	0.24	0.38	5.00	0.42	0.50	0.93
22.75	0.24	0.38	5.00	0.42	0.50	0.93
22.80	0.24	0.38	5.00	0.42	0.50	0.92
22.85	0.24	0.38	5.00	0.42	0.50	0.92
22.90	0.24	0.38	5.00	0.42	0.49	0.92
22.95	0.24	0.38	5.00	0.42	0.49	0.92
23.00	0.25	0.38	5.00	0.42	0.49	0.91
23.05	0.25	0.38	5.00	0.42	0.49	0.91
23.10	0.25	0.38	5.00	0.42	0.48	0.91
23.15	0.25	0.38	5.00	0.42	0.48	0.91
23.20	0.25	0.38	5.00	0.42	0.48	0.90
23.25	0.25	0.38	5.00	0.42	0.48	0.90
23.30	0.25	0.38	5.00	0.42	0.48	0.90
23.35	0.25	0.38	5.00	0.42	0.47	0.90
23.40	0.26	0.38	5.00	0.42	0.47	0.89
23.45	0.26	0.38	5.00	0.42	0.47	0.89
23.50	0.26	0.38	5.00	0.42	0.47	0.89
23.55	0.26	0.38	5.00	0.42	0.46	0.89
23.60	0.26	0.38	5.00	0.42	0.46	0.89
23.65	0.26	0.38	5.00	0.42	0.46	0.88
23.70	0.26	0.38	5.00	0.42	0.46	0.88
23.75	0.26	0.38	5.00	0.42	0.46	0.88
23.80	0.27	0.38	5.00	0.42	0.45	0.88
23.85	0.27	0.38	5.00	0.42	0.45	0.88
23.90	0.27	0.38	5.00	0.42	0.45	0.87
23.95	0.27	0.38	5.00	0.42	0.45	0.87
24.00	0.27	0.38	5.00	0.42	0.45	0.87
24.05	0.27	0.38	5.00	0.42	0.44	0.87
24.10	0.27	0.38	5.00	0.42	0.44	0.86
24.15	0.28	0.38	5.00	0.42	0.44	0.86
24.20	0.28	0.38	5.00	0.42	0.44	0.86
24.25	0.28	0.38	5.00	0.42	0.44	0.86
24.30	0.28	0.38	5.00	0.42	0.44	0.86
24.35	0.28	0.38	5.00	0.42	0.44	0.86
24.40	0.28	0.38	5.00	0.42	0.43	0.86
24.45	0.28	0.38	5.00	0.42	0.43	0.86
24.50	0.29	0.38	5.00	0.42	0.43	0.86
24.55	0.29	0.38	5.00	0.42	0.43	0.86
24.60	0.29	0.38	5.00	0.42	0.43	0.85
24.65	0.29	0.38	5.00	0.42	0.43	0.85
24.70	0.29	0.38	5.00	0.42	0.43	0.85
24.75	0.29	0.38	5.00	0.42	0.43	0.85
24.80	0.30	0.38	5.00	0.42	0.43	0.85
24.85	0.30	0.38	5.00	0.42	0.43	0.85
24.90	0.30	0.38	5.00	0.42	0.43	0.85
24.95	0.30	0.38	5.00	0.42	0.42	0.85
25.00	0.30	0.38	5.00	0.42	0.42	0.85
25.05	0.30	0.38	5.00	0.42	0.42	0.85
25.10	0.31	0.38	5.00	0.42	0.42	0.85
25.15	0.31	0.38	5.00	0.42	0.42	0.84
25.20	0.31	0.38	5.00	0.42	0.42	0.84



25.25	0.31	0.38	5.00	0.42	0.42	0.84
25.30	0.31	0.38	5.00	0.42	0.42	0.84
25.35	0.32	0.38	5.00	0.42	0.42	0.84
25.40	0.32	0.38	5.00	0.42	0.42	0.84
25.45	0.32	0.38	5.00	0.42	0.42	0.84
25.50	0.32	0.38	5.00	0.42	0.42	0.84
25.55	0.32	0.38	5.00	0.42	0.41	0.84
25.60	0.33	0.38	5.00	0.42	0.41	0.84
25.65	0.33	0.38	5.00	0.42	0.41	0.84
25.70	0.33	0.38	5.00	0.42	0.41	0.84
25.75	0.33	0.38	5.00	0.42	0.41	0.83
25.80	0.34	0.38	5.00	0.42	0.41	0.83
25.85	0.34	0.38	5.00	0.42	0.41	0.83
25.90	0.34	0.38	5.00	0.42	0.41	0.83
25.95	0.34	0.38	5.00	0.42	0.41	0.83
26.00	0.35	0.38	5.00	0.42	0.41	0.83
26.05	0.35	0.38	5.00	0.42	0.41	0.83
26.10	0.35	0.38	5.00	0.42	0.41	0.83
26.15	0.36	0.38	5.00	0.42	0.40	0.83
26.20	0.36	0.38	5.00	0.42	0.40	0.83
26.25	0.37	0.38	5.00	0.42	0.40	0.83
26.30	0.37	0.38	5.00	0.42	0.40	0.83
26.35	0.38	0.38	5.00	0.42	0.40	0.83
26.40	0.39	0.38	5.00	0.42	0.40	0.82
26.45	0.40	0.38	5.00	0.42	0.40	0.82
26.50	0.39	0.38	5.00	0.42	0.40	0.82
26.55	0.39	0.38	5.00	0.42	0.40	0.82
26.60	0.39	0.38	5.00	0.42	0.40	0.82
26.65	0.39	0.38	5.00	0.42	0.40	0.82
26.70	0.39	0.38	5.00	0.42	0.40	0.82
26.75	0.39	0.38	5.00	0.42	0.40	0.82
26.80	0.39	0.38	5.00	0.42	0.39	0.82
26.85	0.39	0.38	5.00	0.42	0.39	0.82
26.90	0.39	0.38	5.00	0.42	0.39	0.82
26.95	0.39	0.38	5.00	0.42	0.39	0.82
27.00	0.39	0.38	5.00	0.42	0.39	0.82
27.05	0.39	0.38	5.00	0.42	0.39	0.81
27.10	0.39	0.38	5.00	0.42	0.39	0.81
27.15	0.39	0.38	5.00	0.42	0.39	0.81
27.20	0.39	0.38	5.00	0.42	0.39	0.81
27.25	0.39	0.38	5.00	0.42	0.39	0.81
27.30	0.39	0.38	5.00	0.42	0.39	0.81
27.35	0.39	0.38	5.00	0.42	0.39	0.81
27.40	0.38	0.38	5.00	0.42	0.39	0.81
27.45	0.38	0.38	5.00	0.42	0.38	0.81
27.50	0.38	0.38	5.00	0.42	0.38	0.81
27.55	0.38	0.38	5.00	0.42	0.38	0.81
27.60	0.38	0.38	5.00	0.42	0.38	0.81
27.65	0.38	0.38	5.00	0.42	0.38	0.80
27.70	0.38	0.38	5.00	0.42	0.38	0.80
27.75	0.38	0.38	5.00	0.42	0.38	0.80
27.80	0.38	0.38	5.00	0.42	0.38	0.80
27.85	0.37	0.38	5.00	0.42	0.38	0.80
27.90	0.45	0.38	5.00	0.42	0.38	0.80
27.95	0.45	0.38	5.00	0.42	0.38	0.80
28.00	0.45	0.38	5.00	0.42	0.38	0.80
28.05	0.45	0.38	5.00	0.42	0.37	0.80
28.10	0.45	0.38	5.00	0.42	0.37	0.80
28.15	0.45	0.38	5.00	0.42	0.37	0.80



28.20	0.45	0.38	5.00	0.42	0.37	0.80
28.25	0.45	0.38	5.00	0.42	0.37	0.80
28.30	0.45	0.38	5.00	0.42	0.37	0.79
28.35	0.45	0.38	5.00	0.42	0.37	0.79
28.40	0.45	0.38	5.00	0.42	0.37	0.79
28.45	0.45	0.38	5.00	0.42	0.37	0.79
28.50	0.45	0.38	5.00	0.42	0.37	0.79
28.55	0.45	0.38	5.00	0.42	0.37	0.79
28.60	0.45	0.38	5.00	0.42	0.37	0.79
28.65	0.45	0.38	5.00	0.42	0.37	0.79
28.70	0.45	0.38	5.00	0.42	0.36	0.79
28.75	0.45	0.38	5.00	0.42	0.36	0.79
28.80	0.45	0.38	5.00	0.42	0.36	0.79
28.85	0.45	0.38	5.00	0.42	0.36	0.79
28.90	0.45	0.38	5.00	0.42	0.36	0.79
28.95	0.45	0.38	5.00	0.42	0.36	0.78
29.00	0.45	0.38	5.00	0.42	0.36	0.78
29.05	0.45	0.38	5.00	0.42	0.36	0.78
29.10	0.45	0.38	5.00	0.42	0.36	0.78
29.15	0.45	0.38	5.00	0.42	0.36	0.78
29.20	0.45	0.38	5.00	0.42	0.36	0.78
29.25	0.44	0.38	5.00	0.42	0.36	0.78
29.30	0.42	0.38	5.00	0.42	0.35	0.78
29.35	0.41	0.38	5.00	0.42	0.35	0.78
29.40	0.40	0.38	5.00	0.42	0.35	0.78
29.45	0.39	0.38	5.00	0.42	0.35	0.78
29.50	0.38	0.38	5.00	0.42	0.35	0.78
29.55	0.38	0.38	5.00	0.42	0.35	0.77
29.60	0.37	0.38	5.00	0.42	0.35	0.77
29.65	0.37	0.38	5.00	0.42	0.35	0.77
29.70	0.36	0.38	5.00	0.42	0.35	0.77
29.75	0.36	0.38	5.00	0.42	0.35	0.77
29.80	0.35	0.38	5.00	0.42	0.35	0.77
29.85	0.35	0.38	5.00	0.42	0.35	0.77
29.90	0.35	0.37	5.00	0.42	0.34	0.77
29.95	0.34	0.37	5.00	0.42	0.34	0.77
30.00	0.34	0.37	5.00	0.42	0.34	0.77
30.05	0.34	0.37	5.00	0.42	0.34	0.76
30.10	0.33	0.37	5.00	0.42	0.34	0.76
30.15	0.33	0.37	5.00	0.42	0.34	0.76
30.20	0.33	0.37	5.00	0.42	0.34	0.76
30.25	0.32	0.37	5.00	0.42	0.34	0.76
30.30	0.32	0.37	5.00	0.42	0.34	0.76
30.35	0.32	0.37	5.00	0.42	0.34	0.76
30.40	0.32	0.37	5.00	0.42	0.33	0.76
30.45	0.32	0.37	5.00	0.42	0.33	0.76
30.50	0.31	0.37	5.00	0.42	0.33	0.76
30.55	0.31	0.37	5.00	0.42	0.33	0.75
30.60	0.31	0.37	5.00	0.42	0.33	0.75
30.65	0.31	0.37	5.00	0.42	0.33	0.75
30.70	0.31	0.37	5.00	0.42	0.33	0.75
30.75	0.31	0.37	5.00	0.42	0.33	0.75
30.80	0.30	0.37	5.00	0.42	0.33	0.75
30.85	0.30	0.37	5.00	0.42	0.32	0.75
30.90	0.30	0.37	5.00	0.42	0.32	0.75
30.95	0.30	0.37	5.00	0.42	0.32	0.75
31.00	0.30	0.37	5.00	0.42	0.32	0.75
31.05	0.30	0.37	5.00	0.42	0.32	0.74
31.10	0.31	0.37	5.00	0.42	0.32	0.74



31.15	0.31	0.37	5.00	0.42	0.32	0.74
31.20	0.31	0.37	5.00	0.42	0.32	0.74
31.25	0.31	0.37	5.00	0.42	0.32	0.74
31.30	0.31	0.37	5.00	0.42	0.32	0.74
31.35	0.31	0.37	5.00	0.42	0.31	0.74
31.40	0.31	0.37	5.00	0.42	0.31	0.74
31.45	0.31	0.37	5.00	0.42	0.31	0.74
31.50	0.31	0.37	5.00	0.42	0.31	0.73
31.55	0.32	0.37	5.00	0.42	0.31	0.73
31.60	0.32	0.37	5.00	0.42	0.31	0.73
31.65	0.32	0.37	5.00	0.42	0.31	0.73
31.70	0.32	0.37	5.00	0.42	0.31	0.73
31.75	0.32	0.37	5.00	0.42	0.31	0.73
31.80	0.32	0.37	5.00	0.42	0.30	0.73
31.85	0.33	0.37	5.00	0.42	0.30	0.73
31.90	0.33	0.37	5.00	0.42	0.30	0.73
31.95	0.33	0.37	5.00	0.42	0.30	0.72
32.00	0.33	0.37	5.00	0.42	0.30	0.72
32.05	0.33	0.37	5.00	0.42	0.30	0.72
32.10	0.33	0.37	5.00	0.42	0.30	0.72
32.15	0.33	0.37	5.00	0.42	0.30	0.72
32.20	0.33	0.37	5.00	0.42	0.30	0.72
32.25	0.34	0.37	5.00	0.42	0.30	0.72
32.30	0.34	0.37	5.00	0.42	0.29	0.72
32.35	0.34	0.37	5.00	0.42	0.29	0.72
32.40	0.34	0.37	5.00	0.42	0.29	0.72
32.45	0.34	0.37	5.00	0.42	0.29	0.71
32.50	0.34	0.37	5.00	0.42	0.29	0.71
32.55	0.35	0.37	5.00	0.42	0.29	0.71
32.60	0.35	0.37	5.00	0.42	0.29	0.71
32.65	0.35	0.37	5.00	0.42	0.29	0.71
32.70	0.35	0.37	5.00	0.42	0.29	0.71
32.75	0.35	0.37	5.00	0.42	0.29	0.71
32.80	0.36	0.37	5.00	0.42	0.28	0.71
32.85	0.36	0.37	5.00	0.42	0.28	0.71
32.90	0.36	0.37	5.00	0.42	0.28	0.71
32.95	0.36	0.37	5.00	0.42	0.28	0.70
33.00	0.37	0.36	5.00	0.42	0.28	0.70
33.05	0.37	0.36	5.00	0.42	0.28	0.70
33.10	0.37	0.36	5.00	0.42	0.28	0.70
33.15	0.38	0.36	5.00	0.42	0.28	0.70
33.20	0.38	0.36	5.00	0.42	0.28	0.70
33.25	0.39	0.36	5.00	0.42	0.28	0.70
33.30	0.39	0.36	5.00	0.42	0.27	0.70
33.35	0.40	0.36	5.00	0.42	0.27	0.70
33.40	0.41	0.36	5.00	0.42	0.27	0.70
33.45	0.42	0.36	5.00	0.42	0.27	0.70
33.50	0.43	0.36	5.00	0.42	0.27	0.69
33.55	0.44	0.36	5.00	0.42	0.27	0.69
33.60	0.45	0.36	5.00	0.42	0.27	0.69
33.65	0.45	0.36	5.00	0.42	0.27	0.69
33.70	0.45	0.36	5.00	0.42	0.27	0.69
33.75	0.45	0.36	5.00	0.42	0.27	0.69
33.80	0.45	0.36	5.00	0.42	0.27	0.69
33.85	0.45	0.36	5.00	0.42	0.26	0.69
33.90	0.45	0.36	5.00	0.42	0.26	0.69
33.95	0.45	0.36	5.00	0.42	0.26	0.69
34.00	0.45	0.36	5.00	0.42	0.26	0.68
34.05	0.45	0.36	5.00	0.42	0.26	0.68



34.10	0.45	0.36	5.00	0.42	0.26	0.68
34.15	0.45	0.36	5.00	0.42	0.26	0.68
34.20	0.45	0.36	5.00	0.42	0.26	0.68
34.25	0.45	0.36	5.00	0.42	0.26	0.68
34.30	0.45	0.36	5.00	0.42	0.26	0.68
34.35	0.45	0.36	5.00	0.42	0.25	0.68
34.40	0.45	0.36	5.00	0.42	0.25	0.68
34.45	0.45	0.36	5.00	0.42	0.25	0.68
34.50	0.45	0.36	5.00	0.42	0.25	0.68
34.55	0.45	0.36	5.00	0.42	0.25	0.68
34.60	0.45	0.36	5.00	0.42	0.25	0.67
34.65	0.45	0.36	5.00	0.42	0.25	0.67
34.70	0.45	0.36	5.00	0.42	0.25	0.67
34.75	0.45	0.36	5.00	0.42	0.25	0.67
34.80	0.45	0.36	5.00	0.42	0.25	0.67
34.85	0.45	0.36	5.00	0.42	0.25	0.67
34.90	0.45	0.36	5.00	0.42	0.25	0.67
34.95	0.45	0.36	5.00	0.42	0.24	0.67
35.00	0.45	0.36	5.00	0.42	0.24	0.67
35.05	0.45	0.36	5.00	0.42	0.24	0.67
35.10	0.45	0.36	5.00	0.42	0.24	0.67
35.15	0.45	0.36	5.00	0.42	0.24	0.66
35.20	0.45	0.36	5.00	0.42	0.24	0.66
35.25	0.45	0.36	5.00	0.42	0.24	0.66
35.30	0.45	0.36	5.00	0.42	0.24	0.66
35.35	0.45	0.36	5.00	0.42	0.24	0.66
35.40	0.45	0.36	5.00	0.42	0.24	0.66
35.45	0.45	0.36	5.00	0.42	0.24	0.66
35.50	0.45	0.36	5.00	0.42	0.23	0.66
35.55	0.45	0.36	5.00	0.42	0.23	0.66
35.60	0.45	0.36	5.00	0.42	0.23	0.66
35.65	0.45	0.36	5.00	0.42	0.23	0.66
35.70	0.45	0.36	5.00	0.42	0.23	0.66
35.75	0.45	0.36	5.00	0.42	0.23	0.65
35.80	0.45	0.36	5.00	0.42	0.23	0.65
35.85	0.45	0.36	5.00	0.42	0.23	0.65
35.90	0.44	0.36	5.00	0.42	0.23	0.65
35.95	0.44	0.36	5.00	0.42	0.23	0.65
36.00	0.44	0.36	5.00	0.42	0.23	0.65
36.05	0.44	0.35	5.00	0.42	0.23	0.65
36.10	0.44	0.35	5.00	0.42	0.22	0.65
36.15	0.44	0.35	5.00	0.42	0.22	0.65
36.20	0.44	0.35	5.00	0.42	0.22	0.65
36.25	0.44	0.35	5.00	0.42	0.22	0.65
36.30	0.44	0.35	5.00	0.42	0.22	0.65
36.35	0.44	0.35	5.00	0.42	0.22	0.64
36.40	0.44	0.35	5.00	0.42	0.22	0.64
36.45	0.44	0.35	5.00	0.42	0.22	0.64
36.50	0.44	0.35	5.00	0.42	0.22	0.64
36.55	0.44	0.35	5.00	0.42	0.22	0.64
36.60	0.44	0.35	5.00	0.42	0.22	0.64
36.65	0.44	0.35	5.00	0.42	0.22	0.64
36.70	0.44	0.35	5.00	0.42	0.21	0.64
36.75	0.44	0.35	5.00	0.42	0.21	0.64
36.80	0.44	0.35	5.00	0.42	0.21	0.64
36.85	0.44	0.35	5.00	0.42	0.21	0.64
36.90	0.44	0.35	5.00	0.42	0.21	0.63
36.95	0.44	0.35	5.00	0.42	0.21	0.63
37.00	0.44	0.35	5.00	0.42	0.21	0.63



37.05	0.44	0.35	5.00	0.42	0.21	0.63
37.10	0.44	0.35	5.00	0.42	0.21	0.63
37.15	0.44	0.35	5.00	0.42	0.21	0.63
37.20	0.44	0.35	5.00	0.42	0.21	0.63
37.25	0.44	0.35	5.00	0.42	0.21	0.63
37.30	0.44	0.35	5.00	0.42	0.20	0.63
37.35	0.44	0.35	5.00	0.42	0.20	0.63
37.40	0.44	0.35	5.00	0.42	0.20	0.63
37.45	0.44	0.35	5.00	0.42	0.20	0.63
37.50	0.44	0.35	5.00	0.42	0.20	0.62
37.55	0.44	0.35	5.00	0.42	0.20	0.62
37.60	0.44	0.35	5.00	0.42	0.20	0.62
37.65	0.44	0.35	5.00	0.42	0.20	0.62
37.70	0.44	0.35	5.00	0.42	0.20	0.62
37.75	0.44	0.35	5.00	0.42	0.20	0.62
37.80	0.44	0.35	5.00	0.42	0.19	0.62
37.85	0.44	0.35	5.00	0.42	0.19	0.62
37.90	0.44	0.35	5.00	0.42	0.19	0.62
37.95	0.44	0.35	5.00	0.42	0.19	0.62
38.00	0.44	0.35	5.00	0.42	0.19	0.61
38.05	0.44	0.35	5.00	0.42	0.19	0.61
38.10	0.44	0.35	5.00	0.42	0.19	0.61
38.15	0.44	0.35	5.00	0.42	0.19	0.61
38.20	0.44	0.35	5.00	0.42	0.19	0.61
38.25	0.44	0.35	5.00	0.42	0.19	0.61
38.30	0.44	0.35	5.00	0.42	0.19	0.61
38.35	0.44	0.35	5.00	0.42	0.18	0.61
38.40	0.44	0.35	5.00	0.42	0.18	0.61
38.45	0.44	0.35	5.00	0.42	0.18	0.61
38.50	0.44	0.35	5.00	0.42	0.18	0.61
38.55	0.44	0.35	5.00	0.42	0.18	0.60
38.60	0.44	0.35	5.00	0.42	0.18	0.60
38.65	0.44	0.35	5.00	0.42	0.18	0.60
38.70	0.44	0.35	5.00	0.42	0.18	0.60
38.75	0.43	0.35	5.00	0.42	0.18	0.60
38.80	0.42	0.35	5.00	0.42	0.18	0.60
38.85	0.41	0.35	5.00	0.42	0.17	0.60
38.90	0.40	0.35	5.00	0.42	0.17	0.60
38.95	0.39	0.35	5.00	0.42	0.17	0.60
39.00	0.39	0.35	5.00	0.42	0.17	0.59
39.05	0.38	0.35	5.00	0.42	0.17	0.59
39.10	0.38	0.34	5.00	0.42	0.17	0.59
39.15	0.37	0.34	5.00	0.42	0.17	0.59
39.20	0.37	0.34	5.00	0.42	0.17	0.59
39.25	0.37	0.34	5.00	0.42	0.17	0.59
39.30	0.36	0.34	5.00	0.42	0.17	0.59
39.35	0.36	0.34	5.00	0.42	0.16	0.59
39.40	0.36	0.34	5.00	0.42	0.16	0.59
39.45	0.35	0.34	5.00	0.42	0.16	0.59
39.50	0.35	0.34	5.00	0.42	0.16	0.58
39.55	0.35	0.34	5.00	0.42	0.16	0.58
39.60	0.35	0.34	5.00	0.42	0.16	0.58
39.65	0.35	0.34	5.00	0.42	0.16	0.58
39.70	0.34	0.34	5.00	0.42	0.16	0.58
39.75	0.34	0.34	5.00	0.42	0.16	0.58
39.80	0.34	0.34	5.00	0.42	0.15	0.58
39.85	0.34	0.34	5.00	0.42	0.15	0.58
39.90	0.34	0.34	5.00	0.42	0.15	0.58
39.95	0.33	0.34	5.00	0.42	0.15	0.57



40.00	0.33	0.34	5.00	0.42	0.15	0.57
40.05	0.33	0.34	5.00	0.42	0.15	0.57
40.10	0.33	0.34	5.00	0.42	0.15	0.57
40.15	0.33	0.34	5.00	0.42	0.15	0.57
40.20	0.33	0.34	5.00	0.42	0.15	0.57
40.25	0.33	0.34	5.00	0.42	0.14	0.57
40.30	0.32	0.34	5.00	0.42	0.14	0.57
40.35	0.32	0.34	5.00	0.42	0.14	0.57
40.40	0.32	0.34	5.00	0.42	0.14	0.56
40.45	0.32	0.34	5.00	0.42	0.14	0.56
40.50	0.32	0.34	5.00	0.42	0.14	0.56
40.55	0.32	0.34	5.00	0.42	0.14	0.56
40.60	0.32	0.34	5.00	0.42	0.14	0.56
40.65	0.32	0.34	5.00	0.42	0.14	0.56
40.70	0.32	0.34	5.00	0.42	0.13	0.56
40.75	0.31	0.34	5.00	0.42	0.13	0.56
40.80	0.31	0.34	5.00	0.42	0.13	0.56
40.85	0.31	0.34	5.00	0.42	0.13	0.55
40.90	0.31	0.34	5.00	0.42	0.13	0.55
40.95	0.31	0.34	5.00	0.42	0.13	0.55
41.00	0.31	0.34	5.00	0.42	0.13	0.55
41.05	0.31	0.34	5.00	0.42	0.13	0.55
41.10	0.30	0.34	5.00	0.42	0.12	0.55
41.15	0.30	0.34	5.00	0.42	0.12	0.55
41.20	0.30	0.34	5.00	0.42	0.12	0.55
41.25	0.30	0.34	5.00	0.42	0.12	0.54
41.30	0.30	0.34	5.00	0.42	0.12	0.54
41.35	0.30	0.34	5.00	0.42	0.12	0.54
41.40	0.29	0.34	5.00	0.42	0.12	0.54
41.45	0.29	0.34	5.00	0.42	0.12	0.54
41.50	0.29	0.34	5.00	0.42	0.11	0.54
41.55	0.29	0.34	5.00	0.42	0.11	0.54
41.60	0.29	0.34	5.00	0.42	0.11	0.54
41.65	0.28	0.34	5.00	0.42	0.11	0.53
41.70	0.28	0.34	5.00	0.42	0.11	0.53
41.75	0.28	0.34	5.00	0.42	0.11	0.53
41.80	0.28	0.34	5.00	0.42	0.11	0.53
41.85	0.28	0.34	5.00	0.42	0.11	0.53
41.90	0.28	0.34	5.00	0.42	0.10	0.53
41.95	0.28	0.34	5.00	0.42	0.10	0.53
42.00	0.27	0.34	5.00	0.42	0.10	0.53
42.05	0.27	0.34	5.00	0.42	0.10	0.52
42.10	0.27	0.34	5.00	0.42	0.10	0.52
42.15	0.27	0.33	5.00	0.42	0.10	0.52
42.20	0.27	0.33	5.00	0.42	0.10	0.52
42.25	0.27	0.33	5.00	0.42	0.09	0.52
42.30	0.27	0.33	5.00	0.42	0.09	0.52
42.35	0.27	0.33	5.00	0.42	0.09	0.52
42.40	0.26	0.33	5.00	0.42	0.09	0.51
42.45	0.26	0.33	5.00	0.42	0.09	0.51
42.50	0.26	0.33	5.00	0.42	0.09	0.51
42.55	0.26	0.33	5.00	0.42	0.09	0.51
42.60	0.26	0.33	5.00	0.42	0.08	0.51
42.65	0.26	0.33	5.00	0.42	0.08	0.51
42.70	0.26	0.33	5.00	0.42	0.08	0.51
42.75	0.26	0.33	5.00	0.42	0.08	0.50
42.80	0.25	0.33	5.00	0.42	0.08	0.50
42.85	0.25	0.33	5.00	0.42	0.08	0.50
42.90	0.25	0.33	5.00	0.42	0.08	0.50



42.95	0.25	0.33	5.00	0.42	0.07	0.50
43.00	0.25	0.33	5.00	0.42	0.07	0.50
43.05	0.25	0.33	5.00	0.42	0.07	0.49
43.10	0.25	0.33	5.00	0.42	0.07	0.49
43.15	0.25	0.33	5.00	0.42	0.07	0.49
43.20	0.25	0.33	5.00	0.42	0.07	0.49
43.25	0.24	0.33	5.00	0.42	0.06	0.49
43.30	0.24	0.33	5.00	0.42	0.06	0.49
43.35	0.24	0.33	5.00	0.42	0.06	0.49
43.40	0.24	0.33	5.00	0.42	0.06	0.48
43.45	0.24	0.33	5.00	0.42	0.06	0.48
43.50	0.24	0.33	5.00	0.42	0.06	0.48
43.55	0.24	0.33	5.00	0.42	0.06	0.48
43.60	0.24	0.33	5.00	0.42	0.05	0.48
43.65	0.24	0.33	5.00	0.42	0.05	0.48
43.70	0.24	0.33	5.00	0.42	0.05	0.47
43.75	0.24	0.33	5.00	0.42	0.05	0.47
43.80	0.23	0.33	5.00	0.42	0.05	0.47
43.85	0.23	0.33	5.00	0.42	0.04	0.47
43.90	0.23	0.33	5.00	0.42	0.04	0.47
43.95	0.23	0.33	5.00	0.42	0.04	0.47
44.00	0.23	0.33	5.00	0.42	0.04	0.46
44.05	0.23	0.33	5.00	0.42	0.04	0.46
44.10	0.23	0.33	5.00	0.42	0.04	0.46
44.15	0.23	0.33	5.00	0.42	0.03	0.46
44.20	0.23	0.33	5.00	0.42	0.03	0.46
44.25	0.23	0.33	5.00	0.42	0.03	0.45
44.30	0.23	0.33	5.00	0.42	0.03	0.45
44.35	0.22	0.33	5.00	0.42	0.03	0.45
44.40	0.22	0.33	5.00	0.42	0.03	0.45
44.45	0.22	0.33	5.00	0.42	0.02	0.45
44.50	0.22	0.33	5.00	0.42	0.02	0.45
44.55	0.22	0.33	5.00	0.42	0.02	0.44
44.60	0.22	0.33	5.00	0.42	0.02	0.44
44.65	0.22	0.33	5.00	0.42	0.02	0.44
44.70	0.22	0.33	5.00	0.42	0.01	0.44
44.75	0.22	0.33	5.00	0.42	0.01	0.44
44.80	0.22	0.33	5.00	0.42	0.01	0.43
44.85	0.22	0.33	5.00	0.42	0.01	0.43
44.90	0.22	0.33	5.00	0.42	0.01	0.43
44.95	0.22	0.33	5.00	0.42	0.00	0.43
45.00	0.21	0.33	5.00	0.42	0.00	0.43
45.05	0.21	0.33	0.66*	0.42	0.00	0.42
45.10	0.21	0.33	0.65*	0.42	0.00	0.42
45.15	0.21	0.33	0.65*	0.41	0.00	0.41
45.20	0.21	0.33	0.65*	0.40	0.00	0.40
45.25	0.21	0.33	0.65*	0.39	0.00	0.39
45.30	0.21	0.33	0.64*	0.39	0.00	0.39
45.35	0.21	0.33	0.64*	0.38	0.00	0.38
45.40	0.21	0.33	0.64*	0.37	0.00	0.37
45.45	0.21	0.33	0.64*	0.36	0.00	0.36
45.50	0.21	0.33	0.63*	0.35	0.00	0.35
45.55	0.21	0.33	0.63*	0.35	0.00	0.35
45.60	0.21	0.33	0.63*	0.34	0.00	0.34
45.65	0.20	0.33	0.63*	0.33	0.00	0.33
45.70	0.20	0.33	0.63*	0.32	0.00	0.32
45.75	0.20	0.33	0.62*	0.31	0.00	0.31
45.80	0.20	0.33	0.62*	0.31	0.00	0.31
45.85	0.20	0.33	0.62*	0.30	0.00	0.30



45.90	0.20	0.33	0.62*	0.29	0.00	0.29
45.95	0.20	0.33	0.61*	0.28	0.00	0.28
46.00	0.20	0.33	0.61*	0.27	0.00	0.27
46.05	0.20	0.33	0.62*	0.27	0.00	0.27
46.10	0.20	0.33	0.62*	0.26	0.00	0.26
46.15	0.21	0.33	0.63*	0.25	0.00	0.25
46.20	0.21	0.33	0.64*	0.24	0.00	0.24
46.25	0.21	0.33	0.64*	0.24	0.00	0.24
46.30	0.21	0.33	0.65*	0.23	0.00	0.23
46.35	0.21	0.33	0.65*	0.22	0.00	0.22
46.40	0.22	0.33	0.66*	0.21	0.00	0.21
46.45	0.22	0.33	0.67*	0.20	0.00	0.20
46.50	0.22	0.33	0.67*	0.20	0.00	0.20
46.55	0.22	0.33	0.68*	0.19	0.00	0.19
46.60	0.22	0.33	0.69*	0.18	0.00	0.18
46.65	0.23	0.33	0.69*	0.18	0.00	0.18
46.70	0.23	0.33	0.70*	0.17	0.00	0.17
46.75	0.23	0.33	0.71*	0.16	0.00	0.16
46.80	0.23	0.33	0.71*	0.15	0.00	0.15
46.85	0.24	0.33	0.72*	0.15	0.00	0.15
46.90	0.24	0.33	0.73*	0.14	0.00	0.14
46.95	0.24	0.33	0.74*	0.13	0.00	0.13
47.00	0.24	0.33	0.74*	0.13	0.00	0.13
47.05	0.25	0.33	0.75*	0.12	0.00	0.12
47.10	0.25	0.33	0.76*	0.12	0.00	0.12
47.15	0.25	0.33	0.77*	0.11	0.00	0.11
47.20	0.25	0.33	0.78*	0.10	0.00	0.10
47.25	0.26	0.33	0.79*	0.10	0.00	0.10
47.30	0.26	0.33	0.79*	0.09	0.00	0.09
47.35	0.26	0.33	0.80*	0.08	0.00	0.08
47.40	0.27	0.33	0.81*	0.08	0.00	0.08
47.45	0.27	0.33	0.82*	0.07	0.00	0.07
47.50	0.27	0.33	0.83*	0.07	0.00	0.07
47.55	0.28	0.33	0.84*	0.06	0.00	0.06
47.60	0.28	0.33	0.85*	0.06	0.00	0.06
47.65	0.28	0.33	0.86*	0.05	0.00	0.05
47.70	0.29	0.33	0.88*	0.05	0.00	0.05
47.75	0.29	0.33	0.89*	0.04	0.00	0.04
47.80	0.30	0.33	0.90*	0.04	0.00	0.04
47.85	0.30	0.33	0.91*	0.04	0.00	0.04
47.90	0.30	0.33	0.93*	0.03	0.00	0.03
47.95	0.31	0.33	0.94*	0.03	0.00	0.03
48.00	0.32	0.33	0.96*	0.03	0.00	0.03
48.05	0.32	0.33	0.98*	0.02	0.00	0.02
48.10	0.33	0.33	1.01	0.02	0.00	0.02
48.15	0.34	0.33	1.03	0.02	0.00	0.02
48.20	0.35	0.33	1.07	0.01	0.00	0.01
48.25	0.37	0.33	1.13	0.01	0.00	0.01
48.30	0.41	0.33	1.25	0.01	0.00	0.01
48.35	0.42	0.33	1.28	0.01	0.00	0.01
48.40	0.42	0.33	1.28	0.01	0.00	0.01
48.45	0.42	0.33	1.28	0.01	0.00	0.01
48.50	0.42	0.33	1.28	0.01	0.00	0.01
48.55	0.42	0.33	1.28	0.01	0.00	0.01
48.60	0.42	0.33	1.28	0.01	0.00	0.01
48.65	0.42	0.33	1.28	0.00	0.00	0.00
48.70	0.42	0.33	1.28	0.00	0.00	0.00
48.75	0.42	0.33	1.27	0.00	0.00	0.00
48.80	0.42	0.33	1.27	0.00	0.00	0.00



48.85	0.42	0.33	1.27	0.00	0.00	0.00
48.90	0.42	0.33	1.27	0.00	0.00	0.00
48.95	0.42	0.33	1.27	0.00	0.00	0.00
49.00	0.42	0.33	1.27	0.00	0.00	0.00
49.05	0.42	0.33	1.27	0.00	0.00	0.00
49.10	0.42	0.33	1.27	0.00	0.00	0.00
49.15	0.42	0.33	1.27	0.00	0.00	0.00
49.20	0.42	0.33	1.27	0.00	0.00	0.00
49.25	0.42	0.33	1.27	0.00	0.00	0.00
49.30	0.42	0.33	1.27	0.00	0.00	0.00
49.35	0.42	0.33	1.27	0.00	0.00	0.00
49.40	0.42	0.33	1.27	0.00	0.00	0.00
49.45	0.42	0.33	1.27	0.00	0.00	0.00
49.50	0.42	0.33	1.27	0.00	0.00	0.00
49.55	0.42	0.33	1.27	0.00	0.00	0.00
49.60	0.42	0.33	1.27	0.00	0.00	0.00
49.65	0.42	0.33	1.27	0.00	0.00	0.00
49.70	0.42	0.33	1.27	0.00	0.00	0.00
49.75	0.42	0.33	1.27	0.00	0.00	0.00
49.80	0.42	0.33	1.27	0.00	0.00	0.00
49.85	0.42	0.33	1.27	0.00	0.00	0.00
49.90	0.42	0.33	1.27	0.00	0.00	0.00
49.95	0.42	0.33	1.27	0.00	0.00	0.00
50.00	0.42	0.33	1.27	0.00	0.00	0.00
50.05	0.42	0.33	1.27	0.00	0.00	0.00
50.10	0.42	0.33	1.27	0.00	0.00	0.00
50.15	0.42	0.33	1.26	0.00	0.00	0.00
50.20	0.42	0.33	1.26	0.00	0.00	0.00
50.25	0.42	0.33	1.26	0.00	0.00	0.00
50.30	0.42	0.33	1.26	0.00	0.00	0.00
50.35	0.42	0.33	1.26	0.00	0.00	0.00
50.40	0.42	0.33	1.26	0.00	0.00	0.00
50.45	0.42	0.33	1.26	0.00	0.00	0.00
50.50	0.42	0.33	1.26	0.00	0.00	0.00
50.55	0.42	0.33	1.26	0.00	0.00	0.00
50.60	0.42	0.33	1.26	0.00	0.00	0.00
50.65	0.42	0.33	1.26	0.00	0.00	0.00
50.70	0.41	0.33	1.26	0.00	0.00	0.00
50.75	0.41	0.33	1.26	0.00	0.00	0.00
50.80	0.41	0.33	1.26	0.00	0.00	0.00
50.85	0.41	0.33	1.26	0.00	0.00	0.00
50.90	0.41	0.33	1.26	0.00	0.00	0.00
50.95	0.41	0.33	1.26	0.00	0.00	0.00
51.00	0.41	0.33	1.26	0.00	0.00	0.00

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\* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere)	= 1 tsf (ton/ft <sup>2</sup> )
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

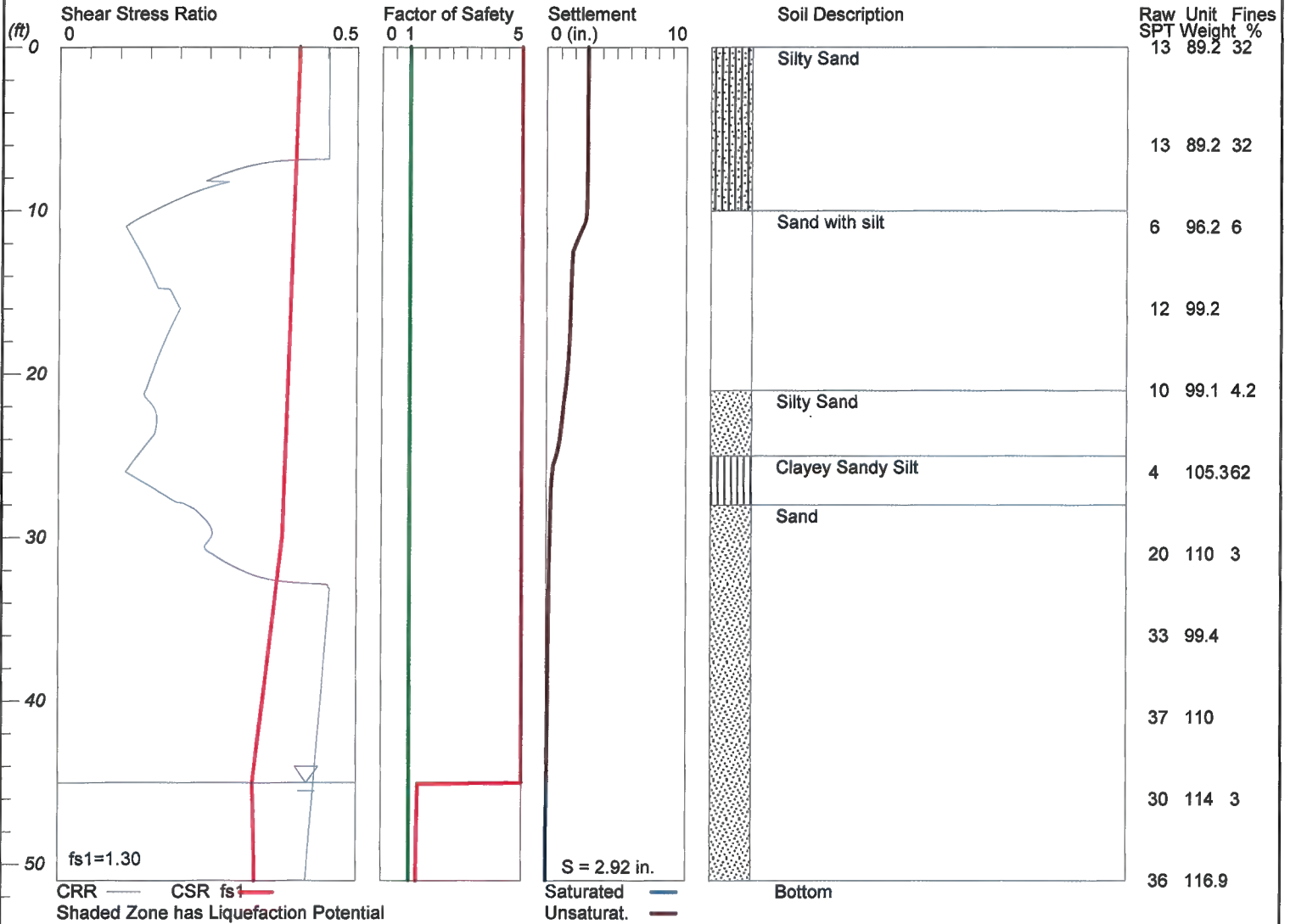


# LIQUEFACTION ANALYSIS

KHSD - SW HS

Hole No.=B-2 Water Depth=45 ft

Magnitude=7.8  
Acceleration=0.477g





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 LIQUEFACTION ANALYSIS SUMMARY  
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Input File Name: O:\b. PROJECT FILES (ACTIVE)\16600-16699\16608  
 KHSD, SW School Site Geotech & GeoHazard\OFFICE REPORTS\Geohaz\16608  
 LiquefyPro files\B2 16608 LiquefyPro.liq  
 Title: KHSD - SW HS  
 Subtitle: 16608

Surface Elev.=  
 Hole No.=B-2  
 Depth of Hole= 51.00 ft  
 Water Table during Earthquake= 45.00 ft  
 Water Table during In-Situ Testing= 100.00 ft  
 Max. Acceleration= 0.48 g  
 Earthquake Magnitude= 7.80

Input Data:

Surface Elev.=  
 Hole No.=B-2  
 Depth of Hole=51.00 ft  
 Water Table during Earthquake= 45.00 ft  
 Water Table during In-Situ Testing= 100.00 ft  
 Max. Acceleration=0.48 g  
 Earthquake Magnitude=7.80  
 No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
  2. Settlement Analysis Method: Tokimatsu, M-correction
  3. Fines Correction for Liquefaction: Idriss/Seed
  4. Fine Correction for Settlement: During Liquefaction\*
  5. Settlement Calculation in: All zones\*
  6. Hammer Energy Ratio, Ce = 1.25
  7. Borehole Diameter, Cb= 1
  8. Sampling Method, Cs= 1.2
  9. User request factor of safety (apply to CSR) , User= 1.3  
 Plot one CSR curve (fsl=User)
  10. Use Curve Smoothing: Yes\*
- \* Recommended Options



In-Situ Test Data:

Depth ft	SPT ft	gamma pcf	Fines %
0.00	13.00	89.20	32.00
6.00	13.00	89.20	32.00
11.00	6.00	96.20	6.00
16.00	12.00	99.20	6.00
21.00	10.00	99.10	4.20
26.00	4.00	105.30	62.00
31.00	20.00	110.00	3.00
36.00	33.00	99.40	3.00
41.00	37.00	110.00	3.00
46.00	30.00	114.00	3.00
51.00	36.00	116.90	3.00

Output Results:

Settlement of Saturated Sands=0.06 in.  
Settlement of Unsaturated Sands=2.86 in.  
Total Settlement of Saturated and Unsaturated Sands=2.92 in.  
Differential Settlement=1.459 to 1.925 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat in.	S_dry in.	S_all in.
0.00	0.45	0.40	5.00	0.06	2.86	2.92
0.05	0.45	0.40	5.00	0.06	2.86	2.92
0.10	0.45	0.40	5.00	0.06	2.86	2.92
0.15	0.45	0.40	5.00	0.06	2.86	2.92
0.20	0.45	0.40	5.00	0.06	2.86	2.92
0.25	0.45	0.40	5.00	0.06	2.86	2.92
0.30	0.45	0.40	5.00	0.06	2.86	2.92
0.35	0.45	0.40	5.00	0.06	2.86	2.92
0.40	0.45	0.40	5.00	0.06	2.86	2.92
0.45	0.45	0.40	5.00	0.06	2.86	2.92
0.50	0.45	0.40	5.00	0.06	2.86	2.92
0.55	0.45	0.40	5.00	0.06	2.86	2.92
0.60	0.45	0.40	5.00	0.06	2.86	2.92
0.65	0.45	0.40	5.00	0.06	2.86	2.92
0.70	0.45	0.40	5.00	0.06	2.86	2.92
0.75	0.45	0.40	5.00	0.06	2.86	2.92
0.80	0.45	0.40	5.00	0.06	2.86	2.92
0.85	0.45	0.40	5.00	0.06	2.86	2.92
0.90	0.45	0.40	5.00	0.06	2.86	2.92
0.95	0.45	0.40	5.00	0.06	2.86	2.92
1.00	0.45	0.40	5.00	0.06	2.86	2.92
1.05	0.45	0.40	5.00	0.06	2.86	2.92
1.10	0.45	0.40	5.00	0.06	2.86	2.92
1.15	0.45	0.40	5.00	0.06	2.86	2.92
1.20	0.45	0.40	5.00	0.06	2.86	2.92
1.25	0.45	0.40	5.00	0.06	2.86	2.92
1.30	0.45	0.40	5.00	0.06	2.86	2.92
1.35	0.45	0.40	5.00	0.06	2.86	2.92
1.40	0.45	0.40	5.00	0.06	2.86	2.92
1.45	0.45	0.40	5.00	0.06	2.86	2.92
1.50	0.45	0.40	5.00	0.06	2.86	2.92
1.55	0.45	0.40	5.00	0.06	2.86	2.92
1.60	0.45	0.40	5.00	0.06	2.86	2.92
1.65	0.45	0.40	5.00	0.06	2.86	2.92



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4.65	0.45	0.40	5.00	0.06	2.85	2.91
4.70	0.45	0.40	5.00	0.06	2.85	2.91
4.75	0.45	0.40	5.00	0.06	2.85	2.91
4.80	0.45	0.40	5.00	0.06	2.85	2.91
4.85	0.45	0.40	5.00	0.06	2.85	2.91
4.90	0.45	0.40	5.00	0.06	2.85	2.91
4.95	0.45	0.40	5.00	0.06	2.85	2.91
5.00	0.45	0.40	5.00	0.06	2.85	2.90
5.05	0.45	0.40	5.00	0.06	2.85	2.90
5.10	0.45	0.40	5.00	0.06	2.85	2.90
5.15	0.45	0.40	5.00	0.06	2.85	2.90
5.20	0.45	0.40	5.00	0.06	2.85	2.90
5.25	0.45	0.40	5.00	0.06	2.85	2.90
5.30	0.45	0.40	5.00	0.06	2.85	2.90
5.35	0.45	0.40	5.00	0.06	2.85	2.90
5.40	0.45	0.40	5.00	0.06	2.85	2.90
5.45	0.45	0.40	5.00	0.06	2.85	2.90
5.50	0.45	0.40	5.00	0.06	2.85	2.90
5.55	0.45	0.40	5.00	0.06	2.85	2.90
5.60	0.45	0.40	5.00	0.06	2.85	2.90
5.65	0.45	0.40	5.00	0.06	2.85	2.90
5.70	0.45	0.40	5.00	0.06	2.85	2.90
5.75	0.45	0.40	5.00	0.06	2.85	2.90
5.80	0.45	0.40	5.00	0.06	2.85	2.90
5.85	0.45	0.40	5.00	0.06	2.85	2.90
5.90	0.45	0.40	5.00	0.06	2.84	2.90
5.95	0.45	0.40	5.00	0.06	2.84	2.90
6.00	0.45	0.40	5.00	0.06	2.84	2.90
6.05	0.45	0.40	5.00	0.06	2.84	2.90
6.10	0.45	0.40	5.00	0.06	2.84	2.90
6.15	0.45	0.40	5.00	0.06	2.84	2.90
6.20	0.45	0.40	5.00	0.06	2.84	2.90
6.25	0.45	0.40	5.00	0.06	2.84	2.90
6.30	0.45	0.40	5.00	0.06	2.84	2.90
6.35	0.45	0.40	5.00	0.06	2.84	2.90
6.40	0.45	0.40	5.00	0.06	2.84	2.90
6.45	0.45	0.40	5.00	0.06	2.84	2.90
6.50	0.45	0.40	5.00	0.06	2.84	2.90
6.55	0.45	0.40	5.00	0.06	2.84	2.90
6.60	0.45	0.40	5.00	0.06	2.84	2.90
6.65	0.45	0.40	5.00	0.06	2.84	2.90
6.70	0.45	0.40	5.00	0.06	2.84	2.90
6.75	0.45	0.40	5.00	0.06	2.84	2.90
6.80	0.45	0.40	5.00	0.06	2.84	2.90
6.85	0.45	0.40	5.00	0.06	2.84	2.90
6.90	0.40	0.40	5.00	0.06	2.84	2.90
6.95	0.38	0.40	5.00	0.06	2.84	2.90
7.00	0.36	0.40	5.00	0.06	2.84	2.90
7.05	0.35	0.40	5.00	0.06	2.84	2.90
7.10	0.34	0.40	5.00	0.06	2.84	2.90
7.15	0.33	0.40	5.00	0.06	2.84	2.90
7.20	0.33	0.40	5.00	0.06	2.84	2.89
7.25	0.32	0.40	5.00	0.06	2.84	2.89
7.30	0.31	0.40	5.00	0.06	2.84	2.89
7.35	0.31	0.40	5.00	0.06	2.84	2.89
7.40	0.30	0.40	5.00	0.06	2.84	2.89
7.45	0.30	0.40	5.00	0.06	2.84	2.89
7.50	0.30	0.40	5.00	0.06	2.84	2.89
7.55	0.29	0.40	5.00	0.06	2.84	2.89



7.60	0.29	0.40	5.00	0.06	2.84	2.89
7.65	0.28	0.40	5.00	0.06	2.84	2.89
7.70	0.28	0.40	5.00	0.06	2.84	2.89
7.75	0.27	0.40	5.00	0.06	2.83	2.89
7.80	0.27	0.40	5.00	0.06	2.83	2.89
7.85	0.27	0.40	5.00	0.06	2.83	2.89
7.90	0.26	0.40	5.00	0.06	2.83	2.89
7.95	0.26	0.40	5.00	0.06	2.83	2.89
8.00	0.26	0.40	5.00	0.06	2.83	2.89
8.05	0.25	0.40	5.00	0.06	2.83	2.89
8.10	0.25	0.40	5.00	0.06	2.83	2.89
8.15	0.25	0.40	5.00	0.06	2.83	2.89
8.20	0.24	0.40	5.00	0.06	2.83	2.89
8.25	0.28	0.40	5.00	0.06	2.83	2.89
8.30	0.28	0.40	5.00	0.06	2.83	2.89
8.35	0.27	0.40	5.00	0.06	2.83	2.89
8.40	0.27	0.40	5.00	0.06	2.83	2.89
8.45	0.26	0.40	5.00	0.06	2.83	2.88
8.50	0.26	0.40	5.00	0.06	2.83	2.88
8.55	0.25	0.40	5.00	0.06	2.83	2.88
8.60	0.25	0.39	5.00	0.06	2.83	2.88
8.65	0.24	0.39	5.00	0.06	2.83	2.88
8.70	0.24	0.39	5.00	0.06	2.83	2.88
8.75	0.24	0.39	5.00	0.06	2.83	2.88
8.80	0.23	0.39	5.00	0.06	2.82	2.88
8.85	0.23	0.39	5.00	0.06	2.82	2.88
8.90	0.22	0.39	5.00	0.06	2.82	2.88
8.95	0.22	0.39	5.00	0.06	2.82	2.88
9.00	0.22	0.39	5.00	0.06	2.82	2.88
9.05	0.21	0.39	5.00	0.06	2.82	2.88
9.10	0.21	0.39	5.00	0.06	2.82	2.88
9.15	0.21	0.39	5.00	0.06	2.82	2.88
9.20	0.20	0.39	5.00	0.06	2.82	2.88
9.25	0.20	0.39	5.00	0.06	2.82	2.87
9.30	0.20	0.39	5.00	0.06	2.82	2.87
9.35	0.19	0.39	5.00	0.06	2.82	2.87
9.40	0.19	0.39	5.00	0.06	2.81	2.87
9.45	0.19	0.39	5.00	0.06	2.81	2.87
9.50	0.19	0.39	5.00	0.06	2.81	2.87
9.55	0.18	0.39	5.00	0.06	2.81	2.87
9.60	0.18	0.39	5.00	0.06	2.81	2.87
9.65	0.18	0.39	5.00	0.06	2.81	2.86
9.70	0.17	0.39	5.00	0.06	2.81	2.86
9.75	0.17	0.39	5.00	0.06	2.80	2.86
9.80	0.17	0.39	5.00	0.06	2.80	2.86
9.85	0.17	0.39	5.00	0.06	2.80	2.86
9.90	0.16	0.39	5.00	0.06	2.80	2.85
9.95	0.16	0.39	5.00	0.06	2.80	2.85
10.00	0.16	0.39	5.00	0.06	2.79	2.85
10.05	0.15	0.39	5.00	0.06	2.79	2.85
10.10	0.15	0.39	5.00	0.06	2.79	2.84
10.15	0.15	0.39	5.00	0.06	2.78	2.84
10.20	0.15	0.39	5.00	0.06	2.78	2.83
10.25	0.14	0.39	5.00	0.06	2.77	2.83
10.30	0.14	0.39	5.00	0.06	2.77	2.82
10.35	0.14	0.39	5.00	0.06	2.76	2.82
10.40	0.14	0.39	5.00	0.06	2.75	2.81
10.45	0.13	0.39	5.00	0.06	2.74	2.80
10.50	0.13	0.39	5.00	0.06	2.73	2.79



10.55	0.13	0.39	5.00	0.06	2.72	2.78
10.60	0.13	0.39	5.00	0.06	2.71	2.77
10.65	0.12	0.39	5.00	0.06	2.70	2.75
10.70	0.12	0.39	5.00	0.06	2.68	2.73
10.75	0.12	0.39	5.00	0.06	2.66	2.71
10.80	0.12	0.39	5.00	0.06	2.63	2.69
10.85	0.12	0.39	5.00	0.06	2.61	2.66
10.90	0.11	0.39	5.00	0.06	2.58	2.64
10.95	0.11	0.39	5.00	0.06	2.56	2.61
11.00	0.11	0.39	5.00	0.06	2.53	2.59
11.05	0.11	0.39	5.00	0.06	2.50	2.56
11.10	0.11	0.39	5.00	0.06	2.47	2.53
11.15	0.11	0.39	5.00	0.06	2.45	2.50
11.20	0.11	0.39	5.00	0.06	2.42	2.48
11.25	0.11	0.39	5.00	0.06	2.39	2.45
11.30	0.11	0.39	5.00	0.06	2.37	2.42
11.35	0.12	0.39	5.00	0.06	2.34	2.40
11.40	0.12	0.39	5.00	0.06	2.31	2.37
11.45	0.12	0.39	5.00	0.06	2.29	2.35
11.50	0.12	0.39	5.00	0.06	2.26	2.32
11.55	0.12	0.39	5.00	0.06	2.24	2.29
11.60	0.12	0.39	5.00	0.06	2.21	2.27
11.65	0.12	0.39	5.00	0.06	2.19	2.24
11.70	0.12	0.39	5.00	0.06	2.16	2.22
11.75	0.12	0.39	5.00	0.06	2.14	2.20
11.80	0.12	0.39	5.00	0.06	2.11	2.17
11.85	0.12	0.39	5.00	0.06	2.09	2.15
11.90	0.12	0.39	5.00	0.06	2.07	2.12
11.95	0.13	0.39	5.00	0.06	2.04	2.10
12.00	0.13	0.39	5.00	0.06	2.02	2.08
12.05	0.13	0.39	5.00	0.06	2.00	2.05
12.10	0.13	0.39	5.00	0.06	1.97	2.03
12.15	0.13	0.39	5.00	0.06	1.95	2.01
12.20	0.13	0.39	5.00	0.06	1.93	1.98
12.25	0.13	0.39	5.00	0.06	1.90	1.96
12.30	0.13	0.39	5.00	0.06	1.88	1.94
12.35	0.13	0.39	5.00	0.06	1.86	1.92
12.40	0.13	0.39	5.00	0.06	1.84	1.89
12.45	0.13	0.39	5.00	0.06	1.82	1.87
12.50	0.13	0.39	5.00	0.06	1.79	1.85
12.55	0.13	0.39	5.00	0.06	1.79	1.85
12.60	0.13	0.39	5.00	0.06	1.79	1.84
12.65	0.14	0.39	5.00	0.06	1.79	1.84
12.70	0.14	0.39	5.00	0.06	1.78	1.84
12.75	0.14	0.39	5.00	0.06	1.78	1.84
12.80	0.14	0.39	5.00	0.06	1.78	1.83
12.85	0.14	0.39	5.00	0.06	1.77	1.83
12.90	0.14	0.39	5.00	0.06	1.77	1.83
12.95	0.14	0.39	5.00	0.06	1.77	1.83
13.00	0.14	0.39	5.00	0.06	1.77	1.82
13.05	0.14	0.39	5.00	0.06	1.76	1.82
13.10	0.14	0.39	5.00	0.06	1.76	1.82
13.15	0.14	0.39	5.00	0.06	1.76	1.81
13.20	0.14	0.39	5.00	0.06	1.76	1.81
13.25	0.14	0.39	5.00	0.06	1.75	1.81
13.30	0.14	0.39	5.00	0.06	1.75	1.81
13.35	0.15	0.39	5.00	0.06	1.75	1.80
13.40	0.15	0.39	5.00	0.06	1.75	1.80
13.45	0.15	0.39	5.00	0.06	1.74	1.80



13.50	0.15	0.39	5.00	0.06	1.74	1.80
13.55	0.15	0.39	5.00	0.06	1.74	1.79
13.60	0.15	0.39	5.00	0.06	1.74	1.79
13.65	0.15	0.39	5.00	0.06	1.73	1.79
13.70	0.15	0.39	5.00	0.06	1.73	1.79
13.75	0.15	0.39	5.00	0.06	1.73	1.78
13.80	0.15	0.39	5.00	0.06	1.73	1.78
13.85	0.15	0.39	5.00	0.06	1.72	1.78
13.90	0.15	0.39	5.00	0.06	1.72	1.78
13.95	0.15	0.39	5.00	0.06	1.72	1.78
14.00	0.15	0.39	5.00	0.06	1.72	1.77
14.05	0.15	0.39	5.00	0.06	1.71	1.77
14.10	0.16	0.39	5.00	0.06	1.71	1.77
14.15	0.16	0.39	5.00	0.06	1.71	1.77
14.20	0.16	0.39	5.00	0.06	1.71	1.76
14.25	0.16	0.39	5.00	0.06	1.70	1.76
14.30	0.16	0.39	5.00	0.06	1.70	1.76
14.35	0.16	0.39	5.00	0.06	1.70	1.76
14.40	0.16	0.39	5.00	0.06	1.70	1.75
14.45	0.16	0.39	5.00	0.06	1.70	1.75
14.50	0.16	0.39	5.00	0.06	1.69	1.75
14.55	0.16	0.39	5.00	0.06	1.69	1.75
14.60	0.16	0.39	5.00	0.06	1.69	1.74
14.65	0.16	0.39	5.00	0.06	1.69	1.74
14.70	0.16	0.39	5.00	0.06	1.68	1.74
14.75	0.16	0.39	5.00	0.06	1.68	1.74
14.80	0.18	0.39	5.00	0.06	1.68	1.74
14.85	0.18	0.39	5.00	0.06	1.68	1.73
14.90	0.19	0.39	5.00	0.06	1.68	1.73
14.95	0.19	0.39	5.00	0.06	1.67	1.73
15.00	0.19	0.39	5.00	0.06	1.67	1.73
15.05	0.19	0.39	5.00	0.06	1.67	1.73
15.10	0.19	0.39	5.00	0.06	1.67	1.73
15.15	0.19	0.39	5.00	0.06	1.67	1.72
15.20	0.19	0.39	5.00	0.06	1.67	1.72
15.25	0.19	0.39	5.00	0.06	1.66	1.72
15.30	0.19	0.39	5.00	0.06	1.66	1.72
15.35	0.19	0.39	5.00	0.06	1.66	1.72
15.40	0.19	0.39	5.00	0.06	1.66	1.72
15.45	0.19	0.39	5.00	0.06	1.66	1.71
15.50	0.19	0.39	5.00	0.06	1.66	1.71
15.55	0.19	0.39	5.00	0.06	1.65	1.71
15.60	0.20	0.39	5.00	0.06	1.65	1.71
15.65	0.20	0.39	5.00	0.06	1.65	1.71
15.70	0.20	0.39	5.00	0.06	1.65	1.71
15.75	0.20	0.39	5.00	0.06	1.65	1.70
15.80	0.20	0.39	5.00	0.06	1.65	1.70
15.85	0.20	0.39	5.00	0.06	1.65	1.70
15.90	0.20	0.39	5.00	0.06	1.64	1.70
15.95	0.20	0.39	5.00	0.06	1.64	1.70
16.00	0.20	0.39	5.00	0.06	1.64	1.70
16.05	0.20	0.39	5.00	0.06	1.64	1.70
16.10	0.20	0.39	5.00	0.06	1.64	1.69
16.15	0.20	0.39	5.00	0.06	1.64	1.69
16.20	0.20	0.39	5.00	0.06	1.63	1.69
16.25	0.20	0.39	5.00	0.06	1.63	1.69
16.30	0.20	0.39	5.00	0.06	1.63	1.69
16.35	0.20	0.39	5.00	0.06	1.63	1.69
16.40	0.20	0.39	5.00	0.06	1.63	1.68



16.45	0.19	0.39	5.00	0.06	1.63	1.68
16.50	0.19	0.39	5.00	0.06	1.62	1.68
16.55	0.19	0.39	5.00	0.06	1.62	1.68
16.60	0.19	0.39	5.00	0.06	1.62	1.68
16.65	0.19	0.39	5.00	0.06	1.62	1.67
16.70	0.19	0.39	5.00	0.06	1.62	1.67
16.75	0.19	0.39	5.00	0.06	1.61	1.67
16.80	0.19	0.39	5.00	0.06	1.61	1.67
16.85	0.19	0.39	5.00	0.06	1.61	1.67
16.90	0.19	0.39	5.00	0.06	1.61	1.67
16.95	0.19	0.39	5.00	0.06	1.61	1.66
17.00	0.19	0.39	5.00	0.06	1.60	1.66
17.05	0.19	0.39	5.00	0.06	1.60	1.66
17.10	0.19	0.39	5.00	0.06	1.60	1.66
17.15	0.19	0.39	5.00	0.06	1.60	1.65
17.20	0.18	0.39	5.00	0.06	1.60	1.65
17.25	0.18	0.39	5.00	0.06	1.59	1.65
17.30	0.18	0.39	5.00	0.06	1.59	1.65
17.35	0.18	0.39	5.00	0.06	1.59	1.65
17.40	0.18	0.39	5.00	0.06	1.59	1.64
17.45	0.18	0.39	5.00	0.06	1.58	1.64
17.50	0.18	0.39	5.00	0.06	1.58	1.64
17.55	0.18	0.39	5.00	0.06	1.58	1.64
17.60	0.18	0.39	5.00	0.06	1.58	1.63
17.65	0.18	0.39	5.00	0.06	1.57	1.63
17.70	0.18	0.39	5.00	0.06	1.57	1.63
17.75	0.18	0.39	5.00	0.06	1.57	1.63
17.80	0.18	0.39	5.00	0.06	1.57	1.62
17.85	0.18	0.39	5.00	0.06	1.56	1.62
17.90	0.18	0.39	5.00	0.06	1.56	1.62
17.95	0.18	0.39	5.00	0.06	1.56	1.62
18.00	0.17	0.39	5.00	0.06	1.56	1.61
18.05	0.17	0.39	5.00	0.06	1.55	1.61
18.10	0.17	0.39	5.00	0.06	1.55	1.61
18.15	0.17	0.39	5.00	0.06	1.55	1.60
18.20	0.17	0.39	5.00	0.06	1.54	1.60
18.25	0.17	0.39	5.00	0.06	1.54	1.60
18.30	0.17	0.39	5.00	0.06	1.54	1.60
18.35	0.17	0.39	5.00	0.06	1.54	1.59
18.40	0.17	0.39	5.00	0.06	1.53	1.59
18.45	0.17	0.39	5.00	0.06	1.53	1.59
18.50	0.17	0.39	5.00	0.06	1.53	1.58
18.55	0.17	0.39	5.00	0.06	1.52	1.58
18.60	0.17	0.39	5.00	0.06	1.52	1.58
18.65	0.17	0.39	5.00	0.06	1.52	1.57
18.70	0.17	0.39	5.00	0.06	1.51	1.57
18.75	0.17	0.39	5.00	0.06	1.51	1.57
18.80	0.17	0.39	5.00	0.06	1.51	1.56
18.85	0.17	0.39	5.00	0.06	1.50	1.56
18.90	0.16	0.39	5.00	0.06	1.50	1.55
18.95	0.16	0.39	5.00	0.06	1.49	1.55
19.00	0.16	0.39	5.00	0.06	1.49	1.55
19.05	0.16	0.39	5.00	0.06	1.49	1.54
19.10	0.16	0.39	5.00	0.06	1.48	1.54
19.15	0.16	0.39	5.00	0.06	1.48	1.54
19.20	0.16	0.39	5.00	0.06	1.48	1.53
19.25	0.16	0.38	5.00	0.06	1.47	1.53
19.30	0.16	0.38	5.00	0.06	1.47	1.52
19.35	0.16	0.38	5.00	0.06	1.46	1.52



19.40	0.16	0.38	5.00	0.06	1.46	1.51
19.45	0.16	0.38	5.00	0.06	1.45	1.51
19.50	0.16	0.38	5.00	0.06	1.45	1.51
19.55	0.16	0.38	5.00	0.06	1.45	1.50
19.60	0.16	0.38	5.00	0.06	1.44	1.50
19.65	0.16	0.38	5.00	0.06	1.44	1.49
19.70	0.16	0.38	5.00	0.06	1.43	1.49
19.75	0.16	0.38	5.00	0.06	1.43	1.48
19.80	0.16	0.38	5.00	0.06	1.42	1.48
19.85	0.15	0.38	5.00	0.06	1.42	1.47
19.90	0.15	0.38	5.00	0.06	1.41	1.47
19.95	0.15	0.38	5.00	0.06	1.41	1.46
20.00	0.15	0.38	5.00	0.06	1.40	1.46
20.05	0.15	0.38	5.00	0.06	1.40	1.45
20.10	0.15	0.38	5.00	0.06	1.39	1.45
20.15	0.15	0.38	5.00	0.06	1.39	1.44
20.20	0.15	0.38	5.00	0.06	1.38	1.44
20.25	0.15	0.38	5.00	0.06	1.38	1.43
20.30	0.15	0.38	5.00	0.06	1.37	1.43
20.35	0.15	0.38	5.00	0.06	1.36	1.42
20.40	0.15	0.38	5.00	0.06	1.36	1.41
20.45	0.15	0.38	5.00	0.06	1.35	1.41
20.50	0.15	0.38	5.00	0.06	1.35	1.40
20.55	0.15	0.38	5.00	0.06	1.34	1.40
20.60	0.15	0.38	5.00	0.06	1.33	1.39
20.65	0.15	0.38	5.00	0.06	1.33	1.38
20.70	0.15	0.38	5.00	0.06	1.32	1.38
20.75	0.15	0.38	5.00	0.06	1.31	1.37
20.80	0.15	0.38	5.00	0.06	1.31	1.36
20.85	0.15	0.38	5.00	0.06	1.30	1.36
20.90	0.14	0.38	5.00	0.06	1.29	1.35
20.95	0.14	0.38	5.00	0.06	1.29	1.34
21.00	0.14	0.38	5.00	0.06	1.28	1.34
21.05	0.14	0.38	5.00	0.06	1.27	1.33
21.10	0.14	0.38	5.00	0.06	1.27	1.32
21.15	0.14	0.38	5.00	0.06	1.26	1.31
21.20	0.14	0.38	5.00	0.06	1.25	1.31
21.25	0.14	0.38	5.00	0.06	1.24	1.30
21.30	0.14	0.38	5.00	0.06	1.24	1.29
21.35	0.14	0.38	5.00	0.06	1.23	1.28
21.40	0.14	0.38	5.00	0.06	1.22	1.28
21.45	0.14	0.38	5.00	0.06	1.21	1.27
21.50	0.14	0.38	5.00	0.06	1.20	1.26
21.55	0.15	0.38	5.00	0.06	1.20	1.25
21.60	0.15	0.38	5.00	0.06	1.19	1.25
21.65	0.15	0.38	5.00	0.06	1.18	1.24
21.70	0.15	0.38	5.00	0.06	1.18	1.23
21.75	0.15	0.38	5.00	0.06	1.17	1.23
21.80	0.15	0.38	5.00	0.06	1.16	1.22
21.85	0.15	0.38	5.00	0.06	1.16	1.21
21.90	0.15	0.38	5.00	0.06	1.15	1.21
21.95	0.16	0.38	5.00	0.06	1.14	1.20
22.00	0.16	0.38	5.00	0.06	1.14	1.19
22.05	0.16	0.38	5.00	0.06	1.13	1.19
22.10	0.16	0.38	5.00	0.06	1.12	1.18
22.15	0.16	0.38	5.00	0.06	1.12	1.17
22.20	0.16	0.38	5.00	0.06	1.11	1.17
22.25	0.16	0.38	5.00	0.06	1.11	1.16
22.30	0.16	0.38	5.00	0.06	1.10	1.16



22.35	0.16	0.38	5.00	0.06	1.09	1.15
22.40	0.16	0.38	5.00	0.06	1.09	1.14
22.45	0.16	0.38	5.00	0.06	1.08	1.14
22.50	0.16	0.38	5.00	0.06	1.08	1.13
22.55	0.16	0.38	5.00	0.06	1.07	1.13
22.60	0.16	0.38	5.00	0.06	1.06	1.12
22.65	0.16	0.38	5.00	0.06	1.06	1.11
22.70	0.16	0.38	5.00	0.06	1.05	1.11
22.75	0.16	0.38	5.00	0.06	1.05	1.10
22.80	0.16	0.38	5.00	0.06	1.04	1.10
22.85	0.16	0.38	5.00	0.06	1.03	1.09
22.90	0.16	0.38	5.00	0.06	1.03	1.08
22.95	0.16	0.38	5.00	0.06	1.02	1.08
23.00	0.16	0.38	5.00	0.06	1.02	1.07
23.05	0.16	0.38	5.00	0.06	1.01	1.07
23.10	0.16	0.38	5.00	0.06	1.00	1.06
23.15	0.16	0.38	5.00	0.06	1.00	1.05
23.20	0.16	0.38	5.00	0.06	0.99	1.05
23.25	0.16	0.38	5.00	0.06	0.98	1.04
23.30	0.16	0.38	5.00	0.06	0.98	1.03
23.35	0.16	0.38	5.00	0.06	0.97	1.03
23.40	0.16	0.38	5.00	0.06	0.96	1.02
23.45	0.16	0.38	5.00	0.06	0.96	1.01
23.50	0.16	0.38	5.00	0.06	0.95	1.01
23.55	0.16	0.38	5.00	0.06	0.94	1.00
23.60	0.16	0.38	5.00	0.06	0.94	0.99
23.65	0.16	0.38	5.00	0.06	0.93	0.99
23.70	0.16	0.38	5.00	0.06	0.92	0.98
23.75	0.16	0.38	5.00	0.06	0.92	0.97
23.80	0.16	0.38	5.00	0.06	0.91	0.96
23.85	0.15	0.38	5.00	0.06	0.90	0.96
23.90	0.15	0.38	5.00	0.06	0.89	0.95
23.95	0.15	0.38	5.00	0.06	0.88	0.94
24.00	0.15	0.38	5.00	0.06	0.88	0.93
24.05	0.15	0.38	5.00	0.06	0.87	0.92
24.10	0.15	0.38	5.00	0.06	0.86	0.91
24.15	0.15	0.38	5.00	0.06	0.85	0.91
24.20	0.15	0.38	5.00	0.06	0.84	0.90
24.25	0.15	0.38	5.00	0.06	0.83	0.89
24.30	0.15	0.38	5.00	0.06	0.82	0.88
24.35	0.14	0.38	5.00	0.06	0.81	0.87
24.40	0.14	0.38	5.00	0.06	0.80	0.86
24.45	0.14	0.38	5.00	0.06	0.79	0.85
24.50	0.14	0.38	5.00	0.06	0.78	0.83
24.55	0.14	0.38	5.00	0.06	0.77	0.82
24.60	0.14	0.38	5.00	0.06	0.75	0.81
24.65	0.14	0.38	5.00	0.06	0.74	0.80
24.70	0.14	0.38	5.00	0.06	0.73	0.79
24.75	0.14	0.38	5.00	0.06	0.72	0.77
24.80	0.13	0.38	5.00	0.06	0.70	0.76
24.85	0.13	0.38	5.00	0.06	0.69	0.75
24.90	0.13	0.38	5.00	0.06	0.67	0.73
24.95	0.13	0.38	5.00	0.06	0.66	0.72
25.00	0.13	0.38	5.00	0.06	0.64	0.70
25.05	0.13	0.38	5.00	0.06	0.63	0.69
25.10	0.13	0.38	5.00	0.06	0.61	0.67
25.15	0.13	0.38	5.00	0.06	0.60	0.65
25.20	0.13	0.38	5.00	0.06	0.58	0.63
25.25	0.13	0.38	5.00	0.06	0.56	0.62



25.30	0.12	0.38	5.00	0.06	0.54	0.60
25.35	0.12	0.38	5.00	0.06	0.52	0.58
25.40	0.12	0.38	5.00	0.06	0.50	0.56
25.45	0.12	0.38	5.00	0.06	0.48	0.54
25.50	0.12	0.38	5.00	0.06	0.46	0.52
25.55	0.12	0.38	5.00	0.06	0.44	0.50
25.60	0.12	0.38	5.00	0.06	0.43	0.49
25.65	0.12	0.38	5.00	0.06	0.43	0.48
25.70	0.12	0.38	5.00	0.06	0.42	0.48
25.75	0.12	0.38	5.00	0.06	0.42	0.47
25.80	0.11	0.38	5.00	0.06	0.41	0.47
25.85	0.11	0.38	5.00	0.06	0.41	0.46
25.90	0.11	0.38	5.00	0.06	0.40	0.46
25.95	0.11	0.38	5.00	0.06	0.39	0.45
26.00	0.11	0.38	5.00	0.06	0.39	0.44
26.05	0.11	0.38	5.00	0.06	0.38	0.44
26.10	0.12	0.38	5.00	0.06	0.38	0.43
26.15	0.12	0.38	5.00	0.06	0.37	0.43
26.20	0.12	0.38	5.00	0.06	0.36	0.42
26.25	0.12	0.38	5.00	0.06	0.36	0.42
26.30	0.12	0.38	5.00	0.06	0.35	0.41
26.35	0.13	0.38	5.00	0.06	0.35	0.41
26.40	0.13	0.38	5.00	0.06	0.34	0.40
26.45	0.13	0.38	5.00	0.06	0.34	0.40
26.50	0.13	0.38	5.00	0.06	0.34	0.39
26.55	0.14	0.38	5.00	0.06	0.33	0.39
26.60	0.14	0.38	5.00	0.06	0.33	0.38
26.65	0.14	0.38	5.00	0.06	0.32	0.38
26.70	0.14	0.38	5.00	0.06	0.32	0.38
26.75	0.15	0.38	5.00	0.06	0.32	0.37
26.80	0.15	0.38	5.00	0.06	0.31	0.37
26.85	0.15	0.38	5.00	0.06	0.31	0.37
26.90	0.15	0.38	5.00	0.06	0.31	0.36
26.95	0.16	0.38	5.00	0.06	0.30	0.36
27.00	0.16	0.38	5.00	0.06	0.30	0.36
27.05	0.16	0.38	5.00	0.06	0.30	0.35
27.10	0.16	0.38	5.00	0.06	0.29	0.35
27.15	0.16	0.38	5.00	0.06	0.29	0.35
27.20	0.17	0.38	5.00	0.06	0.29	0.35
27.25	0.17	0.38	5.00	0.06	0.29	0.34
27.30	0.17	0.38	5.00	0.06	0.28	0.34
27.35	0.17	0.38	5.00	0.06	0.28	0.34
27.40	0.18	0.38	5.00	0.06	0.28	0.34
27.45	0.18	0.38	5.00	0.06	0.28	0.33
27.50	0.18	0.38	5.00	0.06	0.27	0.33
27.55	0.18	0.38	5.00	0.06	0.27	0.33
27.60	0.18	0.38	5.00	0.06	0.27	0.33
27.65	0.19	0.38	5.00	0.06	0.27	0.32
27.70	0.19	0.38	5.00	0.06	0.27	0.32
27.75	0.19	0.38	5.00	0.06	0.26	0.32
27.80	0.19	0.38	5.00	0.06	0.26	0.32
27.85	0.20	0.38	5.00	0.06	0.26	0.32
27.90	0.21	0.38	5.00	0.06	0.26	0.31
27.95	0.21	0.38	5.00	0.06	0.26	0.31
28.00	0.21	0.38	5.00	0.06	0.25	0.31
28.05	0.21	0.38	5.00	0.06	0.25	0.31
28.10	0.22	0.38	5.00	0.06	0.25	0.31
28.15	0.22	0.38	5.00	0.06	0.25	0.31
28.20	0.22	0.38	5.00	0.06	0.25	0.31



28.25	0.23	0.38	5.00	0.06	0.25	0.30
28.30	0.23	0.38	5.00	0.06	0.25	0.30
28.35	0.23	0.38	5.00	0.06	0.24	0.30
28.40	0.23	0.38	5.00	0.06	0.24	0.30
28.45	0.23	0.38	5.00	0.06	0.24	0.30
28.50	0.23	0.38	5.00	0.06	0.24	0.30
28.55	0.24	0.38	5.00	0.06	0.24	0.30
28.60	0.24	0.38	5.00	0.06	0.24	0.29
28.65	0.24	0.38	5.00	0.06	0.24	0.29
28.70	0.24	0.38	5.00	0.06	0.23	0.29
28.75	0.24	0.38	5.00	0.06	0.23	0.29
28.80	0.24	0.38	5.00	0.06	0.23	0.29
28.85	0.24	0.38	5.00	0.06	0.23	0.29
28.90	0.24	0.38	5.00	0.06	0.23	0.29
28.95	0.25	0.38	5.00	0.06	0.23	0.28
29.00	0.25	0.38	5.00	0.06	0.23	0.28
29.05	0.25	0.38	5.00	0.06	0.23	0.28
29.10	0.25	0.38	5.00	0.06	0.22	0.28
29.15	0.25	0.38	5.00	0.06	0.22	0.28
29.20	0.25	0.38	5.00	0.06	0.22	0.28
29.25	0.25	0.38	5.00	0.06	0.22	0.28
29.30	0.25	0.38	5.00	0.06	0.22	0.28
29.35	0.25	0.38	5.00	0.06	0.22	0.27
29.40	0.25	0.38	5.00	0.06	0.22	0.27
29.45	0.25	0.38	5.00	0.06	0.22	0.27
29.50	0.26	0.38	5.00	0.06	0.21	0.27
29.55	0.26	0.38	5.00	0.06	0.21	0.27
29.60	0.26	0.38	5.00	0.06	0.21	0.27
29.65	0.26	0.38	5.00	0.06	0.21	0.27
29.70	0.26	0.38	5.00	0.06	0.21	0.27
29.75	0.26	0.38	5.00	0.06	0.21	0.26
29.80	0.26	0.38	5.00	0.06	0.21	0.26
29.85	0.26	0.38	5.00	0.06	0.21	0.26
29.90	0.26	0.37	5.00	0.06	0.20	0.26
29.95	0.25	0.37	5.00	0.06	0.20	0.26
30.00	0.25	0.37	5.00	0.06	0.20	0.26
30.05	0.25	0.37	5.00	0.06	0.20	0.26
30.10	0.25	0.37	5.00	0.06	0.20	0.26
30.15	0.25	0.37	5.00	0.06	0.20	0.25
30.20	0.25	0.37	5.00	0.06	0.20	0.25
30.25	0.25	0.37	5.00	0.06	0.20	0.25
30.30	0.25	0.37	5.00	0.06	0.19	0.25
30.35	0.25	0.37	5.00	0.06	0.19	0.25
30.40	0.25	0.37	5.00	0.06	0.19	0.25
30.45	0.24	0.37	5.00	0.06	0.19	0.25
30.50	0.24	0.37	5.00	0.06	0.19	0.25
30.55	0.24	0.37	5.00	0.06	0.19	0.24
30.60	0.24	0.37	5.00	0.06	0.19	0.24
30.65	0.24	0.37	5.00	0.06	0.19	0.24
30.70	0.24	0.37	5.00	0.06	0.18	0.24
30.75	0.25	0.37	5.00	0.06	0.18	0.24
30.80	0.25	0.37	5.00	0.06	0.18	0.24
30.85	0.25	0.37	5.00	0.06	0.18	0.24
30.90	0.25	0.37	5.00	0.06	0.18	0.23
30.95	0.25	0.37	5.00	0.06	0.18	0.23
31.00	0.26	0.37	5.00	0.06	0.18	0.23
31.05	0.26	0.37	5.00	0.06	0.17	0.23
31.10	0.26	0.37	5.00	0.06	0.17	0.23
31.15	0.26	0.37	5.00	0.06	0.17	0.23



31.20	0.27	0.37	5.00	0.06	0.17	0.23
31.25	0.27	0.37	5.00	0.06	0.17	0.23
31.30	0.27	0.37	5.00	0.06	0.17	0.22
31.35	0.27	0.37	5.00	0.06	0.17	0.22
31.40	0.27	0.37	5.00	0.06	0.17	0.22
31.45	0.28	0.37	5.00	0.06	0.16	0.22
31.50	0.28	0.37	5.00	0.06	0.16	0.22
31.55	0.28	0.37	5.00	0.06	0.16	0.22
31.60	0.28	0.37	5.00	0.06	0.16	0.22
31.65	0.29	0.37	5.00	0.06	0.16	0.22
31.70	0.29	0.37	5.00	0.06	0.16	0.22
31.75	0.29	0.37	5.00	0.06	0.16	0.21
31.80	0.29	0.37	5.00	0.06	0.16	0.21
31.85	0.30	0.37	5.00	0.06	0.16	0.21
31.90	0.30	0.37	5.00	0.06	0.15	0.21
31.95	0.30	0.37	5.00	0.06	0.15	0.21
32.00	0.31	0.37	5.00	0.06	0.15	0.21
32.05	0.31	0.37	5.00	0.06	0.15	0.21
32.10	0.31	0.37	5.00	0.06	0.15	0.21
32.15	0.32	0.37	5.00	0.06	0.15	0.21
32.20	0.32	0.37	5.00	0.06	0.15	0.21
32.25	0.32	0.37	5.00	0.06	0.15	0.20
32.30	0.33	0.37	5.00	0.06	0.15	0.20
32.35	0.33	0.37	5.00	0.06	0.15	0.20
32.40	0.34	0.37	5.00	0.06	0.14	0.20
32.45	0.34	0.37	5.00	0.06	0.14	0.20
32.50	0.35	0.37	5.00	0.06	0.14	0.20
32.55	0.35	0.37	5.00	0.06	0.14	0.20
32.60	0.36	0.37	5.00	0.06	0.14	0.20
32.65	0.37	0.37	5.00	0.06	0.14	0.20
32.70	0.38	0.37	5.00	0.06	0.14	0.20
32.75	0.39	0.37	5.00	0.06	0.14	0.19
32.80	0.41	0.37	5.00	0.06	0.14	0.19
32.85	0.45	0.37	5.00	0.06	0.14	0.19
32.90	0.45	0.37	5.00	0.06	0.14	0.19
32.95	0.45	0.37	5.00	0.06	0.13	0.19
33.00	0.45	0.36	5.00	0.06	0.13	0.19
33.05	0.45	0.36	5.00	0.06	0.13	0.19
33.10	0.45	0.36	5.00	0.06	0.13	0.19
33.15	0.45	0.36	5.00	0.06	0.13	0.19
33.20	0.45	0.36	5.00	0.06	0.13	0.19
33.25	0.45	0.36	5.00	0.06	0.13	0.19
33.30	0.45	0.36	5.00	0.06	0.13	0.19
33.35	0.45	0.36	5.00	0.06	0.13	0.18
33.40	0.45	0.36	5.00	0.06	0.13	0.18
33.45	0.45	0.36	5.00	0.06	0.13	0.18
33.50	0.45	0.36	5.00	0.06	0.13	0.18
33.55	0.45	0.36	5.00	0.06	0.13	0.18
33.60	0.45	0.36	5.00	0.06	0.12	0.18
33.65	0.45	0.36	5.00	0.06	0.12	0.18
33.70	0.45	0.36	5.00	0.06	0.12	0.18
33.75	0.45	0.36	5.00	0.06	0.12	0.18
33.80	0.45	0.36	5.00	0.06	0.12	0.18
33.85	0.45	0.36	5.00	0.06	0.12	0.18
33.90	0.45	0.36	5.00	0.06	0.12	0.18
33.95	0.45	0.36	5.00	0.06	0.12	0.18
34.00	0.45	0.36	5.00	0.06	0.12	0.17
34.05	0.45	0.36	5.00	0.06	0.12	0.17
34.10	0.45	0.36	5.00	0.06	0.12	0.17



[illegible]



[illegible]



[illegible]



43.00	0.43	0.33	5.00	0.06	0.03	0.09
43.05	0.43	0.33	5.00	0.06	0.03	0.09
43.10	0.43	0.33	5.00	0.06	0.03	0.08
43.15	0.43	0.33	5.00	0.06	0.03	0.08
43.20	0.43	0.33	5.00	0.06	0.03	0.08
43.25	0.43	0.33	5.00	0.06	0.03	0.08
43.30	0.43	0.33	5.00	0.06	0.03	0.08
43.35	0.43	0.33	5.00	0.06	0.03	0.08
43.40	0.43	0.33	5.00	0.06	0.02	0.08
43.45	0.43	0.33	5.00	0.06	0.02	0.08
43.50	0.43	0.33	5.00	0.06	0.02	0.08
43.55	0.43	0.33	5.00	0.06	0.02	0.08
43.60	0.43	0.33	5.00	0.06	0.02	0.08
43.65	0.43	0.33	5.00	0.06	0.02	0.08
43.70	0.43	0.33	5.00	0.06	0.02	0.08
43.75	0.43	0.33	5.00	0.06	0.02	0.08
43.80	0.43	0.33	5.00	0.06	0.02	0.08
43.85	0.43	0.33	5.00	0.06	0.02	0.08
43.90	0.43	0.33	5.00	0.06	0.02	0.07
43.95	0.43	0.33	5.00	0.06	0.02	0.07
44.00	0.43	0.33	5.00	0.06	0.02	0.07
44.05	0.43	0.33	5.00	0.06	0.02	0.07
44.10	0.43	0.33	5.00	0.06	0.02	0.07
44.15	0.43	0.33	5.00	0.06	0.01	0.07
44.20	0.43	0.33	5.00	0.06	0.01	0.07
44.25	0.43	0.33	5.00	0.06	0.01	0.07
44.30	0.43	0.33	5.00	0.06	0.01	0.07
44.35	0.43	0.33	5.00	0.06	0.01	0.07
44.40	0.43	0.33	5.00	0.06	0.01	0.07
44.45	0.43	0.33	5.00	0.06	0.01	0.07
44.50	0.43	0.33	5.00	0.06	0.01	0.07
44.55	0.43	0.33	5.00	0.06	0.01	0.06
44.60	0.43	0.33	5.00	0.06	0.01	0.06
44.65	0.43	0.33	5.00	0.06	0.01	0.06
44.70	0.43	0.33	5.00	0.06	0.01	0.06
44.75	0.43	0.33	5.00	0.06	0.00	0.06
44.80	0.43	0.33	5.00	0.06	0.00	0.06
44.85	0.43	0.33	5.00	0.06	0.00	0.06
44.90	0.43	0.33	5.00	0.06	0.00	0.06
44.95	0.43	0.33	5.00	0.06	0.00	0.06
45.00	0.43	0.33	5.00	0.06	0.00	0.06
45.05	0.43	0.33	1.32	0.06	0.00	0.06
45.10	0.43	0.33	1.32	0.06	0.00	0.06
45.15	0.43	0.33	1.32	0.06	0.00	0.06
45.20	0.43	0.33	1.31	0.05	0.00	0.05
45.25	0.43	0.33	1.31	0.05	0.00	0.05
45.30	0.43	0.33	1.31	0.05	0.00	0.05
45.35	0.43	0.33	1.31	0.05	0.00	0.05
45.40	0.43	0.33	1.31	0.05	0.00	0.05
45.45	0.43	0.33	1.31	0.05	0.00	0.05
45.50	0.43	0.33	1.31	0.05	0.00	0.05
45.55	0.43	0.33	1.31	0.05	0.00	0.05
45.60	0.43	0.33	1.31	0.05	0.00	0.05
45.65	0.43	0.33	1.31	0.05	0.00	0.05
45.70	0.43	0.33	1.31	0.05	0.00	0.05
45.75	0.43	0.33	1.31	0.05	0.00	0.05
45.80	0.43	0.33	1.31	0.04	0.00	0.04
45.85	0.43	0.33	1.31	0.04	0.00	0.04
45.90	0.43	0.33	1.31	0.04	0.00	0.04



45.95	0.43	0.33	1.31	0.04	0.00	0.04
46.00	0.43	0.33	1.31	0.04	0.00	0.04
46.05	0.43	0.33	1.31	0.04	0.00	0.04
46.10	0.43	0.33	1.30	0.04	0.00	0.04
46.15	0.43	0.33	1.30	0.04	0.00	0.04
46.20	0.43	0.33	1.30	0.04	0.00	0.04
46.25	0.43	0.33	1.30	0.04	0.00	0.04
46.30	0.43	0.33	1.30	0.03	0.00	0.03
46.35	0.43	0.33	1.30	0.03	0.00	0.03
46.40	0.43	0.33	1.30	0.03	0.00	0.03
46.45	0.43	0.33	1.30	0.03	0.00	0.03
46.50	0.43	0.33	1.30	0.03	0.00	0.03
46.55	0.43	0.33	1.30	0.03	0.00	0.03
46.60	0.43	0.33	1.30	0.03	0.00	0.03
46.65	0.42	0.33	1.30	0.03	0.00	0.03
46.70	0.42	0.33	1.30	0.03	0.00	0.03
46.75	0.42	0.33	1.30	0.03	0.00	0.03
46.80	0.42	0.33	1.30	0.02	0.00	0.02
46.85	0.42	0.33	1.30	0.02	0.00	0.02
46.90	0.42	0.33	1.30	0.02	0.00	0.02
46.95	0.42	0.33	1.30	0.02	0.00	0.02
47.00	0.42	0.33	1.30	0.02	0.00	0.02
47.05	0.42	0.33	1.29	0.02	0.00	0.02
47.10	0.42	0.33	1.29	0.02	0.00	0.02
47.15	0.42	0.33	1.29	0.02	0.00	0.02
47.20	0.42	0.33	1.29	0.02	0.00	0.02
47.25	0.42	0.33	1.29	0.02	0.00	0.02
47.30	0.42	0.33	1.29	0.02	0.00	0.02
47.35	0.42	0.33	1.29	0.01	0.00	0.01
47.40	0.42	0.33	1.29	0.01	0.00	0.01
47.45	0.42	0.33	1.29	0.01	0.00	0.01
47.50	0.42	0.33	1.29	0.01	0.00	0.01
47.55	0.42	0.33	1.29	0.01	0.00	0.01
47.60	0.42	0.33	1.29	0.01	0.00	0.01
47.65	0.42	0.33	1.29	0.01	0.00	0.01
47.70	0.42	0.33	1.29	0.01	0.00	0.01
47.75	0.42	0.33	1.29	0.01	0.00	0.01
47.80	0.42	0.33	1.29	0.01	0.00	0.01
47.85	0.42	0.33	1.29	0.01	0.00	0.01
47.90	0.42	0.33	1.29	0.01	0.00	0.01
47.95	0.42	0.33	1.29	0.01	0.00	0.01
48.00	0.42	0.33	1.29	0.01	0.00	0.01
48.05	0.42	0.33	1.29	0.00	0.00	0.00
48.10	0.42	0.33	1.28	0.00	0.00	0.00
48.15	0.42	0.33	1.28	0.00	0.00	0.00
48.20	0.42	0.33	1.28	0.00	0.00	0.00
48.25	0.42	0.33	1.28	0.00	0.00	0.00
48.30	0.42	0.33	1.28	0.00	0.00	0.00
48.35	0.42	0.33	1.28	0.00	0.00	0.00
48.40	0.42	0.33	1.28	0.00	0.00	0.00
48.45	0.42	0.33	1.28	0.00	0.00	0.00
48.50	0.42	0.33	1.28	0.00	0.00	0.00
48.55	0.42	0.33	1.28	0.00	0.00	0.00
48.60	0.42	0.33	1.28	0.00	0.00	0.00
48.65	0.42	0.33	1.28	0.00	0.00	0.00
48.70	0.42	0.33	1.28	0.00	0.00	0.00
48.75	0.42	0.33	1.28	0.00	0.00	0.00
48.80	0.42	0.33	1.28	0.00	0.00	0.00
48.85	0.42	0.33	1.28	0.00	0.00	0.00



48.90	0.42	0.33	1.28	0.00	0.00	0.00
48.95	0.42	0.33	1.28	0.00	0.00	0.00
49.00	0.42	0.33	1.28	0.00	0.00	0.00
49.05	0.42	0.33	1.28	0.00	0.00	0.00
49.10	0.42	0.33	1.28	0.00	0.00	0.00
49.15	0.42	0.33	1.28	0.00	0.00	0.00
49.20	0.42	0.33	1.28	0.00	0.00	0.00
49.25	0.42	0.33	1.28	0.00	0.00	0.00
49.30	0.42	0.33	1.27	0.00	0.00	0.00
49.35	0.42	0.33	1.27	0.00	0.00	0.00
49.40	0.42	0.33	1.27	0.00	0.00	0.00
49.45	0.42	0.33	1.27	0.00	0.00	0.00
49.50	0.42	0.33	1.27	0.00	0.00	0.00
49.55	0.42	0.33	1.27	0.00	0.00	0.00
49.60	0.42	0.33	1.27	0.00	0.00	0.00
49.65	0.42	0.33	1.27	0.00	0.00	0.00
49.70	0.42	0.33	1.27	0.00	0.00	0.00
49.75	0.42	0.33	1.27	0.00	0.00	0.00
49.80	0.42	0.33	1.27	0.00	0.00	0.00
49.85	0.42	0.33	1.27	0.00	0.00	0.00
49.90	0.42	0.33	1.27	0.00	0.00	0.00
49.95	0.42	0.33	1.27	0.00	0.00	0.00
50.00	0.42	0.33	1.27	0.00	0.00	0.00
50.05	0.42	0.33	1.27	0.00	0.00	0.00
50.10	0.42	0.33	1.27	0.00	0.00	0.00
50.15	0.42	0.33	1.27	0.00	0.00	0.00
50.20	0.42	0.33	1.27	0.00	0.00	0.00
50.25	0.42	0.33	1.27	0.00	0.00	0.00
50.30	0.42	0.33	1.27	0.00	0.00	0.00
50.35	0.42	0.33	1.27	0.00	0.00	0.00
50.40	0.42	0.33	1.27	0.00	0.00	0.00
50.45	0.42	0.33	1.27	0.00	0.00	0.00
50.50	0.42	0.33	1.27	0.00	0.00	0.00
50.55	0.42	0.33	1.27	0.00	0.00	0.00
50.60	0.42	0.33	1.26	0.00	0.00	0.00
50.65	0.42	0.33	1.26	0.00	0.00	0.00
50.70	0.42	0.33	1.26	0.00	0.00	0.00
50.75	0.42	0.33	1.26	0.00	0.00	0.00
50.80	0.42	0.33	1.26	0.00	0.00	0.00
50.85	0.42	0.33	1.26	0.00	0.00	0.00
50.90	0.42	0.33	1.26	0.00	0.00	0.00
50.95	0.42	0.33	1.26	0.00	0.00	0.00
51.00	0.42	0.33	1.26	0.00	0.00	0.00

---

\* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm	(atmosphere) = 1 tsf (ton/ft <sup>2</sup> )
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

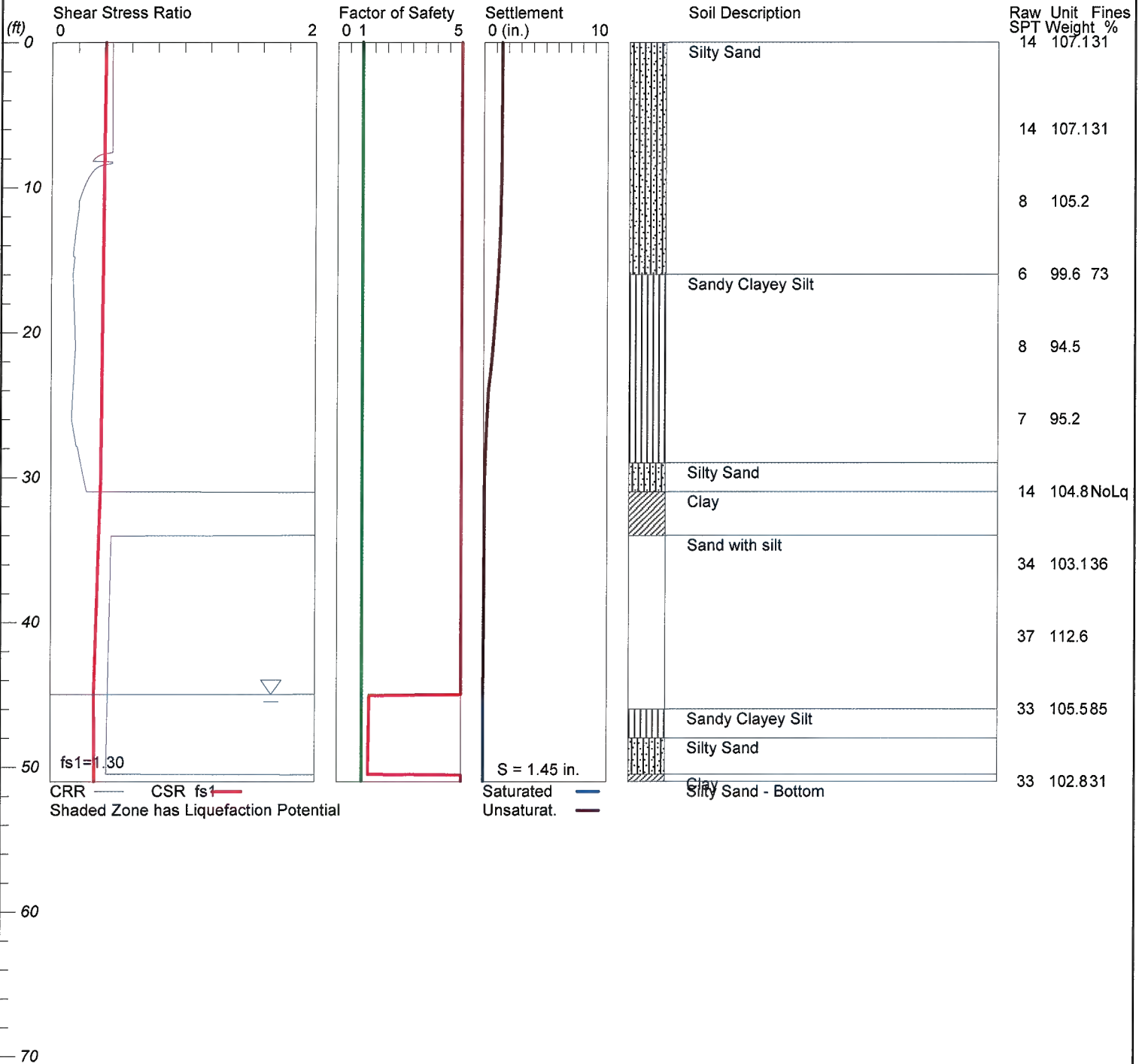


# LIQUEFACTION ANALYSIS

KHSD - SW HS

Hole No.=B-3 Water Depth=45 ft

Magnitude=7.8  
Acceleration=0.477g





\*\*\*\*\*  
\*\*\*\*\*  
LIQUEFACTION ANALYSIS SUMMARY  
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Input File Name: O:\b. PROJECT FILES (ACTIVE)\16600-16699\16608  
KHSD, SW School Site Geotech & GeoHazard\OFFICE REPORTS\Geohaz\16608  
LiquefyPro files\B3 16608 LiquefyPro.liq  
Title: KHSD - SW HS  
Subtitle: 16608

Surface Elev.=  
Hole No.=B-3  
Depth of Hole= 51.00 ft  
Water Table during Earthquake= 45.00 ft  
Water Table during In-Situ Testing= 100.00 ft  
Max. Acceleration= 0.48 g  
Earthquake Magnitude= 7.80

Input Data:

Surface Elev.=  
Hole No.=B-3  
Depth of Hole=51.00 ft  
Water Table during Earthquake= 45.00 ft  
Water Table during In-Situ Testing= 100.00 ft  
Max. Acceleration=0.48 g  
Earthquake Magnitude=7.80  
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
  2. Settlement Analysis Method: Tokimatsu, M-correction
  3. Fines Correction for Liquefaction: Idriss/Seed
  4. Fine Correction for Settlement: During Liquefaction\*
  5. Settlement Calculation in: All zones\*
  6. Hammer Energy Ratio, Ce = 1.25
  7. Borehole Diameter, Cb= 1
  8. Sampling Method, Cs= 1.2
  9. User request factor of safety (apply to CSR) , User= 1.3  
Plot one CSR curve (fsl=User)
  10. Use Curve Smoothing: Yes\*
- \* Recommended Options



In-Situ Test Data:

Depth ft	SPT ft	gamma pcf	Fines %
0.00	14.00	107.10	31.00
6.00	14.00	107.10	31.00
11.00	8.00	105.20	31.00
16.00	6.00	99.60	73.00
21.00	8.00	94.50	73.00
26.00	7.00	95.20	73.00
31.00	14.00	104.80	NoLiq
36.00	34.00	103.10	36.00
41.00	37.00	112.60	36.00
46.00	33.00	105.50	85.00
51.00	33.00	102.80	31.00

Output Results:

Settlement of Saturated Sands=0.00 in.  
Settlement of Unsaturated Sands=1.45 in.  
Total Settlement of Saturated and Unsaturated Sands=1.45 in.  
Differential Settlement=0.725 to 0.957 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat in.	S_dry in.	S_all in.
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0.00	0.45	0.40	5.00	0.00	1.45	1.45
0.05	0.45	0.40	5.00	0.00	1.45	1.45
0.10	0.45	0.40	5.00	0.00	1.45	1.45
0.15	0.45	0.40	5.00	0.00	1.45	1.45
0.20	0.45	0.40	5.00	0.00	1.45	1.45
0.25	0.45	0.40	5.00	0.00	1.45	1.45
0.30	0.45	0.40	5.00	0.00	1.45	1.45
0.35	0.45	0.40	5.00	0.00	1.45	1.45
0.40	0.45	0.40	5.00	0.00	1.45	1.45
0.45	0.45	0.40	5.00	0.00	1.45	1.45
0.50	0.45	0.40	5.00	0.00	1.45	1.45
0.55	0.45	0.40	5.00	0.00	1.45	1.45
0.60	0.45	0.40	5.00	0.00	1.45	1.45
0.65	0.45	0.40	5.00	0.00	1.45	1.45
0.70	0.45	0.40	5.00	0.00	1.45	1.45
0.75	0.45	0.40	5.00	0.00	1.45	1.45
0.80	0.45	0.40	5.00	0.00	1.45	1.45
0.85	0.45	0.40	5.00	0.00	1.45	1.45
0.90	0.45	0.40	5.00	0.00	1.45	1.45
0.95	0.45	0.40	5.00	0.00	1.45	1.45
1.00	0.45	0.40	5.00	0.00	1.45	1.45
1.05	0.45	0.40	5.00	0.00	1.45	1.45
1.10	0.45	0.40	5.00	0.00	1.45	1.45
1.15	0.45	0.40	5.00	0.00	1.45	1.45
1.20	0.45	0.40	5.00	0.00	1.45	1.45
1.25	0.45	0.40	5.00	0.00	1.45	1.45
1.30	0.45	0.40	5.00	0.00	1.45	1.45
1.35	0.45	0.40	5.00	0.00	1.45	1.45
1.40	0.45	0.40	5.00	0.00	1.45	1.45
1.45	0.45	0.40	5.00	0.00	1.45	1.45
1.50	0.45	0.40	5.00	0.00	1.45	1.45
1.55	0.45	0.40	5.00	0.00	1.45	1.45
1.60	0.45	0.40	5.00	0.00	1.45	1.45
1.65	0.45	0.40	5.00	0.00	1.45	1.45



[illegible]



[illegible]



7.60	0.45	0.40	5.00	0.00	1.43	1.43
7.65	0.42	0.40	5.00	0.00	1.43	1.43
7.70	0.39	0.40	5.00	0.00	1.43	1.43
7.75	0.37	0.40	5.00	0.00	1.43	1.43
7.80	0.36	0.40	5.00	0.00	1.43	1.43
7.85	0.35	0.40	5.00	0.00	1.43	1.43
7.90	0.34	0.40	5.00	0.00	1.42	1.42
7.95	0.33	0.40	5.00	0.00	1.42	1.42
8.00	0.33	0.40	5.00	0.00	1.42	1.42
8.05	0.32	0.40	5.00	0.00	1.42	1.42
8.10	0.32	0.40	5.00	0.00	1.42	1.42
8.15	0.31	0.40	5.00	0.00	1.42	1.42
8.20	0.31	0.40	5.00	0.00	1.42	1.42
8.25	0.45	0.40	5.00	0.00	1.42	1.42
8.30	0.45	0.40	5.00	0.00	1.42	1.42
8.35	0.45	0.40	5.00	0.00	1.42	1.42
8.40	0.43	0.40	5.00	0.00	1.42	1.42
8.45	0.39	0.40	5.00	0.00	1.42	1.42
8.50	0.37	0.40	5.00	0.00	1.42	1.42
8.55	0.36	0.40	5.00	0.00	1.42	1.42
8.60	0.35	0.39	5.00	0.00	1.42	1.42
8.65	0.34	0.39	5.00	0.00	1.42	1.42
8.70	0.33	0.39	5.00	0.00	1.42	1.42
8.75	0.33	0.39	5.00	0.00	1.42	1.42
8.80	0.32	0.39	5.00	0.00	1.42	1.42
8.85	0.32	0.39	5.00	0.00	1.42	1.42
8.90	0.31	0.39	5.00	0.00	1.42	1.42
8.95	0.31	0.39	5.00	0.00	1.42	1.42
9.00	0.30	0.39	5.00	0.00	1.41	1.41
9.05	0.30	0.39	5.00	0.00	1.41	1.41
9.10	0.29	0.39	5.00	0.00	1.41	1.41
9.15	0.29	0.39	5.00	0.00	1.41	1.41
9.20	0.29	0.39	5.00	0.00	1.41	1.41
9.25	0.28	0.39	5.00	0.00	1.41	1.41
9.30	0.28	0.39	5.00	0.00	1.41	1.41
9.35	0.28	0.39	5.00	0.00	1.41	1.41
9.40	0.27	0.39	5.00	0.00	1.41	1.41
9.45	0.27	0.39	5.00	0.00	1.41	1.41
9.50	0.27	0.39	5.00	0.00	1.41	1.41
9.55	0.26	0.39	5.00	0.00	1.41	1.41
9.60	0.26	0.39	5.00	0.00	1.41	1.41
9.65	0.26	0.39	5.00	0.00	1.41	1.41
9.70	0.26	0.39	5.00	0.00	1.40	1.40
9.75	0.25	0.39	5.00	0.00	1.40	1.40
9.80	0.25	0.39	5.00	0.00	1.40	1.40
9.85	0.25	0.39	5.00	0.00	1.40	1.40
9.90	0.25	0.39	5.00	0.00	1.40	1.40
9.95	0.24	0.39	5.00	0.00	1.40	1.40
10.00	0.24	0.39	5.00	0.00	1.40	1.40
10.05	0.24	0.39	5.00	0.00	1.40	1.40
10.10	0.24	0.39	5.00	0.00	1.40	1.40
10.15	0.23	0.39	5.00	0.00	1.39	1.39
10.20	0.23	0.39	5.00	0.00	1.39	1.39
10.25	0.23	0.39	5.00	0.00	1.39	1.39
10.30	0.23	0.39	5.00	0.00	1.39	1.39
10.35	0.23	0.39	5.00	0.00	1.39	1.39
10.40	0.22	0.39	5.00	0.00	1.39	1.39
10.45	0.22	0.39	5.00	0.00	1.38	1.38
10.50	0.22	0.39	5.00	0.00	1.38	1.38



10.55	0.22	0.39	5.00	0.00	1.38	1.38
10.60	0.22	0.39	5.00	0.00	1.38	1.38
10.65	0.21	0.39	5.00	0.00	1.38	1.38
10.70	0.21	0.39	5.00	0.00	1.37	1.37
10.75	0.21	0.39	5.00	0.00	1.37	1.37
10.80	0.21	0.39	5.00	0.00	1.37	1.37
10.85	0.21	0.39	5.00	0.00	1.37	1.37
10.90	0.21	0.39	5.00	0.00	1.37	1.37
10.95	0.20	0.39	5.00	0.00	1.37	1.37
11.00	0.20	0.39	5.00	0.00	1.37	1.37
11.05	0.20	0.39	5.00	0.00	1.37	1.37
11.10	0.20	0.39	5.00	0.00	1.37	1.37
11.15	0.20	0.39	5.00	0.00	1.36	1.36
11.20	0.20	0.39	5.00	0.00	1.36	1.36
11.25	0.20	0.39	5.00	0.00	1.36	1.36
11.30	0.20	0.39	5.00	0.00	1.36	1.36
11.35	0.20	0.39	5.00	0.00	1.36	1.36
11.40	0.20	0.39	5.00	0.00	1.36	1.36
11.45	0.20	0.39	5.00	0.00	1.36	1.36
11.50	0.20	0.39	5.00	0.00	1.36	1.36
11.55	0.20	0.39	5.00	0.00	1.36	1.36
11.60	0.20	0.39	5.00	0.00	1.35	1.35
11.65	0.20	0.39	5.00	0.00	1.35	1.35
11.70	0.20	0.39	5.00	0.00	1.35	1.35
11.75	0.20	0.39	5.00	0.00	1.35	1.35
11.80	0.20	0.39	5.00	0.00	1.35	1.35
11.85	0.20	0.39	5.00	0.00	1.35	1.35
11.90	0.20	0.39	5.00	0.00	1.35	1.35
11.95	0.20	0.39	5.00	0.00	1.35	1.35
12.00	0.20	0.39	5.00	0.00	1.34	1.34
12.05	0.19	0.39	5.00	0.00	1.34	1.34
12.10	0.19	0.39	5.00	0.00	1.34	1.34
12.15	0.19	0.39	5.00	0.00	1.34	1.34
12.20	0.19	0.39	5.00	0.00	1.34	1.34
12.25	0.19	0.39	5.00	0.00	1.34	1.34
12.30	0.19	0.39	5.00	0.00	1.34	1.34
12.35	0.19	0.39	5.00	0.00	1.33	1.33
12.40	0.19	0.39	5.00	0.00	1.33	1.33
12.45	0.19	0.39	5.00	0.00	1.33	1.33
12.50	0.19	0.39	5.00	0.00	1.33	1.33
12.55	0.19	0.39	5.00	0.00	1.33	1.33
12.60	0.19	0.39	5.00	0.00	1.33	1.33
12.65	0.19	0.39	5.00	0.00	1.33	1.33
12.70	0.19	0.39	5.00	0.00	1.32	1.32
12.75	0.18	0.39	5.00	0.00	1.32	1.32
12.80	0.18	0.39	5.00	0.00	1.32	1.32
12.85	0.18	0.39	5.00	0.00	1.32	1.32
12.90	0.18	0.39	5.00	0.00	1.32	1.32
12.95	0.18	0.39	5.00	0.00	1.32	1.32
13.00	0.18	0.39	5.00	0.00	1.31	1.31
13.05	0.18	0.39	5.00	0.00	1.31	1.31
13.10	0.18	0.39	5.00	0.00	1.31	1.31
13.15	0.18	0.39	5.00	0.00	1.31	1.31
13.20	0.18	0.39	5.00	0.00	1.31	1.31
13.25	0.18	0.39	5.00	0.00	1.30	1.30
13.30	0.18	0.39	5.00	0.00	1.30	1.30
13.35	0.18	0.39	5.00	0.00	1.30	1.30
13.40	0.18	0.39	5.00	0.00	1.30	1.30
13.45	0.18	0.39	5.00	0.00	1.30	1.30



13.50	0.18	0.39	5.00	0.00	1.29	1.29
13.55	0.18	0.39	5.00	0.00	1.29	1.29
13.60	0.17	0.39	5.00	0.00	1.29	1.29
13.65	0.17	0.39	5.00	0.00	1.29	1.29
13.70	0.17	0.39	5.00	0.00	1.29	1.29
13.75	0.17	0.39	5.00	0.00	1.28	1.28
13.80	0.17	0.39	5.00	0.00	1.28	1.28
13.85	0.17	0.39	5.00	0.00	1.28	1.28
13.90	0.17	0.39	5.00	0.00	1.28	1.28
13.95	0.17	0.39	5.00	0.00	1.27	1.27
14.00	0.17	0.39	5.00	0.00	1.27	1.27
14.05	0.17	0.39	5.00	0.00	1.27	1.27
14.10	0.17	0.39	5.00	0.00	1.27	1.27
14.15	0.17	0.39	5.00	0.00	1.26	1.26
14.20	0.17	0.39	5.00	0.00	1.26	1.26
14.25	0.17	0.39	5.00	0.00	1.26	1.26
14.30	0.17	0.39	5.00	0.00	1.26	1.26
14.35	0.17	0.39	5.00	0.00	1.25	1.25
14.40	0.17	0.39	5.00	0.00	1.25	1.25
14.45	0.17	0.39	5.00	0.00	1.25	1.25
14.50	0.16	0.39	5.00	0.00	1.25	1.25
14.55	0.16	0.39	5.00	0.00	1.24	1.24
14.60	0.16	0.39	5.00	0.00	1.24	1.24
14.65	0.16	0.39	5.00	0.00	1.24	1.24
14.70	0.16	0.39	5.00	0.00	1.23	1.23
14.75	0.16	0.39	5.00	0.00	1.23	1.23
14.80	0.17	0.39	5.00	0.00	1.23	1.23
14.85	0.17	0.39	5.00	0.00	1.23	1.23
14.90	0.17	0.39	5.00	0.00	1.22	1.22
14.95	0.17	0.39	5.00	0.00	1.22	1.22
15.00	0.17	0.39	5.00	0.00	1.22	1.22
15.05	0.17	0.39	5.00	0.00	1.22	1.22
15.10	0.17	0.39	5.00	0.00	1.21	1.21
15.15	0.17	0.39	5.00	0.00	1.21	1.21
15.20	0.17	0.39	5.00	0.00	1.21	1.21
15.25	0.17	0.39	5.00	0.00	1.20	1.20
15.30	0.17	0.39	5.00	0.00	1.20	1.20
15.35	0.17	0.39	5.00	0.00	1.20	1.20
15.40	0.17	0.39	5.00	0.00	1.20	1.20
15.45	0.17	0.39	5.00	0.00	1.19	1.19
15.50	0.17	0.39	5.00	0.00	1.19	1.19
15.55	0.17	0.39	5.00	0.00	1.19	1.19
15.60	0.17	0.39	5.00	0.00	1.18	1.18
15.65	0.16	0.39	5.00	0.00	1.18	1.18
15.70	0.16	0.39	5.00	0.00	1.18	1.18
15.75	0.16	0.39	5.00	0.00	1.17	1.17
15.80	0.16	0.39	5.00	0.00	1.17	1.17
15.85	0.16	0.39	5.00	0.00	1.17	1.17
15.90	0.16	0.39	5.00	0.00	1.16	1.16
15.95	0.16	0.39	5.00	0.00	1.16	1.16
16.00	0.16	0.39	5.00	0.00	1.16	1.16
16.05	0.16	0.39	5.00	0.00	1.15	1.15
16.10	0.16	0.39	5.00	0.00	1.15	1.15
16.15	0.16	0.39	5.00	0.00	1.15	1.15
16.20	0.16	0.39	5.00	0.00	1.14	1.14
16.25	0.16	0.39	5.00	0.00	1.14	1.14
16.30	0.16	0.39	5.00	0.00	1.13	1.13
16.35	0.16	0.39	5.00	0.00	1.13	1.13
16.40	0.16	0.39	5.00	0.00	1.13	1.13



16.45	0.16	0.39	5.00	0.00	1.12	1.12
16.50	0.16	0.39	5.00	0.00	1.12	1.12
16.55	0.16	0.39	5.00	0.00	1.12	1.12
16.60	0.16	0.39	5.00	0.00	1.11	1.11
16.65	0.16	0.39	5.00	0.00	1.11	1.11
16.70	0.16	0.39	5.00	0.00	1.10	1.10
16.75	0.16	0.39	5.00	0.00	1.10	1.10
16.80	0.16	0.39	5.00	0.00	1.10	1.10
16.85	0.16	0.39	5.00	0.00	1.09	1.09
16.90	0.16	0.39	5.00	0.00	1.09	1.09
16.95	0.16	0.39	5.00	0.00	1.09	1.09
17.00	0.17	0.39	5.00	0.00	1.08	1.08
17.05	0.17	0.39	5.00	0.00	1.08	1.08
17.10	0.17	0.39	5.00	0.00	1.07	1.07
17.15	0.17	0.39	5.00	0.00	1.07	1.07
17.20	0.17	0.39	5.00	0.00	1.07	1.07
17.25	0.17	0.39	5.00	0.00	1.06	1.06
17.30	0.17	0.39	5.00	0.00	1.06	1.06
17.35	0.17	0.39	5.00	0.00	1.06	1.06
17.40	0.17	0.39	5.00	0.00	1.05	1.05
17.45	0.17	0.39	5.00	0.00	1.05	1.05
17.50	0.17	0.39	5.00	0.00	1.04	1.04
17.55	0.17	0.39	5.00	0.00	1.04	1.04
17.60	0.17	0.39	5.00	0.00	1.04	1.04
17.65	0.17	0.39	5.00	0.00	1.03	1.03
17.70	0.17	0.39	5.00	0.00	1.03	1.03
17.75	0.17	0.39	5.00	0.00	1.02	1.02
17.80	0.17	0.39	5.00	0.00	1.02	1.02
17.85	0.17	0.39	5.00	0.00	1.02	1.02
17.90	0.17	0.39	5.00	0.00	1.01	1.01
17.95	0.17	0.39	5.00	0.00	1.01	1.01
18.00	0.17	0.39	5.00	0.00	1.00	1.00
18.05	0.17	0.39	5.00	0.00	1.00	1.00
18.10	0.17	0.39	5.00	0.00	1.00	1.00
18.15	0.17	0.39	5.00	0.00	0.99	0.99
18.20	0.17	0.39	5.00	0.00	0.99	0.99
18.25	0.17	0.39	5.00	0.00	0.98	0.98
18.30	0.17	0.39	5.00	0.00	0.98	0.98
18.35	0.17	0.39	5.00	0.00	0.98	0.98
18.40	0.17	0.39	5.00	0.00	0.97	0.97
18.45	0.17	0.39	5.00	0.00	0.97	0.97
18.50	0.17	0.39	5.00	0.00	0.96	0.96
18.55	0.17	0.39	5.00	0.00	0.96	0.96
18.60	0.17	0.39	5.00	0.00	0.96	0.96
18.65	0.17	0.39	5.00	0.00	0.95	0.95
18.70	0.17	0.39	5.00	0.00	0.95	0.95
18.75	0.17	0.39	5.00	0.00	0.94	0.94
18.80	0.17	0.39	5.00	0.00	0.94	0.94
18.85	0.17	0.39	5.00	0.00	0.93	0.93
18.90	0.17	0.39	5.00	0.00	0.93	0.93
18.95	0.17	0.39	5.00	0.00	0.93	0.93
19.00	0.17	0.39	5.00	0.00	0.92	0.92
19.05	0.17	0.39	5.00	0.00	0.92	0.92
19.10	0.17	0.39	5.00	0.00	0.91	0.91
19.15	0.17	0.39	5.00	0.00	0.91	0.91
19.20	0.17	0.39	5.00	0.00	0.91	0.91
19.25	0.17	0.38	5.00	0.00	0.90	0.90
19.30	0.17	0.38	5.00	0.00	0.90	0.90
19.35	0.17	0.38	5.00	0.00	0.89	0.89



19.40	0.17	0.38	5.00	0.00	0.89	0.89
19.45	0.17	0.38	5.00	0.00	0.88	0.88
19.50	0.17	0.38	5.00	0.00	0.88	0.88
19.55	0.18	0.38	5.00	0.00	0.88	0.88
19.60	0.18	0.38	5.00	0.00	0.87	0.87
19.65	0.18	0.38	5.00	0.00	0.87	0.87
19.70	0.18	0.38	5.00	0.00	0.86	0.86
19.75	0.18	0.38	5.00	0.00	0.86	0.86
19.80	0.18	0.38	5.00	0.00	0.85	0.85
19.85	0.18	0.38	5.00	0.00	0.85	0.85
19.90	0.18	0.38	5.00	0.00	0.85	0.85
19.95	0.18	0.38	5.00	0.00	0.84	0.84
20.00	0.18	0.38	5.00	0.00	0.84	0.84
20.05	0.18	0.38	5.00	0.00	0.83	0.83
20.10	0.18	0.38	5.00	0.00	0.83	0.83
20.15	0.18	0.38	5.00	0.00	0.82	0.82
20.20	0.18	0.38	5.00	0.00	0.82	0.82
20.25	0.18	0.38	5.00	0.00	0.82	0.82
20.30	0.18	0.38	5.00	0.00	0.81	0.81
20.35	0.18	0.38	5.00	0.00	0.81	0.81
20.40	0.18	0.38	5.00	0.00	0.80	0.80
20.45	0.18	0.38	5.00	0.00	0.80	0.80
20.50	0.18	0.38	5.00	0.00	0.79	0.79
20.55	0.18	0.38	5.00	0.00	0.79	0.79
20.60	0.18	0.38	5.00	0.00	0.78	0.78
20.65	0.18	0.38	5.00	0.00	0.78	0.78
20.70	0.18	0.38	5.00	0.00	0.78	0.78
20.75	0.18	0.38	5.00	0.00	0.77	0.77
20.80	0.18	0.38	5.00	0.00	0.77	0.77
20.85	0.18	0.38	5.00	0.00	0.76	0.76
20.90	0.18	0.38	5.00	0.00	0.76	0.76
20.95	0.18	0.38	5.00	0.00	0.75	0.75
21.00	0.18	0.38	5.00	0.00	0.75	0.75
21.05	0.18	0.38	5.00	0.00	0.74	0.74
21.10	0.18	0.38	5.00	0.00	0.74	0.74
21.15	0.18	0.38	5.00	0.00	0.73	0.73
21.20	0.18	0.38	5.00	0.00	0.73	0.73
21.25	0.18	0.38	5.00	0.00	0.73	0.73
21.30	0.18	0.38	5.00	0.00	0.72	0.72
21.35	0.18	0.38	5.00	0.00	0.72	0.72
21.40	0.18	0.38	5.00	0.00	0.71	0.71
21.45	0.18	0.38	5.00	0.00	0.71	0.71
21.50	0.18	0.38	5.00	0.00	0.70	0.70
21.55	0.18	0.38	5.00	0.00	0.70	0.70
21.60	0.18	0.38	5.00	0.00	0.69	0.69
21.65	0.18	0.38	5.00	0.00	0.69	0.69
21.70	0.18	0.38	5.00	0.00	0.68	0.68
21.75	0.18	0.38	5.00	0.00	0.68	0.68
21.80	0.18	0.38	5.00	0.00	0.67	0.67
21.85	0.18	0.38	5.00	0.00	0.67	0.67
21.90	0.18	0.38	5.00	0.00	0.66	0.66
21.95	0.17	0.38	5.00	0.00	0.65	0.65
22.00	0.17	0.38	5.00	0.00	0.65	0.65
22.05	0.17	0.38	5.00	0.00	0.64	0.64
22.10	0.17	0.38	5.00	0.00	0.64	0.64
22.15	0.17	0.38	5.00	0.00	0.63	0.63
22.20	0.17	0.38	5.00	0.00	0.63	0.63
22.25	0.17	0.38	5.00	0.00	0.62	0.62
22.30	0.17	0.38	5.00	0.00	0.62	0.62



22.35	0.17	0.38	5.00	0.00	0.61	0.61
22.40	0.17	0.38	5.00	0.00	0.60	0.60
22.45	0.17	0.38	5.00	0.00	0.60	0.60
22.50	0.17	0.38	5.00	0.00	0.59	0.59
22.55	0.17	0.38	5.00	0.00	0.59	0.59
22.60	0.17	0.38	5.00	0.00	0.58	0.58
22.65	0.17	0.38	5.00	0.00	0.57	0.57
22.70	0.17	0.38	5.00	0.00	0.57	0.57
22.75	0.17	0.38	5.00	0.00	0.56	0.56
22.80	0.17	0.38	5.00	0.00	0.55	0.55
22.85	0.17	0.38	5.00	0.00	0.55	0.55
22.90	0.17	0.38	5.00	0.00	0.54	0.54
22.95	0.17	0.38	5.00	0.00	0.53	0.53
23.00	0.17	0.38	5.00	0.00	0.53	0.53
23.05	0.17	0.38	5.00	0.00	0.52	0.52
23.10	0.17	0.38	5.00	0.00	0.51	0.51
23.15	0.17	0.38	5.00	0.00	0.51	0.51
23.20	0.17	0.38	5.00	0.00	0.50	0.50
23.25	0.17	0.38	5.00	0.00	0.49	0.49
23.30	0.17	0.38	5.00	0.00	0.49	0.49
23.35	0.17	0.38	5.00	0.00	0.48	0.48
23.40	0.17	0.38	5.00	0.00	0.47	0.47
23.45	0.17	0.38	5.00	0.00	0.46	0.46
23.50	0.17	0.38	5.00	0.00	0.46	0.46
23.55	0.17	0.38	5.00	0.00	0.45	0.45
23.60	0.17	0.38	5.00	0.00	0.44	0.44
23.65	0.17	0.38	5.00	0.00	0.43	0.43
23.70	0.17	0.38	5.00	0.00	0.43	0.43
23.75	0.16	0.38	5.00	0.00	0.42	0.42
23.80	0.16	0.38	5.00	0.00	0.41	0.41
23.85	0.16	0.38	5.00	0.00	0.40	0.40
23.90	0.16	0.38	5.00	0.00	0.39	0.39
23.95	0.16	0.38	5.00	0.00	0.39	0.39
24.00	0.16	0.38	5.00	0.00	0.39	0.39
24.05	0.16	0.38	5.00	0.00	0.39	0.39
24.10	0.16	0.38	5.00	0.00	0.38	0.38
24.15	0.16	0.38	5.00	0.00	0.38	0.38
24.20	0.16	0.38	5.00	0.00	0.38	0.38
24.25	0.16	0.38	5.00	0.00	0.38	0.38
24.30	0.16	0.38	5.00	0.00	0.37	0.37
24.35	0.16	0.38	5.00	0.00	0.37	0.37
24.40	0.16	0.38	5.00	0.00	0.37	0.37
24.45	0.16	0.38	5.00	0.00	0.37	0.37
24.50	0.16	0.38	5.00	0.00	0.36	0.36
24.55	0.16	0.38	5.00	0.00	0.36	0.36
24.60	0.16	0.38	5.00	0.00	0.36	0.36
24.65	0.16	0.38	5.00	0.00	0.36	0.36
24.70	0.16	0.38	5.00	0.00	0.35	0.35
24.75	0.16	0.38	5.00	0.00	0.35	0.35
24.80	0.16	0.38	5.00	0.00	0.35	0.35
24.85	0.16	0.38	5.00	0.00	0.34	0.34
24.90	0.16	0.38	5.00	0.00	0.34	0.34
24.95	0.16	0.38	5.00	0.00	0.34	0.34
25.00	0.16	0.38	5.00	0.00	0.34	0.34
25.05	0.16	0.38	5.00	0.00	0.33	0.33
25.10	0.16	0.38	5.00	0.00	0.33	0.33
25.15	0.16	0.38	5.00	0.00	0.33	0.33
25.20	0.16	0.38	5.00	0.00	0.32	0.32
25.25	0.16	0.38	5.00	0.00	0.32	0.32



25.30	0.16	0.38	5.00	0.00	0.32	0.32
25.35	0.16	0.38	5.00	0.00	0.32	0.32
25.40	0.16	0.38	5.00	0.00	0.31	0.31
25.45	0.16	0.38	5.00	0.00	0.31	0.31
25.50	0.16	0.38	5.00	0.00	0.31	0.31
25.55	0.16	0.38	5.00	0.00	0.30	0.30
25.60	0.16	0.38	5.00	0.00	0.30	0.30
25.65	0.16	0.38	5.00	0.00	0.30	0.30
25.70	0.15	0.38	5.00	0.00	0.29	0.29
25.75	0.15	0.38	5.00	0.00	0.29	0.29
25.80	0.15	0.38	5.00	0.00	0.29	0.29
25.85	0.15	0.38	5.00	0.00	0.29	0.29
25.90	0.15	0.38	5.00	0.00	0.28	0.28
25.95	0.15	0.38	5.00	0.00	0.28	0.28
26.00	0.15	0.38	5.00	0.00	0.28	0.28
26.05	0.15	0.38	5.00	0.00	0.27	0.27
26.10	0.16	0.38	5.00	0.00	0.27	0.27
26.15	0.16	0.38	5.00	0.00	0.27	0.27
26.20	0.16	0.38	5.00	0.00	0.26	0.26
26.25	0.16	0.38	5.00	0.00	0.26	0.26
26.30	0.16	0.38	5.00	0.00	0.26	0.26
26.35	0.16	0.38	5.00	0.00	0.25	0.25
26.40	0.16	0.38	5.00	0.00	0.25	0.25
26.45	0.16	0.38	5.00	0.00	0.25	0.25
26.50	0.16	0.38	5.00	0.00	0.25	0.25
26.55	0.16	0.38	5.00	0.00	0.24	0.24
26.60	0.16	0.38	5.00	0.00	0.24	0.24
26.65	0.17	0.38	5.00	0.00	0.24	0.24
26.70	0.17	0.38	5.00	0.00	0.23	0.23
26.75	0.17	0.38	5.00	0.00	0.23	0.23
26.80	0.17	0.38	5.00	0.00	0.23	0.23
26.85	0.17	0.38	5.00	0.00	0.23	0.23
26.90	0.17	0.38	5.00	0.00	0.22	0.22
26.95	0.17	0.38	5.00	0.00	0.22	0.22
27.00	0.17	0.38	5.00	0.00	0.22	0.22
27.05	0.17	0.38	5.00	0.00	0.22	0.22
27.10	0.17	0.38	5.00	0.00	0.21	0.21
27.15	0.17	0.38	5.00	0.00	0.21	0.21
27.20	0.18	0.38	5.00	0.00	0.21	0.21
27.25	0.18	0.38	5.00	0.00	0.21	0.21
27.30	0.18	0.38	5.00	0.00	0.20	0.20
27.35	0.18	0.38	5.00	0.00	0.20	0.20
27.40	0.18	0.38	5.00	0.00	0.20	0.20
27.45	0.18	0.38	5.00	0.00	0.20	0.20
27.50	0.18	0.38	5.00	0.00	0.19	0.19
27.55	0.18	0.38	5.00	0.00	0.19	0.19
27.60	0.18	0.38	5.00	0.00	0.19	0.19
27.65	0.18	0.38	5.00	0.00	0.19	0.19
27.70	0.18	0.38	5.00	0.00	0.18	0.18
27.75	0.19	0.38	5.00	0.00	0.18	0.18
27.80	0.19	0.38	5.00	0.00	0.18	0.18
27.85	0.19	0.38	5.00	0.00	0.18	0.18
27.90	0.20	0.38	5.00	0.00	0.17	0.17
27.95	0.20	0.38	5.00	0.00	0.17	0.17
28.00	0.20	0.38	5.00	0.00	0.17	0.17
28.05	0.20	0.38	5.00	0.00	0.17	0.17
28.10	0.20	0.38	5.00	0.00	0.17	0.17
28.15	0.20	0.38	5.00	0.00	0.17	0.17
28.20	0.20	0.38	5.00	0.00	0.16	0.16



28.25	0.20	0.38	5.00	0.00	0.16	0.16
28.30	0.20	0.38	5.00	0.00	0.16	0.16
28.35	0.20	0.38	5.00	0.00	0.16	0.16
28.40	0.21	0.38	5.00	0.00	0.16	0.16
28.45	0.21	0.38	5.00	0.00	0.15	0.15
28.50	0.21	0.38	5.00	0.00	0.15	0.15
28.55	0.21	0.38	5.00	0.00	0.15	0.15
28.60	0.21	0.38	5.00	0.00	0.15	0.15
28.65	0.21	0.38	5.00	0.00	0.15	0.15
28.70	0.21	0.38	5.00	0.00	0.14	0.14
28.75	0.21	0.38	5.00	0.00	0.14	0.14
28.80	0.21	0.38	5.00	0.00	0.14	0.14
28.85	0.22	0.38	5.00	0.00	0.14	0.14
28.90	0.22	0.38	5.00	0.00	0.14	0.14
28.95	0.22	0.38	5.00	0.00	0.14	0.14
29.00	0.22	0.38	5.00	0.00	0.13	0.13
29.05	0.22	0.38	5.00	0.00	0.13	0.13
29.10	0.22	0.38	5.00	0.00	0.13	0.13
29.15	0.22	0.38	5.00	0.00	0.13	0.13
29.20	0.22	0.38	5.00	0.00	0.13	0.13
29.25	0.22	0.38	5.00	0.00	0.13	0.13
29.30	0.22	0.38	5.00	0.00	0.12	0.12
29.35	0.23	0.38	5.00	0.00	0.12	0.12
29.40	0.23	0.38	5.00	0.00	0.12	0.12
29.45	0.23	0.38	5.00	0.00	0.12	0.12
29.50	0.23	0.38	5.00	0.00	0.12	0.12
29.55	0.23	0.38	5.00	0.00	0.12	0.12
29.60	0.23	0.38	5.00	0.00	0.12	0.12
29.65	0.23	0.38	5.00	0.00	0.11	0.11
29.70	0.23	0.38	5.00	0.00	0.11	0.11
29.75	0.23	0.38	5.00	0.00	0.11	0.11
29.80	0.24	0.38	5.00	0.00	0.11	0.11
29.85	0.24	0.38	5.00	0.00	0.11	0.11
29.90	0.24	0.37	5.00	0.00	0.11	0.11
29.95	0.24	0.37	5.00	0.00	0.10	0.10
30.00	0.24	0.37	5.00	0.00	0.10	0.10
30.05	0.24	0.37	5.00	0.00	0.10	0.10
30.10	0.24	0.37	5.00	0.00	0.10	0.10
30.15	0.24	0.37	5.00	0.00	0.10	0.10
30.20	0.25	0.37	5.00	0.00	0.10	0.10
30.25	0.25	0.37	5.00	0.00	0.10	0.10
30.30	0.25	0.37	5.00	0.00	0.09	0.09
30.35	0.25	0.37	5.00	0.00	0.09	0.09
30.40	0.25	0.37	5.00	0.00	0.09	0.09
30.45	0.25	0.37	5.00	0.00	0.09	0.09
30.50	0.25	0.37	5.00	0.00	0.09	0.09
30.55	0.25	0.37	5.00	0.00	0.09	0.09
30.60	0.26	0.37	5.00	0.00	0.09	0.09
30.65	0.26	0.37	5.00	0.00	0.08	0.08
30.70	0.26	0.37	5.00	0.00	0.08	0.08
30.75	0.26	0.37	5.00	0.00	0.08	0.08
30.80	0.26	0.37	5.00	0.00	0.08	0.08
30.85	0.26	0.37	5.00	0.00	0.08	0.08
30.90	0.26	0.37	5.00	0.00	0.08	0.08
30.95	0.26	0.37	5.00	0.00	0.08	0.08
31.00	0.27	0.37	5.00	0.00	0.08	0.08
31.05	2.00	0.37	5.00	0.00	0.08	0.08
31.10	2.00	0.37	5.00	0.00	0.08	0.08
31.15	2.00	0.37	5.00	0.00	0.08	0.08



[illegible]



[illegible]



[illegible]



[illegible]



[illegible]



[illegible]



48.90	0.42	0.33	1.27	0.00	0.00	0.00
48.95	0.42	0.33	1.27	0.00	0.00	0.00
49.00	0.42	0.33	1.27	0.00	0.00	0.00
49.05	0.42	0.33	1.27	0.00	0.00	0.00
49.10	0.42	0.33	1.27	0.00	0.00	0.00
49.15	0.42	0.33	1.27	0.00	0.00	0.00
49.20	0.42	0.33	1.27	0.00	0.00	0.00
49.25	0.42	0.33	1.27	0.00	0.00	0.00
49.30	0.42	0.33	1.27	0.00	0.00	0.00
49.35	0.42	0.33	1.27	0.00	0.00	0.00
49.40	0.42	0.33	1.27	0.00	0.00	0.00
49.45	0.42	0.33	1.27	0.00	0.00	0.00
49.50	0.42	0.33	1.27	0.00	0.00	0.00
49.55	0.42	0.33	1.27	0.00	0.00	0.00
49.60	0.42	0.33	1.27	0.00	0.00	0.00
49.65	0.42	0.33	1.27	0.00	0.00	0.00
49.70	0.42	0.33	1.27	0.00	0.00	0.00
49.75	0.42	0.33	1.27	0.00	0.00	0.00
49.80	0.42	0.33	1.27	0.00	0.00	0.00
49.85	0.42	0.33	1.27	0.00	0.00	0.00
49.90	0.42	0.33	1.27	0.00	0.00	0.00
49.95	0.42	0.33	1.27	0.00	0.00	0.00
50.00	0.42	0.33	1.27	0.00	0.00	0.00
50.05	0.42	0.33	1.27	0.00	0.00	0.00
50.10	0.42	0.33	1.27	0.00	0.00	0.00
50.15	0.42	0.33	1.27	0.00	0.00	0.00
50.20	0.42	0.33	1.27	0.00	0.00	0.00
50.25	0.42	0.33	1.26	0.00	0.00	0.00
50.30	0.42	0.33	1.26	0.00	0.00	0.00
50.35	0.42	0.33	1.26	0.00	0.00	0.00
50.40	0.42	0.33	1.26	0.00	0.00	0.00
50.45	0.42	0.33	1.26	0.00	0.00	0.00
50.50	0.42	0.33	1.26	0.00	0.00	0.00
50.55	2.00	0.33	5.00	0.00	0.00	0.00
50.60	2.00	0.33	5.00	0.00	0.00	0.00
50.65	2.00	0.33	5.00	0.00	0.00	0.00
50.70	2.00	0.33	5.00	0.00	0.00	0.00
50.75	2.00	0.33	5.00	0.00	0.00	0.00
50.80	2.00	0.33	5.00	0.00	0.00	0.00
50.85	2.00	0.33	5.00	0.00	0.00	0.00
50.90	2.00	0.33	5.00	0.00	0.00	0.00
50.95	2.00	0.33	5.00	0.00	0.00	0.00
51.00	2.00	0.33	5.00	0.00	0.00	0.00

---

\* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit  
Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm Cyclic resistance ratio from soils

CSRsf Cyclic stress ratio induced by a given earthquake (with  
user request factor of safety)

F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf

S\_sat Settlement from saturated sands

S\_dry Settlement from Unsaturated Sands

S\_all Total Settlement from Saturated and Unsaturated Sands

NoLiq No-Liquefy Soils

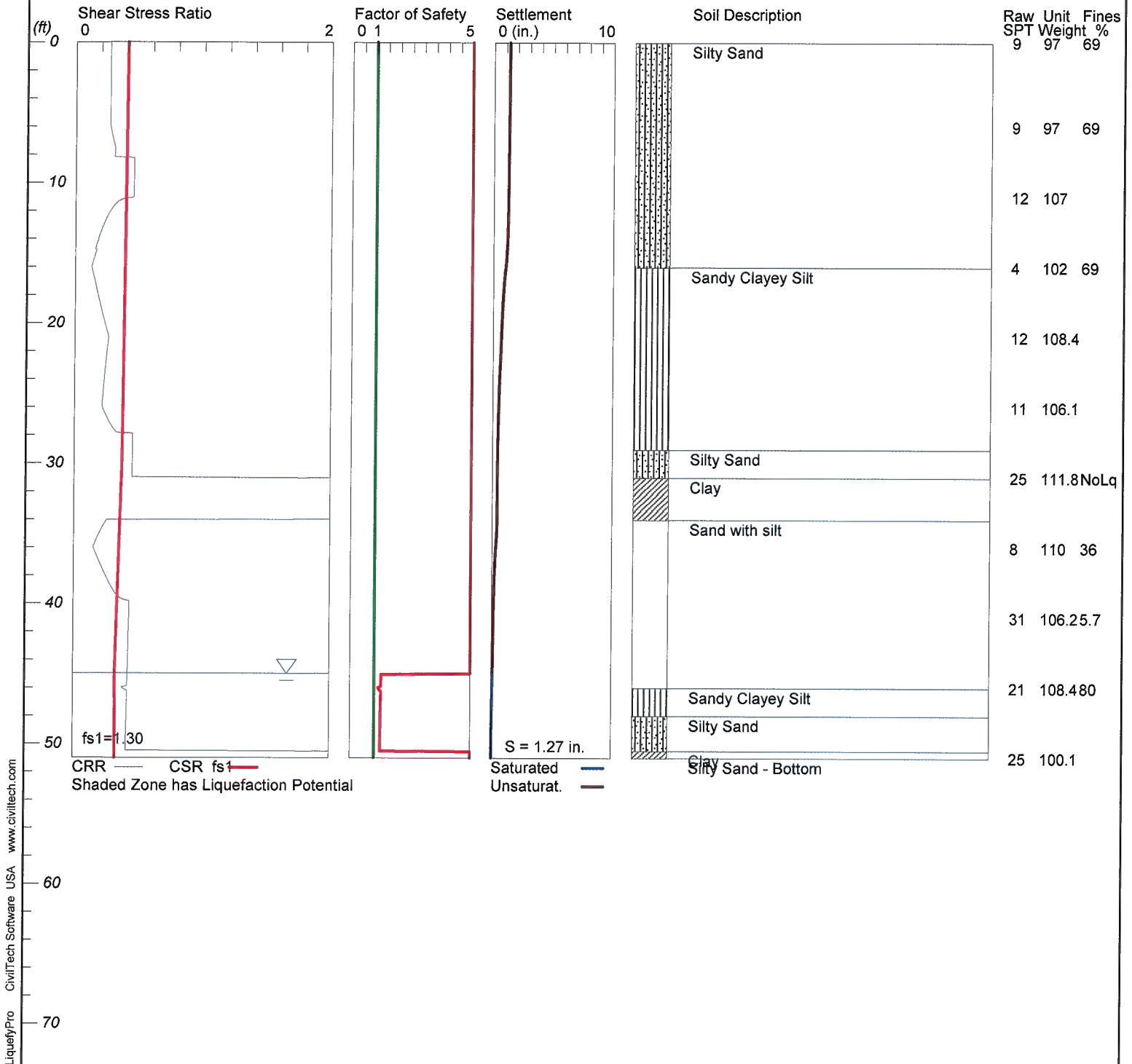


# LIQUEFACTION ANALYSIS

KHSD - SW HS

Hole No.=B-4 Water Depth=45 ft

Magnitude=7.8  
Acceleration=0.477g





\*\*\*\*\*  
\*\*\*\*\*  
LIQUEFACTION ANALYSIS SUMMARY  
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Input File Name: O:\b. PROJECT FILES (ACTIVE)\16600-16699\16608  
KHSD, SW School Site Geotech & GeoHazard\OFFICE REPORTS\Geohaz\16608  
LiquefyPro files\B4 16608 LiquefyPro.liq  
Title: KHSD - SW HS  
Subtitle: 16608

Surface Elev.=  
Hole No.=B-4  
Depth of Hole= 51.00 ft  
Water Table during Earthquake= 45.00 ft  
Water Table during In-Situ Testing= 100.00 ft  
Max. Acceleration= 0.48 g  
Earthquake Magnitude= 7.80

Input Data:

Surface Elev.=  
Hole No.=B-4  
Depth of Hole=51.00 ft  
Water Table during Earthquake= 45.00 ft  
Water Table during In-Situ Testing= 100.00 ft  
Max. Acceleration=0.48 g  
Earthquake Magnitude=7.80  
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
  2. Settlement Analysis Method: Tokimatsu, M-correction
  3. Fines Correction for Liquefaction: Idriss/Seed
  4. Fine Correction for Settlement: During Liquefaction\*
  5. Settlement Calculation in: All zones\*
  6. Hammer Energy Ratio, Ce = 1.25
  7. Borehole Diameter, Cb= 1
  8. Sampling Method, Cs= 1.2
  9. User request factor of safety (apply to CSR) , User= 1.3  
Plot one CSR curve (fsl=User)
  10. Use Curve Smoothing: Yes\*
- \* Recommended Options



# In-Situ Test Data:

Depth ft	SPT ft	gamma pcf	Fines %
0.00	9.00	97.00	69.00
6.00	9.00	97.00	69.00
11.00	12.00	107.00	69.00
16.00	4.00	102.00	69.00
21.00	12.00	108.40	69.00
26.00	11.00	106.10	69.00
31.00	25.00	111.80	NoLiq
36.00	8.00	110.00	36.00
41.00	31.00	106.20	5.70
46.00	21.00	108.40	80.00
51.00	25.00	100.10	80.00

## Output Results:

Settlement of Saturated Sands=0.08 in.  
Settlement of Unsaturated Sands=1.19 in.  
Total Settlement of Saturated and Unsaturated Sands=1.27 in.  
Differential Settlement=0.635 to 0.838 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat in.	S_dry in.	S_all in.
0.00	0.27	0.40	5.00	0.08	1.19	1.27
0.05	0.27	0.40	5.00	0.08	1.19	1.27
0.10	0.27	0.40	5.00	0.08	1.19	1.27
0.15	0.27	0.40	5.00	0.08	1.19	1.27
0.20	0.27	0.40	5.00	0.08	1.19	1.27
0.25	0.27	0.40	5.00	0.08	1.19	1.27
0.30	0.27	0.40	5.00	0.08	1.19	1.27
0.35	0.27	0.40	5.00	0.08	1.19	1.27
0.40	0.27	0.40	5.00	0.08	1.19	1.27
0.45	0.27	0.40	5.00	0.08	1.19	1.27
0.50	0.27	0.40	5.00	0.08	1.19	1.27
0.55	0.27	0.40	5.00	0.08	1.19	1.27
0.60	0.27	0.40	5.00	0.08	1.19	1.27
0.65	0.27	0.40	5.00	0.08	1.19	1.27
0.70	0.27	0.40	5.00	0.08	1.19	1.27
0.75	0.27	0.40	5.00	0.08	1.19	1.27
0.80	0.27	0.40	5.00	0.08	1.19	1.27
0.85	0.27	0.40	5.00	0.08	1.19	1.27
0.90	0.27	0.40	5.00	0.08	1.19	1.27
0.95	0.27	0.40	5.00	0.08	1.19	1.27
1.00	0.27	0.40	5.00	0.08	1.19	1.27
1.05	0.27	0.40	5.00	0.08	1.19	1.27
1.10	0.27	0.40	5.00	0.08	1.19	1.27
1.15	0.27	0.40	5.00	0.08	1.19	1.27
1.20	0.27	0.40	5.00	0.08	1.19	1.27
1.25	0.27	0.40	5.00	0.08	1.19	1.27
1.30	0.27	0.40	5.00	0.08	1.19	1.27
1.35	0.27	0.40	5.00	0.08	1.19	1.27
1.40	0.27	0.40	5.00	0.08	1.19	1.27
1.45	0.27	0.40	5.00	0.08	1.19	1.27
1.50	0.27	0.40	5.00	0.08	1.19	1.27
1.55	0.27	0.40	5.00	0.08	1.19	1.27
1.60	0.27	0.40	5.00	0.08	1.19	1.27



1.65	0.27	0.40	5.00	0.08	1.19	1.27
1.70	0.27	0.40	5.00	0.08	1.19	1.27
1.75	0.27	0.40	5.00	0.08	1.19	1.26
1.80	0.27	0.40	5.00	0.08	1.18	1.26
1.85	0.27	0.40	5.00	0.08	1.18	1.26
1.90	0.27	0.40	5.00	0.08	1.18	1.26
1.95	0.27	0.40	5.00	0.08	1.18	1.26
2.00	0.27	0.40	5.00	0.08	1.18	1.26
2.05	0.27	0.40	5.00	0.08	1.18	1.26
2.10	0.27	0.40	5.00	0.08	1.18	1.26
2.15	0.27	0.40	5.00	0.08	1.18	1.26
2.20	0.27	0.40	5.00	0.08	1.18	1.26
2.25	0.27	0.40	5.00	0.08	1.18	1.26
2.30	0.27	0.40	5.00	0.08	1.18	1.26
2.35	0.27	0.40	5.00	0.08	1.18	1.26
2.40	0.27	0.40	5.00	0.08	1.18	1.26
2.45	0.27	0.40	5.00	0.08	1.18	1.26
2.50	0.27	0.40	5.00	0.08	1.18	1.26
2.55	0.27	0.40	5.00	0.08	1.18	1.26
2.60	0.27	0.40	5.00	0.08	1.18	1.26
2.65	0.27	0.40	5.00	0.08	1.18	1.26
2.70	0.27	0.40	5.00	0.08	1.18	1.26
2.75	0.27	0.40	5.00	0.08	1.18	1.26
2.80	0.27	0.40	5.00	0.08	1.18	1.26
2.85	0.27	0.40	5.00	0.08	1.18	1.26
2.90	0.27	0.40	5.00	0.08	1.18	1.26
2.95	0.27	0.40	5.00	0.08	1.18	1.26
3.00	0.27	0.40	5.00	0.08	1.18	1.26
3.05	0.27	0.40	5.00	0.08	1.18	1.26
3.10	0.27	0.40	5.00	0.08	1.18	1.26
3.15	0.27	0.40	5.00	0.08	1.18	1.26
3.20	0.27	0.40	5.00	0.08	1.18	1.26
3.25	0.27	0.40	5.00	0.08	1.18	1.26
3.30	0.27	0.40	5.00	0.08	1.18	1.26
3.35	0.27	0.40	5.00	0.08	1.18	1.26
3.40	0.27	0.40	5.00	0.08	1.18	1.26
3.45	0.27	0.40	5.00	0.08	1.18	1.26
3.50	0.27	0.40	5.00	0.08	1.18	1.26
3.55	0.27	0.40	5.00	0.08	1.18	1.26
3.60	0.27	0.40	5.00	0.08	1.18	1.26
3.65	0.27	0.40	5.00	0.08	1.18	1.26
3.70	0.27	0.40	5.00	0.08	1.18	1.26
3.75	0.27	0.40	5.00	0.08	1.18	1.26
3.80	0.27	0.40	5.00	0.08	1.18	1.25
3.85	0.27	0.40	5.00	0.08	1.17	1.25
3.90	0.27	0.40	5.00	0.08	1.17	1.25
3.95	0.27	0.40	5.00	0.08	1.17	1.25
4.00	0.27	0.40	5.00	0.08	1.17	1.25
4.05	0.27	0.40	5.00	0.08	1.17	1.25
4.10	0.27	0.40	5.00	0.08	1.17	1.25
4.15	0.27	0.40	5.00	0.08	1.17	1.25
4.20	0.27	0.40	5.00	0.08	1.17	1.25
4.25	0.27	0.40	5.00	0.08	1.17	1.25
4.30	0.27	0.40	5.00	0.08	1.17	1.25
4.35	0.27	0.40	5.00	0.08	1.17	1.25
4.40	0.27	0.40	5.00	0.08	1.17	1.25
4.45	0.27	0.40	5.00	0.08	1.17	1.25
4.50	0.27	0.40	5.00	0.08	1.17	1.25
4.55	0.27	0.40	5.00	0.08	1.17	1.25



4.60	0.27	0.40	5.00	0.08	1.17	1.25
4.65	0.27	0.40	5.00	0.08	1.17	1.25
4.70	0.27	0.40	5.00	0.08	1.17	1.25
4.75	0.27	0.40	5.00	0.08	1.17	1.25
4.80	0.27	0.40	5.00	0.08	1.17	1.25
4.85	0.27	0.40	5.00	0.08	1.17	1.25
4.90	0.27	0.40	5.00	0.08	1.17	1.25
4.95	0.27	0.40	5.00	0.08	1.17	1.25
5.00	0.27	0.40	5.00	0.08	1.17	1.25
5.05	0.27	0.40	5.00	0.08	1.17	1.25
5.10	0.27	0.40	5.00	0.08	1.17	1.25
5.15	0.27	0.40	5.00	0.08	1.17	1.25
5.20	0.27	0.40	5.00	0.08	1.17	1.25
5.25	0.27	0.40	5.00	0.08	1.16	1.24
5.30	0.27	0.40	5.00	0.08	1.16	1.24
5.35	0.27	0.40	5.00	0.08	1.16	1.24
5.40	0.27	0.40	5.00	0.08	1.16	1.24
5.45	0.27	0.40	5.00	0.08	1.16	1.24
5.50	0.27	0.40	5.00	0.08	1.16	1.24
5.55	0.27	0.40	5.00	0.08	1.16	1.24
5.60	0.27	0.40	5.00	0.08	1.16	1.24
5.65	0.27	0.40	5.00	0.08	1.16	1.24
5.70	0.27	0.40	5.00	0.08	1.16	1.24
5.75	0.27	0.40	5.00	0.08	1.16	1.24
5.80	0.27	0.40	5.00	0.08	1.16	1.24
5.85	0.27	0.40	5.00	0.08	1.16	1.24
5.90	0.27	0.40	5.00	0.08	1.16	1.24
5.95	0.27	0.40	5.00	0.08	1.16	1.24
6.00	0.27	0.40	5.00	0.08	1.16	1.24
6.05	0.27	0.40	5.00	0.08	1.16	1.24
6.10	0.27	0.40	5.00	0.08	1.16	1.24
6.15	0.27	0.40	5.00	0.08	1.16	1.24
6.20	0.27	0.40	5.00	0.08	1.16	1.24
6.25	0.27	0.40	5.00	0.08	1.16	1.24
6.30	0.27	0.40	5.00	0.08	1.16	1.24
6.35	0.27	0.40	5.00	0.08	1.16	1.24
6.40	0.27	0.40	5.00	0.08	1.16	1.24
6.45	0.28	0.40	5.00	0.08	1.16	1.24
6.50	0.28	0.40	5.00	0.08	1.16	1.24
6.55	0.28	0.40	5.00	0.08	1.16	1.24
6.60	0.28	0.40	5.00	0.08	1.16	1.24
6.65	0.28	0.40	5.00	0.08	1.15	1.23
6.70	0.28	0.40	5.00	0.08	1.15	1.23
6.75	0.28	0.40	5.00	0.08	1.15	1.23
6.80	0.28	0.40	5.00	0.08	1.15	1.23
6.85	0.29	0.40	5.00	0.08	1.15	1.23
6.90	0.29	0.40	5.00	0.08	1.15	1.23
6.95	0.29	0.40	5.00	0.08	1.15	1.23
7.00	0.29	0.40	5.00	0.08	1.15	1.23
7.05	0.29	0.40	5.00	0.08	1.15	1.23
7.10	0.29	0.40	5.00	0.08	1.15	1.23
7.15	0.29	0.40	5.00	0.08	1.15	1.23
7.20	0.29	0.40	5.00	0.08	1.15	1.23
7.25	0.30	0.40	5.00	0.08	1.15	1.23
7.30	0.30	0.40	5.00	0.08	1.15	1.23
7.35	0.30	0.40	5.00	0.08	1.15	1.23
7.40	0.30	0.40	5.00	0.08	1.15	1.23
7.45	0.30	0.40	5.00	0.08	1.15	1.23
7.50	0.30	0.40	5.00	0.08	1.15	1.23



7.55	0.30	0.40	5.00	0.08	1.15	1.23
7.60	0.30	0.40	5.00	0.08	1.15	1.23
7.65	0.30	0.40	5.00	0.08	1.15	1.23
7.70	0.30	0.40	5.00	0.08	1.15	1.23
7.75	0.30	0.40	5.00	0.08	1.15	1.23
7.80	0.30	0.40	5.00	0.08	1.15	1.23
7.85	0.30	0.40	5.00	0.08	1.15	1.23
7.90	0.30	0.40	5.00	0.08	1.15	1.23
7.95	0.30	0.40	5.00	0.08	1.15	1.23
8.00	0.30	0.40	5.00	0.08	1.14	1.22
8.05	0.30	0.40	5.00	0.08	1.14	1.22
8.10	0.30	0.40	5.00	0.08	1.14	1.22
8.15	0.30	0.40	5.00	0.08	1.14	1.22
8.20	0.30	0.40	5.00	0.08	1.14	1.22
8.25	0.45	0.40	5.00	0.08	1.14	1.22
8.30	0.45	0.40	5.00	0.08	1.14	1.22
8.35	0.45	0.40	5.00	0.08	1.14	1.22
8.40	0.45	0.40	5.00	0.08	1.14	1.22
8.45	0.45	0.40	5.00	0.08	1.14	1.22
8.50	0.45	0.40	5.00	0.08	1.14	1.22
8.55	0.45	0.40	5.00	0.08	1.14	1.22
8.60	0.45	0.39	5.00	0.08	1.14	1.22
8.65	0.45	0.39	5.00	0.08	1.14	1.22
8.70	0.45	0.39	5.00	0.08	1.14	1.22
8.75	0.45	0.39	5.00	0.08	1.14	1.22
8.80	0.45	0.39	5.00	0.08	1.14	1.22
8.85	0.45	0.39	5.00	0.08	1.14	1.22
8.90	0.45	0.39	5.00	0.08	1.14	1.22
8.95	0.45	0.39	5.00	0.08	1.14	1.22
9.00	0.45	0.39	5.00	0.08	1.14	1.22
9.05	0.45	0.39	5.00	0.08	1.14	1.22
9.10	0.45	0.39	5.00	0.08	1.14	1.22
9.15	0.45	0.39	5.00	0.08	1.14	1.22
9.20	0.45	0.39	5.00	0.08	1.14	1.22
9.25	0.45	0.39	5.00	0.08	1.14	1.22
9.30	0.45	0.39	5.00	0.08	1.14	1.22
9.35	0.45	0.39	5.00	0.08	1.13	1.21
9.40	0.45	0.39	5.00	0.08	1.13	1.21
9.45	0.45	0.39	5.00	0.08	1.13	1.21
9.50	0.45	0.39	5.00	0.08	1.13	1.21
9.55	0.45	0.39	5.00	0.08	1.13	1.21
9.60	0.45	0.39	5.00	0.08	1.13	1.21
9.65	0.45	0.39	5.00	0.08	1.13	1.21
9.70	0.45	0.39	5.00	0.08	1.13	1.21
9.75	0.45	0.39	5.00	0.08	1.13	1.21
9.80	0.45	0.39	5.00	0.08	1.13	1.21
9.85	0.45	0.39	5.00	0.08	1.13	1.21
9.90	0.45	0.39	5.00	0.08	1.13	1.21
9.95	0.45	0.39	5.00	0.08	1.13	1.21
10.00	0.45	0.39	5.00	0.08	1.13	1.21
10.05	0.45	0.39	5.00	0.08	1.13	1.21
10.10	0.45	0.39	5.00	0.08	1.13	1.21
10.15	0.45	0.39	5.00	0.08	1.13	1.21
10.20	0.45	0.39	5.00	0.08	1.13	1.21
10.25	0.45	0.39	5.00	0.08	1.13	1.21
10.30	0.45	0.39	5.00	0.08	1.13	1.21
10.35	0.45	0.39	5.00	0.08	1.13	1.21
10.40	0.45	0.39	5.00	0.08	1.13	1.21
10.45	0.45	0.39	5.00	0.08	1.13	1.21



10.50	0.45	0.39	5.00	0.08	1.12	1.20
10.55	0.45	0.39	5.00	0.08	1.12	1.20
10.60	0.45	0.39	5.00	0.08	1.12	1.20
10.65	0.45	0.39	5.00	0.08	1.12	1.20
10.70	0.45	0.39	5.00	0.08	1.12	1.20
10.75	0.45	0.39	5.00	0.08	1.12	1.20
10.80	0.45	0.39	5.00	0.08	1.12	1.20
10.85	0.45	0.39	5.00	0.08	1.12	1.20
10.90	0.45	0.39	5.00	0.08	1.12	1.20
10.95	0.45	0.39	5.00	0.08	1.12	1.20
11.00	0.45	0.39	5.00	0.08	1.12	1.20
11.05	0.45	0.39	5.00	0.08	1.12	1.20
11.10	0.44	0.39	5.00	0.08	1.12	1.20
11.15	0.39	0.39	5.00	0.08	1.12	1.20
11.20	0.37	0.39	5.00	0.08	1.12	1.20
11.25	0.36	0.39	5.00	0.08	1.12	1.20
11.30	0.35	0.39	5.00	0.08	1.12	1.20
11.35	0.34	0.39	5.00	0.08	1.12	1.19
11.40	0.33	0.39	5.00	0.08	1.11	1.19
11.45	0.32	0.39	5.00	0.08	1.11	1.19
11.50	0.32	0.39	5.00	0.08	1.11	1.19
11.55	0.31	0.39	5.00	0.08	1.11	1.19
11.60	0.31	0.39	5.00	0.08	1.11	1.19
11.65	0.30	0.39	5.00	0.08	1.11	1.19
11.70	0.30	0.39	5.00	0.08	1.11	1.19
11.75	0.29	0.39	5.00	0.08	1.11	1.19
11.80	0.29	0.39	5.00	0.08	1.11	1.19
11.85	0.28	0.39	5.00	0.08	1.11	1.19
11.90	0.28	0.39	5.00	0.08	1.11	1.19
11.95	0.28	0.39	5.00	0.08	1.11	1.19
12.00	0.27	0.39	5.00	0.08	1.11	1.19
12.05	0.27	0.39	5.00	0.08	1.11	1.19
12.10	0.27	0.39	5.00	0.08	1.11	1.19
12.15	0.26	0.39	5.00	0.08	1.11	1.19
12.20	0.26	0.39	5.00	0.08	1.10	1.18
12.25	0.26	0.39	5.00	0.08	1.10	1.18
12.30	0.25	0.39	5.00	0.08	1.10	1.18
12.35	0.25	0.39	5.00	0.08	1.10	1.18
12.40	0.25	0.39	5.00	0.08	1.10	1.18
12.45	0.25	0.39	5.00	0.08	1.10	1.18
12.50	0.24	0.39	5.00	0.08	1.10	1.18
12.55	0.24	0.39	5.00	0.08	1.10	1.18
12.60	0.24	0.39	5.00	0.08	1.10	1.18
12.65	0.24	0.39	5.00	0.08	1.10	1.18
12.70	0.23	0.39	5.00	0.08	1.10	1.18
12.75	0.23	0.39	5.00	0.08	1.10	1.18
12.80	0.23	0.39	5.00	0.08	1.10	1.17
12.85	0.23	0.39	5.00	0.08	1.09	1.17
12.90	0.22	0.39	5.00	0.08	1.09	1.17
12.95	0.22	0.39	5.00	0.08	1.09	1.17
13.00	0.22	0.39	5.00	0.08	1.09	1.17
13.05	0.22	0.39	5.00	0.08	1.09	1.17
13.10	0.21	0.39	5.00	0.08	1.09	1.17
13.15	0.21	0.39	5.00	0.08	1.09	1.17
13.20	0.21	0.39	5.00	0.08	1.09	1.17
13.25	0.21	0.39	5.00	0.08	1.09	1.17
13.30	0.21	0.39	5.00	0.08	1.08	1.16
13.35	0.20	0.39	5.00	0.08	1.08	1.16
13.40	0.20	0.39	5.00	0.08	1.08	1.16



13.45	0.20	0.39	5.00	0.08	1.08	1.16
13.50	0.20	0.39	5.00	0.08	1.08	1.16
13.55	0.20	0.39	5.00	0.08	1.08	1.16
13.60	0.19	0.39	5.00	0.08	1.08	1.16
13.65	0.19	0.39	5.00	0.08	1.08	1.15
13.70	0.19	0.39	5.00	0.08	1.07	1.15
13.75	0.19	0.39	5.00	0.08	1.07	1.15
13.80	0.19	0.39	5.00	0.08	1.07	1.15
13.85	0.19	0.39	5.00	0.08	1.07	1.15
13.90	0.18	0.39	5.00	0.08	1.07	1.15
13.95	0.18	0.39	5.00	0.08	1.07	1.15
14.00	0.18	0.39	5.00	0.08	1.06	1.14
14.05	0.18	0.39	5.00	0.08	1.06	1.14
14.10	0.18	0.39	5.00	0.08	1.06	1.14
14.15	0.18	0.39	5.00	0.08	1.06	1.14
14.20	0.17	0.39	5.00	0.08	1.06	1.14
14.25	0.17	0.39	5.00	0.08	1.05	1.13
14.30	0.17	0.39	5.00	0.08	1.05	1.13
14.35	0.17	0.39	5.00	0.08	1.05	1.13
14.40	0.17	0.39	5.00	0.08	1.05	1.13
14.45	0.17	0.39	5.00	0.08	1.04	1.12
14.50	0.16	0.39	5.00	0.08	1.04	1.12
14.55	0.16	0.39	5.00	0.08	1.04	1.12
14.60	0.16	0.39	5.00	0.08	1.04	1.12
14.65	0.16	0.39	5.00	0.08	1.03	1.11
14.70	0.16	0.39	5.00	0.08	1.03	1.11
14.75	0.16	0.39	5.00	0.08	1.03	1.11
14.80	0.17	0.39	5.00	0.08	1.02	1.10
14.85	0.16	0.39	5.00	0.08	1.02	1.10
14.90	0.16	0.39	5.00	0.08	1.02	1.10
14.95	0.16	0.39	5.00	0.08	1.02	1.10
15.00	0.16	0.39	5.00	0.08	1.01	1.09
15.05	0.16	0.39	5.00	0.08	1.01	1.09
15.10	0.16	0.39	5.00	0.08	1.01	1.09
15.15	0.15	0.39	5.00	0.08	1.00	1.08
15.20	0.15	0.39	5.00	0.08	1.00	1.08
15.25	0.15	0.39	5.00	0.08	1.00	1.08
15.30	0.15	0.39	5.00	0.08	0.99	1.07
15.35	0.15	0.39	5.00	0.08	0.99	1.07
15.40	0.15	0.39	5.00	0.08	0.99	1.07
15.45	0.14	0.39	5.00	0.08	0.98	1.06
15.50	0.14	0.39	5.00	0.08	0.98	1.06
15.55	0.14	0.39	5.00	0.08	0.97	1.05
15.60	0.14	0.39	5.00	0.08	0.97	1.05
15.65	0.14	0.39	5.00	0.08	0.96	1.04
15.70	0.14	0.39	5.00	0.08	0.96	1.04
15.75	0.13	0.39	5.00	0.08	0.95	1.03
15.80	0.13	0.39	5.00	0.08	0.95	1.03
15.85	0.13	0.39	5.00	0.08	0.94	1.02
15.90	0.13	0.39	5.00	0.08	0.94	1.02
15.95	0.13	0.39	5.00	0.08	0.93	1.01
16.00	0.13	0.39	5.00	0.08	0.93	1.01
16.05	0.13	0.39	5.00	0.08	0.92	1.00
16.10	0.13	0.39	5.00	0.08	0.91	0.99
16.15	0.13	0.39	5.00	0.08	0.91	0.99
16.20	0.13	0.39	5.00	0.08	0.90	0.98
16.25	0.13	0.39	5.00	0.08	0.89	0.97
16.30	0.13	0.39	5.00	0.08	0.89	0.97
16.35	0.14	0.39	5.00	0.08	0.88	0.96



16.40	0.14	0.39	5.00	0.08	0.88	0.96
16.45	0.14	0.39	5.00	0.08	0.87	0.95
16.50	0.14	0.39	5.00	0.08	0.86	0.94
16.55	0.14	0.39	5.00	0.08	0.86	0.94
16.60	0.14	0.39	5.00	0.08	0.85	0.93
16.65	0.14	0.39	5.00	0.08	0.85	0.93
16.70	0.14	0.39	5.00	0.08	0.84	0.92
16.75	0.15	0.39	5.00	0.08	0.84	0.92
16.80	0.15	0.39	5.00	0.08	0.83	0.91
16.85	0.15	0.39	5.00	0.08	0.83	0.91
16.90	0.15	0.39	5.00	0.08	0.82	0.90
16.95	0.15	0.39	5.00	0.08	0.82	0.90
17.00	0.15	0.39	5.00	0.08	0.82	0.90
17.05	0.15	0.39	5.00	0.08	0.81	0.89
17.10	0.16	0.39	5.00	0.08	0.81	0.89
17.15	0.16	0.39	5.00	0.08	0.80	0.88
17.20	0.16	0.39	5.00	0.08	0.80	0.88
17.25	0.16	0.39	5.00	0.08	0.79	0.87
17.30	0.16	0.39	5.00	0.08	0.79	0.87
17.35	0.16	0.39	5.00	0.08	0.79	0.87
17.40	0.16	0.39	5.00	0.08	0.78	0.86
17.45	0.16	0.39	5.00	0.08	0.78	0.86
17.50	0.17	0.39	5.00	0.08	0.78	0.86
17.55	0.17	0.39	5.00	0.08	0.77	0.85
17.60	0.17	0.39	5.00	0.08	0.77	0.85
17.65	0.17	0.39	5.00	0.08	0.76	0.84
17.70	0.17	0.39	5.00	0.08	0.76	0.84
17.75	0.17	0.39	5.00	0.08	0.76	0.84
17.80	0.17	0.39	5.00	0.08	0.75	0.83
17.85	0.17	0.39	5.00	0.08	0.75	0.83
17.90	0.18	0.39	5.00	0.08	0.75	0.83
17.95	0.18	0.39	5.00	0.08	0.74	0.82
18.00	0.18	0.39	5.00	0.08	0.74	0.82
18.05	0.18	0.39	5.00	0.08	0.74	0.82
18.10	0.18	0.39	5.00	0.08	0.73	0.81
18.15	0.18	0.39	5.00	0.08	0.73	0.81
18.20	0.18	0.39	5.00	0.08	0.73	0.81
18.25	0.18	0.39	5.00	0.08	0.73	0.81
18.30	0.19	0.39	5.00	0.08	0.72	0.80
18.35	0.19	0.39	5.00	0.08	0.72	0.80
18.40	0.19	0.39	5.00	0.08	0.72	0.80
18.45	0.19	0.39	5.00	0.08	0.71	0.79
18.50	0.19	0.39	5.00	0.08	0.71	0.79
18.55	0.19	0.39	5.00	0.08	0.71	0.79
18.60	0.19	0.39	5.00	0.08	0.71	0.79
18.65	0.19	0.39	5.00	0.08	0.70	0.78
18.70	0.20	0.39	5.00	0.08	0.70	0.78
18.75	0.20	0.39	5.00	0.08	0.70	0.78
18.80	0.20	0.39	5.00	0.08	0.69	0.77
18.85	0.20	0.39	5.00	0.08	0.69	0.77
18.90	0.20	0.39	5.00	0.08	0.69	0.77
18.95	0.20	0.39	5.00	0.08	0.69	0.77
19.00	0.20	0.39	5.00	0.08	0.68	0.76
19.05	0.20	0.39	5.00	0.08	0.68	0.76
19.10	0.21	0.39	5.00	0.08	0.68	0.76
19.15	0.21	0.39	5.00	0.08	0.68	0.76
19.20	0.21	0.39	5.00	0.08	0.67	0.75
19.25	0.21	0.38	5.00	0.08	0.67	0.75
19.30	0.21	0.38	5.00	0.08	0.67	0.75



19.35	0.21	0.38	5.00	0.08	0.67	0.75
19.40	0.21	0.38	5.00	0.08	0.67	0.75
19.45	0.22	0.38	5.00	0.08	0.66	0.74
19.50	0.22	0.38	5.00	0.08	0.66	0.74
19.55	0.22	0.38	5.00	0.08	0.66	0.74
19.60	0.22	0.38	5.00	0.08	0.66	0.74
19.65	0.22	0.38	5.00	0.08	0.65	0.73
19.70	0.22	0.38	5.00	0.08	0.65	0.73
19.75	0.22	0.38	5.00	0.08	0.65	0.73
19.80	0.23	0.38	5.00	0.08	0.65	0.73
19.85	0.23	0.38	5.00	0.08	0.65	0.73
19.90	0.23	0.38	5.00	0.08	0.64	0.72
19.95	0.23	0.38	5.00	0.08	0.64	0.72
20.00	0.23	0.38	5.00	0.08	0.64	0.72
20.05	0.23	0.38	5.00	0.08	0.64	0.72
20.10	0.23	0.38	5.00	0.08	0.64	0.72
20.15	0.24	0.38	5.00	0.08	0.63	0.71
20.20	0.24	0.38	5.00	0.08	0.63	0.71
20.25	0.24	0.38	5.00	0.08	0.63	0.71
20.30	0.24	0.38	5.00	0.08	0.63	0.71
20.35	0.24	0.38	5.00	0.08	0.63	0.71
20.40	0.24	0.38	5.00	0.08	0.62	0.70
20.45	0.24	0.38	5.00	0.08	0.62	0.70
20.50	0.25	0.38	5.00	0.08	0.62	0.70
20.55	0.25	0.38	5.00	0.08	0.62	0.70
20.60	0.25	0.38	5.00	0.08	0.62	0.70
20.65	0.25	0.38	5.00	0.08	0.61	0.69
20.70	0.25	0.38	5.00	0.08	0.61	0.69
20.75	0.25	0.38	5.00	0.08	0.61	0.69
20.80	0.25	0.38	5.00	0.08	0.61	0.69
20.85	0.26	0.38	5.00	0.08	0.61	0.69
20.90	0.26	0.38	5.00	0.08	0.60	0.68
20.95	0.26	0.38	5.00	0.08	0.60	0.68
21.00	0.26	0.38	5.00	0.08	0.60	0.68
21.05	0.26	0.38	5.00	0.08	0.60	0.68
21.10	0.26	0.38	5.00	0.08	0.60	0.68
21.15	0.26	0.38	5.00	0.08	0.60	0.68
21.20	0.26	0.38	5.00	0.08	0.59	0.67
21.25	0.26	0.38	5.00	0.08	0.59	0.67
21.30	0.26	0.38	5.00	0.08	0.59	0.67
21.35	0.26	0.38	5.00	0.08	0.59	0.67
21.40	0.26	0.38	5.00	0.08	0.59	0.67
21.45	0.26	0.38	5.00	0.08	0.58	0.66
21.50	0.26	0.38	5.00	0.08	0.58	0.66
21.55	0.25	0.38	5.00	0.08	0.58	0.66
21.60	0.25	0.38	5.00	0.08	0.58	0.66
21.65	0.25	0.38	5.00	0.08	0.58	0.66
21.70	0.25	0.38	5.00	0.08	0.58	0.65
21.75	0.25	0.38	5.00	0.08	0.57	0.65
21.80	0.25	0.38	5.00	0.08	0.57	0.65
21.85	0.25	0.38	5.00	0.08	0.57	0.65
21.90	0.25	0.38	5.00	0.08	0.57	0.65
21.95	0.25	0.38	5.00	0.08	0.56	0.64
22.00	0.25	0.38	5.00	0.08	0.56	0.64
22.05	0.25	0.38	5.00	0.08	0.56	0.64
22.10	0.25	0.38	5.00	0.08	0.56	0.64
22.15	0.25	0.38	5.00	0.08	0.56	0.64
22.20	0.25	0.38	5.00	0.08	0.55	0.63
22.25	0.25	0.38	5.00	0.08	0.55	0.63



22.30	0.25	0.38	5.00	0.08	0.55	0.63
22.35	0.25	0.38	5.00	0.08	0.55	0.63
22.40	0.25	0.38	5.00	0.08	0.55	0.62
22.45	0.24	0.38	5.00	0.08	0.54	0.62
22.50	0.24	0.38	5.00	0.08	0.54	0.62
22.55	0.24	0.38	5.00	0.08	0.54	0.62
22.60	0.24	0.38	5.00	0.08	0.54	0.62
22.65	0.24	0.38	5.00	0.08	0.53	0.61
22.70	0.24	0.38	5.00	0.08	0.53	0.61
22.75	0.24	0.38	5.00	0.08	0.53	0.61
22.80	0.24	0.38	5.00	0.08	0.53	0.61
22.85	0.24	0.38	5.00	0.08	0.52	0.60
22.90	0.24	0.38	5.00	0.08	0.52	0.60
22.95	0.24	0.38	5.00	0.08	0.52	0.60
23.00	0.24	0.38	5.00	0.08	0.52	0.60
23.05	0.24	0.38	5.00	0.08	0.51	0.59
23.10	0.24	0.38	5.00	0.08	0.51	0.59
23.15	0.24	0.38	5.00	0.08	0.51	0.59
23.20	0.24	0.38	5.00	0.08	0.51	0.59
23.25	0.24	0.38	5.00	0.08	0.50	0.58
23.30	0.24	0.38	5.00	0.08	0.50	0.58
23.35	0.24	0.38	5.00	0.08	0.50	0.58
23.40	0.24	0.38	5.00	0.08	0.49	0.57
23.45	0.23	0.38	5.00	0.08	0.49	0.57
23.50	0.23	0.38	5.00	0.08	0.49	0.57
23.55	0.23	0.38	5.00	0.08	0.49	0.57
23.60	0.23	0.38	5.00	0.08	0.48	0.56
23.65	0.23	0.38	5.00	0.08	0.48	0.56
23.70	0.23	0.38	5.00	0.08	0.48	0.56
23.75	0.23	0.38	5.00	0.08	0.47	0.55
23.80	0.23	0.38	5.00	0.08	0.47	0.55
23.85	0.23	0.38	5.00	0.08	0.47	0.55
23.90	0.23	0.38	5.00	0.08	0.47	0.55
23.95	0.23	0.38	5.00	0.08	0.47	0.55
24.00	0.23	0.38	5.00	0.08	0.47	0.55
24.05	0.23	0.38	5.00	0.08	0.47	0.55
24.10	0.23	0.38	5.00	0.08	0.46	0.54
24.15	0.23	0.38	5.00	0.08	0.46	0.54
24.20	0.23	0.38	5.00	0.08	0.46	0.54
24.25	0.23	0.38	5.00	0.08	0.46	0.54
24.30	0.23	0.38	5.00	0.08	0.46	0.54
24.35	0.23	0.38	5.00	0.08	0.46	0.54
24.40	0.23	0.38	5.00	0.08	0.46	0.54
24.45	0.23	0.38	5.00	0.08	0.46	0.54
24.50	0.23	0.38	5.00	0.08	0.45	0.53
24.55	0.23	0.38	5.00	0.08	0.45	0.53
24.60	0.22	0.38	5.00	0.08	0.45	0.53
24.65	0.22	0.38	5.00	0.08	0.45	0.53
24.70	0.22	0.38	5.00	0.08	0.45	0.53
24.75	0.22	0.38	5.00	0.08	0.45	0.53
24.80	0.22	0.38	5.00	0.08	0.45	0.53
24.85	0.22	0.38	5.00	0.08	0.44	0.52
24.90	0.22	0.38	5.00	0.08	0.44	0.52
24.95	0.22	0.38	5.00	0.08	0.44	0.52
25.00	0.22	0.38	5.00	0.08	0.44	0.52
25.05	0.22	0.38	5.00	0.08	0.44	0.52
25.10	0.22	0.38	5.00	0.08	0.44	0.52
25.15	0.22	0.38	5.00	0.08	0.44	0.52
25.20	0.22	0.38	5.00	0.08	0.44	0.51



25.25	0.22	0.38	5.00	0.08	0.43	0.51
25.30	0.22	0.38	5.00	0.08	0.43	0.51
25.35	0.22	0.38	5.00	0.08	0.43	0.51
25.40	0.22	0.38	5.00	0.08	0.43	0.51
25.45	0.22	0.38	5.00	0.08	0.43	0.51
25.50	0.22	0.38	5.00	0.08	0.43	0.51
25.55	0.22	0.38	5.00	0.08	0.43	0.50
25.60	0.22	0.38	5.00	0.08	0.42	0.50
25.65	0.22	0.38	5.00	0.08	0.42	0.50
25.70	0.22	0.38	5.00	0.08	0.42	0.50
25.75	0.22	0.38	5.00	0.08	0.42	0.50
25.80	0.22	0.38	5.00	0.08	0.42	0.50
25.85	0.22	0.38	5.00	0.08	0.42	0.50
25.90	0.21	0.38	5.00	0.08	0.41	0.49
25.95	0.21	0.38	5.00	0.08	0.41	0.49
26.00	0.21	0.38	5.00	0.08	0.41	0.49
26.05	0.22	0.38	5.00	0.08	0.41	0.49
26.10	0.22	0.38	5.00	0.08	0.41	0.49
26.15	0.22	0.38	5.00	0.08	0.41	0.49
26.20	0.22	0.38	5.00	0.08	0.41	0.49
26.25	0.23	0.38	5.00	0.08	0.40	0.48
26.30	0.23	0.38	5.00	0.08	0.40	0.48
26.35	0.23	0.38	5.00	0.08	0.40	0.48
26.40	0.23	0.38	5.00	0.08	0.40	0.48
26.45	0.23	0.38	5.00	0.08	0.40	0.48
26.50	0.24	0.38	5.00	0.08	0.40	0.48
26.55	0.24	0.38	5.00	0.08	0.40	0.48
26.60	0.24	0.38	5.00	0.08	0.39	0.47
26.65	0.24	0.38	5.00	0.08	0.39	0.47
26.70	0.25	0.38	5.00	0.08	0.39	0.47
26.75	0.25	0.38	5.00	0.08	0.39	0.47
26.80	0.25	0.38	5.00	0.08	0.39	0.47
26.85	0.26	0.38	5.00	0.08	0.39	0.47
26.90	0.26	0.38	5.00	0.08	0.39	0.47
26.95	0.26	0.38	5.00	0.08	0.39	0.47
27.00	0.26	0.38	5.00	0.08	0.38	0.46
27.05	0.27	0.38	5.00	0.08	0.38	0.46
27.10	0.27	0.38	5.00	0.08	0.38	0.46
27.15	0.27	0.38	5.00	0.08	0.38	0.46
27.20	0.28	0.38	5.00	0.08	0.38	0.46
27.25	0.28	0.38	5.00	0.08	0.38	0.46
27.30	0.28	0.38	5.00	0.08	0.38	0.46
27.35	0.29	0.38	5.00	0.08	0.38	0.46
27.40	0.29	0.38	5.00	0.08	0.38	0.46
27.45	0.29	0.38	5.00	0.08	0.37	0.45
27.50	0.30	0.38	5.00	0.08	0.37	0.45
27.55	0.30	0.38	5.00	0.08	0.37	0.45
27.60	0.31	0.38	5.00	0.08	0.37	0.45
27.65	0.31	0.38	5.00	0.08	0.37	0.45
27.70	0.31	0.38	5.00	0.08	0.37	0.45
27.75	0.32	0.38	5.00	0.08	0.37	0.45
27.80	0.32	0.38	5.00	0.08	0.37	0.45
27.85	0.33	0.38	5.00	0.08	0.37	0.45
27.90	0.45	0.38	5.00	0.08	0.37	0.45
27.95	0.45	0.38	5.00	0.08	0.37	0.45
28.00	0.45	0.38	5.00	0.08	0.36	0.44
28.05	0.45	0.38	5.00	0.08	0.36	0.44
28.10	0.45	0.38	5.00	0.08	0.36	0.44
28.15	0.45	0.38	5.00	0.08	0.36	0.44



28.20	0.45	0.38	5.00	0.08	0.36	0.44
28.25	0.45	0.38	5.00	0.08	0.36	0.44
28.30	0.45	0.38	5.00	0.08	0.36	0.44
28.35	0.45	0.38	5.00	0.08	0.36	0.44
28.40	0.45	0.38	5.00	0.08	0.36	0.44
28.45	0.45	0.38	5.00	0.08	0.36	0.44
28.50	0.45	0.38	5.00	0.08	0.36	0.44
28.55	0.45	0.38	5.00	0.08	0.36	0.44
28.60	0.45	0.38	5.00	0.08	0.36	0.44
28.65	0.45	0.38	5.00	0.08	0.36	0.44
28.70	0.45	0.38	5.00	0.08	0.35	0.43
28.75	0.45	0.38	5.00	0.08	0.35	0.43
28.80	0.45	0.38	5.00	0.08	0.35	0.43
28.85	0.45	0.38	5.00	0.08	0.35	0.43
28.90	0.45	0.38	5.00	0.08	0.35	0.43
28.95	0.45	0.38	5.00	0.08	0.35	0.43
29.00	0.45	0.38	5.00	0.08	0.35	0.43
29.05	0.45	0.38	5.00	0.08	0.35	0.43
29.10	0.45	0.38	5.00	0.08	0.35	0.43
29.15	0.45	0.38	5.00	0.08	0.35	0.43
29.20	0.45	0.38	5.00	0.08	0.35	0.43
29.25	0.45	0.38	5.00	0.08	0.35	0.43
29.30	0.45	0.38	5.00	0.08	0.35	0.43
29.35	0.45	0.38	5.00	0.08	0.35	0.43
29.40	0.45	0.38	5.00	0.08	0.35	0.43
29.45	0.45	0.38	5.00	0.08	0.35	0.43
29.50	0.45	0.38	5.00	0.08	0.35	0.42
29.55	0.45	0.38	5.00	0.08	0.34	0.42
29.60	0.45	0.38	5.00	0.08	0.34	0.42
29.65	0.45	0.38	5.00	0.08	0.34	0.42
29.70	0.45	0.38	5.00	0.08	0.34	0.42
29.75	0.45	0.38	5.00	0.08	0.34	0.42
29.80	0.45	0.38	5.00	0.08	0.34	0.42
29.85	0.45	0.38	5.00	0.08	0.34	0.42
29.90	0.45	0.37	5.00	0.08	0.34	0.42
29.95	0.45	0.37	5.00	0.08	0.34	0.42
30.00	0.45	0.37	5.00	0.08	0.34	0.42
30.05	0.45	0.37	5.00	0.08	0.34	0.42
30.10	0.45	0.37	5.00	0.08	0.34	0.42
30.15	0.45	0.37	5.00	0.08	0.34	0.42
30.20	0.45	0.37	5.00	0.08	0.34	0.42
30.25	0.45	0.37	5.00	0.08	0.34	0.42
30.30	0.45	0.37	5.00	0.08	0.34	0.42
30.35	0.45	0.37	5.00	0.08	0.34	0.42
30.40	0.45	0.37	5.00	0.08	0.34	0.42
30.45	0.45	0.37	5.00	0.08	0.34	0.42
30.50	0.45	0.37	5.00	0.08	0.34	0.42
30.55	0.45	0.37	5.00	0.08	0.34	0.41
30.60	0.45	0.37	5.00	0.08	0.33	0.41
30.65	0.45	0.37	5.00	0.08	0.33	0.41
30.70	0.45	0.37	5.00	0.08	0.33	0.41
30.75	0.45	0.37	5.00	0.08	0.33	0.41
30.80	0.45	0.37	5.00	0.08	0.33	0.41
30.85	0.45	0.37	5.00	0.08	0.33	0.41
30.90	0.45	0.37	5.00	0.08	0.33	0.41
30.95	0.45	0.37	5.00	0.08	0.33	0.41
31.00	0.45	0.37	5.00	0.08	0.33	0.41
31.05	2.00	0.37	5.00	0.08	0.33	0.41
31.10	2.00	0.37	5.00	0.08	0.33	0.41



[illegible]



34.10	0.25	0.36	5.00	0.08	0.33	0.41
34.15	0.25	0.36	5.00	0.08	0.33	0.41
34.20	0.25	0.36	5.00	0.08	0.33	0.41
34.25	0.24	0.36	5.00	0.08	0.33	0.41
34.30	0.24	0.36	5.00	0.08	0.33	0.40
34.35	0.24	0.36	5.00	0.08	0.32	0.40
34.40	0.23	0.36	5.00	0.08	0.32	0.40
34.45	0.23	0.36	5.00	0.08	0.32	0.40
34.50	0.23	0.36	5.00	0.08	0.32	0.40
34.55	0.22	0.36	5.00	0.08	0.32	0.40
34.60	0.22	0.36	5.00	0.08	0.31	0.39
34.65	0.22	0.36	5.00	0.08	0.31	0.39
34.70	0.22	0.36	5.00	0.08	0.31	0.39
34.75	0.21	0.36	5.00	0.08	0.31	0.39
34.80	0.21	0.36	5.00	0.08	0.31	0.39
34.85	0.21	0.36	5.00	0.08	0.30	0.38
34.90	0.20	0.36	5.00	0.08	0.30	0.38
34.95	0.20	0.36	5.00	0.08	0.30	0.38
35.00	0.20	0.36	5.00	0.08	0.30	0.38
35.05	0.20	0.36	5.00	0.08	0.30	0.38
35.10	0.19	0.36	5.00	0.08	0.29	0.37
35.15	0.19	0.36	5.00	0.08	0.29	0.37
35.20	0.19	0.36	5.00	0.08	0.29	0.37
35.25	0.19	0.36	5.00	0.08	0.29	0.36
35.30	0.18	0.36	5.00	0.08	0.28	0.36
35.35	0.18	0.36	5.00	0.08	0.28	0.36
35.40	0.18	0.36	5.00	0.08	0.28	0.36
35.45	0.18	0.36	5.00	0.08	0.27	0.35
35.50	0.17	0.36	5.00	0.08	0.27	0.35
35.55	0.17	0.36	5.00	0.08	0.27	0.35
35.60	0.17	0.36	5.00	0.08	0.26	0.34
35.65	0.17	0.36	5.00	0.08	0.26	0.34
35.70	0.17	0.36	5.00	0.08	0.26	0.34
35.75	0.16	0.36	5.00	0.08	0.25	0.33
35.80	0.16	0.36	5.00	0.08	0.25	0.33
35.85	0.16	0.36	5.00	0.08	0.24	0.32
35.90	0.16	0.36	5.00	0.08	0.24	0.32
35.95	0.15	0.36	5.00	0.08	0.24	0.32
36.00	0.15	0.36	5.00	0.08	0.23	0.31
36.05	0.15	0.35	5.00	0.08	0.23	0.31
36.10	0.16	0.35	5.00	0.08	0.22	0.30
36.15	0.16	0.35	5.00	0.08	0.22	0.30
36.20	0.16	0.35	5.00	0.08	0.21	0.29
36.25	0.16	0.35	5.00	0.08	0.21	0.29
36.30	0.17	0.35	5.00	0.08	0.21	0.29
36.35	0.17	0.35	5.00	0.08	0.20	0.28
36.40	0.17	0.35	5.00	0.08	0.20	0.28
36.45	0.17	0.35	5.00	0.08	0.20	0.28
36.50	0.18	0.35	5.00	0.08	0.19	0.27
36.55	0.18	0.35	5.00	0.08	0.19	0.27
36.60	0.18	0.35	5.00	0.08	0.19	0.27
36.65	0.18	0.35	5.00	0.08	0.18	0.26
36.70	0.19	0.35	5.00	0.08	0.18	0.26
36.75	0.19	0.35	5.00	0.08	0.18	0.26
36.80	0.19	0.35	5.00	0.08	0.17	0.25
36.85	0.19	0.35	5.00	0.08	0.17	0.25
36.90	0.19	0.35	5.00	0.08	0.17	0.25
36.95	0.20	0.35	5.00	0.08	0.17	0.25
37.00	0.20	0.35	5.00	0.08	0.16	0.24



37.05	0.20	0.35	5.00	0.08	0.16	0.24
37.10	0.20	0.35	5.00	0.08	0.16	0.24
37.15	0.21	0.35	5.00	0.08	0.16	0.24
37.20	0.21	0.35	5.00	0.08	0.15	0.23
37.25	0.21	0.35	5.00	0.08	0.15	0.23
37.30	0.21	0.35	5.00	0.08	0.15	0.23
37.35	0.22	0.35	5.00	0.08	0.15	0.23
37.40	0.22	0.35	5.00	0.08	0.15	0.23
37.45	0.22	0.35	5.00	0.08	0.14	0.22
37.50	0.22	0.35	5.00	0.08	0.14	0.22
37.55	0.22	0.35	5.00	0.08	0.14	0.22
37.60	0.23	0.35	5.00	0.08	0.14	0.22
37.65	0.23	0.35	5.00	0.08	0.14	0.22
37.70	0.23	0.35	5.00	0.08	0.13	0.21
37.75	0.23	0.35	5.00	0.08	0.13	0.21
37.80	0.24	0.35	5.00	0.08	0.13	0.21
37.85	0.24	0.35	5.00	0.08	0.13	0.21
37.90	0.24	0.35	5.00	0.08	0.13	0.21
37.95	0.24	0.35	5.00	0.08	0.13	0.21
38.00	0.25	0.35	5.00	0.08	0.12	0.20
38.05	0.25	0.35	5.00	0.08	0.12	0.20
38.10	0.25	0.35	5.00	0.08	0.12	0.20
38.15	0.26	0.35	5.00	0.08	0.12	0.20
38.20	0.26	0.35	5.00	0.08	0.12	0.20
38.25	0.26	0.35	5.00	0.08	0.12	0.20
38.30	0.26	0.35	5.00	0.08	0.12	0.19
38.35	0.27	0.35	5.00	0.08	0.11	0.19
38.40	0.27	0.35	5.00	0.08	0.11	0.19
38.45	0.27	0.35	5.00	0.08	0.11	0.19
38.50	0.27	0.35	5.00	0.08	0.11	0.19
38.55	0.28	0.35	5.00	0.08	0.11	0.19
38.60	0.28	0.35	5.00	0.08	0.11	0.19
38.65	0.28	0.35	5.00	0.08	0.11	0.19
38.70	0.29	0.35	5.00	0.08	0.10	0.18
38.75	0.29	0.35	5.00	0.08	0.10	0.18
38.80	0.29	0.35	5.00	0.08	0.10	0.18
38.85	0.30	0.35	5.00	0.08	0.10	0.18
38.90	0.30	0.35	5.00	0.08	0.10	0.18
38.95	0.30	0.35	5.00	0.08	0.10	0.18
39.00	0.30	0.35	5.00	0.08	0.10	0.18
39.05	0.31	0.35	5.00	0.08	0.10	0.18
39.10	0.31	0.34	5.00	0.08	0.09	0.17
39.15	0.32	0.34	5.00	0.08	0.09	0.17
39.20	0.32	0.34	5.00	0.08	0.09	0.17
39.25	0.32	0.34	5.00	0.08	0.09	0.17
39.30	0.33	0.34	5.00	0.08	0.09	0.17
39.35	0.33	0.34	5.00	0.08	0.09	0.17
39.40	0.34	0.34	5.00	0.08	0.09	0.17
39.45	0.34	0.34	5.00	0.08	0.09	0.17
39.50	0.35	0.34	5.00	0.08	0.09	0.16
39.55	0.35	0.34	5.00	0.08	0.08	0.16
39.60	0.36	0.34	5.00	0.08	0.08	0.16
39.65	0.37	0.34	5.00	0.08	0.08	0.16
39.70	0.38	0.34	5.00	0.08	0.08	0.16
39.75	0.39	0.34	5.00	0.08	0.08	0.16
39.80	0.41	0.34	5.00	0.08	0.08	0.16
39.85	0.44	0.34	5.00	0.08	0.08	0.16
39.90	0.43	0.34	5.00	0.08	0.08	0.16
39.95	0.43	0.34	5.00	0.08	0.08	0.16



[illegible]



42.95	0.43	0.33	5.00	0.08	0.03	0.11
43.00	0.43	0.33	5.00	0.08	0.03	0.11
43.05	0.43	0.33	5.00	0.08	0.03	0.11
43.10	0.43	0.33	5.00	0.08	0.03	0.11
43.15	0.43	0.33	5.00	0.08	0.03	0.11
43.20	0.43	0.33	5.00	0.08	0.03	0.11
43.25	0.43	0.33	5.00	0.08	0.03	0.11
43.30	0.43	0.33	5.00	0.08	0.03	0.11
43.35	0.43	0.33	5.00	0.08	0.02	0.10
43.40	0.43	0.33	5.00	0.08	0.02	0.10
43.45	0.43	0.33	5.00	0.08	0.02	0.10
43.50	0.43	0.33	5.00	0.08	0.02	0.10
43.55	0.43	0.33	5.00	0.08	0.02	0.10
43.60	0.43	0.33	5.00	0.08	0.02	0.10
43.65	0.43	0.33	5.00	0.08	0.02	0.10
43.70	0.43	0.33	5.00	0.08	0.02	0.10
43.75	0.43	0.33	5.00	0.08	0.02	0.10
43.80	0.43	0.33	5.00	0.08	0.02	0.10
43.85	0.43	0.33	5.00	0.08	0.02	0.10
43.90	0.43	0.33	5.00	0.08	0.02	0.10
43.95	0.43	0.33	5.00	0.08	0.02	0.10
44.00	0.43	0.33	5.00	0.08	0.02	0.10
44.05	0.43	0.33	5.00	0.08	0.02	0.10
44.10	0.43	0.33	5.00	0.08	0.02	0.09
44.15	0.43	0.33	5.00	0.08	0.01	0.09
44.20	0.43	0.33	5.00	0.08	0.01	0.09
44.25	0.43	0.33	5.00	0.08	0.01	0.09
44.30	0.43	0.33	5.00	0.08	0.01	0.09
44.35	0.43	0.33	5.00	0.08	0.01	0.09
44.40	0.43	0.33	5.00	0.08	0.01	0.09
44.45	0.43	0.33	5.00	0.08	0.01	0.09
44.50	0.43	0.33	5.00	0.08	0.01	0.09
44.55	0.43	0.33	5.00	0.08	0.01	0.09
44.60	0.43	0.33	5.00	0.08	0.01	0.09
44.65	0.43	0.33	5.00	0.08	0.01	0.09
44.70	0.42	0.33	5.00	0.08	0.01	0.09
44.75	0.42	0.33	5.00	0.08	0.01	0.08
44.80	0.42	0.33	5.00	0.08	0.00	0.08
44.85	0.42	0.33	5.00	0.08	0.00	0.08
44.90	0.42	0.33	5.00	0.08	0.00	0.08
44.95	0.42	0.33	5.00	0.08	0.00	0.08
45.00	0.42	0.33	5.00	0.08	0.00	0.08
45.05	0.42	0.33	1.30	0.08	0.00	0.08
45.10	0.42	0.33	1.30	0.08	0.00	0.08
45.15	0.42	0.33	1.30	0.08	0.00	0.08
45.20	0.42	0.33	1.30	0.08	0.00	0.08
45.25	0.42	0.33	1.30	0.08	0.00	0.08
45.30	0.42	0.33	1.30	0.08	0.00	0.08
45.35	0.42	0.33	1.30	0.08	0.00	0.08
45.40	0.42	0.33	1.30	0.08	0.00	0.08
45.45	0.42	0.33	1.30	0.08	0.00	0.08
45.50	0.42	0.33	1.30	0.08	0.00	0.08
45.55	0.42	0.33	1.30	0.07	0.00	0.07
45.60	0.42	0.33	1.30	0.07	0.00	0.07
45.65	0.42	0.33	1.30	0.07	0.00	0.07
45.70	0.42	0.33	1.30	0.07	0.00	0.07
45.75	0.42	0.33	1.30	0.07	0.00	0.07
45.80	0.42	0.33	1.30	0.07	0.00	0.07
45.85	0.42	0.33	1.30	0.07	0.00	0.07



45.90	0.42	0.33	1.30	0.07	0.00	0.07
45.95	0.41	0.33	1.26	0.07	0.00	0.07
46.00	0.38	0.33	1.17	0.07	0.00	0.07
46.05	0.39	0.33	1.18	0.06	0.00	0.06
46.10	0.39	0.33	1.20	0.06	0.00	0.06
46.15	0.40	0.33	1.23	0.06	0.00	0.06
46.20	0.41	0.33	1.26	0.06	0.00	0.06
46.25	0.42	0.33	1.29	0.06	0.00	0.06
46.30	0.42	0.33	1.29	0.06	0.00	0.06
46.35	0.42	0.33	1.29	0.06	0.00	0.06
46.40	0.42	0.33	1.29	0.06	0.00	0.06
46.45	0.42	0.33	1.29	0.06	0.00	0.06
46.50	0.42	0.33	1.29	0.05	0.00	0.05
46.55	0.42	0.33	1.29	0.05	0.00	0.05
46.60	0.42	0.33	1.29	0.05	0.00	0.05
46.65	0.42	0.33	1.29	0.05	0.00	0.05
46.70	0.42	0.33	1.29	0.05	0.00	0.05
46.75	0.42	0.33	1.29	0.05	0.00	0.05
46.80	0.42	0.33	1.29	0.05	0.00	0.05
46.85	0.42	0.33	1.29	0.05	0.00	0.05
46.90	0.42	0.33	1.29	0.05	0.00	0.05
46.95	0.42	0.33	1.29	0.04	0.00	0.04
47.00	0.42	0.33	1.29	0.04	0.00	0.04
47.05	0.42	0.33	1.28	0.04	0.00	0.04
47.10	0.42	0.33	1.28	0.04	0.00	0.04
47.15	0.42	0.33	1.28	0.04	0.00	0.04
47.20	0.42	0.33	1.28	0.04	0.00	0.04
47.25	0.42	0.33	1.28	0.04	0.00	0.04
47.30	0.42	0.33	1.28	0.04	0.00	0.04
47.35	0.42	0.33	1.28	0.04	0.00	0.04
47.40	0.42	0.33	1.28	0.04	0.00	0.04
47.45	0.42	0.33	1.28	0.03	0.00	0.03
47.50	0.42	0.33	1.28	0.03	0.00	0.03
47.55	0.42	0.33	1.28	0.03	0.00	0.03
47.60	0.42	0.33	1.28	0.03	0.00	0.03
47.65	0.42	0.33	1.28	0.03	0.00	0.03
47.70	0.42	0.33	1.28	0.03	0.00	0.03
47.75	0.42	0.33	1.28	0.03	0.00	0.03
47.80	0.42	0.33	1.28	0.03	0.00	0.03
47.85	0.42	0.33	1.28	0.03	0.00	0.03
47.90	0.42	0.33	1.28	0.03	0.00	0.03
47.95	0.42	0.33	1.28	0.03	0.00	0.03
48.00	0.42	0.33	1.28	0.02	0.00	0.02
48.05	0.42	0.33	1.28	0.02	0.00	0.02
48.10	0.42	0.33	1.28	0.02	0.00	0.02
48.15	0.42	0.33	1.28	0.02	0.00	0.02
48.20	0.42	0.33	1.28	0.02	0.00	0.02
48.25	0.42	0.33	1.27	0.02	0.00	0.02
48.30	0.42	0.33	1.27	0.02	0.00	0.02
48.35	0.42	0.33	1.27	0.02	0.00	0.02
48.40	0.42	0.33	1.27	0.02	0.00	0.02
48.45	0.42	0.33	1.27	0.02	0.00	0.02
48.50	0.42	0.33	1.27	0.02	0.00	0.02
48.55	0.42	0.33	1.27	0.02	0.00	0.02
48.60	0.42	0.33	1.27	0.01	0.00	0.01
48.65	0.42	0.33	1.27	0.01	0.00	0.01
48.70	0.42	0.33	1.27	0.01	0.00	0.01
48.75	0.42	0.33	1.27	0.01	0.00	0.01
48.80	0.42	0.33	1.27	0.01	0.00	0.01



48.85	0.42	0.33	1.27	0.01	0.00	0.01
48.90	0.42	0.33	1.27	0.01	0.00	0.01
48.95	0.42	0.33	1.27	0.01	0.00	0.01
49.00	0.42	0.33	1.27	0.01	0.00	0.01
49.05	0.42	0.33	1.27	0.01	0.00	0.01
49.10	0.42	0.33	1.27	0.01	0.00	0.01
49.15	0.42	0.33	1.27	0.01	0.00	0.01
49.20	0.42	0.33	1.27	0.01	0.00	0.01
49.25	0.42	0.33	1.27	0.01	0.00	0.01
49.30	0.42	0.33	1.27	0.00	0.00	0.00
49.35	0.42	0.33	1.27	0.00	0.00	0.00
49.40	0.42	0.33	1.27	0.00	0.00	0.00
49.45	0.42	0.33	1.27	0.00	0.00	0.00
49.50	0.42	0.33	1.27	0.00	0.00	0.00
49.55	0.42	0.33	1.27	0.00	0.00	0.00
49.60	0.42	0.33	1.27	0.00	0.00	0.00
49.65	0.42	0.33	1.26	0.00	0.00	0.00
49.70	0.42	0.33	1.26	0.00	0.00	0.00
49.75	0.42	0.33	1.26	0.00	0.00	0.00
49.80	0.41	0.33	1.26	0.00	0.00	0.00
49.85	0.41	0.33	1.26	0.00	0.00	0.00
49.90	0.41	0.33	1.26	0.00	0.00	0.00
49.95	0.41	0.33	1.26	0.00	0.00	0.00
50.00	0.41	0.33	1.26	0.00	0.00	0.00
50.05	0.41	0.33	1.26	0.00	0.00	0.00
50.10	0.41	0.33	1.26	0.00	0.00	0.00
50.15	0.41	0.33	1.26	0.00	0.00	0.00
50.20	0.41	0.33	1.26	0.00	0.00	0.00
50.25	0.41	0.33	1.26	0.00	0.00	0.00
50.30	0.41	0.33	1.26	0.00	0.00	0.00
50.35	0.41	0.33	1.26	0.00	0.00	0.00
50.40	0.41	0.33	1.26	0.00	0.00	0.00
50.45	0.41	0.33	1.26	0.00	0.00	0.00
50.50	0.41	0.33	1.26	0.00	0.00	0.00
50.55	2.00	0.33	5.00	0.00	0.00	0.00
50.60	2.00	0.33	5.00	0.00	0.00	0.00
50.65	2.00	0.33	5.00	0.00	0.00	0.00
50.70	2.00	0.33	5.00	0.00	0.00	0.00
50.75	2.00	0.33	5.00	0.00	0.00	0.00
50.80	2.00	0.33	5.00	0.00	0.00	0.00
50.85	2.00	0.33	5.00	0.00	0.00	0.00
50.90	2.00	0.33	5.00	0.00	0.00	0.00
50.95	2.00	0.33	5.00	0.00	0.00	0.00
51.00	2.00	0.33	5.00	0.00	0.00	0.00

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\* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)  
Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight =  
pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft<sup>2</sup>)  
CRRm Cyclic resistance ratio from soils  
CSRsf Cyclic stress ratio induced by a given earthquake (with user  
request factor of safety)  
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf  
S<sub>sat</sub> Settlement from saturated sands  
S<sub>dry</sub> Settlement from Unsaturated Sands  
S<sub>all</sub> Total Settlement from Saturated and Unsaturated Sands  
NoLiq No-Liquefy Soils

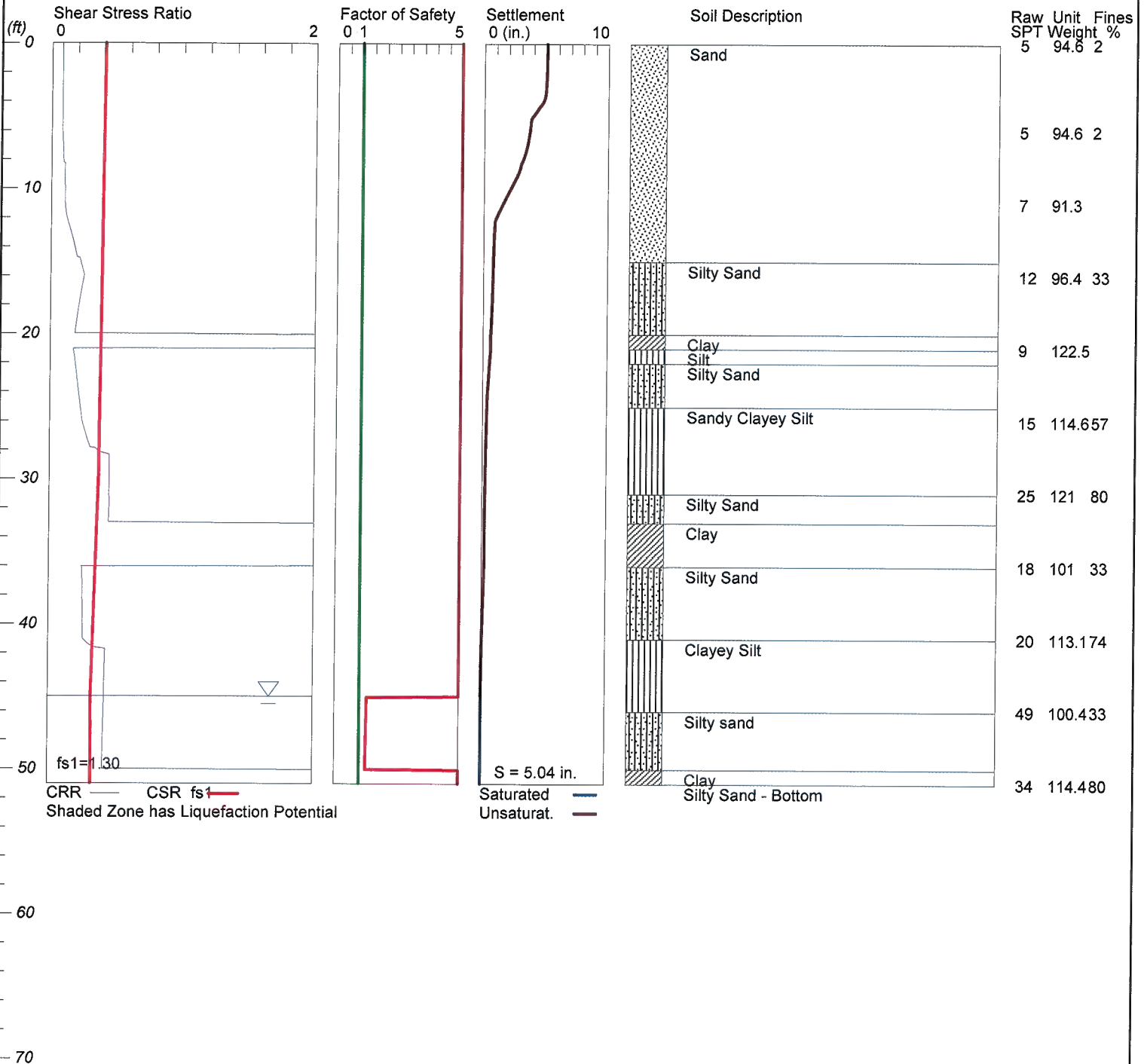


# LIQUEFACTION ANALYSIS

KHSD - SW HS

Hole No.=B-5 Water Depth=45 ft

Magnitude=7.8  
Acceleration=0.477g





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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: O:\b. PROJECT FILES (ACTIVE)\16600-16699\16608  
 KHSD, SW School Site Geotech & GeoHazard\OFFICE REPORTS\Geohaz\16608  
 LiquefyPro files\B5 16608 LiquefyPro.liq  
 Title: KHSD - SW HS  
 Subtitle: 16608

Surface Elev.=  
 Hole No.=B-5  
 Depth of Hole= 51.00 ft  
 Water Table during Earthquake= 45.00 ft  
 Water Table during In-Situ Testing= 100.00 ft  
 Max. Acceleration= 0.48 g  
 Earthquake Magnitude= 7.80

#### Input Data:

Surface Elev.=  
 Hole No.=B-5  
 Depth of Hole=51.00 ft  
 Water Table during Earthquake= 45.00 ft  
 Water Table during In-Situ Testing= 100.00 ft  
 Max. Acceleration=0.48 g  
 Earthquake Magnitude=7.80  
 No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
  2. Settlement Analysis Method: Tokimatsu, M-correction
  3. Fines Correction for Liquefaction: Idriss/Seed
  4. Fine Correction for Settlement: During Liquefaction\*
  5. Settlement Calculation in: All zones\*
  6. Hammer Energy Ratio, Ce = 1.25
  7. Borehole Diameter, Cb= 1
  8. Sampling Method, Cs= 1
  9. User request factor of safety (apply to CSR) , User= 1.3  
 Plot one CSR curve (fsl=User)
  10. Use Curve Smoothing: Yes\*
- \* Recommended Options



In-Situ Test Data:

Depth SPT      gamma Fines  
ft              pcf      %

0.00	5.00	94.60	2.00
6.00	5.00	94.60	2.00
11.00	7.00	91.30	2.00
16.00	12.00	96.40	33.00
21.00	9.00	122.50	33.00
26.00	15.00	114.60	57.00
31.00	25.00	121.00	80.00
36.00	18.00	101.00	33.00
41.00	20.00	113.10	74.00
46.00	49.00	100.40	33.00
51.00	34.00	114.40	80.00

Output Results:

Settlement of Saturated Sands=0.00 in.

Settlement of Unsaturated Sands=5.04 in.

Total Settlement of Saturated and Unsaturated Sands=5.04 in.

Differential Settlement=2.521 to 3.327 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all
ft				in.	in.	in.

0.00	0.08	0.40	5.00	0.00	5.04	5.04
0.05	0.08	0.40	5.00	0.00	5.04	5.04
0.10	0.08	0.40	5.00	0.00	5.04	5.04
0.15	0.08	0.40	5.00	0.00	5.04	5.04
0.20	0.08	0.40	5.00	0.00	5.04	5.04
0.25	0.08	0.40	5.00	0.00	5.04	5.04
0.30	0.08	0.40	5.00	0.00	5.04	5.04
0.35	0.08	0.40	5.00	0.00	5.04	5.04
0.40	0.08	0.40	5.00	0.00	5.04	5.04
0.45	0.08	0.40	5.00	0.00	5.04	5.04
0.50	0.08	0.40	5.00	0.00	5.04	5.04
0.55	0.08	0.40	5.00	0.00	5.04	5.04
0.60	0.08	0.40	5.00	0.00	5.04	5.04
0.65	0.08	0.40	5.00	0.00	5.04	5.04
0.70	0.08	0.40	5.00	0.00	5.04	5.04
0.75	0.08	0.40	5.00	0.00	5.03	5.03
0.80	0.08	0.40	5.00	0.00	5.03	5.03
0.85	0.08	0.40	5.00	0.00	5.03	5.03
0.90	0.08	0.40	5.00	0.00	5.03	5.03
0.95	0.08	0.40	5.00	0.00	5.03	5.03
1.00	0.08	0.40	5.00	0.00	5.03	5.03
1.05	0.08	0.40	5.00	0.00	5.03	5.03
1.10	0.08	0.40	5.00	0.00	5.03	5.03
1.15	0.08	0.40	5.00	0.00	5.03	5.03
1.20	0.08	0.40	5.00	0.00	5.03	5.03
1.25	0.08	0.40	5.00	0.00	5.03	5.03
1.30	0.08	0.40	5.00	0.00	5.02	5.02
1.35	0.08	0.40	5.00	0.00	5.02	5.02
1.40	0.08	0.40	5.00	0.00	5.02	5.02
1.45	0.08	0.40	5.00	0.00	5.02	5.02
1.50	0.08	0.40	5.00	0.00	5.02	5.02
1.55	0.08	0.40	5.00	0.00	5.02	5.02
1.60	0.08	0.40	5.00	0.00	5.02	5.02



1.65	0.08	0.40	5.00	0.00	5.02	5.02
1.70	0.08	0.40	5.00	0.00	5.02	5.02
1.75	0.08	0.40	5.00	0.00	5.01	5.01
1.80	0.08	0.40	5.00	0.00	5.01	5.01
1.85	0.08	0.40	5.00	0.00	5.01	5.01
1.90	0.08	0.40	5.00	0.00	5.01	5.01
1.95	0.08	0.40	5.00	0.00	5.01	5.01
2.00	0.08	0.40	5.00	0.00	5.01	5.01
2.05	0.08	0.40	5.00	0.00	5.01	5.01
2.10	0.08	0.40	5.00	0.00	5.00	5.00
2.15	0.08	0.40	5.00	0.00	5.00	5.00
2.20	0.08	0.40	5.00	0.00	5.00	5.00
2.25	0.08	0.40	5.00	0.00	5.00	5.00
2.30	0.08	0.40	5.00	0.00	5.00	5.00
2.35	0.08	0.40	5.00	0.00	5.00	5.00
2.40	0.08	0.40	5.00	0.00	4.99	4.99
2.45	0.08	0.40	5.00	0.00	4.99	4.99
2.50	0.08	0.40	5.00	0.00	4.99	4.99
2.55	0.08	0.40	5.00	0.00	4.99	4.99
2.60	0.08	0.40	5.00	0.00	4.99	4.99
2.65	0.08	0.40	5.00	0.00	4.99	4.99
2.70	0.08	0.40	5.00	0.00	4.98	4.98
2.75	0.08	0.40	5.00	0.00	4.98	4.98
2.80	0.08	0.40	5.00	0.00	4.98	4.98
2.85	0.08	0.40	5.00	0.00	4.98	4.98
2.90	0.08	0.40	5.00	0.00	4.97	4.97
2.95	0.08	0.40	5.00	0.00	4.97	4.97
3.00	0.08	0.40	5.00	0.00	4.97	4.97
3.05	0.08	0.40	5.00	0.00	4.96	4.96
3.10	0.08	0.40	5.00	0.00	4.96	4.96
3.15	0.08	0.40	5.00	0.00	4.95	4.95
3.20	0.08	0.40	5.00	0.00	4.95	4.95
3.25	0.08	0.40	5.00	0.00	4.94	4.94
3.30	0.08	0.40	5.00	0.00	4.94	4.94
3.35	0.08	0.40	5.00	0.00	4.93	4.93
3.40	0.08	0.40	5.00	0.00	4.92	4.92
3.45	0.08	0.40	5.00	0.00	4.92	4.92
3.50	0.08	0.40	5.00	0.00	4.91	4.91
3.55	0.08	0.40	5.00	0.00	4.90	4.90
3.60	0.08	0.40	5.00	0.00	4.89	4.89
3.65	0.08	0.40	5.00	0.00	4.88	4.88
3.70	0.08	0.40	5.00	0.00	4.86	4.86
3.75	0.08	0.40	5.00	0.00	4.85	4.85
3.80	0.08	0.40	5.00	0.00	4.83	4.83
3.85	0.08	0.40	5.00	0.00	4.81	4.81
3.90	0.08	0.40	5.00	0.00	4.79	4.79
3.95	0.08	0.40	5.00	0.00	4.76	4.76
4.00	0.08	0.40	5.00	0.00	4.73	4.73
4.05	0.08	0.40	5.00	0.00	4.70	4.70
4.10	0.08	0.40	5.00	0.00	4.66	4.66
4.15	0.08	0.40	5.00	0.00	4.62	4.62
4.20	0.08	0.40	5.00	0.00	4.58	4.58
4.25	0.08	0.40	5.00	0.00	4.54	4.54
4.30	0.08	0.40	5.00	0.00	4.50	4.50
4.35	0.08	0.40	5.00	0.00	4.46	4.46
4.40	0.08	0.40	5.00	0.00	4.42	4.42
4.45	0.08	0.40	5.00	0.00	4.38	4.38
4.50	0.08	0.40	5.00	0.00	4.34	4.34
4.55	0.08	0.40	5.00	0.00	4.30	4.30



4.60	0.08	0.40	5.00	0.00	4.25	4.25
4.65	0.08	0.40	5.00	0.00	4.21	4.21
4.70	0.08	0.40	5.00	0.00	4.17	4.17
4.75	0.08	0.40	5.00	0.00	4.13	4.13
4.80	0.08	0.40	5.00	0.00	4.09	4.09
4.85	0.08	0.40	5.00	0.00	4.05	4.05
4.90	0.08	0.40	5.00	0.00	4.01	4.01
4.95	0.08	0.40	5.00	0.00	3.97	3.97
5.00	0.08	0.40	5.00	0.00	3.93	3.93
5.05	0.08	0.40	5.00	0.00	3.89	3.89
5.10	0.08	0.40	5.00	0.00	3.85	3.85
5.15	0.08	0.40	5.00	0.00	3.81	3.81
5.20	0.08	0.40	5.00	0.00	3.77	3.77
5.25	0.08	0.40	5.00	0.00	3.76	3.76
5.30	0.08	0.40	5.00	0.00	3.76	3.76
5.35	0.08	0.40	5.00	0.00	3.75	3.75
5.40	0.08	0.40	5.00	0.00	3.75	3.75
5.45	0.08	0.40	5.00	0.00	3.74	3.74
5.50	0.08	0.40	5.00	0.00	3.74	3.74
5.55	0.08	0.40	5.00	0.00	3.73	3.73
5.60	0.08	0.40	5.00	0.00	3.73	3.73
5.65	0.08	0.40	5.00	0.00	3.72	3.72
5.70	0.08	0.40	5.00	0.00	3.71	3.71
5.75	0.08	0.40	5.00	0.00	3.71	3.71
5.80	0.08	0.40	5.00	0.00	3.70	3.70
5.85	0.08	0.40	5.00	0.00	3.69	3.69
5.90	0.08	0.40	5.00	0.00	3.69	3.69
5.95	0.08	0.40	5.00	0.00	3.68	3.68
6.00	0.08	0.40	5.00	0.00	3.67	3.67
6.05	0.08	0.40	5.00	0.00	3.66	3.66
6.10	0.08	0.40	5.00	0.00	3.65	3.65
6.15	0.08	0.40	5.00	0.00	3.64	3.64
6.20	0.08	0.40	5.00	0.00	3.64	3.64
6.25	0.08	0.40	5.00	0.00	3.63	3.63
6.30	0.08	0.40	5.00	0.00	3.62	3.62
6.35	0.08	0.40	5.00	0.00	3.61	3.61
6.40	0.08	0.40	5.00	0.00	3.60	3.60
6.45	0.08	0.40	5.00	0.00	3.59	3.59
6.50	0.08	0.40	5.00	0.00	3.58	3.58
6.55	0.08	0.40	5.00	0.00	3.57	3.57
6.60	0.08	0.40	5.00	0.00	3.56	3.56
6.65	0.08	0.40	5.00	0.00	3.54	3.54
6.70	0.08	0.40	5.00	0.00	3.53	3.53
6.75	0.08	0.40	5.00	0.00	3.52	3.52
6.80	0.08	0.40	5.00	0.00	3.51	3.51
6.85	0.08	0.40	5.00	0.00	3.50	3.50
6.90	0.08	0.40	5.00	0.00	3.48	3.48
6.95	0.09	0.40	5.00	0.00	3.47	3.47
7.00	0.09	0.40	5.00	0.00	3.46	3.46
7.05	0.09	0.40	5.00	0.00	3.45	3.45
7.10	0.09	0.40	5.00	0.00	3.43	3.43
7.15	0.09	0.40	5.00	0.00	3.42	3.42
7.20	0.09	0.40	5.00	0.00	3.40	3.40
7.25	0.09	0.40	5.00	0.00	3.39	3.39
7.30	0.09	0.40	5.00	0.00	3.37	3.37
7.35	0.09	0.40	5.00	0.00	3.36	3.36
7.40	0.09	0.40	5.00	0.00	3.34	3.34
7.45	0.09	0.40	5.00	0.00	3.33	3.33
7.50	0.09	0.40	5.00	0.00	3.31	3.31



7.55	0.09	0.40	5.00	0.00	3.29	3.29
7.60	0.09	0.40	5.00	0.00	3.27	3.27
7.65	0.09	0.40	5.00	0.00	3.26	3.26
7.70	0.09	0.40	5.00	0.00	3.24	3.24
7.75	0.09	0.40	5.00	0.00	3.22	3.22
7.80	0.09	0.40	5.00	0.00	3.20	3.20
7.85	0.09	0.40	5.00	0.00	3.18	3.18
7.90	0.09	0.40	5.00	0.00	3.16	3.16
7.95	0.09	0.40	5.00	0.00	3.14	3.14
8.00	0.09	0.40	5.00	0.00	3.12	3.12
8.05	0.09	0.40	5.00	0.00	3.09	3.09
8.10	0.09	0.40	5.00	0.00	3.07	3.07
8.15	0.09	0.40	5.00	0.00	3.04	3.04
8.20	0.09	0.40	5.00	0.00	3.02	3.02
8.25	0.10	0.40	5.00	0.00	2.99	2.99
8.30	0.10	0.40	5.00	0.00	2.97	2.97
8.35	0.10	0.40	5.00	0.00	2.96	2.96
8.40	0.10	0.40	5.00	0.00	2.94	2.94
8.45	0.10	0.40	5.00	0.00	2.93	2.93
8.50	0.10	0.40	5.00	0.00	2.91	2.91
8.55	0.10	0.40	5.00	0.00	2.90	2.90
8.60	0.10	0.39	5.00	0.00	2.88	2.88
8.65	0.10	0.39	5.00	0.00	2.86	2.86
8.70	0.10	0.39	5.00	0.00	2.84	2.84
8.75	0.10	0.39	5.00	0.00	2.82	2.82
8.80	0.10	0.39	5.00	0.00	2.80	2.80
8.85	0.10	0.39	5.00	0.00	2.78	2.78
8.90	0.10	0.39	5.00	0.00	2.76	2.76
8.95	0.10	0.39	5.00	0.00	2.74	2.74
9.00	0.10	0.39	5.00	0.00	2.72	2.72
9.05	0.10	0.39	5.00	0.00	2.69	2.69
9.10	0.10	0.39	5.00	0.00	2.67	2.67
9.15	0.10	0.39	5.00	0.00	2.64	2.64
9.20	0.10	0.39	5.00	0.00	2.61	2.61
9.25	0.10	0.39	5.00	0.00	2.59	2.59
9.30	0.10	0.39	5.00	0.00	2.56	2.56
9.35	0.10	0.39	5.00	0.00	2.53	2.53
9.40	0.10	0.39	5.00	0.00	2.50	2.50
9.45	0.10	0.39	5.00	0.00	2.47	2.47
9.50	0.10	0.39	5.00	0.00	2.44	2.44
9.55	0.10	0.39	5.00	0.00	2.41	2.41
9.60	0.10	0.39	5.00	0.00	2.38	2.38
9.65	0.10	0.39	5.00	0.00	2.35	2.35
9.70	0.10	0.39	5.00	0.00	2.32	2.32
9.75	0.10	0.39	5.00	0.00	2.29	2.29
9.80	0.10	0.39	5.00	0.00	2.26	2.26
9.85	0.10	0.39	5.00	0.00	2.23	2.23
9.90	0.10	0.39	5.00	0.00	2.20	2.20
9.95	0.10	0.39	5.00	0.00	2.17	2.17
10.00	0.10	0.39	5.00	0.00	2.14	2.14
10.05	0.10	0.39	5.00	0.00	2.11	2.11
10.10	0.10	0.39	5.00	0.00	2.08	2.08
10.15	0.10	0.39	5.00	0.00	2.05	2.05
10.20	0.10	0.39	5.00	0.00	2.02	2.02
10.25	0.10	0.39	5.00	0.00	1.99	1.99
10.30	0.10	0.39	5.00	0.00	1.96	1.96
10.35	0.10	0.39	5.00	0.00	1.93	1.93
10.40	0.10	0.39	5.00	0.00	1.90	1.90
10.45	0.10	0.39	5.00	0.00	1.87	1.87



10.50	0.10	0.39	5.00	0.00	1.84	1.84
10.55	0.10	0.39	5.00	0.00	1.81	1.81
10.60	0.10	0.39	5.00	0.00	1.78	1.78
10.65	0.10	0.39	5.00	0.00	1.75	1.75
10.70	0.10	0.39	5.00	0.00	1.72	1.72
10.75	0.10	0.39	5.00	0.00	1.69	1.69
10.80	0.10	0.39	5.00	0.00	1.66	1.66
10.85	0.10	0.39	5.00	0.00	1.63	1.63
10.90	0.10	0.39	5.00	0.00	1.60	1.60
10.95	0.10	0.39	5.00	0.00	1.57	1.57
11.00	0.10	0.39	5.00	0.00	1.55	1.55
11.05	0.10	0.39	5.00	0.00	1.52	1.52
11.10	0.11	0.39	5.00	0.00	1.49	1.49
11.15	0.11	0.39	5.00	0.00	1.46	1.46
11.20	0.11	0.39	5.00	0.00	1.43	1.43
11.25	0.11	0.39	5.00	0.00	1.40	1.40
11.30	0.11	0.39	5.00	0.00	1.37	1.37
11.35	0.11	0.39	5.00	0.00	1.34	1.34
11.40	0.11	0.39	5.00	0.00	1.31	1.31
11.45	0.11	0.39	5.00	0.00	1.29	1.29
11.50	0.11	0.39	5.00	0.00	1.26	1.26
11.55	0.11	0.39	5.00	0.00	1.23	1.23
11.60	0.11	0.39	5.00	0.00	1.20	1.20
11.65	0.11	0.39	5.00	0.00	1.18	1.18
11.70	0.11	0.39	5.00	0.00	1.15	1.15
11.75	0.11	0.39	5.00	0.00	1.12	1.12
11.80	0.11	0.39	5.00	0.00	1.10	1.10
11.85	0.12	0.39	5.00	0.00	1.07	1.07
11.90	0.12	0.39	5.00	0.00	1.04	1.04
11.95	0.12	0.39	5.00	0.00	1.02	1.02
12.00	0.12	0.39	5.00	0.00	0.99	0.99
12.05	0.12	0.39	5.00	0.00	0.97	0.97
12.10	0.12	0.39	5.00	0.00	0.94	0.94
12.15	0.12	0.39	5.00	0.00	0.92	0.92
12.20	0.13	0.39	5.00	0.00	0.89	0.89
12.25	0.13	0.39	5.00	0.00	0.89	0.89
12.30	0.13	0.39	5.00	0.00	0.89	0.89
12.35	0.13	0.39	5.00	0.00	0.89	0.89
12.40	0.13	0.39	5.00	0.00	0.88	0.88
12.45	0.13	0.39	5.00	0.00	0.88	0.88
12.50	0.14	0.39	5.00	0.00	0.88	0.88
12.55	0.14	0.39	5.00	0.00	0.87	0.87
12.60	0.14	0.39	5.00	0.00	0.87	0.87
12.65	0.14	0.39	5.00	0.00	0.87	0.87
12.70	0.14	0.39	5.00	0.00	0.87	0.87
12.75	0.14	0.39	5.00	0.00	0.86	0.86
12.80	0.15	0.39	5.00	0.00	0.86	0.86
12.85	0.15	0.39	5.00	0.00	0.86	0.86
12.90	0.15	0.39	5.00	0.00	0.86	0.86
12.95	0.15	0.39	5.00	0.00	0.85	0.85
13.00	0.15	0.39	5.00	0.00	0.85	0.85
13.05	0.15	0.39	5.00	0.00	0.85	0.85
13.10	0.15	0.39	5.00	0.00	0.85	0.85
13.15	0.16	0.39	5.00	0.00	0.84	0.84
13.20	0.16	0.39	5.00	0.00	0.84	0.84
13.25	0.16	0.39	5.00	0.00	0.84	0.84
13.30	0.16	0.39	5.00	0.00	0.84	0.84
13.35	0.16	0.39	5.00	0.00	0.84	0.84
13.40	0.16	0.39	5.00	0.00	0.83	0.83



13.45	0.16	0.39	5.00	0.00	0.83	0.83
13.50	0.17	0.39	5.00	0.00	0.83	0.83
13.55	0.17	0.39	5.00	0.00	0.83	0.83
13.60	0.17	0.39	5.00	0.00	0.83	0.83
13.65	0.17	0.39	5.00	0.00	0.82	0.82
13.70	0.17	0.39	5.00	0.00	0.82	0.82
13.75	0.17	0.39	5.00	0.00	0.82	0.82
13.80	0.17	0.39	5.00	0.00	0.82	0.82
13.85	0.18	0.39	5.00	0.00	0.82	0.82
13.90	0.18	0.39	5.00	0.00	0.82	0.82
13.95	0.18	0.39	5.00	0.00	0.81	0.81
14.00	0.18	0.39	5.00	0.00	0.81	0.81
14.05	0.18	0.39	5.00	0.00	0.81	0.81
14.10	0.18	0.39	5.00	0.00	0.81	0.81
14.15	0.18	0.39	5.00	0.00	0.81	0.81
14.20	0.18	0.39	5.00	0.00	0.81	0.81
14.25	0.18	0.39	5.00	0.00	0.80	0.80
14.30	0.19	0.39	5.00	0.00	0.80	0.80
14.35	0.19	0.39	5.00	0.00	0.80	0.80
14.40	0.19	0.39	5.00	0.00	0.80	0.80
14.45	0.19	0.39	5.00	0.00	0.80	0.80
14.50	0.19	0.39	5.00	0.00	0.80	0.80
14.55	0.19	0.39	5.00	0.00	0.79	0.79
14.60	0.19	0.39	5.00	0.00	0.79	0.79
14.65	0.19	0.39	5.00	0.00	0.79	0.79
14.70	0.20	0.39	5.00	0.00	0.79	0.79
14.75	0.20	0.39	5.00	0.00	0.79	0.79
14.80	0.22	0.39	5.00	0.00	0.79	0.79
14.85	0.22	0.39	5.00	0.00	0.79	0.79
14.90	0.22	0.39	5.00	0.00	0.78	0.78
14.95	0.22	0.39	5.00	0.00	0.78	0.78
15.00	0.22	0.39	5.00	0.00	0.78	0.78
15.05	0.22	0.39	5.00	0.00	0.78	0.78
15.10	0.23	0.39	5.00	0.00	0.78	0.78
15.15	0.23	0.39	5.00	0.00	0.78	0.78
15.20	0.23	0.39	5.00	0.00	0.78	0.78
15.25	0.23	0.39	5.00	0.00	0.78	0.78
15.30	0.23	0.39	5.00	0.00	0.78	0.78
15.35	0.23	0.39	5.00	0.00	0.77	0.77
15.40	0.23	0.39	5.00	0.00	0.77	0.77
15.45	0.24	0.39	5.00	0.00	0.77	0.77
15.50	0.24	0.39	5.00	0.00	0.77	0.77
15.55	0.24	0.39	5.00	0.00	0.77	0.77
15.60	0.24	0.39	5.00	0.00	0.77	0.77
15.65	0.24	0.39	5.00	0.00	0.77	0.77
15.70	0.24	0.39	5.00	0.00	0.77	0.77
15.75	0.25	0.39	5.00	0.00	0.77	0.77
15.80	0.25	0.39	5.00	0.00	0.77	0.77
15.85	0.25	0.39	5.00	0.00	0.76	0.76
15.90	0.25	0.39	5.00	0.00	0.76	0.76
15.95	0.25	0.39	5.00	0.00	0.76	0.76
16.00	0.25	0.39	5.00	0.00	0.76	0.76
16.05	0.25	0.39	5.00	0.00	0.76	0.76
16.10	0.25	0.39	5.00	0.00	0.76	0.76
16.15	0.25	0.39	5.00	0.00	0.76	0.76
16.20	0.25	0.39	5.00	0.00	0.76	0.76
16.25	0.25	0.39	5.00	0.00	0.76	0.76
16.30	0.25	0.39	5.00	0.00	0.76	0.76
16.35	0.25	0.39	5.00	0.00	0.75	0.75



16.40	0.24	0.39	5.00	0.00	0.75	0.75
16.45	0.24	0.39	5.00	0.00	0.75	0.75
16.50	0.24	0.39	5.00	0.00	0.75	0.75
16.55	0.24	0.39	5.00	0.00	0.75	0.75
16.60	0.24	0.39	5.00	0.00	0.75	0.75
16.65	0.24	0.39	5.00	0.00	0.75	0.75
16.70	0.24	0.39	5.00	0.00	0.75	0.75
16.75	0.24	0.39	5.00	0.00	0.75	0.75
16.80	0.24	0.39	5.00	0.00	0.74	0.74
16.85	0.23	0.39	5.00	0.00	0.74	0.74
16.90	0.23	0.39	5.00	0.00	0.74	0.74
16.95	0.23	0.39	5.00	0.00	0.74	0.74
17.00	0.23	0.39	5.00	0.00	0.74	0.74
17.05	0.23	0.39	5.00	0.00	0.74	0.74
17.10	0.23	0.39	5.00	0.00	0.74	0.74
17.15	0.23	0.39	5.00	0.00	0.74	0.74
17.20	0.23	0.39	5.00	0.00	0.73	0.73
17.25	0.23	0.39	5.00	0.00	0.73	0.73
17.30	0.23	0.39	5.00	0.00	0.73	0.73
17.35	0.23	0.39	5.00	0.00	0.73	0.73
17.40	0.22	0.39	5.00	0.00	0.73	0.73
17.45	0.22	0.39	5.00	0.00	0.73	0.73
17.50	0.22	0.39	5.00	0.00	0.73	0.73
17.55	0.22	0.39	5.00	0.00	0.72	0.72
17.60	0.22	0.39	5.00	0.00	0.72	0.72
17.65	0.22	0.39	5.00	0.00	0.72	0.72
17.70	0.22	0.39	5.00	0.00	0.72	0.72
17.75	0.22	0.39	5.00	0.00	0.72	0.72
17.80	0.22	0.39	5.00	0.00	0.72	0.72
17.85	0.22	0.39	5.00	0.00	0.71	0.71
17.90	0.22	0.39	5.00	0.00	0.71	0.71
17.95	0.21	0.39	5.00	0.00	0.71	0.71
18.00	0.21	0.39	5.00	0.00	0.71	0.71
18.05	0.21	0.39	5.00	0.00	0.71	0.71
18.10	0.21	0.39	5.00	0.00	0.71	0.71
18.15	0.21	0.39	5.00	0.00	0.70	0.70
18.20	0.21	0.39	5.00	0.00	0.70	0.70
18.25	0.21	0.39	5.00	0.00	0.70	0.70
18.30	0.21	0.39	5.00	0.00	0.70	0.70
18.35	0.21	0.39	5.00	0.00	0.70	0.70
18.40	0.21	0.39	5.00	0.00	0.69	0.69
18.45	0.21	0.39	5.00	0.00	0.69	0.69
18.50	0.21	0.39	5.00	0.00	0.69	0.69
18.55	0.21	0.39	5.00	0.00	0.69	0.69
18.60	0.20	0.39	5.00	0.00	0.69	0.69
18.65	0.20	0.39	5.00	0.00	0.68	0.68
18.70	0.20	0.39	5.00	0.00	0.68	0.68
18.75	0.20	0.39	5.00	0.00	0.68	0.68
18.80	0.20	0.39	5.00	0.00	0.68	0.68
18.85	0.20	0.39	5.00	0.00	0.68	0.68
18.90	0.20	0.39	5.00	0.00	0.67	0.67
18.95	0.20	0.39	5.00	0.00	0.67	0.67
19.00	0.20	0.39	5.00	0.00	0.67	0.67
19.05	0.20	0.39	5.00	0.00	0.67	0.67
19.10	0.20	0.39	5.00	0.00	0.66	0.66
19.15	0.20	0.39	5.00	0.00	0.66	0.66
19.20	0.20	0.39	5.00	0.00	0.66	0.66
19.25	0.20	0.38	5.00	0.00	0.66	0.66
19.30	0.19	0.38	5.00	0.00	0.66	0.66



19.35	0.19	0.38	5.00	0.00	0.65	0.65
19.40	0.19	0.38	5.00	0.00	0.65	0.65
19.45	0.19	0.38	5.00	0.00	0.65	0.65
19.50	0.19	0.38	5.00	0.00	0.64	0.64
19.55	0.19	0.38	5.00	0.00	0.64	0.64
19.60	0.19	0.38	5.00	0.00	0.64	0.64
19.65	0.19	0.38	5.00	0.00	0.64	0.64
19.70	0.19	0.38	5.00	0.00	0.63	0.63
19.75	0.19	0.38	5.00	0.00	0.63	0.63
19.80	0.19	0.38	5.00	0.00	0.63	0.63
19.85	0.19	0.38	5.00	0.00	0.62	0.62
19.90	0.19	0.38	5.00	0.00	0.62	0.62
19.95	0.19	0.38	5.00	0.00	0.62	0.62
20.00	0.19	0.38	5.00	0.00	0.62	0.62
20.05	2.00	0.38	5.00	0.00	0.61	0.61
20.10	2.00	0.38	5.00	0.00	0.61	0.61
20.15	2.00	0.38	5.00	0.00	0.61	0.61
20.20	2.00	0.38	5.00	0.00	0.61	0.61
20.25	2.00	0.38	5.00	0.00	0.61	0.61
20.30	2.00	0.38	5.00	0.00	0.61	0.61
20.35	2.00	0.38	5.00	0.00	0.61	0.61
20.40	2.00	0.38	5.00	0.00	0.61	0.61
20.45	2.00	0.38	5.00	0.00	0.61	0.61
20.50	2.00	0.38	5.00	0.00	0.61	0.61
20.55	2.00	0.38	5.00	0.00	0.61	0.61
20.60	2.00	0.38	5.00	0.00	0.61	0.61
20.65	2.00	0.38	5.00	0.00	0.61	0.61
20.70	2.00	0.38	5.00	0.00	0.61	0.61
20.75	2.00	0.38	5.00	0.00	0.61	0.61
20.80	2.00	0.38	5.00	0.00	0.61	0.61
20.85	2.00	0.38	5.00	0.00	0.61	0.61
20.90	2.00	0.38	5.00	0.00	0.61	0.61
20.95	2.00	0.38	5.00	0.00	0.61	0.61
21.00	2.00	0.38	5.00	0.00	0.61	0.61
21.05	0.17	0.38	5.00	0.00	0.61	0.61
21.10	0.17	0.38	5.00	0.00	0.61	0.61
21.15	0.18	0.38	5.00	0.00	0.60	0.60
21.20	0.18	0.38	5.00	0.00	0.60	0.60
21.25	0.18	0.38	5.00	0.00	0.59	0.59
21.30	0.18	0.38	5.00	0.00	0.59	0.59
21.35	0.18	0.38	5.00	0.00	0.59	0.59
21.40	0.18	0.38	5.00	0.00	0.58	0.58
21.45	0.18	0.38	5.00	0.00	0.58	0.58
21.50	0.18	0.38	5.00	0.00	0.57	0.57
21.55	0.18	0.38	5.00	0.00	0.57	0.57
21.60	0.18	0.38	5.00	0.00	0.57	0.57
21.65	0.18	0.38	5.00	0.00	0.56	0.56
21.70	0.19	0.38	5.00	0.00	0.56	0.56
21.75	0.19	0.38	5.00	0.00	0.55	0.55
21.80	0.19	0.38	5.00	0.00	0.55	0.55
21.85	0.19	0.38	5.00	0.00	0.55	0.55
21.90	0.19	0.38	5.00	0.00	0.54	0.54
21.95	0.19	0.38	5.00	0.00	0.54	0.54
22.00	0.19	0.38	5.00	0.00	0.53	0.53
22.05	0.19	0.38	5.00	0.00	0.53	0.53
22.10	0.19	0.38	5.00	0.00	0.53	0.53
22.15	0.19	0.38	5.00	0.00	0.52	0.52
22.20	0.19	0.38	5.00	0.00	0.52	0.52
22.25	0.19	0.38	5.00	0.00	0.51	0.51



22.30	0.19	0.38	5.00	0.00	0.51	0.51
22.35	0.19	0.38	5.00	0.00	0.51	0.51
22.40	0.19	0.38	5.00	0.00	0.50	0.50
22.45	0.19	0.38	5.00	0.00	0.50	0.50
22.50	0.20	0.38	5.00	0.00	0.50	0.50
22.55	0.20	0.38	5.00	0.00	0.49	0.49
22.60	0.20	0.38	5.00	0.00	0.49	0.49
22.65	0.20	0.38	5.00	0.00	0.48	0.48
22.70	0.20	0.38	5.00	0.00	0.48	0.48
22.75	0.20	0.38	5.00	0.00	0.48	0.48
22.80	0.20	0.38	5.00	0.00	0.47	0.47
22.85	0.20	0.38	5.00	0.00	0.47	0.47
22.90	0.20	0.38	5.00	0.00	0.47	0.47
22.95	0.20	0.38	5.00	0.00	0.46	0.46
23.00	0.20	0.38	5.00	0.00	0.46	0.46
23.05	0.20	0.38	5.00	0.00	0.46	0.46
23.10	0.20	0.38	5.00	0.00	0.45	0.45
23.15	0.20	0.38	5.00	0.00	0.45	0.45
23.20	0.20	0.38	5.00	0.00	0.44	0.44
23.25	0.21	0.38	5.00	0.00	0.44	0.44
23.30	0.21	0.38	5.00	0.00	0.44	0.44
23.35	0.21	0.38	5.00	0.00	0.43	0.43
23.40	0.21	0.38	5.00	0.00	0.43	0.43
23.45	0.21	0.38	5.00	0.00	0.43	0.43
23.50	0.21	0.38	5.00	0.00	0.42	0.42
23.55	0.21	0.38	5.00	0.00	0.42	0.42
23.60	0.21	0.38	5.00	0.00	0.42	0.42
23.65	0.21	0.38	5.00	0.00	0.41	0.41
23.70	0.21	0.38	5.00	0.00	0.41	0.41
23.75	0.21	0.38	5.00	0.00	0.41	0.41
23.80	0.21	0.38	5.00	0.00	0.40	0.40
23.85	0.21	0.38	5.00	0.00	0.40	0.40
23.90	0.21	0.38	5.00	0.00	0.39	0.39
23.95	0.21	0.38	5.00	0.00	0.39	0.39
24.00	0.22	0.38	5.00	0.00	0.39	0.39
24.05	0.22	0.38	5.00	0.00	0.38	0.38
24.10	0.22	0.38	5.00	0.00	0.38	0.38
24.15	0.22	0.38	5.00	0.00	0.38	0.38
24.20	0.22	0.38	5.00	0.00	0.37	0.37
24.25	0.22	0.38	5.00	0.00	0.37	0.37
24.30	0.22	0.38	5.00	0.00	0.37	0.37
24.35	0.22	0.38	5.00	0.00	0.37	0.37
24.40	0.22	0.38	5.00	0.00	0.36	0.36
24.45	0.22	0.38	5.00	0.00	0.36	0.36
24.50	0.22	0.38	5.00	0.00	0.36	0.36
24.55	0.22	0.38	5.00	0.00	0.36	0.36
24.60	0.22	0.38	5.00	0.00	0.36	0.36
24.65	0.22	0.38	5.00	0.00	0.36	0.36
24.70	0.22	0.38	5.00	0.00	0.36	0.36
24.75	0.23	0.38	5.00	0.00	0.36	0.36
24.80	0.23	0.38	5.00	0.00	0.35	0.35
24.85	0.23	0.38	5.00	0.00	0.35	0.35
24.90	0.23	0.38	5.00	0.00	0.35	0.35
24.95	0.23	0.38	5.00	0.00	0.35	0.35
25.00	0.23	0.38	5.00	0.00	0.35	0.35
25.05	0.23	0.38	5.00	0.00	0.35	0.35
25.10	0.23	0.38	5.00	0.00	0.35	0.35
25.15	0.23	0.38	5.00	0.00	0.34	0.34
25.20	0.23	0.38	5.00	0.00	0.34	0.34



25.25	0.23	0.38	5.00	0.00	0.34	0.34
25.30	0.23	0.38	5.00	0.00	0.34	0.34
25.35	0.23	0.38	5.00	0.00	0.34	0.34
25.40	0.23	0.38	5.00	0.00	0.34	0.34
25.45	0.24	0.38	5.00	0.00	0.34	0.34
25.50	0.24	0.38	5.00	0.00	0.34	0.34
25.55	0.24	0.38	5.00	0.00	0.33	0.33
25.60	0.24	0.38	5.00	0.00	0.33	0.33
25.65	0.24	0.38	5.00	0.00	0.33	0.33
25.70	0.24	0.38	5.00	0.00	0.33	0.33
25.75	0.24	0.38	5.00	0.00	0.33	0.33
25.80	0.24	0.38	5.00	0.00	0.33	0.33
25.85	0.24	0.38	5.00	0.00	0.33	0.33
25.90	0.24	0.38	5.00	0.00	0.33	0.33
25.95	0.24	0.38	5.00	0.00	0.32	0.32
26.00	0.24	0.38	5.00	0.00	0.32	0.32
26.05	0.24	0.38	5.00	0.00	0.32	0.32
26.10	0.25	0.38	5.00	0.00	0.32	0.32
26.15	0.25	0.38	5.00	0.00	0.32	0.32
26.20	0.25	0.38	5.00	0.00	0.32	0.32
26.25	0.25	0.38	5.00	0.00	0.32	0.32
26.30	0.25	0.38	5.00	0.00	0.32	0.32
26.35	0.25	0.38	5.00	0.00	0.32	0.32
26.40	0.26	0.38	5.00	0.00	0.31	0.31
26.45	0.26	0.38	5.00	0.00	0.31	0.31
26.50	0.26	0.38	5.00	0.00	0.31	0.31
26.55	0.26	0.38	5.00	0.00	0.31	0.31
26.60	0.26	0.38	5.00	0.00	0.31	0.31
26.65	0.26	0.38	5.00	0.00	0.31	0.31
26.70	0.26	0.38	5.00	0.00	0.31	0.31
26.75	0.27	0.38	5.00	0.00	0.31	0.31
26.80	0.27	0.38	5.00	0.00	0.31	0.31
26.85	0.27	0.38	5.00	0.00	0.30	0.30
26.90	0.27	0.38	5.00	0.00	0.30	0.30
26.95	0.27	0.38	5.00	0.00	0.30	0.30
27.00	0.27	0.38	5.00	0.00	0.30	0.30
27.05	0.28	0.38	5.00	0.00	0.30	0.30
27.10	0.28	0.38	5.00	0.00	0.30	0.30
27.15	0.28	0.38	5.00	0.00	0.30	0.30
27.20	0.28	0.38	5.00	0.00	0.30	0.30
27.25	0.28	0.38	5.00	0.00	0.30	0.30
27.30	0.29	0.38	5.00	0.00	0.29	0.29
27.35	0.29	0.38	5.00	0.00	0.29	0.29
27.40	0.29	0.38	5.00	0.00	0.29	0.29
27.45	0.29	0.38	5.00	0.00	0.29	0.29
27.50	0.29	0.38	5.00	0.00	0.29	0.29
27.55	0.30	0.38	5.00	0.00	0.29	0.29
27.60	0.30	0.38	5.00	0.00	0.29	0.29
27.65	0.30	0.38	5.00	0.00	0.29	0.29
27.70	0.30	0.38	5.00	0.00	0.29	0.29
27.75	0.30	0.38	5.00	0.00	0.29	0.29
27.80	0.31	0.38	5.00	0.00	0.28	0.28
27.85	0.31	0.38	5.00	0.00	0.28	0.28
27.90	0.35	0.38	5.00	0.00	0.28	0.28
27.95	0.35	0.38	5.00	0.00	0.28	0.28
28.00	0.36	0.38	5.00	0.00	0.28	0.28
28.05	0.37	0.38	5.00	0.00	0.28	0.28
28.10	0.37	0.38	5.00	0.00	0.28	0.28
28.15	0.38	0.38	5.00	0.00	0.28	0.28



28.20	0.39	0.38	5.00	0.00	0.28	0.28
28.25	0.41	0.38	5.00	0.00	0.28	0.28
28.30	0.43	0.38	5.00	0.00	0.28	0.28
28.35	0.45	0.38	5.00	0.00	0.28	0.28
28.40	0.45	0.38	5.00	0.00	0.27	0.27
28.45	0.45	0.38	5.00	0.00	0.27	0.27
28.50	0.45	0.38	5.00	0.00	0.27	0.27
28.55	0.45	0.38	5.00	0.00	0.27	0.27
28.60	0.45	0.38	5.00	0.00	0.27	0.27
28.65	0.45	0.38	5.00	0.00	0.27	0.27
28.70	0.45	0.38	5.00	0.00	0.27	0.27
28.75	0.45	0.38	5.00	0.00	0.27	0.27
28.80	0.45	0.38	5.00	0.00	0.27	0.27
28.85	0.45	0.38	5.00	0.00	0.27	0.27
28.90	0.45	0.38	5.00	0.00	0.27	0.27
28.95	0.45	0.38	5.00	0.00	0.27	0.27
29.00	0.45	0.38	5.00	0.00	0.26	0.26
29.05	0.45	0.38	5.00	0.00	0.26	0.26
29.10	0.45	0.38	5.00	0.00	0.26	0.26
29.15	0.45	0.38	5.00	0.00	0.26	0.26
29.20	0.45	0.38	5.00	0.00	0.26	0.26
29.25	0.45	0.38	5.00	0.00	0.26	0.26
29.30	0.45	0.38	5.00	0.00	0.26	0.26
29.35	0.45	0.38	5.00	0.00	0.26	0.26
29.40	0.45	0.38	5.00	0.00	0.26	0.26
29.45	0.45	0.38	5.00	0.00	0.26	0.26
29.50	0.45	0.38	5.00	0.00	0.26	0.26
29.55	0.45	0.38	5.00	0.00	0.26	0.26
29.60	0.45	0.38	5.00	0.00	0.26	0.26
29.65	0.45	0.38	5.00	0.00	0.26	0.26
29.70	0.45	0.38	5.00	0.00	0.25	0.25
29.75	0.45	0.38	5.00	0.00	0.25	0.25
29.80	0.45	0.38	5.00	0.00	0.25	0.25
29.85	0.45	0.38	5.00	0.00	0.25	0.25
29.90	0.45	0.37	5.00	0.00	0.25	0.25
29.95	0.45	0.37	5.00	0.00	0.25	0.25
30.00	0.45	0.37	5.00	0.00	0.25	0.25
30.05	0.45	0.37	5.00	0.00	0.25	0.25
30.10	0.45	0.37	5.00	0.00	0.25	0.25
30.15	0.45	0.37	5.00	0.00	0.25	0.25
30.20	0.45	0.37	5.00	0.00	0.25	0.25
30.25	0.45	0.37	5.00	0.00	0.25	0.25
30.30	0.45	0.37	5.00	0.00	0.25	0.25
30.35	0.45	0.37	5.00	0.00	0.25	0.25
30.40	0.45	0.37	5.00	0.00	0.25	0.25
30.45	0.45	0.37	5.00	0.00	0.24	0.24
30.50	0.45	0.37	5.00	0.00	0.24	0.24
30.55	0.45	0.37	5.00	0.00	0.24	0.24
30.60	0.45	0.37	5.00	0.00	0.24	0.24
30.65	0.45	0.37	5.00	0.00	0.24	0.24
30.70	0.45	0.37	5.00	0.00	0.24	0.24
30.75	0.45	0.37	5.00	0.00	0.24	0.24
30.80	0.45	0.37	5.00	0.00	0.24	0.24
30.85	0.45	0.37	5.00	0.00	0.24	0.24
30.90	0.45	0.37	5.00	0.00	0.24	0.24
30.95	0.45	0.37	5.00	0.00	0.24	0.24
31.00	0.45	0.37	5.00	0.00	0.24	0.24
31.05	0.45	0.37	5.00	0.00	0.24	0.24
31.10	0.45	0.37	5.00	0.00	0.24	0.24



[illegible]



[illegible]



37.05	0.25	0.35	5.00	0.00	0.18	0.18
37.10	0.25	0.35	5.00	0.00	0.18	0.18
37.15	0.25	0.35	5.00	0.00	0.17	0.17
37.20	0.26	0.35	5.00	0.00	0.17	0.17
37.25	0.26	0.35	5.00	0.00	0.17	0.17
37.30	0.26	0.35	5.00	0.00	0.17	0.17
37.35	0.26	0.35	5.00	0.00	0.17	0.17
37.40	0.26	0.35	5.00	0.00	0.17	0.17
37.45	0.26	0.35	5.00	0.00	0.16	0.16
37.50	0.26	0.35	5.00	0.00	0.16	0.16
37.55	0.26	0.35	5.00	0.00	0.16	0.16
37.60	0.26	0.35	5.00	0.00	0.16	0.16
37.65	0.26	0.35	5.00	0.00	0.16	0.16
37.70	0.26	0.35	5.00	0.00	0.16	0.16
37.75	0.26	0.35	5.00	0.00	0.16	0.16
37.80	0.26	0.35	5.00	0.00	0.15	0.15
37.85	0.26	0.35	5.00	0.00	0.15	0.15
37.90	0.26	0.35	5.00	0.00	0.15	0.15
37.95	0.26	0.35	5.00	0.00	0.15	0.15
38.00	0.26	0.35	5.00	0.00	0.15	0.15
38.05	0.26	0.35	5.00	0.00	0.15	0.15
38.10	0.26	0.35	5.00	0.00	0.15	0.15
38.15	0.26	0.35	5.00	0.00	0.14	0.14
38.20	0.26	0.35	5.00	0.00	0.14	0.14
38.25	0.26	0.35	5.00	0.00	0.14	0.14
38.30	0.26	0.35	5.00	0.00	0.14	0.14
38.35	0.26	0.35	5.00	0.00	0.14	0.14
38.40	0.26	0.35	5.00	0.00	0.14	0.14
38.45	0.26	0.35	5.00	0.00	0.13	0.13
38.50	0.26	0.35	5.00	0.00	0.13	0.13
38.55	0.26	0.35	5.00	0.00	0.13	0.13
38.60	0.26	0.35	5.00	0.00	0.13	0.13
38.65	0.26	0.35	5.00	0.00	0.13	0.13
38.70	0.26	0.35	5.00	0.00	0.13	0.13
38.75	0.26	0.35	5.00	0.00	0.13	0.13
38.80	0.26	0.35	5.00	0.00	0.12	0.12
38.85	0.26	0.35	5.00	0.00	0.12	0.12
38.90	0.26	0.35	5.00	0.00	0.12	0.12
38.95	0.26	0.35	5.00	0.00	0.12	0.12
39.00	0.26	0.35	5.00	0.00	0.12	0.12
39.05	0.26	0.35	5.00	0.00	0.12	0.12
39.10	0.26	0.34	5.00	0.00	0.11	0.11
39.15	0.26	0.34	5.00	0.00	0.11	0.11
39.20	0.26	0.34	5.00	0.00	0.11	0.11
39.25	0.26	0.34	5.00	0.00	0.11	0.11
39.30	0.26	0.34	5.00	0.00	0.11	0.11
39.35	0.26	0.34	5.00	0.00	0.11	0.11
39.40	0.26	0.34	5.00	0.00	0.11	0.11
39.45	0.26	0.34	5.00	0.00	0.10	0.10
39.50	0.26	0.34	5.00	0.00	0.10	0.10
39.55	0.26	0.34	5.00	0.00	0.10	0.10
39.60	0.26	0.34	5.00	0.00	0.10	0.10
39.65	0.26	0.34	5.00	0.00	0.10	0.10
39.70	0.26	0.34	5.00	0.00	0.10	0.10
39.75	0.26	0.34	5.00	0.00	0.10	0.10
39.80	0.26	0.34	5.00	0.00	0.09	0.09
39.85	0.26	0.34	5.00	0.00	0.09	0.09
39.90	0.26	0.34	5.00	0.00	0.09	0.09
39.95	0.26	0.34	5.00	0.00	0.09	0.09



40.00	0.26	0.34	5.00	0.00	0.09	0.09
40.05	0.26	0.34	5.00	0.00	0.09	0.09
40.10	0.26	0.34	5.00	0.00	0.08	0.08
40.15	0.26	0.34	5.00	0.00	0.08	0.08
40.20	0.26	0.34	5.00	0.00	0.08	0.08
40.25	0.26	0.34	5.00	0.00	0.08	0.08
40.30	0.26	0.34	5.00	0.00	0.08	0.08
40.35	0.26	0.34	5.00	0.00	0.08	0.08
40.40	0.26	0.34	5.00	0.00	0.08	0.08
40.45	0.26	0.34	5.00	0.00	0.07	0.07
40.50	0.26	0.34	5.00	0.00	0.07	0.07
40.55	0.26	0.34	5.00	0.00	0.07	0.07
40.60	0.26	0.34	5.00	0.00	0.07	0.07
40.65	0.26	0.34	5.00	0.00	0.07	0.07
40.70	0.26	0.34	5.00	0.00	0.07	0.07
40.75	0.26	0.34	5.00	0.00	0.07	0.07
40.80	0.26	0.34	5.00	0.00	0.06	0.06
40.85	0.26	0.34	5.00	0.00	0.06	0.06
40.90	0.26	0.34	5.00	0.00	0.06	0.06
40.95	0.26	0.34	5.00	0.00	0.06	0.06
41.00	0.26	0.34	5.00	0.00	0.06	0.06
41.05	0.26	0.34	5.00	0.00	0.06	0.06
41.10	0.27	0.34	5.00	0.00	0.05	0.05
41.15	0.27	0.34	5.00	0.00	0.05	0.05
41.20	0.28	0.34	5.00	0.00	0.05	0.05
41.25	0.28	0.34	5.00	0.00	0.05	0.05
41.30	0.29	0.34	5.00	0.00	0.05	0.05
41.35	0.30	0.34	5.00	0.00	0.05	0.05
41.40	0.30	0.34	5.00	0.00	0.05	0.05
41.45	0.31	0.34	5.00	0.00	0.05	0.05
41.50	0.32	0.34	5.00	0.00	0.04	0.04
41.55	0.33	0.34	5.00	0.00	0.04	0.04
41.60	0.34	0.34	5.00	0.00	0.04	0.04
41.65	0.36	0.34	5.00	0.00	0.04	0.04
41.70	0.40	0.34	5.00	0.00	0.04	0.04
41.75	0.43	0.34	5.00	0.00	0.04	0.04
41.80	0.43	0.34	5.00	0.00	0.04	0.04
41.85	0.43	0.34	5.00	0.00	0.04	0.04
41.90	0.43	0.34	5.00	0.00	0.04	0.04
41.95	0.43	0.34	5.00	0.00	0.03	0.03
42.00	0.43	0.34	5.00	0.00	0.03	0.03
42.05	0.43	0.34	5.00	0.00	0.03	0.03
42.10	0.43	0.34	5.00	0.00	0.03	0.03
42.15	0.43	0.33	5.00	0.00	0.03	0.03
42.20	0.43	0.33	5.00	0.00	0.03	0.03
42.25	0.43	0.33	5.00	0.00	0.03	0.03
42.30	0.43	0.33	5.00	0.00	0.03	0.03
42.35	0.43	0.33	5.00	0.00	0.03	0.03
42.40	0.43	0.33	5.00	0.00	0.03	0.03
42.45	0.43	0.33	5.00	0.00	0.03	0.03
42.50	0.43	0.33	5.00	0.00	0.03	0.03
42.55	0.43	0.33	5.00	0.00	0.02	0.02
42.60	0.43	0.33	5.00	0.00	0.02	0.02
42.65	0.43	0.33	5.00	0.00	0.02	0.02
42.70	0.43	0.33	5.00	0.00	0.02	0.02
42.75	0.43	0.33	5.00	0.00	0.02	0.02
42.80	0.43	0.33	5.00	0.00	0.02	0.02
42.85	0.43	0.33	5.00	0.00	0.02	0.02
42.90	0.43	0.33	5.00	0.00	0.02	0.02



[illegible]



[illegible]



48.85	0.42	0.33	1.27	0.00	0.00	0.00
48.90	0.42	0.33	1.27	0.00	0.00	0.00
48.95	0.42	0.33	1.27	0.00	0.00	0.00
49.00	0.42	0.33	1.27	0.00	0.00	0.00
49.05	0.42	0.33	1.27	0.00	0.00	0.00
49.10	0.42	0.33	1.27	0.00	0.00	0.00
49.15	0.42	0.33	1.27	0.00	0.00	0.00
49.20	0.42	0.33	1.27	0.00	0.00	0.00
49.25	0.42	0.33	1.27	0.00	0.00	0.00
49.30	0.42	0.33	1.27	0.00	0.00	0.00
49.35	0.42	0.33	1.27	0.00	0.00	0.00
49.40	0.42	0.33	1.27	0.00	0.00	0.00
49.45	0.42	0.33	1.27	0.00	0.00	0.00
49.50	0.42	0.33	1.27	0.00	0.00	0.00
49.55	0.42	0.33	1.27	0.00	0.00	0.00
49.60	0.42	0.33	1.26	0.00	0.00	0.00
49.65	0.42	0.33	1.26	0.00	0.00	0.00
49.70	0.42	0.33	1.26	0.00	0.00	0.00
49.75	0.42	0.33	1.26	0.00	0.00	0.00
49.80	0.41	0.33	1.26	0.00	0.00	0.00
49.85	0.41	0.33	1.26	0.00	0.00	0.00
49.90	0.41	0.33	1.26	0.00	0.00	0.00
49.95	0.41	0.33	1.26	0.00	0.00	0.00
50.00	0.41	0.33	1.26	0.00	0.00	0.00
50.05	2.00	0.33	5.00	0.00	0.00	0.00
50.10	2.00	0.33	5.00	0.00	0.00	0.00
50.15	2.00	0.33	5.00	0.00	0.00	0.00
50.20	2.00	0.33	5.00	0.00	0.00	0.00
50.25	2.00	0.33	5.00	0.00	0.00	0.00
50.30	2.00	0.33	5.00	0.00	0.00	0.00
50.35	2.00	0.33	5.00	0.00	0.00	0.00
50.40	2.00	0.33	5.00	0.00	0.00	0.00
50.45	2.00	0.33	5.00	0.00	0.00	0.00
50.50	2.00	0.33	5.00	0.00	0.00	0.00
50.55	2.00	0.33	5.00	0.00	0.00	0.00
50.60	2.00	0.33	5.00	0.00	0.00	0.00
50.65	2.00	0.33	5.00	0.00	0.00	0.00
50.70	2.00	0.33	5.00	0.00	0.00	0.00
50.75	2.00	0.33	5.00	0.00	0.00	0.00
50.80	2.00	0.33	5.00	0.00	0.00	0.00
50.85	2.00	0.33	5.00	0.00	0.00	0.00
50.90	2.00	0.33	5.00	0.00	0.00	0.00
50.95	2.00	0.33	5.00	0.00	0.00	0.00
51.00	2.00	0.33	5.00	0.00	0.00	0.00

---

\* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft<sup>2</sup>)

CRRm           Cyclic resistance ratio from soils

CSRs<sub>f</sub>           Cyclic stress ratio induced by a given earthquake  
(with user request factor of safety)

F.S.           Factor of Safety against liquefaction, F.S.=CRRm/CSRs<sub>f</sub>

S<sub>sat</sub>           Settlement from saturated sands

S<sub>dry</sub>           Settlement from Unsaturated Sands

S<sub>all</sub>           Total Settlement from Saturated and Unsaturated Sands

NoLiq          No-Liquefy Soils

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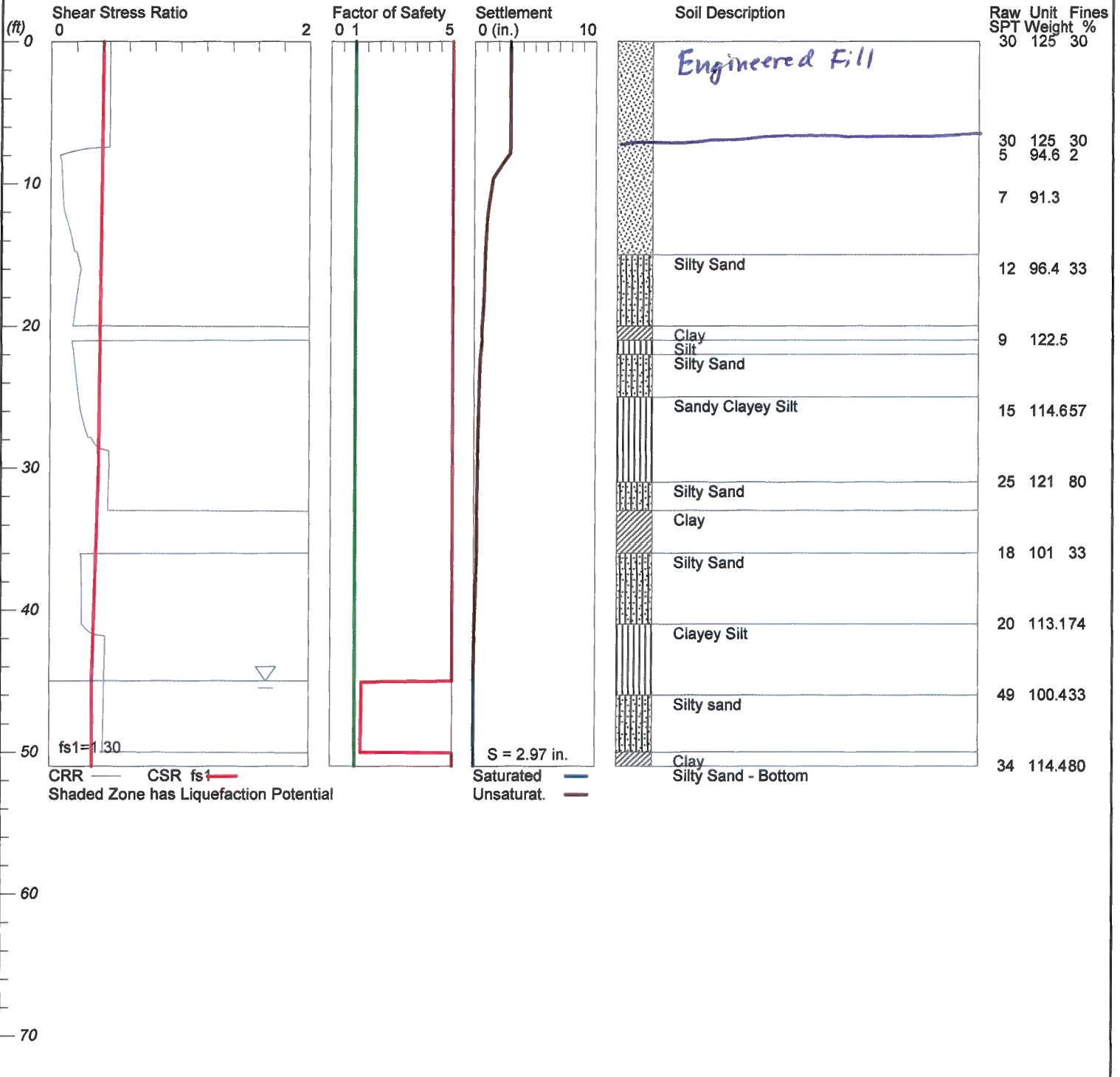


# LIQUEFACTION ANALYSIS

KHSD - SW HS

Hole No.=B-5 Water Depth=45 ft

Magnitude=7.8  
Acceleration=0.477g





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LIQUEFACTION ANALYSIS SUMMARY  
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Font: Courier New, Regular, Size 8 is recommended for this report.  
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Input File Name: O:\b. PROJECT FILES (ACTIVE)\16600-16699\16608  
KHSD, SW School Site Geotech & GeoHazard\OFFICE REPORTS\Geohaz\16608  
LiquefyPro files\B5 with 7' improvement 16608 LiquefyPro.liq

Title: KHSD - SW HS

Subtitle: 16608 B-5 with 7' improvement

Surface Elev.=

Hole No.=B-5

Depth of Hole= 51.00 ft

Water Table during Earthquake= 45.00 ft

Water Table during In-Situ Testing= 100.00 ft

Max. Acceleration= 0.48 g

Earthquake Magnitude= 7.80

Input Data:

Surface Elev.=

Hole No.=B-5

Depth of Hole=51.00 ft

Water Table during Earthquake= 45.00 ft

Water Table during In-Situ Testing= 100.00 ft

Max. Acceleration=0.48 g

Earthquake Magnitude=7.80

No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.

2. Settlement Analysis Method: Tokimatsu, M-correction

3. Fines Correction for Liquefaction: Idriss/Seed

4. Fine Correction for Settlement: During Liquefaction\*

5. Settlement Calculation in: All zones\*

6. Hammer Energy Ratio,

Ce = 1.25

7. Borehole Diameter,

Cb= 1

8. Sampling Method,

Cs= 1

9. User request factor of safety (apply to CSR) , User= 1.3

Plot one CSR curve (fsl=User)

10. Use Curve Smoothing: Yes\*

\* Recommended Options



# In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	30.00	125.00	30.00
7.00	30.00	125.00	30.00
8.00	5.00	94.60	2.00
11.00	7.00	91.30	2.00
16.00	12.00	96.40	33.00
21.00	9.00	122.50	33.00
26.00	15.00	114.60	57.00
31.00	25.00	121.00	80.00
36.00	18.00	101.00	33.00
41.00	20.00	113.10	74.00
46.00	49.00	100.40	33.00
51.00	34.00	114.40	80.00

## Output Results:

Settlement of Saturated Sands=0.00 in.  
Settlement of Unsaturated Sands=2.97 in.  
Total Settlement of Saturated and Unsaturated Sands=2.97 in.  
Differential Settlement=1.483 to 1.958 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat in.	S_dry in.	S_all in.
0.00	0.45	0.40	5.00	0.00	2.97	2.97
0.05	0.45	0.40	5.00	0.00	2.97	2.97
0.10	0.45	0.40	5.00	0.00	2.97	2.97
0.15	0.45	0.40	5.00	0.00	2.97	2.97
0.20	0.45	0.40	5.00	0.00	2.97	2.97
0.25	0.45	0.40	5.00	0.00	2.97	2.97
0.30	0.45	0.40	5.00	0.00	2.97	2.97
0.35	0.45	0.40	5.00	0.00	2.97	2.97
0.40	0.45	0.40	5.00	0.00	2.97	2.97
0.45	0.45	0.40	5.00	0.00	2.97	2.97
0.50	0.45	0.40	5.00	0.00	2.97	2.97
0.55	0.45	0.40	5.00	0.00	2.97	2.97
0.60	0.45	0.40	5.00	0.00	2.97	2.97
0.65	0.45	0.40	5.00	0.00	2.97	2.97
0.70	0.45	0.40	5.00	0.00	2.97	2.97
0.75	0.45	0.40	5.00	0.00	2.97	2.97
0.80	0.45	0.40	5.00	0.00	2.97	2.97
0.85	0.45	0.40	5.00	0.00	2.97	2.97
0.90	0.45	0.40	5.00	0.00	2.97	2.97
0.95	0.45	0.40	5.00	0.00	2.97	2.97
1.00	0.45	0.40	5.00	0.00	2.97	2.97
1.05	0.45	0.40	5.00	0.00	2.97	2.97
1.10	0.45	0.40	5.00	0.00	2.97	2.97
1.15	0.45	0.40	5.00	0.00	2.97	2.97
1.20	0.45	0.40	5.00	0.00	2.97	2.97
1.25	0.45	0.40	5.00	0.00	2.97	2.97
1.30	0.45	0.40	5.00	0.00	2.97	2.97
1.35	0.45	0.40	5.00	0.00	2.97	2.97
1.40	0.45	0.40	5.00	0.00	2.97	2.97
1.45	0.45	0.40	5.00	0.00	2.97	2.97
1.50	0.45	0.40	5.00	0.00	2.97	2.97
1.55	0.45	0.40	5.00	0.00	2.97	2.97
1.60	0.45	0.40	5.00	0.00	2.97	2.97



[illegible]



[illegible]



7.55	0.28	0.40	5.00	0.00	2.95	2.95
7.60	0.24	0.40	5.00	0.00	2.95	2.95
7.65	0.21	0.40	5.00	0.00	2.95	2.95
7.70	0.18	0.40	5.00	0.00	2.95	2.95
7.75	0.16	0.40	5.00	0.00	2.95	2.95
7.80	0.14	0.40	5.00	0.00	2.94	2.94
7.85	0.12	0.40	5.00	0.00	2.93	2.93
7.90	0.10	0.40	5.00	0.00	2.91	2.91
7.95	0.09	0.40	5.00	0.00	2.88	2.88
8.00	0.07	0.40	5.00	0.00	2.84	2.84
8.05	0.07	0.40	5.00	0.00	2.79	2.79
8.10	0.07	0.40	5.00	0.00	2.75	2.75
8.15	0.07	0.40	5.00	0.00	2.70	2.70
8.20	0.07	0.40	5.00	0.00	2.65	2.65
8.25	0.08	0.40	5.00	0.00	2.61	2.61
8.30	0.08	0.40	5.00	0.00	2.57	2.57
8.35	0.08	0.40	5.00	0.00	2.52	2.52
8.40	0.08	0.40	5.00	0.00	2.48	2.48
8.45	0.08	0.40	5.00	0.00	2.44	2.44
8.50	0.08	0.40	5.00	0.00	2.40	2.40
8.55	0.08	0.40	5.00	0.00	2.36	2.36
8.60	0.08	0.39	5.00	0.00	2.32	2.32
8.65	0.08	0.39	5.00	0.00	2.28	2.28
8.70	0.08	0.39	5.00	0.00	2.25	2.25
8.75	0.08	0.39	5.00	0.00	2.21	2.21
8.80	0.08	0.39	5.00	0.00	2.17	2.17
8.85	0.08	0.39	5.00	0.00	2.13	2.13
8.90	0.08	0.39	5.00	0.00	2.09	2.09
8.95	0.08	0.39	5.00	0.00	2.05	2.05
9.00	0.08	0.39	5.00	0.00	2.01	2.01
9.05	0.08	0.39	5.00	0.00	1.97	1.97
9.10	0.08	0.39	5.00	0.00	1.94	1.94
9.15	0.08	0.39	5.00	0.00	1.90	1.90
9.20	0.08	0.39	5.00	0.00	1.86	1.86
9.25	0.09	0.39	5.00	0.00	1.82	1.82
9.30	0.09	0.39	5.00	0.00	1.79	1.79
9.35	0.09	0.39	5.00	0.00	1.75	1.75
9.40	0.09	0.39	5.00	0.00	1.71	1.71
9.45	0.09	0.39	5.00	0.00	1.67	1.67
9.50	0.09	0.39	5.00	0.00	1.64	1.64
9.55	0.09	0.39	5.00	0.00	1.60	1.60
9.60	0.09	0.39	5.00	0.00	1.56	1.56
9.65	0.09	0.39	5.00	0.00	1.53	1.53
9.70	0.09	0.39	5.00	0.00	1.52	1.52
9.75	0.09	0.39	5.00	0.00	1.51	1.51
9.80	0.09	0.39	5.00	0.00	1.50	1.50
9.85	0.09	0.39	5.00	0.00	1.49	1.49
9.90	0.09	0.39	5.00	0.00	1.48	1.48
9.95	0.09	0.39	5.00	0.00	1.47	1.47
10.00	0.09	0.39	5.00	0.00	1.46	1.46
10.05	0.09	0.39	5.00	0.00	1.46	1.46
10.10	0.09	0.39	5.00	0.00	1.45	1.45
10.15	0.09	0.39	5.00	0.00	1.44	1.44
10.20	0.09	0.39	5.00	0.00	1.43	1.43
10.25	0.09	0.39	5.00	0.00	1.42	1.42
10.30	0.09	0.39	5.00	0.00	1.41	1.41
10.35	0.09	0.39	5.00	0.00	1.40	1.40
10.40	0.09	0.39	5.00	0.00	1.39	1.39
10.45	0.09	0.39	5.00	0.00	1.38	1.38



10.50	0.09	0.39	5.00	0.00	1.38	1.38
10.55	0.09	0.39	5.00	0.00	1.37	1.37
10.60	0.09	0.39	5.00	0.00	1.36	1.36
10.65	0.09	0.39	5.00	0.00	1.35	1.35
10.70	0.09	0.39	5.00	0.00	1.34	1.34
10.75	0.09	0.39	5.00	0.00	1.33	1.33
10.80	0.09	0.39	5.00	0.00	1.32	1.32
10.85	0.09	0.39	5.00	0.00	1.31	1.31
10.90	0.09	0.39	5.00	0.00	1.30	1.30
10.95	0.09	0.39	5.00	0.00	1.30	1.30
11.00	0.09	0.39	5.00	0.00	1.29	1.29
11.05	0.10	0.39	5.00	0.00	1.28	1.28
11.10	0.10	0.39	5.00	0.00	1.27	1.27
11.15	0.10	0.39	5.00	0.00	1.26	1.26
11.20	0.10	0.39	5.00	0.00	1.25	1.25
11.25	0.10	0.39	5.00	0.00	1.24	1.24
11.30	0.10	0.39	5.00	0.00	1.23	1.23
11.35	0.10	0.39	5.00	0.00	1.23	1.23
11.40	0.10	0.39	5.00	0.00	1.22	1.22
11.45	0.10	0.39	5.00	0.00	1.21	1.21
11.50	0.10	0.39	5.00	0.00	1.20	1.20
11.55	0.10	0.39	5.00	0.00	1.19	1.19
11.60	0.10	0.39	5.00	0.00	1.18	1.18
11.65	0.10	0.39	5.00	0.00	1.18	1.18
11.70	0.10	0.39	5.00	0.00	1.17	1.17
11.75	0.10	0.39	5.00	0.00	1.16	1.16
11.80	0.10	0.39	5.00	0.00	1.15	1.15
11.85	0.11	0.39	5.00	0.00	1.14	1.14
11.90	0.11	0.39	5.00	0.00	1.14	1.14
11.95	0.11	0.39	5.00	0.00	1.13	1.13
12.00	0.11	0.39	5.00	0.00	1.12	1.12
12.05	0.11	0.39	5.00	0.00	1.12	1.12
12.10	0.11	0.39	5.00	0.00	1.11	1.11
12.15	0.11	0.39	5.00	0.00	1.10	1.10
12.20	0.11	0.39	5.00	0.00	1.10	1.10
12.25	0.12	0.39	5.00	0.00	1.09	1.09
12.30	0.12	0.39	5.00	0.00	1.08	1.08
12.35	0.12	0.39	5.00	0.00	1.08	1.08
12.40	0.12	0.39	5.00	0.00	1.07	1.07
12.45	0.12	0.39	5.00	0.00	1.07	1.07
12.50	0.12	0.39	5.00	0.00	1.06	1.06
12.55	0.13	0.39	5.00	0.00	1.06	1.06
12.60	0.13	0.39	5.00	0.00	1.05	1.05
12.65	0.13	0.39	5.00	0.00	1.05	1.05
12.70	0.13	0.39	5.00	0.00	1.04	1.04
12.75	0.13	0.39	5.00	0.00	1.04	1.04
12.80	0.13	0.39	5.00	0.00	1.03	1.03
12.85	0.14	0.39	5.00	0.00	1.03	1.03
12.90	0.14	0.39	5.00	0.00	1.02	1.02
12.95	0.14	0.39	5.00	0.00	1.02	1.02
13.00	0.14	0.39	5.00	0.00	1.02	1.02
13.05	0.14	0.39	5.00	0.00	1.01	1.01
13.10	0.14	0.39	5.00	0.00	1.01	1.01
13.15	0.15	0.39	5.00	0.00	1.00	1.00
13.20	0.15	0.39	5.00	0.00	1.00	1.00
13.25	0.15	0.39	5.00	0.00	1.00	1.00
13.30	0.15	0.39	5.00	0.00	0.99	0.99
13.35	0.15	0.39	5.00	0.00	0.99	0.99
13.40	0.15	0.39	5.00	0.00	0.99	0.99



13.45	0.15	0.39	5.00	0.00	0.98	0.98
13.50	0.16	0.39	5.00	0.00	0.98	0.98
13.55	0.16	0.39	5.00	0.00	0.98	0.98
13.60	0.16	0.39	5.00	0.00	0.97	0.97
13.65	0.16	0.39	5.00	0.00	0.97	0.97
13.70	0.16	0.39	5.00	0.00	0.97	0.97
13.75	0.16	0.39	5.00	0.00	0.97	0.97
13.80	0.16	0.39	5.00	0.00	0.96	0.96
13.85	0.16	0.39	5.00	0.00	0.96	0.96
13.90	0.17	0.39	5.00	0.00	0.96	0.96
13.95	0.17	0.39	5.00	0.00	0.95	0.95
14.00	0.17	0.39	5.00	0.00	0.95	0.95
14.05	0.17	0.39	5.00	0.00	0.95	0.95
14.10	0.17	0.39	5.00	0.00	0.95	0.95
14.15	0.17	0.39	5.00	0.00	0.94	0.94
14.20	0.17	0.39	5.00	0.00	0.94	0.94
14.25	0.17	0.39	5.00	0.00	0.94	0.94
14.30	0.17	0.39	5.00	0.00	0.94	0.94
14.35	0.18	0.39	5.00	0.00	0.93	0.93
14.40	0.18	0.39	5.00	0.00	0.93	0.93
14.45	0.18	0.39	5.00	0.00	0.93	0.93
14.50	0.18	0.39	5.00	0.00	0.93	0.93
14.55	0.18	0.39	5.00	0.00	0.92	0.92
14.60	0.18	0.39	5.00	0.00	0.92	0.92
14.65	0.18	0.39	5.00	0.00	0.92	0.92
14.70	0.18	0.39	5.00	0.00	0.92	0.92
14.75	0.18	0.39	5.00	0.00	0.91	0.91
14.80	0.20	0.39	5.00	0.00	0.91	0.91
14.85	0.20	0.39	5.00	0.00	0.91	0.91
14.90	0.21	0.39	5.00	0.00	0.91	0.91
14.95	0.21	0.39	5.00	0.00	0.91	0.91
15.00	0.21	0.39	5.00	0.00	0.90	0.90
15.05	0.21	0.39	5.00	0.00	0.90	0.90
15.10	0.21	0.39	5.00	0.00	0.90	0.90
15.15	0.21	0.39	5.00	0.00	0.90	0.90
15.20	0.21	0.39	5.00	0.00	0.90	0.90
15.25	0.21	0.39	5.00	0.00	0.90	0.90
15.30	0.22	0.39	5.00	0.00	0.89	0.89
15.35	0.22	0.39	5.00	0.00	0.89	0.89
15.40	0.22	0.39	5.00	0.00	0.89	0.89
15.45	0.22	0.39	5.00	0.00	0.89	0.89
15.50	0.22	0.39	5.00	0.00	0.89	0.89
15.55	0.22	0.39	5.00	0.00	0.89	0.89
15.60	0.22	0.39	5.00	0.00	0.88	0.88
15.65	0.23	0.39	5.00	0.00	0.88	0.88
15.70	0.23	0.39	5.00	0.00	0.88	0.88
15.75	0.23	0.39	5.00	0.00	0.88	0.88
15.80	0.23	0.39	5.00	0.00	0.88	0.88
15.85	0.23	0.39	5.00	0.00	0.88	0.88
15.90	0.23	0.39	5.00	0.00	0.87	0.87
15.95	0.23	0.39	5.00	0.00	0.87	0.87
16.00	0.23	0.39	5.00	0.00	0.87	0.87
16.05	0.23	0.39	5.00	0.00	0.87	0.87
16.10	0.23	0.39	5.00	0.00	0.87	0.87
16.15	0.23	0.39	5.00	0.00	0.87	0.87
16.20	0.23	0.39	5.00	0.00	0.87	0.87
16.25	0.23	0.39	5.00	0.00	0.86	0.86
16.30	0.23	0.39	5.00	0.00	0.86	0.86
16.35	0.23	0.39	5.00	0.00	0.86	0.86



16.40	0.23	0.39	5.00	0.00	0.86	0.86
16.45	0.23	0.39	5.00	0.00	0.86	0.86
16.50	0.23	0.39	5.00	0.00	0.86	0.86
16.55	0.22	0.39	5.00	0.00	0.85	0.85
16.60	0.22	0.39	5.00	0.00	0.85	0.85
16.65	0.22	0.39	5.00	0.00	0.85	0.85
16.70	0.22	0.39	5.00	0.00	0.85	0.85
16.75	0.22	0.39	5.00	0.00	0.85	0.85
16.80	0.22	0.39	5.00	0.00	0.85	0.85
16.85	0.22	0.39	5.00	0.00	0.84	0.84
16.90	0.22	0.39	5.00	0.00	0.84	0.84
16.95	0.22	0.39	5.00	0.00	0.84	0.84
17.00	0.22	0.39	5.00	0.00	0.84	0.84
17.05	0.22	0.39	5.00	0.00	0.84	0.84
17.10	0.22	0.39	5.00	0.00	0.83	0.83
17.15	0.22	0.39	5.00	0.00	0.83	0.83
17.20	0.21	0.39	5.00	0.00	0.83	0.83
17.25	0.21	0.39	5.00	0.00	0.83	0.83
17.30	0.21	0.39	5.00	0.00	0.83	0.83
17.35	0.21	0.39	5.00	0.00	0.82	0.82
17.40	0.21	0.39	5.00	0.00	0.82	0.82
17.45	0.21	0.39	5.00	0.00	0.82	0.82
17.50	0.21	0.39	5.00	0.00	0.82	0.82
17.55	0.21	0.39	5.00	0.00	0.81	0.81
17.60	0.21	0.39	5.00	0.00	0.81	0.81
17.65	0.21	0.39	5.00	0.00	0.81	0.81
17.70	0.21	0.39	5.00	0.00	0.81	0.81
17.75	0.21	0.39	5.00	0.00	0.81	0.81
17.80	0.21	0.39	5.00	0.00	0.80	0.80
17.85	0.20	0.39	5.00	0.00	0.80	0.80
17.90	0.20	0.39	5.00	0.00	0.80	0.80
17.95	0.20	0.39	5.00	0.00	0.80	0.80
18.00	0.20	0.39	5.00	0.00	0.79	0.79
18.05	0.20	0.39	5.00	0.00	0.79	0.79
18.10	0.20	0.39	5.00	0.00	0.79	0.79
18.15	0.20	0.39	5.00	0.00	0.79	0.79
18.20	0.20	0.39	5.00	0.00	0.78	0.78
18.25	0.20	0.39	5.00	0.00	0.78	0.78
18.30	0.20	0.39	5.00	0.00	0.78	0.78
18.35	0.20	0.39	5.00	0.00	0.77	0.77
18.40	0.20	0.39	5.00	0.00	0.77	0.77
18.45	0.20	0.39	5.00	0.00	0.77	0.77
18.50	0.20	0.39	5.00	0.00	0.77	0.77
18.55	0.20	0.39	5.00	0.00	0.76	0.76
18.60	0.19	0.39	5.00	0.00	0.76	0.76
18.65	0.19	0.39	5.00	0.00	0.76	0.76
18.70	0.19	0.39	5.00	0.00	0.75	0.75
18.75	0.19	0.39	5.00	0.00	0.75	0.75
18.80	0.19	0.39	5.00	0.00	0.75	0.75
18.85	0.19	0.39	5.00	0.00	0.74	0.74
18.90	0.19	0.39	5.00	0.00	0.74	0.74
18.95	0.19	0.39	5.00	0.00	0.74	0.74
19.00	0.19	0.39	5.00	0.00	0.73	0.73
19.05	0.19	0.39	5.00	0.00	0.73	0.73
19.10	0.19	0.39	5.00	0.00	0.73	0.73
19.15	0.19	0.39	5.00	0.00	0.72	0.72
19.20	0.19	0.39	5.00	0.00	0.72	0.72
19.25	0.19	0.38	5.00	0.00	0.72	0.72
19.30	0.19	0.38	5.00	0.00	0.71	0.71



19.35	0.19	0.38	5.00	0.00	0.71	0.71
19.40	0.18	0.38	5.00	0.00	0.70	0.70
19.45	0.18	0.38	5.00	0.00	0.70	0.70
19.50	0.18	0.38	5.00	0.00	0.70	0.70
19.55	0.18	0.38	5.00	0.00	0.69	0.69
19.60	0.18	0.38	5.00	0.00	0.69	0.69
19.65	0.18	0.38	5.00	0.00	0.68	0.68
19.70	0.18	0.38	5.00	0.00	0.68	0.68
19.75	0.18	0.38	5.00	0.00	0.68	0.68
19.80	0.18	0.38	5.00	0.00	0.67	0.67
19.85	0.18	0.38	5.00	0.00	0.67	0.67
19.90	0.18	0.38	5.00	0.00	0.66	0.66
19.95	0.18	0.38	5.00	0.00	0.66	0.66
20.00	0.18	0.38	5.00	0.00	0.65	0.65
20.05	2.00	0.38	5.00	0.00	0.65	0.65
20.10	2.00	0.38	5.00	0.00	0.65	0.65
20.15	2.00	0.38	5.00	0.00	0.65	0.65
20.20	2.00	0.38	5.00	0.00	0.65	0.65
20.25	2.00	0.38	5.00	0.00	0.65	0.65
20.30	2.00	0.38	5.00	0.00	0.65	0.65
20.35	2.00	0.38	5.00	0.00	0.65	0.65
20.40	2.00	0.38	5.00	0.00	0.65	0.65
20.45	2.00	0.38	5.00	0.00	0.65	0.65
20.50	2.00	0.38	5.00	0.00	0.65	0.65
20.55	2.00	0.38	5.00	0.00	0.65	0.65
20.60	2.00	0.38	5.00	0.00	0.65	0.65
20.65	2.00	0.38	5.00	0.00	0.65	0.65
20.70	2.00	0.38	5.00	0.00	0.65	0.65
20.75	2.00	0.38	5.00	0.00	0.65	0.65
20.80	2.00	0.38	5.00	0.00	0.65	0.65
20.85	2.00	0.38	5.00	0.00	0.65	0.65
20.90	2.00	0.38	5.00	0.00	0.65	0.65
20.95	2.00	0.38	5.00	0.00	0.65	0.65
21.00	2.00	0.38	5.00	0.00	0.65	0.65
21.05	0.17	0.38	5.00	0.00	0.65	0.65
21.10	0.17	0.38	5.00	0.00	0.64	0.64
21.15	0.17	0.38	5.00	0.00	0.64	0.64
21.20	0.17	0.38	5.00	0.00	0.63	0.63
21.25	0.17	0.38	5.00	0.00	0.62	0.62
21.30	0.17	0.38	5.00	0.00	0.62	0.62
21.35	0.17	0.38	5.00	0.00	0.61	0.61
21.40	0.17	0.38	5.00	0.00	0.60	0.60
21.45	0.17	0.38	5.00	0.00	0.60	0.60
21.50	0.18	0.38	5.00	0.00	0.59	0.59
21.55	0.18	0.38	5.00	0.00	0.59	0.59
21.60	0.18	0.38	5.00	0.00	0.58	0.58
21.65	0.18	0.38	5.00	0.00	0.57	0.57
21.70	0.18	0.38	5.00	0.00	0.57	0.57
21.75	0.18	0.38	5.00	0.00	0.56	0.56
21.80	0.18	0.38	5.00	0.00	0.56	0.56
21.85	0.18	0.38	5.00	0.00	0.55	0.55
21.90	0.18	0.38	5.00	0.00	0.54	0.54
21.95	0.18	0.38	5.00	0.00	0.54	0.54
22.00	0.18	0.38	5.00	0.00	0.53	0.53
22.05	0.18	0.38	5.00	0.00	0.53	0.53
22.10	0.18	0.38	5.00	0.00	0.52	0.52
22.15	0.18	0.38	5.00	0.00	0.52	0.52
22.20	0.18	0.38	5.00	0.00	0.51	0.51
22.25	0.18	0.38	5.00	0.00	0.51	0.51



22.30	0.19	0.38	5.00	0.00	0.50	0.50
22.35	0.19	0.38	5.00	0.00	0.49	0.49
22.40	0.19	0.38	5.00	0.00	0.49	0.49
22.45	0.19	0.38	5.00	0.00	0.49	0.49
22.50	0.19	0.38	5.00	0.00	0.49	0.49
22.55	0.19	0.38	5.00	0.00	0.49	0.49
22.60	0.19	0.38	5.00	0.00	0.48	0.48
22.65	0.19	0.38	5.00	0.00	0.48	0.48
22.70	0.19	0.38	5.00	0.00	0.48	0.48
22.75	0.19	0.38	5.00	0.00	0.48	0.48
22.80	0.19	0.38	5.00	0.00	0.48	0.48
22.85	0.19	0.38	5.00	0.00	0.48	0.48
22.90	0.19	0.38	5.00	0.00	0.47	0.47
22.95	0.19	0.38	5.00	0.00	0.47	0.47
23.00	0.19	0.38	5.00	0.00	0.47	0.47
23.05	0.19	0.38	5.00	0.00	0.47	0.47
23.10	0.20	0.38	5.00	0.00	0.47	0.47
23.15	0.20	0.38	5.00	0.00	0.46	0.46
23.20	0.20	0.38	5.00	0.00	0.46	0.46
23.25	0.20	0.38	5.00	0.00	0.46	0.46
23.30	0.20	0.38	5.00	0.00	0.46	0.46
23.35	0.20	0.38	5.00	0.00	0.46	0.46
23.40	0.20	0.38	5.00	0.00	0.46	0.46
23.45	0.20	0.38	5.00	0.00	0.45	0.45
23.50	0.20	0.38	5.00	0.00	0.45	0.45
23.55	0.20	0.38	5.00	0.00	0.45	0.45
23.60	0.20	0.38	5.00	0.00	0.45	0.45
23.65	0.20	0.38	5.00	0.00	0.45	0.45
23.70	0.20	0.38	5.00	0.00	0.45	0.45
23.75	0.20	0.38	5.00	0.00	0.44	0.44
23.80	0.20	0.38	5.00	0.00	0.44	0.44
23.85	0.20	0.38	5.00	0.00	0.44	0.44
23.90	0.21	0.38	5.00	0.00	0.44	0.44
23.95	0.21	0.38	5.00	0.00	0.44	0.44
24.00	0.21	0.38	5.00	0.00	0.44	0.44
24.05	0.21	0.38	5.00	0.00	0.43	0.43
24.10	0.21	0.38	5.00	0.00	0.43	0.43
24.15	0.21	0.38	5.00	0.00	0.43	0.43
24.20	0.21	0.38	5.00	0.00	0.43	0.43
24.25	0.21	0.38	5.00	0.00	0.43	0.43
24.30	0.21	0.38	5.00	0.00	0.43	0.43
24.35	0.21	0.38	5.00	0.00	0.42	0.42
24.40	0.21	0.38	5.00	0.00	0.42	0.42
24.45	0.21	0.38	5.00	0.00	0.42	0.42
24.50	0.21	0.38	5.00	0.00	0.42	0.42
24.55	0.21	0.38	5.00	0.00	0.42	0.42
24.60	0.21	0.38	5.00	0.00	0.42	0.42
24.65	0.22	0.38	5.00	0.00	0.41	0.41
24.70	0.22	0.38	5.00	0.00	0.41	0.41
24.75	0.22	0.38	5.00	0.00	0.41	0.41
24.80	0.22	0.38	5.00	0.00	0.41	0.41
24.85	0.22	0.38	5.00	0.00	0.41	0.41
24.90	0.22	0.38	5.00	0.00	0.41	0.41
24.95	0.22	0.38	5.00	0.00	0.40	0.40
25.00	0.22	0.38	5.00	0.00	0.40	0.40
25.05	0.22	0.38	5.00	0.00	0.40	0.40
25.10	0.22	0.38	5.00	0.00	0.40	0.40
25.15	0.22	0.38	5.00	0.00	0.40	0.40
25.20	0.22	0.38	5.00	0.00	0.40	0.40



25.25	0.22	0.38	5.00	0.00	0.40	0.40
25.30	0.22	0.38	5.00	0.00	0.39	0.39
25.35	0.22	0.38	5.00	0.00	0.39	0.39
25.40	0.22	0.38	5.00	0.00	0.39	0.39
25.45	0.23	0.38	5.00	0.00	0.39	0.39
25.50	0.23	0.38	5.00	0.00	0.39	0.39
25.55	0.23	0.38	5.00	0.00	0.39	0.39
25.60	0.23	0.38	5.00	0.00	0.39	0.39
25.65	0.23	0.38	5.00	0.00	0.38	0.38
25.70	0.23	0.38	5.00	0.00	0.38	0.38
25.75	0.23	0.38	5.00	0.00	0.38	0.38
25.80	0.23	0.38	5.00	0.00	0.38	0.38
25.85	0.23	0.38	5.00	0.00	0.38	0.38
25.90	0.23	0.38	5.00	0.00	0.38	0.38
25.95	0.23	0.38	5.00	0.00	0.37	0.37
26.00	0.23	0.38	5.00	0.00	0.37	0.37
26.05	0.23	0.38	5.00	0.00	0.37	0.37
26.10	0.24	0.38	5.00	0.00	0.37	0.37
26.15	0.24	0.38	5.00	0.00	0.37	0.37
26.20	0.24	0.38	5.00	0.00	0.37	0.37
26.25	0.24	0.38	5.00	0.00	0.37	0.37
26.30	0.24	0.38	5.00	0.00	0.36	0.36
26.35	0.24	0.38	5.00	0.00	0.36	0.36
26.40	0.24	0.38	5.00	0.00	0.36	0.36
26.45	0.25	0.38	5.00	0.00	0.36	0.36
26.50	0.25	0.38	5.00	0.00	0.36	0.36
26.55	0.25	0.38	5.00	0.00	0.36	0.36
26.60	0.25	0.38	5.00	0.00	0.36	0.36
26.65	0.25	0.38	5.00	0.00	0.35	0.35
26.70	0.25	0.38	5.00	0.00	0.35	0.35
26.75	0.25	0.38	5.00	0.00	0.35	0.35
26.80	0.26	0.38	5.00	0.00	0.35	0.35
26.85	0.26	0.38	5.00	0.00	0.35	0.35
26.90	0.26	0.38	5.00	0.00	0.35	0.35
26.95	0.26	0.38	5.00	0.00	0.35	0.35
27.00	0.26	0.38	5.00	0.00	0.35	0.35
27.05	0.26	0.38	5.00	0.00	0.34	0.34
27.10	0.26	0.38	5.00	0.00	0.34	0.34
27.15	0.27	0.38	5.00	0.00	0.34	0.34
27.20	0.27	0.38	5.00	0.00	0.34	0.34
27.25	0.27	0.38	5.00	0.00	0.34	0.34
27.30	0.27	0.38	5.00	0.00	0.34	0.34
27.35	0.27	0.38	5.00	0.00	0.34	0.34
27.40	0.27	0.38	5.00	0.00	0.34	0.34
27.45	0.28	0.38	5.00	0.00	0.33	0.33
27.50	0.28	0.38	5.00	0.00	0.33	0.33
27.55	0.28	0.38	5.00	0.00	0.33	0.33
27.60	0.28	0.38	5.00	0.00	0.33	0.33
27.65	0.28	0.38	5.00	0.00	0.33	0.33
27.70	0.28	0.38	5.00	0.00	0.33	0.33
27.75	0.29	0.38	5.00	0.00	0.33	0.33
27.80	0.29	0.38	5.00	0.00	0.33	0.33
27.85	0.29	0.38	5.00	0.00	0.33	0.33
27.90	0.32	0.38	5.00	0.00	0.32	0.32
27.95	0.32	0.38	5.00	0.00	0.32	0.32
28.00	0.32	0.38	5.00	0.00	0.32	0.32
28.05	0.33	0.38	5.00	0.00	0.32	0.32
28.10	0.33	0.38	5.00	0.00	0.32	0.32
28.15	0.33	0.38	5.00	0.00	0.32	0.32



28.20	0.34	0.38	5.00	0.00	0.32	0.32
28.25	0.34	0.38	5.00	0.00	0.32	0.32
28.30	0.34	0.38	5.00	0.00	0.32	0.32
28.35	0.35	0.38	5.00	0.00	0.31	0.31
28.40	0.35	0.38	5.00	0.00	0.31	0.31
28.45	0.36	0.38	5.00	0.00	0.31	0.31
28.50	0.36	0.38	5.00	0.00	0.31	0.31
28.55	0.37	0.38	5.00	0.00	0.31	0.31
28.60	0.38	0.38	5.00	0.00	0.31	0.31
28.65	0.39	0.38	5.00	0.00	0.31	0.31
28.70	0.40	0.38	5.00	0.00	0.31	0.31
28.75	0.42	0.38	5.00	0.00	0.31	0.31
28.80	0.45	0.38	5.00	0.00	0.31	0.31
28.85	0.45	0.38	5.00	0.00	0.31	0.31
28.90	0.45	0.38	5.00	0.00	0.30	0.30
28.95	0.45	0.38	5.00	0.00	0.30	0.30
29.00	0.45	0.38	5.00	0.00	0.30	0.30
29.05	0.45	0.38	5.00	0.00	0.30	0.30
29.10	0.45	0.38	5.00	0.00	0.30	0.30
29.15	0.45	0.38	5.00	0.00	0.30	0.30
29.20	0.45	0.38	5.00	0.00	0.30	0.30
29.25	0.45	0.38	5.00	0.00	0.30	0.30
29.30	0.45	0.38	5.00	0.00	0.30	0.30
29.35	0.45	0.38	5.00	0.00	0.30	0.30
29.40	0.45	0.38	5.00	0.00	0.30	0.30
29.45	0.45	0.38	5.00	0.00	0.29	0.29
29.50	0.45	0.38	5.00	0.00	0.29	0.29
29.55	0.45	0.38	5.00	0.00	0.29	0.29
29.60	0.45	0.38	5.00	0.00	0.29	0.29
29.65	0.45	0.38	5.00	0.00	0.29	0.29
29.70	0.45	0.38	5.00	0.00	0.29	0.29
29.75	0.45	0.38	5.00	0.00	0.29	0.29
29.80	0.45	0.38	5.00	0.00	0.29	0.29
29.85	0.45	0.38	5.00	0.00	0.29	0.29
29.90	0.45	0.37	5.00	0.00	0.29	0.29
29.95	0.45	0.37	5.00	0.00	0.29	0.29
30.00	0.45	0.37	5.00	0.00	0.29	0.29
30.05	0.45	0.37	5.00	0.00	0.28	0.28
30.10	0.45	0.37	5.00	0.00	0.28	0.28
30.15	0.45	0.37	5.00	0.00	0.28	0.28
30.20	0.45	0.37	5.00	0.00	0.28	0.28
30.25	0.45	0.37	5.00	0.00	0.28	0.28
30.30	0.45	0.37	5.00	0.00	0.28	0.28
30.35	0.45	0.37	5.00	0.00	0.28	0.28
30.40	0.45	0.37	5.00	0.00	0.28	0.28
30.45	0.45	0.37	5.00	0.00	0.28	0.28
30.50	0.45	0.37	5.00	0.00	0.28	0.28
30.55	0.45	0.37	5.00	0.00	0.28	0.28
30.60	0.45	0.37	5.00	0.00	0.28	0.28
30.65	0.45	0.37	5.00	0.00	0.28	0.28
30.70	0.45	0.37	5.00	0.00	0.27	0.27
30.75	0.45	0.37	5.00	0.00	0.27	0.27
30.80	0.45	0.37	5.00	0.00	0.27	0.27
30.85	0.45	0.37	5.00	0.00	0.27	0.27
30.90	0.45	0.37	5.00	0.00	0.27	0.27
30.95	0.45	0.37	5.00	0.00	0.27	0.27
31.00	0.45	0.37	5.00	0.00	0.27	0.27
31.05	0.45	0.37	5.00	0.00	0.27	0.27
31.10	0.45	0.37	5.00	0.00	0.27	0.27



31.15	0.45	0.37	5.00'	0.00	0.27	0.27
31.20	0.45	0.37	5.00	0.00	0.27	0.27
31.25	0.45	0.37	5.00	0.00	0.27	0.27
31.30	0.45	0.37	5.00	0.00	0.27	0.27
31.35	0.45	0.37	5.00	0.00	0.27	0.27
31.40	0.45	0.37	5.00	0.00	0.26	0.26
31.45	0.45	0.37	5.00	0.00	0.26	0.26
31.50	0.45	0.37	5.00	0.00	0.26	0.26
31.55	0.45	0.37	5.00	0.00	0.26	0.26
31.60	0.45	0.37	5.00	0.00	0.26	0.26
31.65	0.45	0.37	5.00	0.00	0.26	0.26
31.70	0.45	0.37	5.00	0.00	0.26	0.26
31.75	0.45	0.37	5.00	0.00	0.26	0.26
31.80	0.45	0.37	5.00	0.00	0.26	0.26
31.85	0.45	0.37	5.00	0.00	0.26	0.26
31.90	0.45	0.37	5.00	0.00	0.26	0.26
31.95	0.45	0.37	5.00	0.00	0.26	0.26
32.00	0.45	0.37	5.00	0.00	0.25	0.25
32.05	0.45	0.37	5.00	0.00	0.25	0.25
32.10	0.45	0.37	5.00	0.00	0.25	0.25
32.15	0.45	0.37	5.00	0.00	0.25	0.25
32.20	0.45	0.37	5.00	0.00	0.25	0.25
32.25	0.45	0.37	5.00	0.00	0.25	0.25
32.30	0.45	0.37	5.00	0.00	0.25	0.25
32.35	0.45	0.37	5.00	0.00	0.25	0.25
32.40	0.45	0.37	5.00	0.00	0.25	0.25
32.45	0.45	0.37	5.00	0.00	0.25	0.25
32.50	0.45	0.37	5.00	0.00	0.25	0.25
32.55	0.45	0.37	5.00	0.00	0.24	0.24
32.60	0.45	0.37	5.00	0.00	0.24	0.24
32.65	0.45	0.37	5.00	0.00	0.24	0.24
32.70	0.45	0.37	5.00	0.00	0.24	0.24
32.75	0.45	0.37	5.00	0.00	0.24	0.24
32.80	0.45	0.37	5.00	0.00	0.24	0.24
32.85	0.45	0.37	5.00	0.00	0.24	0.24
32.90	0.45	0.37	5.00	0.00	0.24	0.24
32.95	0.45	0.37	5.00	0.00	0.24	0.24
33.00	0.45	0.36	5.00	0.00	0.24	0.24
33.05	2.00	0.36	5.00	0.00	0.23	0.23
33.10	2.00	0.36	5.00	0.00	0.23	0.23
33.15	2.00	0.36	5.00	0.00	0.23	0.23
33.20	2.00	0.36	5.00	0.00	0.23	0.23
33.25	2.00	0.36	5.00	0.00	0.23	0.23
33.30	2.00	0.36	5.00	0.00	0.23	0.23
33.35	2.00	0.36	5.00	0.00	0.23	0.23
33.40	2.00	0.36	5.00	0.00	0.23	0.23
33.45	2.00	0.36	5.00	0.00	0.23	0.23
33.50	2.00	0.36	5.00	0.00	0.23	0.23
33.55	2.00	0.36	5.00	0.00	0.23	0.23
33.60	2.00	0.36	5.00	0.00	0.23	0.23
33.65	2.00	0.36	5.00	0.00	0.23	0.23
33.70	2.00	0.36	5.00	0.00	0.23	0.23
33.75	2.00	0.36	5.00	0.00	0.23	0.23
33.80	2.00	0.36	5.00	0.00	0.23	0.23
33.85	2.00	0.36	5.00	0.00	0.23	0.23
33.90	2.00	0.36	5.00	0.00	0.23	0.23
33.95	2.00	0.36	5.00	0.00	0.23	0.23
34.00	2.00	0.36	5.00	0.00	0.23	0.23
34.05	2.00	0.36	5.00	0.00	0.23	0.23



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37.05	0.24	0.35	5.00	0.00	0.20	0.20
37.10	0.24	0.35	5.00	0.00	0.20	0.20
37.15	0.24	0.35	5.00	0.00	0.20	0.20
37.20	0.24	0.35	5.00	0.00	0.19	0.19
37.25	0.24	0.35	5.00	0.00	0.19	0.19
37.30	0.24	0.35	5.00	0.00	0.19	0.19
37.35	0.24	0.35	5.00	0.00	0.19	0.19
37.40	0.24	0.35	5.00	0.00	0.19	0.19
37.45	0.24	0.35	5.00	0.00	0.19	0.19
37.50	0.24	0.35	5.00	0.00	0.18	0.18
37.55	0.24	0.35	5.00	0.00	0.18	0.18
37.60	0.24	0.35	5.00	0.00	0.18	0.18
37.65	0.24	0.35	5.00	0.00	0.18	0.18
37.70	0.24	0.35	5.00	0.00	0.18	0.18
37.75	0.24	0.35	5.00	0.00	0.17	0.17
37.80	0.24	0.35	5.00	0.00	0.17	0.17
37.85	0.24	0.35	5.00	0.00	0.17	0.17
37.90	0.24	0.35	5.00	0.00	0.17	0.17
37.95	0.24	0.35	5.00	0.00	0.17	0.17
38.00	0.25	0.35	5.00	0.00	0.17	0.17
38.05	0.25	0.35	5.00	0.00	0.16	0.16
38.10	0.25	0.35	5.00	0.00	0.16	0.16
38.15	0.25	0.35	5.00	0.00	0.16	0.16
38.20	0.25	0.35	5.00	0.00	0.16	0.16
38.25	0.25	0.35	5.00	0.00	0.16	0.16
38.30	0.25	0.35	5.00	0.00	0.16	0.16
38.35	0.25	0.35	5.00	0.00	0.15	0.15
38.40	0.25	0.35	5.00	0.00	0.15	0.15
38.45	0.25	0.35	5.00	0.00	0.15	0.15
38.50	0.25	0.35	5.00	0.00	0.15	0.15
38.55	0.25	0.35	5.00	0.00	0.15	0.15
38.60	0.25	0.35	5.00	0.00	0.15	0.15
38.65	0.25	0.35	5.00	0.00	0.14	0.14
38.70	0.25	0.35	5.00	0.00	0.14	0.14
38.75	0.25	0.35	5.00	0.00	0.14	0.14
38.80	0.25	0.35	5.00	0.00	0.14	0.14
38.85	0.25	0.35	5.00	0.00	0.14	0.14
38.90	0.25	0.35	5.00	0.00	0.13	0.13
38.95	0.25	0.35	5.00	0.00	0.13	0.13
39.00	0.25	0.35	5.00	0.00	0.13	0.13
39.05	0.25	0.35	5.00	0.00	0.13	0.13
39.10	0.25	0.34	5.00	0.00	0.13	0.13
39.15	0.25	0.34	5.00	0.00	0.13	0.13
39.20	0.25	0.34	5.00	0.00	0.12	0.12
39.25	0.25	0.34	5.00	0.00	0.12	0.12
39.30	0.25	0.34	5.00	0.00	0.12	0.12
39.35	0.25	0.34	5.00	0.00	0.12	0.12
39.40	0.25	0.34	5.00	0.00	0.12	0.12
39.45	0.25	0.34	5.00	0.00	0.12	0.12
39.50	0.25	0.34	5.00	0.00	0.11	0.11
39.55	0.25	0.34	5.00	0.00	0.11	0.11
39.60	0.25	0.34	5.00	0.00	0.11	0.11
39.65	0.25	0.34	5.00	0.00	0.11	0.11
39.70	0.25	0.34	5.00	0.00	0.11	0.11
39.75	0.25	0.34	5.00	0.00	0.11	0.11
39.80	0.25	0.34	5.00	0.00	0.10	0.10
39.85	0.25	0.34	5.00	0.00	0.10	0.10
39.90	0.25	0.34	5.00	0.00	0.10	0.10
39.95	0.25	0.34	5.00	0.00	0.10	0.10



40.00	0.25	0.34	5.00	0.00	0.10	0.10
40.05	0.25	0.34	5.00	0.00	0.10	0.10
40.10	0.25	0.34	5.00	0.00	0.09	0.09
40.15	0.25	0.34	5.00	0.00	0.09	0.09
40.20	0.25	0.34	5.00	0.00	0.09	0.09
40.25	0.25	0.34	5.00	0.00	0.09	0.09
40.30	0.25	0.34	5.00	0.00	0.09	0.09
40.35	0.25	0.34	5.00	0.00	0.08	0.08
40.40	0.25	0.34	5.00	0.00	0.08	0.08
40.45	0.25	0.34	5.00	0.00	0.08	0.08
40.50	0.25	0.34	5.00	0.00	0.08	0.08
40.55	0.25	0.34	5.00	0.00	0.08	0.08
40.60	0.25	0.34	5.00	0.00	0.08	0.08
40.65	0.25	0.34	5.00	0.00	0.07	0.07
40.70	0.25	0.34	5.00	0.00	0.07	0.07
40.75	0.25	0.34	5.00	0.00	0.07	0.07
40.80	0.25	0.34	5.00	0.00	0.07	0.07
40.85	0.25	0.34	5.00	0.00	0.07	0.07
40.90	0.25	0.34	5.00	0.00	0.07	0.07
40.95	0.25	0.34	5.00	0.00	0.06	0.06
41.00	0.25	0.34	5.00	0.00	0.06	0.06
41.05	0.25	0.34	5.00	0.00	0.06	0.06
41.10	0.26	0.34	5.00	0.00	0.06	0.06
41.15	0.26	0.34	5.00	0.00	0.06	0.06
41.20	0.27	0.34	5.00	0.00	0.06	0.06
41.25	0.27	0.34	5.00	0.00	0.05	0.05
41.30	0.28	0.34	5.00	0.00	0.05	0.05
41.35	0.28	0.34	5.00	0.00	0.05	0.05
41.40	0.29	0.34	5.00	0.00	0.05	0.05
41.45	0.29	0.34	5.00	0.00	0.05	0.05
41.50	0.30	0.34	5.00	0.00	0.05	0.05
41.55	0.31	0.34	5.00	0.00	0.05	0.05
41.60	0.31	0.34	5.00	0.00	0.04	0.04
41.65	0.32	0.34	5.00	0.00	0.04	0.04
41.70	0.34	0.34	5.00	0.00	0.04	0.04
41.75	0.35	0.34	5.00	0.00	0.04	0.04
41.80	0.38	0.34	5.00	0.00	0.04	0.04
41.85	0.43	0.34	5.00	0.00	0.04	0.04
41.90	0.43	0.34	5.00	0.00	0.04	0.04
41.95	0.43	0.34	5.00	0.00	0.04	0.04
42.00	0.43	0.34	5.00	0.00	0.04	0.04
42.05	0.43	0.34	5.00	0.00	0.03	0.03
42.10	0.43	0.34	5.00	0.00	0.03	0.03
42.15	0.43	0.33	5.00	0.00	0.03	0.03
42.20	0.43	0.33	5.00	0.00	0.03	0.03
42.25	0.43	0.33	5.00	0.00	0.03	0.03
42.30	0.43	0.33	5.00	0.00	0.03	0.03
42.35	0.43	0.33	5.00	0.00	0.03	0.03
42.40	0.42	0.33	5.00	0.00	0.03	0.03
42.45	0.42	0.33	5.00	0.00	0.03	0.03
42.50	0.42	0.33	5.00	0.00	0.03	0.03
42.55	0.42	0.33	5.00	0.00	0.02	0.02
42.60	0.42	0.33	5.00	0.00	0.02	0.02
42.65	0.42	0.33	5.00	0.00	0.02	0.02
42.70	0.42	0.33	5.00	0.00	0.02	0.02
42.75	0.42	0.33	5.00	0.00	0.02	0.02
42.80	0.42	0.33	5.00	0.00	0.02	0.02
42.85	0.42	0.33	5.00	0.00	0.02	0.02
42.90	0.42	0.33	5.00	0.00	0.02	0.02



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48.85	0.41	0.33	1.26	0.00	0.00	0.00
48.90	0.41	0.33	1.26	0.00	0.00	0.00
48.95	0.41	0.33	1.26	0.00	0.00	0.00
49.00	0.41	0.33	1.26	0.00	0.00	0.00
49.05	0.41	0.33	1.26	0.00	0.00	0.00
49.10	0.41	0.33	1.26	0.00	0.00	0.00
49.15	0.41	0.33	1.26	0.00	0.00	0.00
49.20	0.41	0.33	1.26	0.00	0.00	0.00
49.25	0.41	0.33	1.26	0.00	0.00	0.00
49.30	0.41	0.33	1.26	0.00	0.00	0.00
49.35	0.41	0.33	1.26	0.00	0.00	0.00
49.40	0.41	0.33	1.26	0.00	0.00	0.00
49.45	0.41	0.33	1.26	0.00	0.00	0.00
49.50	0.41	0.33	1.26	0.00	0.00	0.00
49.55	0.41	0.33	1.26	0.00	0.00	0.00
49.60	0.41	0.33	1.26	0.00	0.00	0.00
49.65	0.41	0.33	1.26	0.00	0.00	0.00
49.70	0.41	0.33	1.25	0.00	0.00	0.00
49.75	0.41	0.33	1.25	0.00	0.00	0.00
49.80	0.41	0.33	1.25	0.00	0.00	0.00
49.85	0.41	0.33	1.25	0.00	0.00	0.00
49.90	0.41	0.33	1.25	0.00	0.00	0.00
49.95	0.41	0.33	1.25	0.00	0.00	0.00
50.00	0.41	0.33	1.25	0.00	0.00	0.00
50.05	2.00	0.33	5.00	0.00	0.00	0.00
50.10	2.00	0.33	5.00	0.00	0.00	0.00
50.15	2.00	0.33	5.00	0.00	0.00	0.00
50.20	2.00	0.33	5.00	0.00	0.00	0.00
50.25	2.00	0.33	5.00	0.00	0.00	0.00
50.30	2.00	0.33	5.00	0.00	0.00	0.00
50.35	2.00	0.33	5.00	0.00	0.00	0.00
50.40	2.00	0.33	5.00	0.00	0.00	0.00
50.45	2.00	0.33	5.00	0.00	0.00	0.00
50.50	2.00	0.33	5.00	0.00	0.00	0.00
50.55	2.00	0.33	5.00	0.00	0.00	0.00
50.60	2.00	0.33	5.00	0.00	0.00	0.00
50.65	2.00	0.33	5.00	0.00	0.00	0.00
50.70	2.00	0.33	5.00	0.00	0.00	0.00
50.75	2.00	0.33	5.00	0.00	0.00	0.00
50.80	2.00	0.33	5.00	0.00	0.00	0.00
50.85	2.00	0.33	5.00	0.00	0.00	0.00
50.90	2.00	0.33	5.00	0.00	0.00	0.00
50.95	2.00	0.33	5.00	0.00	0.00	0.00
51.00	2.00	0.33	5.00	0.00	0.00	0.00

---

\* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit  
Weight = pcfs; Depth = ft; Settlement  
in.

---

1 atm (atmosphere) = 1 tsf (ton/ft<sup>2</sup>)

CRRm Cyclic resistance ratio from soils

CSRsfs Cyclic stress ratio induced by a given earthquake (with  
user request factor of safety)

F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsfs

S<sub>sat</sub> Settlement from saturated sands

S<sub>dry</sub> Settlement from Unsaturated Sands

S<sub>all</sub> Total Settlement from Saturated and Unsaturated Sands

NoLiq No-Liquefy Soils





(Rev.Og/04)

County		Kern	<div>Project Tracking Number</div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>-</div> <div></div> <div></div> <div></div> <div></div> </div>										
Local Educational Agency		Kern High School District											
Proposed School Site - SW High School Site													
<div>Proposed School Site Location</div>													
Address and Cross Streets		SE of Wible Road and Engle Road											
		Wible Road and Engle Road											
Parcel Numbers		184-150-38, 39, 40, & -41											
Legal Description		The site consists of approximately 80 acres. Dimensions of the property are approximately 2600' east-west by 1320' north-south.											

Describe what professional investigation has been conducted to allow completion of this survey, including but not limited to, field surveys, written, electronic, and documented verbal contacts with utility companies, railroads, cities, counties, special districts, or regulatory agencies. If any maps or other documentation previously completed by others is utilized, please cite. Attach additional sheets if necessary.

Site area survey within 1-mile of the site border. Visual inspection around local streets within ½-mile of the site area. Looked at topographic maps of the area and contacted State Fire Marshal's Office, PG&E and The Gas Company for information concerning high-pressure pipelines within 1500' of the site. There are no high-pressure natural gas pipelines within 1500' of the property. Based on this information the risk from any high-pressure pipelines appear to be minimal to the project area.

I certify that, to the best of my knowledge based upon the above-described investigation, and not receiving credible information to the contrary, no portion of the proposed school site listed above is within 1500 feet of the easement of an aboveground or underground pipeline, including natural gas, petroleum, fuels, or other hazardous substances (other than a natural gas or water distribution line which serves the site or surrounding neighborhood with a maximum pressure of less than 80 psi). \*

Signature [Signature] Date 4/13/18

Soils Engineering, Inc.,	4400 Yeager Way, Bakersfield, CA 93313
Company	Address
661-831-5100	bob@soilsengineering.com
Telephone Number	E-mail Address

\* If an easement containing a pipeline with a maximum allowable operating pressure at or above 80 psi is within 1500 feet of the proposed school site, an acceptable pipeline risk analysis must be prepared by a competent professional according to the *California Code of Regulations*, Title 5, and CDE protocols in order to be considered for approval.



# Kern High School District

Geotechnical Soils Investigation

KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW  
SE of Wible Rd. & Engle Rd. in Bakersfield, CA

SEI File No. 18-16608

March 26, 2018

TABLE 2

TEST LOCATION	USCS	% < # 200	CONSOLIDATION				DIRECT SHEAR		UNCONFINED COMPRESSION		E.I.	ATTERBERG LIMITS			R-VALUE @ 300 psi		MAXIMUM DENSITY	
			C <sub>c</sub>	C <sub>s</sub>	S.P. (psf)	HV %	C, (ksf)	F.A.	Q <sub>u</sub> , (psi)	C, (ksf)		LL	PL	PI	R.V.	E.P. (psi)	MDD (pcf)	O.M.
B-1 @ 21'	SM	38																
B-1 @ 31'	SP-SM	6.4																
B-1 @ 46'	SP	2.0																
B-2 @ 6'	SM	32																
B-2 @ 11'	SP-SM	6.0																
B-2 @ 21'	SP	4.2																
B-2 @ 26'	ML	62																
B-2 @ 31'	SP	3.0																
B-3 @ 6'	SM	31																
B-3 @ 16'	ML	73																
B-3 @ 36'	SP-SM	9.7																
B-3 @ 46'	ML	85																
B-4 @ 6'	ML	69																
B-4 @ 16'	ML	69																
B-4 @ 31'	SC	31																
B-4 @ 36'	SM	36																
B-4 @ 41'	SP-SM	5.7																
B-5 @ 26'	ML	57																
B-5 @ 36'	SM	33																

CONSOLIDATION  
Cc - Compression Index  
Cs - Swell Index  
S.P. (psf) - Swell Pressure  
HV % - Heave Percentage / Collapse

UNCONFINED COMPRESSION  
Q<sub>u</sub> (psi) - Unconfined Compression  
Strength  
C, (ksf) - Cohesion

DIRECT SHEAR  
C (ksf) - Cohesion  
F.A. - Friction Angle

E.I. - EXPANSION INDEX  
ATTERBERG LIMITS  
LL - Liquid Limit  
PL - Plastic Limit  
PI - Plasticity Index

(R)ESISTANCE VALUE  
RV - R-Value @ 300 psi  
EP - Expansion Press @ 300 psi

MAXIMUM DENSITY  
MDD (pcf) - Max Dry Density  
O.M. - Optimum Moisture



# Kern High School District

Geotechnical Soils Investigation

KHSD Geotechnical Feasibility, Sewage Feasibility & Geohazard for Potential High School Site in SW  
SE of Wible Rd. & Engle Rd. in Bakersfield, CA

SEI File No. 18-16608

March 26, 2018

TABLE 3

TEST LOCATION	USCS	% < # 200	CONSOLIDATION				DIRECT SHEAR		UNCONFINED COMPRESSION		E.I.	ATTERBERG LIMITS			R-VALUE @ 300 psi		MAXIMUM DENSITY	
			C <sub>c</sub>	C <sub>s</sub>	S.P. (psf)	HV %	C, (ksf)	F.A.	Q <sub>u</sub> , (psi)	C, (ksf)		LL	PL	PI	R.V.	E.P. (psi)	MDD (pcf)	O.M.
B-5 @ 41'	ML	74																
B-6 @ 3'	SM	22					0	31.9										
B-7 @ 0-5'	SC										18							
B-7 @ 3'	SC	46	0.16	0.01	0	-0.6												
B-8 @ 0-5'	ML										6							
B-8 @ 6'	ML	94	0.21	0.03	120	0.1												
B-9 @ 3'	ML	51	0.16	0.02	0	-0.2												
B-10 @ 3'	ML	61	0.10	0.02	0	-0.1												
B-11 @ 3'	SM	14	0.02	0	0	-0.1												
B-11 @ 6'	SM		0.03	0	0	0												
B-12 @ 6'	ML	71	0.16	0.02	0	0												
B-13 @ 0-5'	SP										0							
B-13 @ 3'	SP	1.7					0	40.3										
B-14 @ 3'	ML	64	0.09	0.01	0	-0.4												
B-15 @ 3'	ML	60	0.32	0.02	0	-0.9												
B-16 @ 3'	ML	83	0.22	0.04	0	-0.2												
B-17 @ 3'	ML	74	0.14	0.04	582	0.3												
B-18 @ 0-5'	SC										15							
B-18 @ 3'	SC	32	0.05	0.01	0	-0.1												

CONSOLIDATION  
Cc - Compression Index  
Cs - Swell Index  
S.P. (psf) - Swell Pressure  
HV % - Heave Percentage / Collapse

UNCONFINED COMPRESSION  
Q<sub>u</sub> (psi) - Unconfined Compression  
Strength  
C, (ksf) - Cohesion

DIRECT SHEAR  
C (ksf) - Cohesion  
F.A. - Friction Angle

E.I. - EXPANSION INDEX  
ATTERBERG LIMITS  
LL - Liquid Limit  
PL - Plastic Limit  
PI - Plasticity Index

(R)ESISTANCE VALUE  
RV - R-Value @ 300 psi  
EP - Expansion Press @ 300 psi

MAXIMUM DENSITY  
MDD (pcf) - Max Dry Density  
O.M. - Optimum Moisture





**Jared Blumenfeld**  
Secretary for  
Environmental Protection



## Department of Toxic Substances Control

Meredith Williams, Ph.D.  
Acting Director  
5796 Corporate Avenue  
Cypress, California 90630



**Gavin Newsom**  
Governor

July 17, 2019

Ms. Jenny Hannah  
Director of Facilities Planning  
Kern High School District  
5801 Sundale Road  
Bakersfield, California 93309

ADEQUACY OF THE PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT  
FOR PUBLIC COMMENT, KERN HSD - WIBLE / ENGLE HIGH SCHOOL (PROPOSED  
SOUTHWEST HIGH SCHOOL SITE) SOUTHEAST OF WIBLE ROAD & ENGLE  
ROAD, BAKERSFIELD, KERN COUNTY (SITE CODE 104789)

Dear Ms. Hannah:

The Department of Toxic Substances Control (DTSC) reviewed the following documents for the Kern HSD – Wible / Engle High School site (Site):

- “Preliminary Environmental Assessment Equivalent Report” (Soils Engineering, Inc., April 24, 2018) received on July 18, 2018;
- “Addendum No. 1 to Preliminary Environmental Assessment Equivalent Report” (Addendum 1) (Soils Engineering, Inc., June 6, 2018) received on July 18, 2018; and
- “Addendum No. 2 to Preliminary Environmental Assessment Equivalent Report” (Addendum 2) (Soils Engineering, Inc.), dated and received on August 17, 2018.

DTSC considers these reports collectively as a Preliminary Environmental Assessment (hereinafter referred to as PEA). The PEA presents investigation results and conclusions based on a health risk screening evaluation for the Site.

According to the PEA, the Site is approximately 120 acres and has been used for agricultural since at least the 1930's and the northwestern portion was a dairy from the 1940's to the 1990's and has been a milk trucking business for the last 14 years. The Site currently consists of a plowed agricultural field in the southern 80 acres, a small pistachio orchard and the Oldenkamp Trucking yard in the northwestern 40 acres. Two water wells, a truck repair area, a diesel fuel area and storage areas are present on the



northwestern portion of the property utilized by Oldenkamp Trucking. Power poles with pole-mounted electrical transformers are present onsite adjacent to each of the tailwater sumps that appear to be in good condition. To evaluate the impact from residual agricultural chemicals, transfer pump and electrical transformers, the Site was investigated for metals, organochlorine pesticides, volatile organic compounds, semi-volatile organic compounds, polychlorinated biphenyls (PCBs) and total petroleum hydrocarbons (TPHs).


Based on the PEA, DTSC determined on October 10, 2018, that a Supplemental Site Investigation (SSI) was necessary for the northern 40 acres of the Site and for PCBs beneath pole-mounted electrical transformers at the southern 80 acres. A SSI report for PCB sampling on the 80-acre southern portion of the Site was submitted on May 17, 2019.

DTSC understands that the Kern High School District (District) intends to make the PEA available for public review and comment pursuant to Option A (Ed. Code § 17213.1, subd. (a)(6)(A)). As such, the PEA, SSI and this letter along with the enclosed comments should be made available to the public in the information repository. Immediately after the public comment period and hearing, the District should provide written notification to DTSC of the start and end dates of the public comment period, date of the public hearing, and all public comments received on the PEA Report.

In addition, DTSC comments on the SSI are enclosed. Please submit a table with responses to the enclosed comments and a revised document by August 17, 2019, for DTSC review and approval. The table should restate each comment and provide the associated response.

If you have any questions regarding this project, please contact me at (714) 484-5368 or by e-mail at [Shahir.Haddad@dtsc.ca.gov](mailto:Shahir.Haddad@dtsc.ca.gov), or Mr. Johnson P. Abraham, Project Manager, at (714) 484-5380 or by e-mail at [Johnson.Abraham@dtsc.ca.gov](mailto:Johnson.Abraham@dtsc.ca.gov).

Sincerely,



Shahir Haddad, P.E.  
Supervising Engineer  
Brownfields Restoration and School Evaluation Branch  
Site Mitigation and Restoration Program

mv/ja/sh

Enclosure

cc: See next page



Ms. Jenny Hannah  
July 17, 2019  
Page 3

cc: (via e-mail)

Mr. Robert Becker, REA II, P.G.  
Environmental Manager  
Soils Engineering, Inc.  
[bob@soilsengineering.com](mailto:bob@soilsengineering.com)

Dr. Qingyu Meng, Ph.D.  
Staff Toxicologist  
DTSC - Human and Ecological Risk Office  
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DTSC – Geological Services Branch  
[Joe.Hwong@dtsc.ca.gov](mailto:Joe.Hwong@dtsc.ca.gov)

Mr. Johnson P. Abraham  
Project Manager  
DTSC – Brownfields Restoration and School Evaluation Branch  
[Johnson.Abraham@dtsc.ca.gov](mailto:Johnson.Abraham@dtsc.ca.gov)

Schools Evaluation and Cleanup Team Reading File – Cypress Office



**DTSC COMMENTS  
SUPPLEMENTAL SITE INVESTIGATION COMPLETION REPORT  
FOR THE SOUTHERN 80 ACRES  
KERN HSD - WIBLE / ENGLE HIGH SCHOOL  
(PROPOSED SOUTHWEST HIGH SCHOOL SITE)  
BAKERSFIELD, KERN COUNTY**

The following DTSC staff reviewed and provided comments herein to the Supplemental Site Investigation (SSI) Completion Report for the Southern 80-Acres. Please contact the Project Manager if you have any questions on the comments. Original comments from the DTSC Engineering/Geology and Human and Ecological Risk are available for review in DTSC project files.

**Dr. Qingyu Meng, Ph.D.**

**Staff Toxicologist**

DTSC – Human and Ecological Risk Office

[Qingyu.Meng@dtsc.ca.gov](mailto:Qingyu.Meng@dtsc.ca.gov)

**Background**

The 120-acre site (Site) is located southeast of Wible Road and Engle Road in Bakersfield, CA and contains three parcels: a south 80-acre parcel, a northeast 32-acre parcel, and a northwest 8-acre parcel. Adjacent off-site properties are agricultural properties. The Kern High School District intends to build a Comprehensive High School on this Site. Per request from the Project Manager for this Site, HERO's review is limited to the southern 80-acres of the Site.

The 80-acre parcel has been used for agriculture since at least the 1930's to the present. The agricultural fields have been planted in carrots, potatoes, wheat, corn and cotton for the last 24 years. One "tailwater sump" is located at the southeast corner of the parcel, and another "tailwater sump" is located on the west side of the south boarder of the parcel. Next to each "tailwater sump", there is a transfer pump, and a power pole with pole-mounted electrical transformers. Within the "tailwater sump" on the west side of the parcel, there is a pile of unknown materials (20' long x 15' wide x 0.5-1' deep) which emit a putrid odor.

The groundwater is about 130' below the ground surface (bgs). The general groundwater gradient in the area of the Site is to the north or generally flat. The source of the potable and non-potable water for the proposed school Site will be from a local water company.

The Site is not within 10 miles of a geologic unit with ultramafic rock suspected to contain naturally occurring asbestos (NOA).

The PEA Equivalent Report (dated April 2018, PEA-E Report), Addendum #1 to the PEA-E report (dated June 2018), and Addendum #2 to the PEA-E report (dated August 2018)



were submitted to HERO for risk assessment review in August of 2018. HERO issued three memos with comments on these three documents. In general, HERO concluded that risks and hazards are above the regulatory thresholds of  $1 \times 10^{-6}$  and 1, respectively. HERO also concluded that the risks and hazards were underestimated due to major deficiencies, such as using wrong units for polynuclear aromatic hydrocarbons (PAHs) soil concentrations, insufficient soil gas sampling, inappropriate soil sample handling, inadequate step-out sampling, and incomplete human health risk-based screening levels. HERO recommended incorporating the necessary corrections in the work plan for the upcoming Supplemental Site Investigation (SSI) to obtain sufficient data to address the data gaps and calculate the remaining current conditions risks.

In response to DTSC's comments, Soils Engineering submitted the Sampling Plan for the south 80-acre parcel of the Site (dated March 6, 2019). The Sampling Plan contains the plan of additional step-out soil sampling for polychlorinated biphenyls (PCBs) from a pole-mounted transformer, and one additional sample for polycyclic aromatic hydrocarbons (PAHs) at a tail water sump area. HERO concurred with the soil sampling plan and pointed out the deficiencies of HHRA in a memo issued on May 8, 2019; and HERO recommends addressing the HHRA deficiencies in the SSI Report.

This SSI Report describes the environmental sampling activities, analytical results of environmental samples, and the screening level human health risk assessment (HHRA). The PEA Report predicted cumulative risks and hazards of  $3.1 \times 10^{-7}$  and 0.58, respectively, for the south 80-acres of the Site.

### **Scope of Review**

As stated above, per request from the Project Manager for this Site, HERO's review is limited to the southern 80-acres of the Site. A separate SSI Report for the northern 40-acres of the Site will be submitted to HERO for further review. HERO's review focused on scientific and technical contents of the Report with emphasis on the factors that affect human health risk assessment (HHRA).

### **General Comments**

1. Soil Sampling Activities Concurred: Soils Engineering followed the original HERO recommendations (HERO memo, dated May 8, 2019) and conducted additional soil step-out sampling for PCBs and PAHs. HERO concurs that the PCB and PAHs step-out sampling and data reporting are scientifically defensible.
2. Major HHRA Deficiencies: The SSI Report contains numerous errors regarding HHRA, such as wrong screening levels (SLs), and mistakes in the human health risk calculation. HERO recommends revising the SSI Report by using the latest HHRA



SLs and following the most recent DTSC Preliminary Endangerment Assessment Guidance Manual ([https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/01/PEA\\_Guidance\\_Manual.pdf](https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/01/PEA_Guidance_Manual.pdf)) and DTSC HHRA Note 4 (<https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/05/HHRA-Note-Number-4-May-14-2019.pdf>; May 14, 2019) to conduct the screening level HHRA.

### Specific Comments

1. Section 2.2 Summary of PEA Equivalent Investigation Southern 80 Acres (Page 6) and Section 8.0 Conclusions and Recommendations (Page 13) – Risk Calculations: Section 2.2 states “The Southern 80-acres has an acceptable cumulative Risk ( $3.1 \times 10^{-7}$ ) and Hazard (0.58) utilizing the very low TPH screening levels suggested by the DTSC toxicologist.” Likewise, Section 8.0 states “The results were a total cumulative risk of  $3.1 \times 10^{-7}$  and a total cumulative hazard of 0.58 for all pathways.” However, those risk and hazard estimates are not scientifically defensible due to the incorrect citation of screening levels and the lack of details for risk and hazard calculation (please see Specific Comments 2 and 3 for details). HERO recommends updating this statement after correcting HHRA calculation errors in the revised SSI Report.
2. Section 4.0 Risk Evaluation (Page 9) and Tables 4 & 5 – HHRA Methods and Equations: The screening level HHRA presented in the report is not transparent. Equations are not presented in Section 8.0. The specific data used in the HHRA calculations are not properly identified. The most recent DTSC Preliminary Endangerment Assessment (PEA) Guidance Manual was not followed to conduct the screening level human health risk assessment ([https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/01/PEA\\_Guidance\\_Manual.pdf](https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/01/PEA_Guidance_Manual.pdf)). HERO recommends following Section 2.5 of the PEA Guidance Manual and DTSC HHRA Note 4 (<https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/05/HHRA-Note-Number-4-May-14-2019.pdf>; May 14, 2019) when conducting the screening level HHRA in the revised SSI Report.
3. Wrong HHRA Screening Levels in Tables 1-3: The HHRA screening levels cited in Tables 1-3 are not properly identified as pertaining to cancer risk or noncancer hazard, and they are not adequate for HHRA evaluation. As HERO has repeatedly pointed out in previous memos commenting on the PEA Equivalent Report and its Addendums, and the Sampling Plan for the SSI, SLs for each COC need to be presented for both cancer and noncancer endpoints, where available. HERO recommends presenting SLs for both cancer and noncancer endpoints in the SSI Report and using the most recent SLs specified in DTSC Human Health Risk Assessment (HHRA) Note 3 (April 2019; <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-2019-04.pdf>) and the USEPA RSL



Tables (November 2018: <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>).

## **Conclusion**

HERO has reviewed the “Supplemental Site Investigation (SSI) Completion Report for Southern 80-Acres, Proposed Southwest High School Site, Southeast of Wible Road & Engle Road Bakersfield, California” (Sampling Plan, dated May 17, 2019). HERO concludes that the PCBs and PAHs step-out sampling and data presentation are scientifically defensible. However, HERO identified major deficiencies in HHRA, with respect to SLs and HHRA calculations. HERO recommends rectifying errors in Tables and text that affect the scientific defensibility of the HHRA in the revised SSI Report.

The recommendations provided in this memo are site specific and are not to be construed as DTSC policy. These comments are meant to be constructive and we hope they are useful. If you have any questions, please feel free to contact me at (916) 255-6628 or e-mail [Qingyu.Meng@dtsc.ca.gov](mailto:Qingyu.Meng@dtsc.ca.gov).

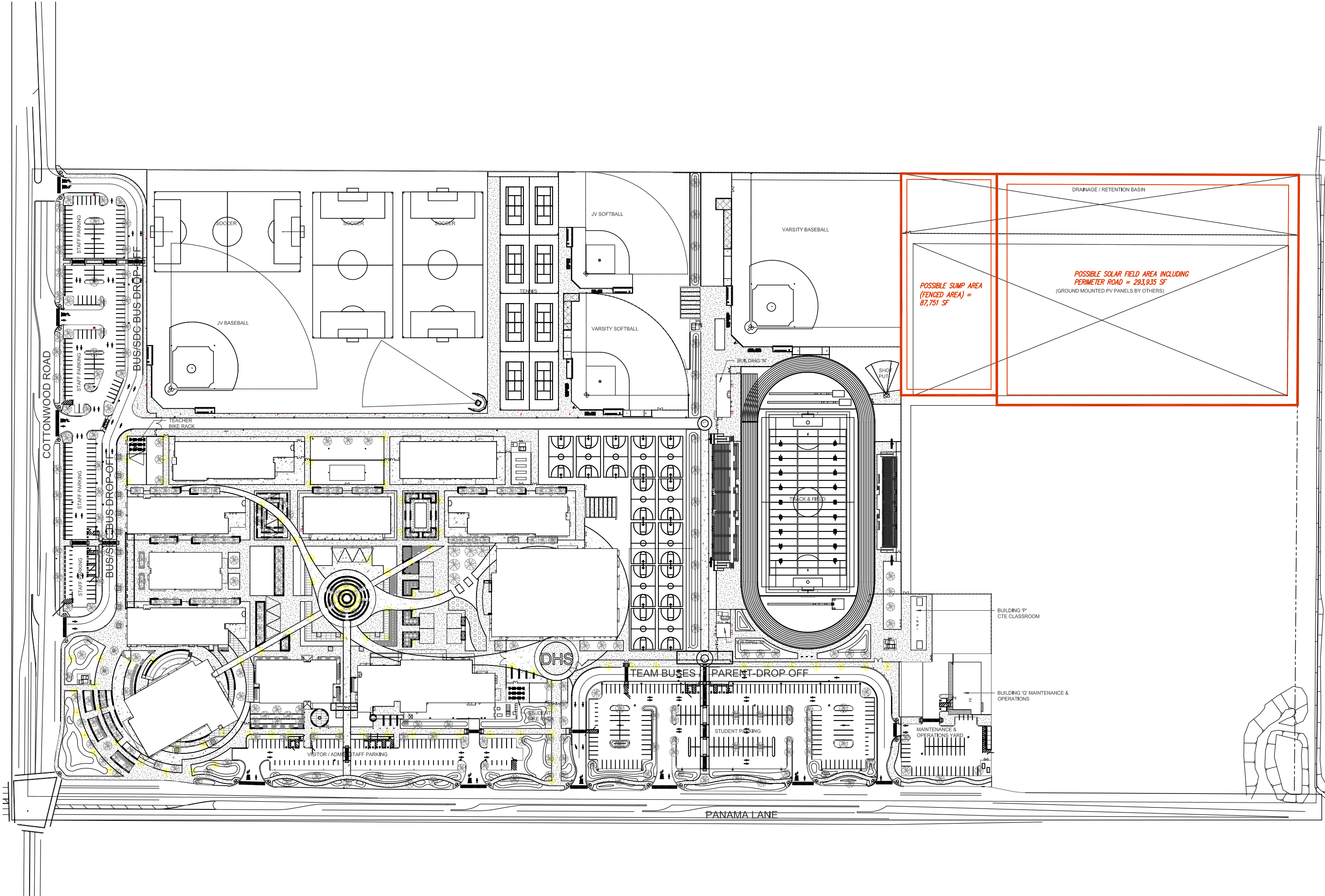






**APPENDIX F**  
**SITE PLAN**





DRAINAGE / RETENTION BASIN

POSSIBLE SUMP AREA  
(FENCED AREA) =  
87,751 SF

POSSIBLE SOLAR FIELD AREA INCLUDING  
PERIMETER ROAD = 293,935 SF  
(GROUND MOUNTED PV PANELS BY OTHERS)

BUILDING 'P'  
CTE CLASSROOM

BUILDING 'Q' MAINTENANCE &  
OPERATIONS

PANAMA LANE

COTTONWOOD ROAD