APEX
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April 13, 2018

Ms. Jessica Pao
Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

Subject: **Off-Site Groundwater Monitoring Well Installation Report**
Former Chemoil Refinery, 2020 Walnut Avenue, Signal Hill, California 90755, LARWQCB Site Cleanup Program No. 1391, Global ID T10000010213

Dear Ms. Pao:

This *Off-Site Groundwater Monitoring Well Installation Report* (Report) has been prepared by The Source Group, Inc., a subsidiary of Apex Companies, LLC (Apex), on behalf of Signal Hill XC, LLC to document the installation and sampling of off-site groundwater monitoring wells at the former Chemoil Refinery property located at 2020 Walnut Avenue (Site) in Signal Hill, California (Figures 1 and 2). The new groundwater monitoring wells were installed pursuant to the July 13, 2017, *Response Plan and Remedial Technology Evaluation* (Response Plan), which was prepared by Apex and approved by the Los Angeles Regional Water Quality Control Board (LARWQCB) on September 15, 2017.

Vertical delineation of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) in groundwater is considered to be met at the Site at the previous deepest depths explored of 60 feet below ground surface (bgs). However, within groundwater monitoring wells screened at this depth (maximum depth of approximately 60 feet bgs), total petroleum hydrocarbons as gasoline (TPHg) and total petroleum hydrocarbons as diesel (TPHd) are present at concentrations that exceed applicable screening levels (as defined within the Response Plan). In order to achieve vertical delineation of the dissolved phase hydrocarbons downgradient of the Site, two off-site groundwater monitoring wells screened at depths of 55 to 65 feet bgs and a third off-site groundwater monitoring well screened at depths of 75 to 85 feet bgs were proposed for installation at locations west and south of the Site. As discussed in Section 1.0 below, only two off-site groundwater monitoring wells (screened at depths of 55 to 65 feet bgs) were installed during the current phase of work; the third off-site groundwater monitoring well planned for completion at a depth of 85 feet bgs was abandoned upon encountering a potential confining layer greater than 5 feet thick at a depth of 70 feet bgs. To prevent possible downward vertical migration of constituents through this fine-grained horizon at 70 feet bgs, the boring (which was advanced with a hollow stem auger drilling rig) was abandoned.

Detailed information regarding the Site description and background, the remedial program being implemented at the Site, and Site groundwater conditions can be found in the Response Plan (Apex, 2017) and the most recent semi-annual monitoring report for the Site (Apex, 2018).

1.0 Off-Site Groundwater Monitoring Well and Soil Boring Installations

Between February 5, 2018 and February 12, 2018, two off-site groundwater monitoring wells (MW-21 and MW-22) and one soil boring (AO-02) were installed in the residential area to the south and west of the Site. Drilling work was completed by Gregg Drilling and Testing, Inc. (Gregg) of Signal Hill, California under the oversight of Apex personnel. Locations of the new off-site groundwater monitoring wells and the soil boring are included on Figure 3.

Pre-field Activities

The following activities were completed prior to drilling:

- Prepared a Site-specific Health and Safety Plan (HASP);
- Obtained necessary well and encroachment permits from the City of Long Beach Department of Health and Human Services, Bureau of Environmental Health and the City of Long Beach Department of Public Works, respectively; and
- Performed a utility survey.

The Site-specific HASP was prepared in compliance with Federal Occupational Safety and Health Administration regulations (OSHA; 29 Code of Federal Regulations, Section 1910.120) and State OSHA regulations (California Code of Regulations, Title 8, Section 5192). Apex personnel and subcontractors associated with the project were required to be familiar and comply with all provisions of the Site-specific HASP.

Well construction permits were obtained for the new groundwater monitoring wells from the City of Long Beach Department of Health and Human Services, Bureau of Environmental Health. In addition, an encroachment permit was obtained from the City of Long Beach Department of Public Works to install these wells and soil boring in the public right-of-way (ROW). Copies of the approved permits are included in Attachment 1.

A Site visit was completed to mark the locations of the proposed soil borings. Following the Site visit, the proposed soil boring locations were marked and cleared of underground utilities by Underground Services Alert (USA), as well as by a private utility locating service prior to initiating any subsurface activity. Based on the results of the utility survey activities, the final locations of the soil borings were selected.

Groundwater Monitoring Well and Soil Boring Installation

The location of the new off-site groundwater monitoring wells and soil boring are shown on Figure 3 and monitoring well construction details are summarized in Table 1. The soil boring logs with well completion details are included in Attachment 2. Installation details are discussed in the following paragraphs.

Groundwater Monitoring Wells

Between February 5, 2018 and February 12, 2018, wells MW-21 and MW-22 were installed in the public ROW along East Wesley Drive and within an unnamed alleyway in the vicinity of East Wesley Drive, respectively. Wells were logged with a California-modified split spoon sampler. Both wells were completed to 65 feet bgs. The wells were constructed using 2-inch diameter schedule 40 PVC casing and 0.020-inch machine-slotted screen from 55 feet bgs to 65 feet bgs. Filter pack consisting of No. 2/12 Monterey sand was placed from approximately 52 feet bgs to 65 feet bgs. Bentonite seals were placed above the screened intervals from approximately 47 feet bgs to 52 feet bgs. The remaining annulus was grouted from approximately 47 feet bgs to the surface using cement-bentonite grout. Each well was completed with a 10-inch diameter traffic-rated well box installed flush to grade and secured with concrete.

Soil Boring

On February 7, 2018, soil boring AO-02 was completed to a depth of 76 feet bgs within an unnamed alleyway in the vicinity of East Wesley Drive in the public ROW and logged with a California-modified split spoon sampler. This soil boring was originally planned to be installed as a groundwater monitoring well completed at a maximum depth of 85 feet bgs, but the well was abandoned to prevent potential cross-contamination at depth after a high plasticity clay (a potential aquitard) was logged from 70 feet bgs to 76 feet bgs. The boring was grouted from 76 feet bgs to surface and patched with concrete to match surrounding grade. A copy of the boring log is included in Attachment 2.

Surveying Activities

Following completion of the well installation activities, the newly-installed monitoring wells were surveyed by Evans Land Surveying and Mapping, California on February 14, 2018. A copy of the survey report is included as Attachment 3.

Well Development

Following installation, the groundwater monitoring wells were developed by Blaine Tech Services, Inc. under the supervision of Apex on February 16, 2018, to improve communication with the formation and to remove any standing sediment. During purging, water quality parameters (e.g., pH, electrical conductivity, temperature, and turbidity) were measured and recorded on field forms (Attachment 4). The wells were purged of a minimum of 10 casing volumes and field

measurements indicated that water quality parameters had stabilized within 10 percent (%) of each parameter to ensure that groundwater entering the well was representative of the water-bearing zone. Following development, the wells were allowed to recover for a period of at least 48 hours prior to sampling. Well development logs are included in Attachment 4.

Groundwater Sampling

Following well development, the new groundwater monitoring wells were gauged and sampled by Blaine Tech Services, Inc., under the supervision of Apex on February 20, 2018. Table 2 summarizes the depth to water and groundwater elevation data. Groundwater monitoring field data sheets are provided in Attachment 5. Groundwater samples were collected after purging approximately three to five casing volumes from each well, or until parameters stabilized. Dedicated tubing was placed in each well to a depth approximately equal to the bottom of the well screen. Field parameters (i.e., temperature, pH, conductivity, dissolved oxygen [DO], and oxidation reduction potential [ORP]) were measured and purging continued until field parameters had stabilized. Groundwater samples were then decanted into laboratory-supplied, appropriately preserved sample containers and placed on ice for transport under chain-of-custody protocol to American Analytics, Inc., in Chatsworth, California (AAI), a California-certified laboratory. Each groundwater sample was analyzed for the following parameters:

- TPHg, VOCs, and fuel oxygenates by Environmental Protection Agency (EPA) Method 8260B;
- TPHd by EPA Method 8015M; and
- SVOCs by EPA Method 8270C.

Laboratory analytical reports and chain-of-custody documentation are included as Attachment 6. The groundwater monitoring analytical results are presented in Table 3 and discussed in Section 2.0.

Investigation-Derived Waste Management

Soil cuttings produced during the off-site well installation activities were stockpiled on-Site according to the *Site Redevelopment Soil Management Plan* in Appendix G of the Response Plan (Apex, 2017). Soil cuttings were screened with a photoionization detector (PID), stockpiled according to PID measurement, and placed on and covered by plastic sheeting secured with sandbags. Soil with PID readings of less than 50 parts per million volume (ppmv) was segregated from contaminated soil and will be reused during Site redevelopment activities. Soil that was field screened and determined to contain greater than 50 ppmv (but less than 1,000 ppmv) or that appeared impacted by visual/odor screening observations was staged in stockpiles no greater than 1,000 cubic yards and will be characterized for off-site disposal or on-site treatment with prior approval from South Coast Air Quality Management District (SCAQMD) and LARWQCB. Based on

field PID screening, no soil spoils generated during drilling activities registered greater than 1,000 ppmv for total VOCs.

2.0 Investigation Results

Data collected during the off-site groundwater monitoring well installation, described in Section 1.0, are presented in the following sections.

Soil Conditions

Soil boring log results were generally consistent with historical logging data, which indicate the presence of both coarse-grained (SP) and fine-grained (CL-ML) soil types to 70 feet bgs. At the deepest depth explored during the February 2018 field activities, a plastic clay was encountered at 70 feet bgs in borings MW-21 and AO-02. This potentially confining clay layer was found to extend to a maximum explored depth of 71.5 feet bgs in MW-21 and 76 feet bgs in AO-02 and may act as an aquitard that prevents further downward vertical migration of dissolved phase constituents. Boring logs from this investigation are provided in Attachment 2.

Groundwater Conditions and Results

Groundwater elevation data is presented on Table 2 for the February 2018 groundwater monitoring well installations. Groundwater monitoring field data sheets are available in Attachment 5.

Groundwater elevations range from 2.65 feet above mean sea level in MW-21 to 2.79 feet above mean sea level in MW-22. Groundwater elevations measured during this sampling event are consistent with historical groundwater elevations measured at the Site.

Groundwater Analytical Results

The analytical results for this investigation are summarized below. Results were compared with applicable risk-based regulatory screening levels, which are the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs; SFRWQCB, 2016), California maximum contaminant levels (MCLs), and State Water Resources Control Board (SWRCB) Notification Levels (Notification Levels) as defined in the Response Plan. Laboratory analytical reports are included as Attachment 6.

Groundwater analytical results are summarized on Table 3. During the February 2018 sampling event, both groundwater samples from MW-21 and MW-22 had detections of TPHg, TPHd, VOCs, and SVOCs. Results were compared to the SFRWQCB ESLs for groundwater vapor intrusion for both commercial/industrial land use and residential land use. For evaluation of long-term groundwater objectives, which are used to determine when vertical delineation has been met, results were compared to MCLs and Notification Levels. Since no MCL or Notification Level exists for TPHg and TPHd, results were compared to the SFRWQCB ESLs for drinking water based on taste and odor. Groundwater analytical results are as follows.

TPHg was detected above the laboratory reporting limit (RL) in samples collected from both monitoring wells at concentrations of 140 micrograms per liter (µg/L) in well MW-21 and 2,100 µg/L in well MW-22. TPHg was detected at concentrations above the SFRWQCB ESL for drinking water based on taste and odor of 100 µg/L in both wells. There is no SFRWQCB ESL for groundwater vapor intrusion for TPHg;

- TPHd was detected above the laboratory RL in samples collected from both monitoring wells at concentrations of 3,900 µg/L in well MW-22 and 4,700 µg/L in well MW-21. TPHd was detected at concentrations above the SFRWQCB ESL for drinking water based on taste and odor of 100 µg/L in both wells. There is no SFRWQCB ESL for groundwater vapor intrusion for TPHd;
- Sec-butylbenzene was detected above the laboratory RL in samples collected from both monitoring wells at concentrations of 0.52 µg/L in well MW-21 and 5.9 µg/L in well MW-22. Sec-butylbenzene was detected at concentrations below the Notification Level of 260 µg/L in both wells. There is no SFRWQCB ESL for groundwater vapor intrusion for sec-butylbenzene;
- 1,2-dichloroethane (1,2-DCA) was detected above the laboratory RL in samples collected from both monitoring wells at a concentration of 1.5 µg/L in both wells. 1,2-DCA was detected at concentrations above the MCL of 0.5 µg/L in both wells MW-21 and MW-22. 1,2-DCA was detected at concentrations below the SFRWQCB ESLs of 64 µg/L and 7.4 µg/L for groundwater vapor intrusion under a commercial/industrial land use and residential land use, respectively, in both wells;
- Isopropylbenzene was detected above the laboratory RL in samples collected from both monitoring wells at concentrations of 0.62 µg/L in well MW-21 and 15 µg/L in well MW-22. There is no MCL, Notification Level, or SFRWQCB ESL for groundwater vapor intrusion for isopropylbenzene;
- Ethylbenzene was detected above the laboratory RL in well MW-22 with a concentration of 33 µg/L. Ethylbenzene was detected at a concentration below the MCL of 300 µg/L and below the SFRWQCB ESL of 140 µg/L for groundwater vapor intrusion under a commercial/industrial land use in well MW-22. Ethylbenzene was detected at a concentration above the SFRWQCB ESL of 16 µg/L for groundwater vapor intrusion under a residential land use in well MW-22;
- Vinyl chloride was detected above the laboratory RL in well MW-22 with a concentration of 2.4 µg/L. Vinyl chloride was detected at a concentration above the MCL of 0.5 µg/L. Vinyl chloride was detected at a concentration above the SFRWQCB ESLs of 0.64 µg/L and

0.073 µg/L for groundwater vapor intrusion under a commercial/industrial land use and residential land use, respectively;

- Naphthalene was detected above the laboratory RL in well MW-22 with a concentration of 14 µg/L as measured by EPA Method 8260B and 12 µg/L by EPA Method 8270C. Naphthalene was detected at concentrations below the Notification Level of 17 µg/L. Naphthalene was detected at concentrations below the SFRWQCB ESLs of 220 µg/L and 24 µg/L for groundwater vapor intrusion under a commercial/industrial land use and residential land use, respectively;
- Low concentrations of n-butylbenzene (5.1 µg/L), cis-1,2-dichloroethene (0.55 µg/L), diisopropyl ether (4.6 µg/L), 4-isopropyltoluene (6.1 µg/L), n-propylbenzene (18 µg/L), 1,3,5-trimethylbenzene (TMB; 17 µg/L), 1,2,4-TMB (43 µg/L), total xylenes (60.2 µg/L), and 2-methylnaphthalene (6.0 µg/L) were detected in well MW-22. The reported concentrations for each detected compound did not exceed their respective MCLs / Notification Levels or SFRWQCB ESLs for groundwater vapor intrusion under a commercial/industrial land use or residential land use; and
- No other compounds were detected above laboratory reporting limits.

In general, the highest concentrations of TPH and VOCs were detected in monitoring well MW-22, located west of the proposed groundwater monitoring barrier along the western edge of the property line. In both wells MW-21 and MW-22, concentrations of TPHg and TPHd in groundwater exceed long-term screening levels and indicate the need for further work to delineate the vertical extent of the dissolved phase contaminants.

3.0 Conclusions and Recommendations

The field activities completed in February 2018 and documented in this report include the advancement of one soil boring to 76 feet bgs, the installation of two groundwater monitoring wells to 65 feet bgs, development of the aforementioned wells, and collection and analysis of groundwater samples from each of the newly-installed off-Site groundwater monitoring wells. These activities were conducted in an attempt to vertically delineate dissolved phase COCs in groundwater downgradient of the Site.

With the exception of vinyl chloride, constituents detected in wells MW-21 and MW-22 were consistent with constituents historically observed on-site in shallower groundwater samples. Vinyl chloride was detected at a low concentration in well MW-22 during this sampling event. It is not a constituent that is historically observed at the Site and is not considered a constituent of concern for the Site. This detection may be anomalous or from an off-site source and will continue to be monitored in subsequent sampling events.

Results from the off-site groundwater monitoring well and boring installation activities indicate the vertical extent of dissolved phase constituents, including TPHg and TPHd, are still not fully delineated downgradient of the Site. Isoconcentration contour maps for TPHg and TPHd, which include data for shallower-screened monitoring wells and MW-21 and MW-22 are provided on Figures 4 and 5. Data for the following adjacent well pairs were considered to assess the extent of vertical migration:

- MW-15 (screened 6 feet bgs to 26 feet bgs) and MW-21 (screened 55 feet bgs to 65 feet bgs); and
- MW-16 (screened 7 feet bgs to 28 feet bgs) and MW-22 (screened 55 feet bgs to 65 feet bgs).

The data indicate that while some vertical attenuation is occurring in the vicinity of MW-15 and MW-21, where TPHg and TPHd concentrations are observed to have decreased by an order of magnitude, very little vertical attenuation occurs between the depths explored at MW-16 and MW-22. Boring logs for MW-22 and AO-02 indicate the presence of primarily coarse-grained units, including sand and gravel, to 70 feet bgs, while the boring log for MW-21 indicates the presence of both coarse-grained sands and fine-grained units, including clay and silt, to 70 feet bgs. These less transmissive, fine grained units may impede the vertical migration of dissolved phase constituents in the vicinity of MW-21/MW-15.

At the deepest depths explored at the Site, a plastic clay was encountered at 70 feet bgs in borings MW-21 and AO-02 that extends to a maximum explored depth of 76 feet bgs in AO-02. This clay layer may act as an aquitard and prevent further vertical migration of the dissolved phase to deeper depths.

Based on the results of this report, the following activities are recommended:

- In order to fully delineate the extent of the dissolved phase, a deeper zone groundwater monitoring well will be installed below the clay layer on the western portion of the property near BMW-10 using a dual-tube sonic drilling rig to ensure no cross-contamination from shallow-zone groundwater;
- Newly installed wells MW-21 and MW-22 will be added to the semi-annual groundwater monitoring program currently being implemented at the Site; and
- Three planned pilot test air sparge wells (required for the air sparge barrier design) will be installed to a depth of 70 feet bgs.

Apex has scheduled the installation for the air sparge pilot test wells to occur in April 2018. We will proceed with installation of a deep groundwater monitoring well using a dual-tube sonic drilling rig upon your approval to proceed. Please don't hesitate to contact Kirsten Duey at (925) 951-6376 if you have any questions.

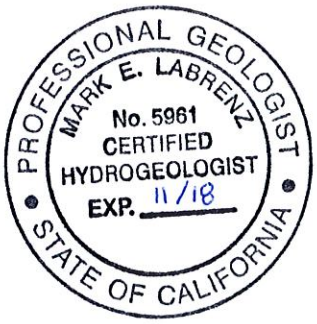
Sincerely,

The Source Group, Inc., a subsidiary of Apex Companies, LLC

Kirsten Duey
Project Manager

Casey Huff
Staff Geologist

Mark Labrenz, C.HG.
Principal Hydrogeologist



Attachments:

Figure 1 – Site Location Map
Figure 2 – Site Plan
Figure 3 – New Groundwater Monitoring Well and Soil Boring Locations
Figure 4 – Summary of TPHg (C4-C12) Concentrations in Groundwater
Figure 5 – Summary of TPHd (C13-C22) Concentrations in Groundwater

Table 1 – Summary of Monitoring Well Construction Details, February 2018
Table 2 – Summary of Depth to Water and Groundwater Elevation Data, February 2018
Table 3 – Summary of Groundwater Analytical Results, February 2018

Attachment 1 – Permits
Attachment 2 – Boring Logs
Attachment 3 – Survey Report
Attachment 4 – Well Development Field Notes
Attachment 5 – Groundwater Monitoring Field Sheets
Attachment 6 – Laboratory Analytical Reports

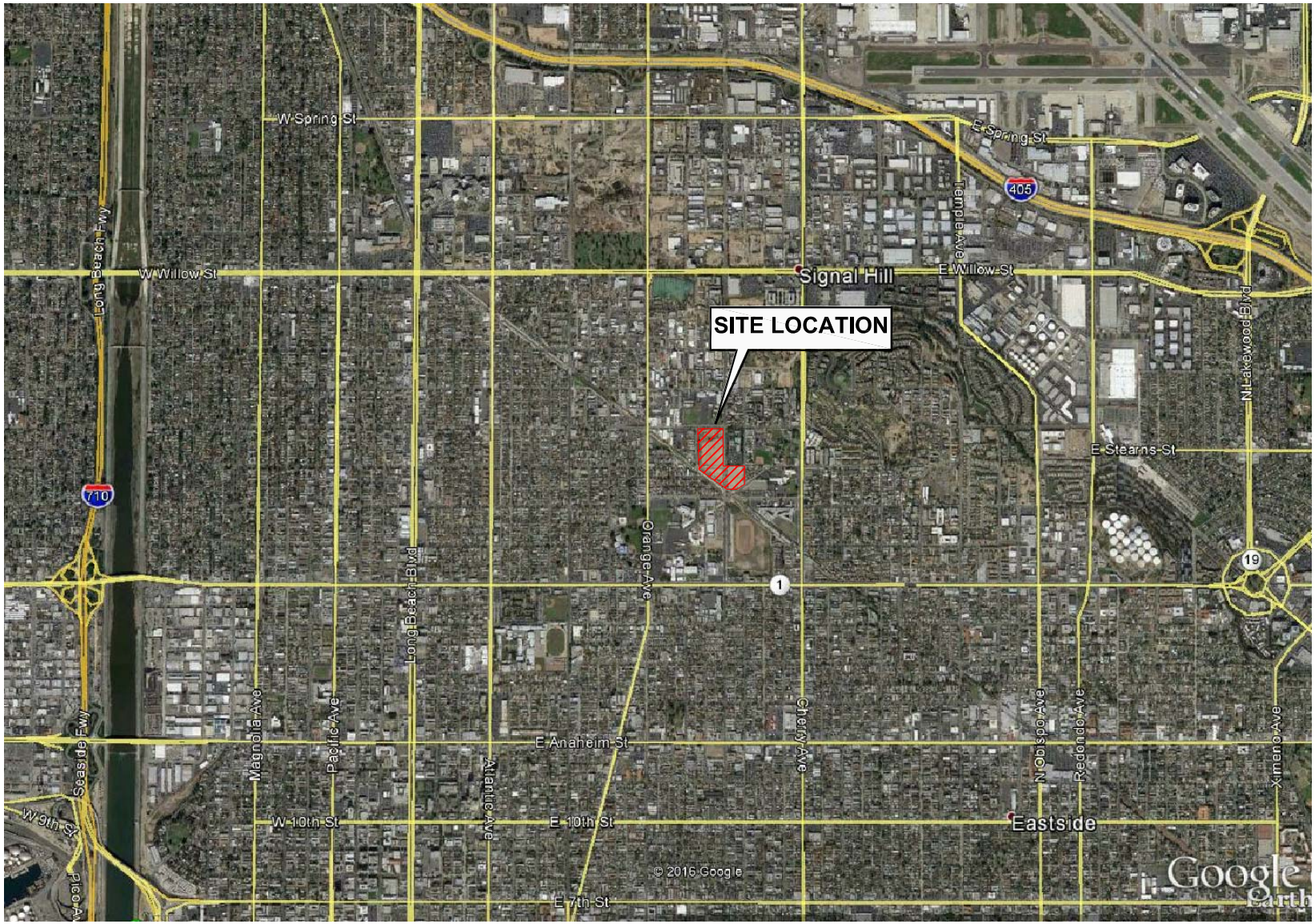
REFERENCES

The Source Group, Inc., A Subsidiary of Apex Companies, LLC (Apex), 2018. Groundwater Monitoring Report – Fourth Quarter 2017, Former Chemoil Refinery, 2020 Walnut Avenue, Signal Hill, California. February 6.

Apex, 2017. Response Plan and Remedial Technology Evaluation, Former Chemoil Refinery, 2020 Walnut Avenue, Signal Hill, California. July 13.

San Francisco Bay - Regional Water Quality Control Board (SFRWQCB), 2016. Update to Environmental Screening Levels. Revision 3. February.

FIGURES



APEX

299 WEST HILLCREST DR. SUITE 220
THOUSAND OAKS, CA 91360

FORMER CHEMOIL REFINERY
2020 WALNUT AVENUE
SIGNAL HILL, CA

PROJECT NO.	DATE	DR.BY:	APP. BY:
093-CHEMOIL-001	05/30/17	ZA	KD

SITE LOCATION MAP

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FIGURE 1

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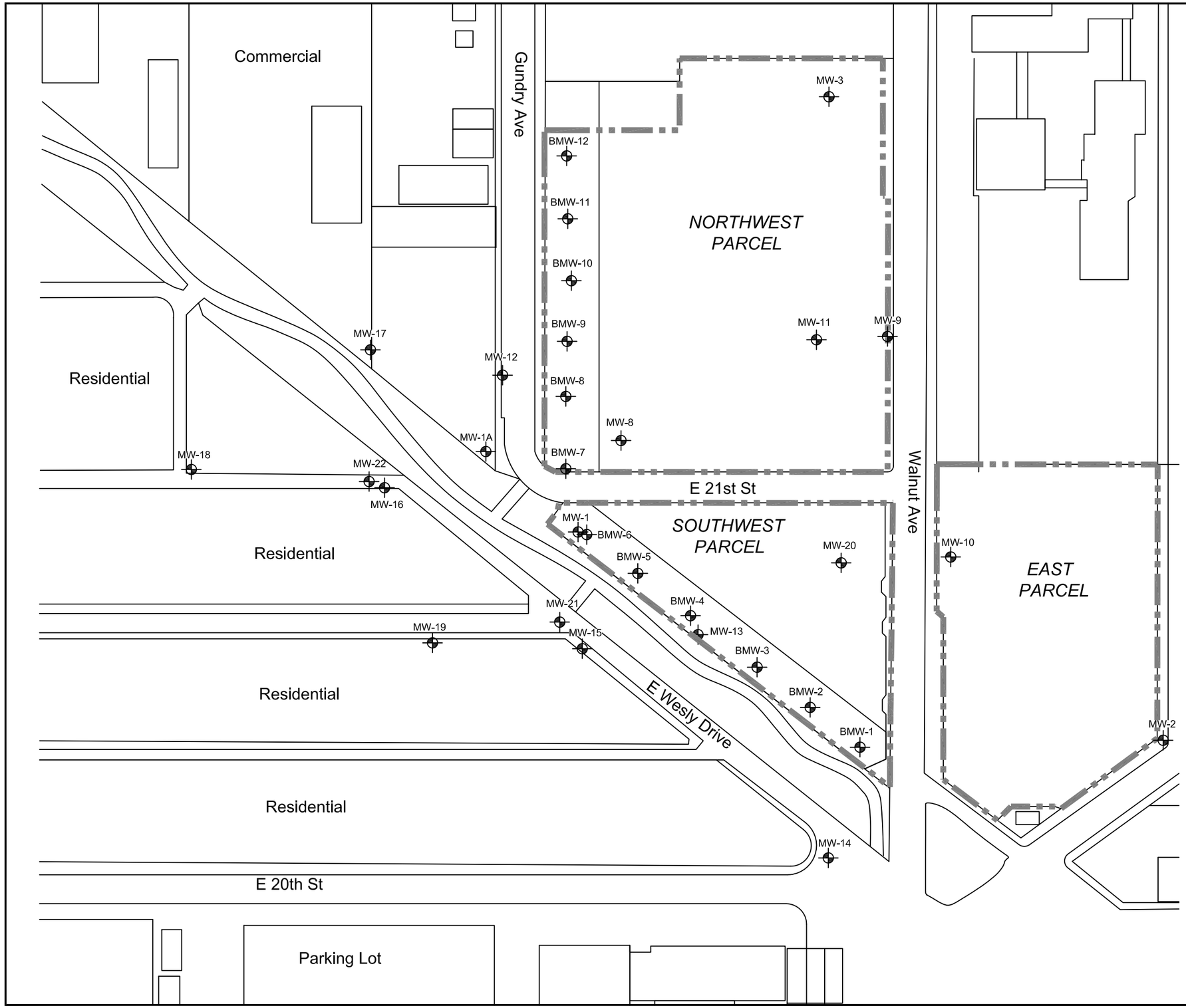

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Site Boundary

MW-16 Groundwater Monitoring Well Locations

SITE PLAN

FORMER CHEMOIL REFINERY
2020 WALNUT AVENUE
SIGNAL HILL, CA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
093-CHEMOIL-003	03/01/18	ZA	KD

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HORIZONTAL SCALE IN FEET

APEX
299 WEST HILLCREST DR., SUITE 220
THOUSAND OAKS, CA 91360

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FIGURE 2

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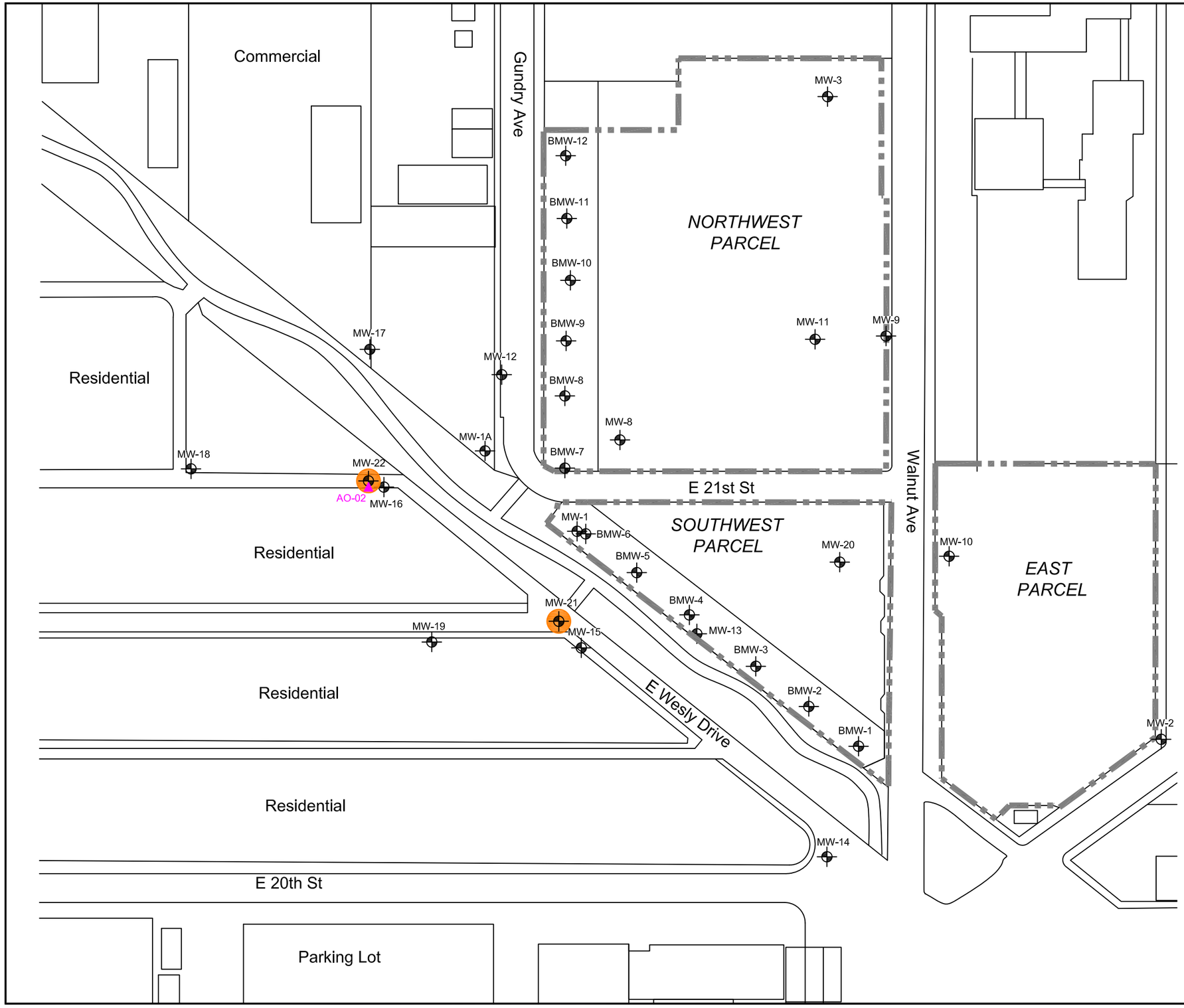

LEGEND

- Site Boundary
- MW-16 — Groundwater Monitoring Well Locations
- AO-02 — Soil Boring Location (Apex, 2018)
- New Monitoring Well/Soil Boring Location (Installed in February 2018)

NEW GROUNDWATER MONITORING WELL AND SOIL BORING LOCATIONS

FORMER CHEMOIL REFINERY
2020 WALNUT AVENUE
SIGNAL HILL, CA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
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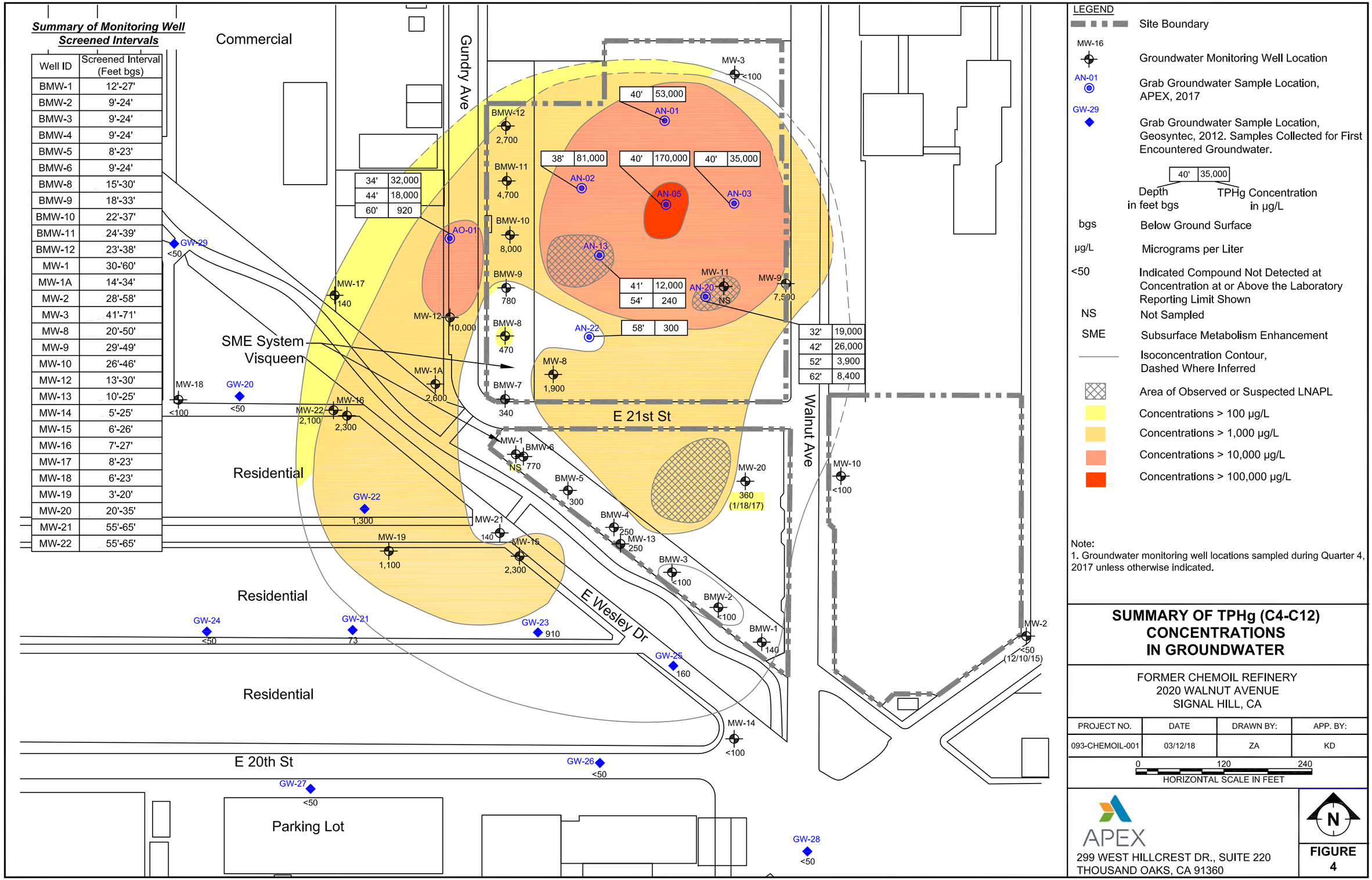
FIGURE 3

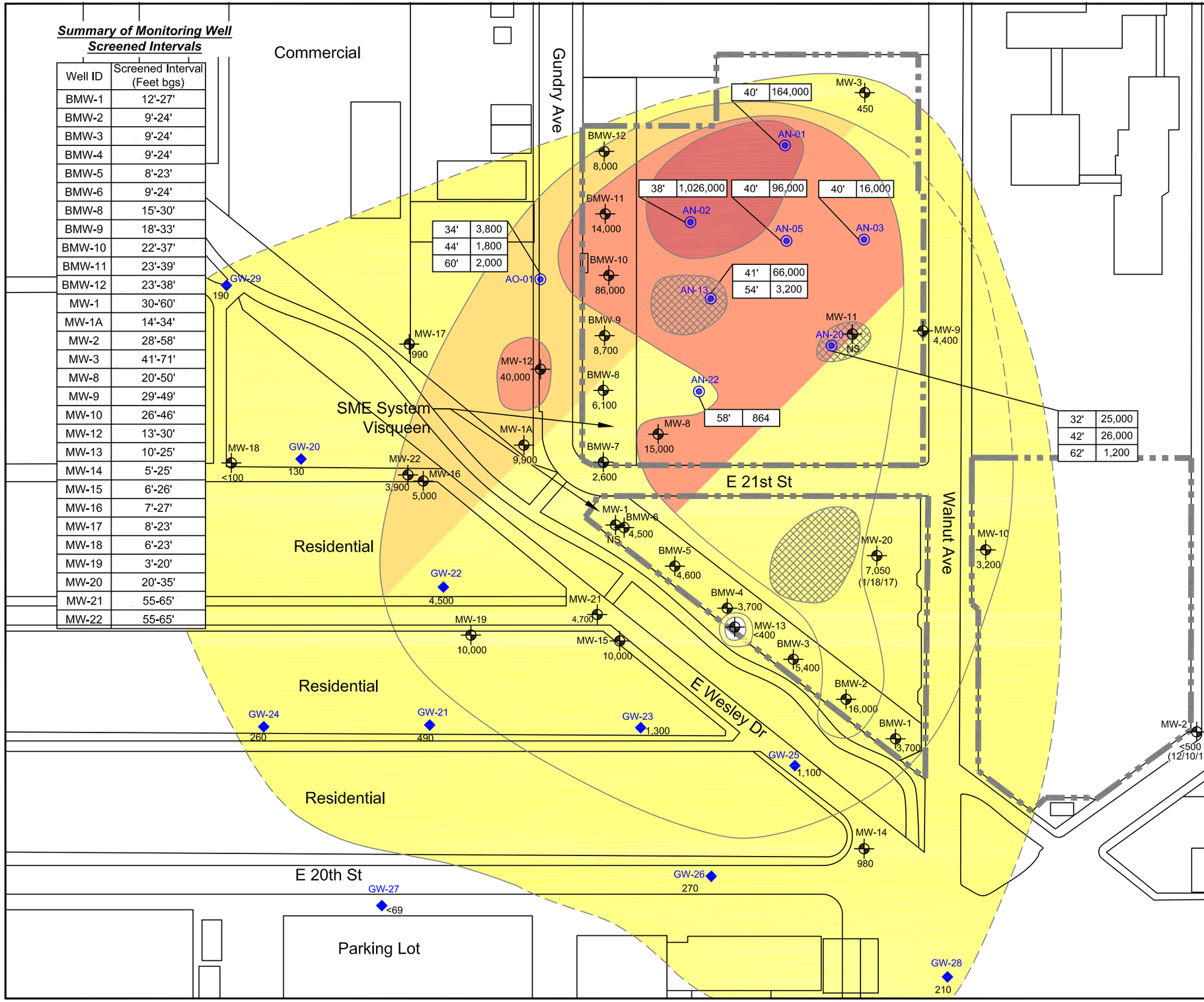
S:\Clients A - F\ChemOil Refinery\Reports\Off-Site MW Install\Figures\Fig.2-1-New GW MW & Soil Boring Locations-rev.dwg, 3/1/2018 11:02:33 AM



S:\Clients A - F\ChemOil Refinery\Reports\Off-Site MW Install\Figures\Fig.4-Summary of TPHg (C4-C12) in GW.dwg, 3/14/2018 10:38:40 AM

Summary of Monitoring Well Screened Intervals

Well ID	Screened Interval (Feet bgs)
BMW-1	12'-27'
BMW-2	9'-24'
BMW-3	9'-24'
BMW-4	9'-24'
BMW-5	8'-23'
BMW-6	9'-24'
BMW-8	15'-30'
BMW-9	18'-33'
BMW-10	22'-37'
BMW-11	23'-39'
BMW-12	23'-38'
MW-1	30-'60'
MW-1A	14'-34'
MW-2	28'-58'
MW-3	41'-71'
MW-8	20'-50'
MW-9	29'-49'
MW-10	26'-46'
MW-12	13'-30'
MW-13	10'-25'
MW-14	5'-25'
MW-15	6'-26'
MW-16	7'-27'
MW-17	8'-23'
MW-18	6'-23'
MW-19	3'-20'
MW-20	20'-35'
MW-21	55-65'
MW-22	55-65'



LEGEND

- Site Boundary
- MW-16 — Groundwater Monitoring Well Location
- AN-01 — Grab Groundwater Sample Location, APEX, 2017
- GW-29 — Grab Groundwater Sample Location, Geosyntec, 2012
- 40' | 18 — Depth in feet bgs; TPHd Concentration in µg/L
- bgs — Below Ground Surface
- µg/L — Micrograms per Liter
- <0.50 — Indicated Compound Not Detected at Concentration at or Above the Laboratory Reporting Limit Shown
- NS — Not Sampled
- SME — Subsurface Metabolism Enhancement
- Isoconcentration Contour, Dashed Where Inferred
- Area of Observed or Suspected LNAPL
- Concentrations > 100 µg/L
- Concentrations > 1,000 µg/L
- Concentrations > 10,000 µg/L
- Concentrations > 100,000 µg/L

Note:
1. Groundwater monitoring well locations sampled during Quarter 4, 2017 unless otherwise indicated.

SUMMARY OF TPHd (C13-C22) CONCENTRATIONS IN GROUNDWATER

FORMER CHEMOIL REFINERY
2020 WALNUT AVENUE
SIGNAL HILL, CA

PROJECT NO.	DATE	DRAWN BY:	APP. BY:
093-CHEMOIL-001	03/12/18	ZA	KD

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HORIZONTAL SCALE IN FEET

APEX
299 WEST HILLCREST DR., SUITE 220
THOUSAND OAKS, CA 91360

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FIGURE 5

S:\Clients A - F\ChemOil Refinery\Reports\Off-Site MW Install\Figures\Fig.5-Summary of TPHd (C13-C-22) Concentration in GW.dwg, 3/14/2018 12:35:03 PM

TABLES

Table 1
Summary of Monitoring Well Construction Details, February 2018
Former Chemoil Refinery
Signal HIll, California

Well	Date Installed	Total Boring Depth (feet bgs)	Casing Diameter (inches)	Screen Interval (feet bgs)	Notes
MW-21	02/06/2018	71.5	2	55 - 65	Single-Completion
MW-22	02/05/2018	65	2	55 - 65	Single-Completion

Notes:
bgs = Below ground surface.

Table 2
Summary of Depth to Water and Groundwater Elevation Data, February 2018
Former Chemoil Refinery
Signal Hill, California

Well	Casing Elevation[1] (feet MSL)	Date of Measurement	Depth to Water (feet BTOC)	Groundwater Elevation (feet MSL)
MW-21	16.90	02/20/2018	14.25	2.65
MW-22	17.60	02/20/2018	14.81	2.79

Notes:
BTOC = Below top of casing.
MSL = Mean sea level.
[1] Elevation of PVC well casing (north edge) relative to MSL using NAVD88 datum.

Table 3
Summary of Groundwater Analytical Results, February 2018
Former Chemoil Refinery
Signal Hill, California

Well ID	Sample Date	TPHg, TPHd, and VOCs																						SVOCs	
		TPHg [4] µg/L	TPHd [4] µg/L	Benzene µg/L	TBA µg/L	sec-Butylbenzene µg/L	n-Butylbenzene µg/L	1,2-Dichloroethane µg/L	cis-1,2-Dichloroethene µg/L	Diisopropyl ether (DIPE) µg/L	Ethylbenzene µg/L	Isopropylbenzene µg/L	4-Isopropyltoluene µg/L	MTBE µg/L	Naphthalene µg/L	n-Propylbenzene µg/L	Tetrachloroethylene µg/L	Toluene µg/L	1,3,5-TMB µg/L	1,2,4-TMB µg/L	Vinyl Chloride µg/L	o-Xylene µg/L	m,p-Xylenes µg/L	Total Xylenes µg/L	2-Methylnaphthalene µg/L	Naphthalene µg/L
California MCL[1] / *Notification Level*[2]		**100**	**NV**	**1**	*12*	*260*	*260*	**0.5**	**6**	**NV**	**300**	*770*	**NV**	**13**	*17*	*260*	**5**	**150**	*330*	*330*	**0.5**	**1,750**	**1,750**	**1,750**	**NV**	*17*
SFRWQCB ESLs [3] Residential		**NV**	**100**	**1.4**	**NV**	**NV**	**NV**	**7.4**	**140**	**NV**	**16**	**NV**	**NV**	**1,500**	**25**	**NV**	**3.7**	**4,300**	**NV**	**NV**	**0.073**	**1,600**	**1,600**	**1,600**	**NV**	**24**
SFRWQCB ESLs [3] Commercial/Industrial		**NV**	**100**	**12**	**NV**	**NV**	**NV**	**64**	**1,100**	**NV**	**140**	**NV**	**NV**	**13,000**	**220**	**NV**	**32**	**37,000**	**NV**	**NV**	**0.64**	**13,000**	**13,000**	**13,000**	**NV**	**220**
MW-21	2/20/2018	**140**	**4,700**	<0.50	<10	**0.52**	<0.50	**1.5**	<0.50	<2.0	<0.50	**0.62**	<1.0	<2.0	<2.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.5	<5.0	<0.50
MW-22	2/20/2018	**2,100**	**3,900**	<0.50	<10	**5.9**	**5.1**	**1.5**	**0.55**	**4.6**	**33**	**15**	**6.1**	<2.0	**14**	**18**	<0.50	<0.50	**17**	**43**	**2.4**	**3.2**	**57**	**60.2**	**6.0**	**12**

Notes:
VOCs, fuel oxygenates, and TPHg measured by EPA Method 8260B.
TPHd measured by EPA Method 8015M.
SVOCs measured by EPA Method 8270C.
µg/L = microgram per liter.
SVOCs = Semi-Volatile Organic Compounds.
VOCs = Volatile Organic Compounds.
TPHg = Total petroleum hydrocarbons as gasoline.
TPHd = Total petrloeum hydrocarbons as diesel.
TBA = tert-Butyl alcohol.
MTBE = Methyl-t-butyl ether.
TMB = Trimethylbenzene
MCL = Maximum Contaminant Level.
SFRWQCB ESL = San Francisco Bay Regional Water Quality Control Board Groundwater Screening Level for Vapor Intrusion (SFRWQCB, 2016).
NV = No value published.
<X.XX = Not detected above indicated reporting limit (RL).
Bold values were reported above laboratory detection limits.
Shaded and bold value exceeds lowest of SFRWQCB ESL groundwater vapor intrusion for commercial/industrial land use or California MCL or California notification level.
[1] California MCLs shown in bold font. MCLs are enforceable standards.
[2] California notification levels shown in italic font. Notification levels are advisory in nature and not enforceable standards.
[3] SFRWQCB ESL for groundwater vapor intrusion, deep groundwater (≥10 feet bgs), sand scenario for resident and commercial/industrial land use.
[4] No California MCL or California Notification Level exists for TPHg or TPHd. Therefore, the most conservative SFRWQCB ESL for drinking water based on taste and odor was used.
References:
SFRWQCB. 2016. Environmental Screening Levels (ESLs). Revision 3. February.

ATTACHMENT 1

PERMITS

CITY OF LONG BEACH

DEPARTMENT OF HEALTH AND HUMAN SERVICES
BUREAU OF ENVIRONEMTNAL HEALTH
WATER QUALITY PROGRAM
2525 GRAND AVENUE, ROOM 220, LONG BEACH, CALIFORNIA CA 90815
562-570-4132

WELL PERMIT

PERMIT#: ***2432***

DATE: ***November 15, 2017***

All work must be completed in accordance with Water Well Bulletin 74-81 and 74-90
PLEASE NOTIFY INSPECTOR 48 HOURS BEFORE DRILLING AND SUBMIT LOG(S) TO vanna.kho@longbeach.gov , OR MAIL AT ADDRESS ABOVE.

Site Address:	***City ROW along E Wesley Drive and alley way Long Beach, CA***
Owner:	***Signal Hill XC, LLC***
Owner Address:	*3010 Old Ranch Parkway, STE 470* Seal Beach, CA 90740 562-546-0200
Consulting Firm:	***The Source Group (Apex)***
Consulting Firm Address	*3478 Buskirk Avenue, STE 100* *Pleasant Hill, CA 94523* *925-944-2856*
Drilling Company:	***Gregg Drilling & Testing, Inc.***
Drilling Co. Address:	*2726 Walnut Ave* *Signal Hill, CA 90755* *562-427-6899*
Type Of Permit:	***New Well Construction***
Type Of Well:	***Monitoring***
Total Number Of Well/Soil Boring:	***3 Wells***

This permit valid for one year from date above

Craig Wong
Cross-Connection/Water Quality

CITY OF LONG BEACH
333 W.Ocean Blvd

Office:DV Cashier:jaowen
Date/Time: 1/31/2018 1:50 PM
Trans:99
4000 LMR Fees
Receipt #: 03190837
Acct#: 7571
Name: PWP41227
Payment Total: $5,002.02

==========
Transaction Total $5,002.02

Tender: CHECK $5,002.02

Thank you for your payment.

www.longbeach.gov

>> Customer Copy <<

APEX COMPANIES, LLC AND SUBSIDIARIES Check Date: 1/30/2018

397789

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
01302018	1/30/2018	000000873823	5,002.02			5,002.02
City of Long Beach		TOTAL	5,002.02			5,002.02
2-M&T BANK-	1	CITYLON802				

REORDER FORM #290LB1 (1 PART)

USE WITH COMPANION ENVELOPE #44-005

CITY OF LONG BEACH

DEPARTMENT OF PUBLIC WORKS

Website: www.longbeach.gov/pw

333 W. OCEAN BLVD, 10TH FLOOR • LONG BEACH, CALIFORNIA 90802 • (562) 570 - 6784

I hereby make application for a permit to construct the following improvements or to temporarily occupy the following street(s) in the City of Long Beach subject to the applicable provisions of the Long Beach Municipal Code in consideration of the execution of a permit, the applicant hereby agrees to indemnify, hold harmless and defend the City of Long Beach, its boards and commissions, and their official, employees, and agents against all liability, costs, losses, suits, claims, demands, settlements, damages, actions and causes of action including attorneys fees sustained as a result of, or arising out of, or in any manner connected with any and all operations authorized or permitted by this permit. Applicant further agrees to comply with all applicable insurance requirements of the Long Beach Municipal Code.

Job Address: 1352 WESLEY DR

Permit Number: **PWP41227**

Type of Permit: EXCAVATION

Description: three monitoring well in Wesley drive north of 20th street

24 HOUR ADVANCE NOTICE IS REQUIRED FOR INSPECTION
BUSINESS HOURS ARE: 7:30 AM TO 4:00 PM

For TSO/Street/Excavation Call: (562) 570-5160
For Sewer Call: (562) 570-2321, (562) 570-2322

Government Code Section 4216.2 requires a "DIG ALERT IDENTIFICATION NUMBER" be issued before a "permit to excavate" is valid. For DIG ALERT I.D. NO. call underground service alert at (800) 422-4133 two (2) days before you dig.

SEE SPECIAL CONDITIONS ATTACHED

Approved by: _____ (For City Engineer) **Signed:** _____ (Permittee)

Date Issued: 1/31/18 Permit Expires:

This permit is only valid through the expiration date as long as your state license and liability insurance are current.

Property Owner
Name:
Mailing Address: ,

Permittee
Name: The Source Group, LLC (PW) **Office:** (562)597-1055
Address: 1962 FREEMAN AVE , SIGNAL HILL, CA 90755
City License No: 20402930 10/22/2017

Jobsite Contact: kevin nguyen (714)495-1187
24hr Emergency Contact: casey huff (925)808-8824

Payor
Paid by: APEX COMPANIES LLC

Paid Amount	
Check (CK)	$5,002.02

Fees Paid

7443830		Miscellaneous Excavation Sur	$292.02
7443829		Miscellaneous Excavation	$4,710.00
	CHECK	Total Paid:	$5,002.02
		Receipt No:	03190837

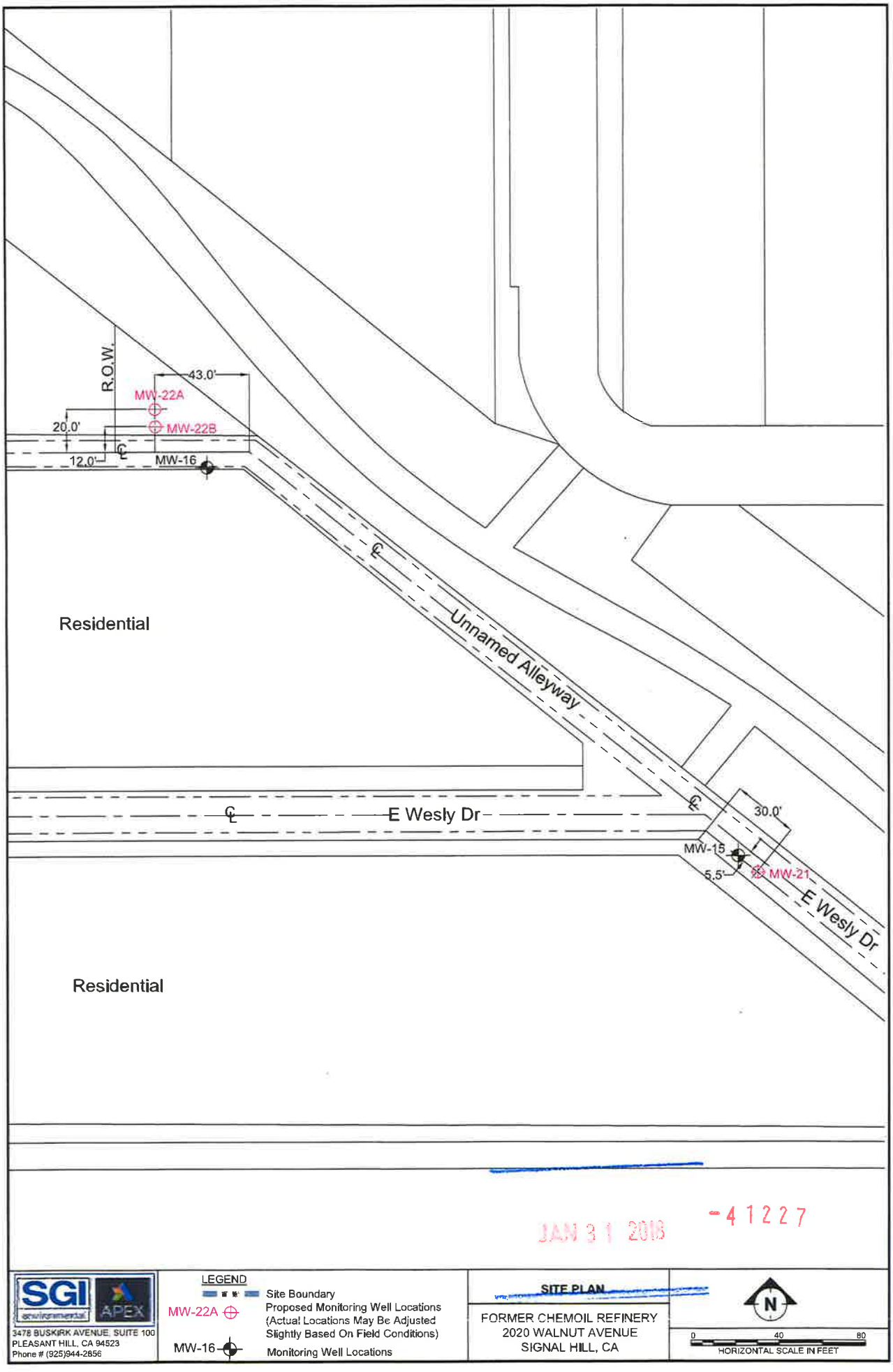
Inspectors Comments:

SPECIAL CONDITIONS ATTACHED

Inspectors Name: _____

Insp. Signature: _____

Final Date: _____



JAN 31 2018

-41227

SGI environmental APEX
3478 BUSKIRK AVENUE, SUITE 100
PLEASANT HILL, CA 94523
Phone # (925)944-2856

LEGEND

Site Boundary

MW-22A — Proposed Monitoring Well Locations (Actual Locations May Be Adjusted Slightly Based On Field Conditions)

MW-16 — Monitoring Well Locations

SITE PLAN

FORMER CHEMOIL REFINERY
2020 WALNUT AVENUE
SIGNAL HILL, CA

N

0 40 80
HORIZONTAL SCALE IN FEET

S:\Clients A - F\ChemOil Refinery\Permits\City of Signal Hill\Permit application\Permit Application.dwg, 12/8/2017 1:14:57 PM

Permit Number: PWP -41227 -41LLT

Date: 4/31/18

PUBLIC WORKS PERMIT APPLICATION

Kevin Nguyen 714 495 1187 PLEASE PRINT

Project Address/Location: East Wesley Drive in City ROW, Long Beach, CA

Applicant: The Source Group Inc., a division of Apex Companies, LLC		**Email Address:** casey.huff@apexcos.com	
Firm Name (DBA) The Source Group, Inc, a division of Apex Companies, LLC		**Firm Phone Number:** 925-944-2856	
Address: 3478 Buskirk Ave, STE 100	**City:** Pleasant Hill	**State** CA	**Zip Code:** 94523
Contact Name at Job Site: Casey Huff		**Contact Phone Number:** 925-808-8824	
State License Number: 758173	**Class:** A Haz	**Expiration Date:** 3/31/2019	
City License Number: BL20402930	**Expiration Date:** 10/22/2018		
Liability Insurance Carrier: Starr Surplus Lines	**Policy Number:** 1000065701171	**Expiration Date:** 7/31/2017	

★**NOTE:** The names listed on the STATE LICENSE, CITY LICENSE & INSURANCE POLICY must be identical. If they are not, they must be corrected before a permit may be issued.

STREET IMPROVEMENT

Please indicate quantities for each type of improvement proposed.

IMPROVEMENT:	QUANTITY:	IMP VALUE:
Curb – All types	L.F.	
Comb. C & G	L.F.	
Sidewalk	S.F.	
Apron Res.	S.F.	
Apron Comm'l	S.F.	
Alley	S.F.	
Tree Trimming		

Total Value: _____

C.L.B. Dwg No. _____

Please complete sketch on back

*If there is a tree involved, an arborist report will be required prior to issuance of the permit.

TEMPORARY STREET OCCUPANCY

Please indicate type of encroachment required and dimensions of street area to be occupied.

☐ _____ Bin ☐ Fence ☐ Structures

☐ Materials ☐ Pedestrian Canopy ☐ Equipment

Street Area: _____ X _____ = _____ S.F. / L.F.

The term of the permit is for _____ days beginning on date issuance. This permit expires on _____.

Please complete sketch on back

EXCAVATION PERMIT DATA

Please provide the following information:

Purpose of Excavation: groundwater monitoring well installation
TRAFFIC CONTROL MUTCD "WATCH" MAN.

Franchise or Permit Number: _____

Width	Length	SQ. Ft	Surface
Total SQ. FT.			

MONITORING WELL DATA

# of Mon. Wells 3	Min. Depth B.G.S. 45 ft.

Permit Fee $ _____

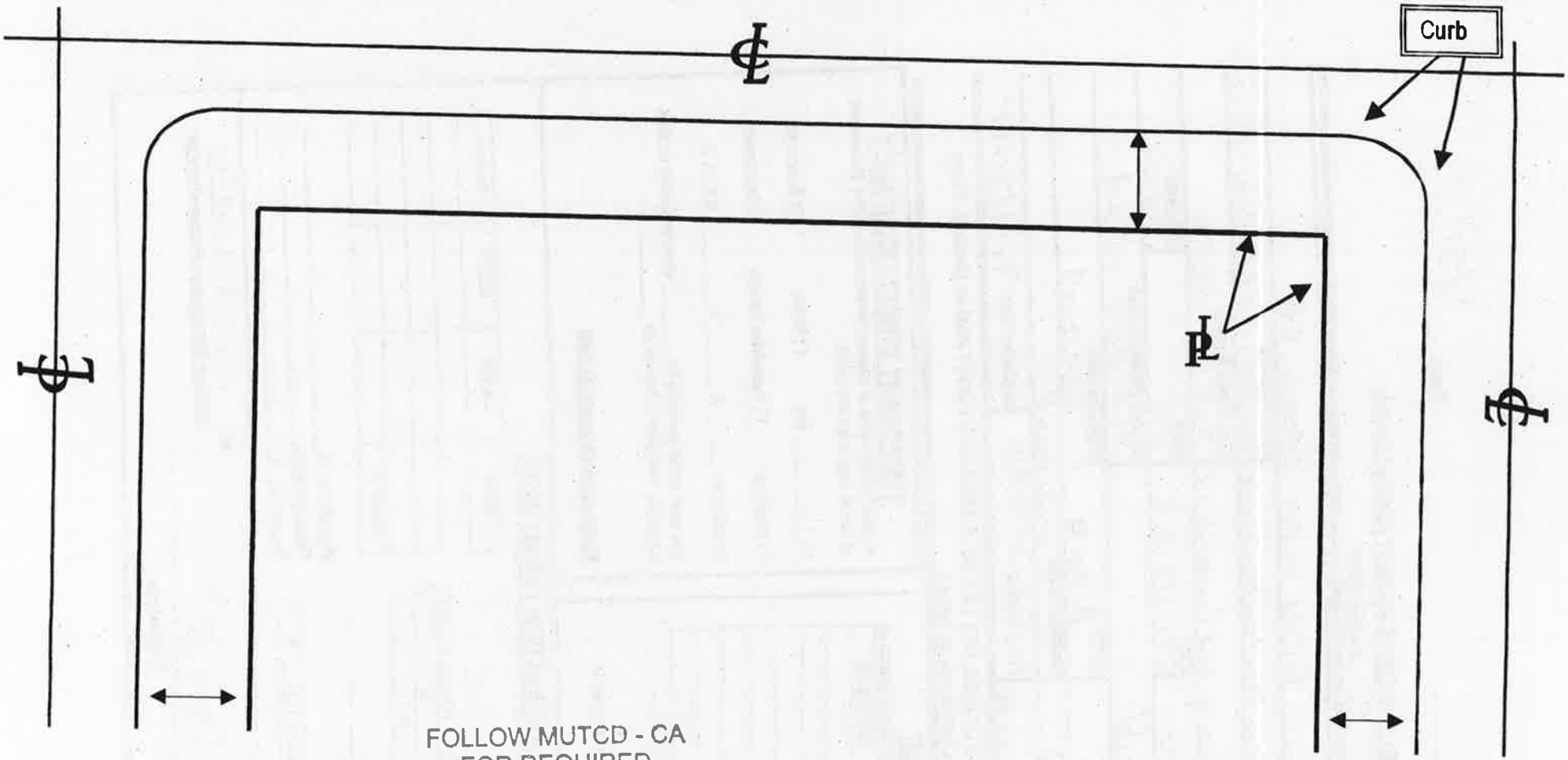
Title/Company _____

Phone No. (____) _____

☒ Apex Companies, LLC
Contractor/Applicant Name

☒ _____
Signature

☎( ) 925-944-2856
24 Hour Emergency Phone Number



FOLLOW MUTCD - CA
FOR REQUIRED
TRAFFIC CONTROL

Contractor: _____
Location: _____
Section Map Number: _____ Permit Number: _____
Lot Number: _____ Block Number: _____
Tract: _____
Date: _____
Approved by Planning: _____
Approved by Traffic: _____
Reference: _____
Applicable Charge Number: _____

APPROVED
DOT/TRAN
1/29/18
SENIOR TRAFFIC ENGINEER

Approved by:
Sean Crumby
Deputy Director of Public
Works/City Engineer

By: _____

SPECIAL CONDITIONS

To be attached and made a part of

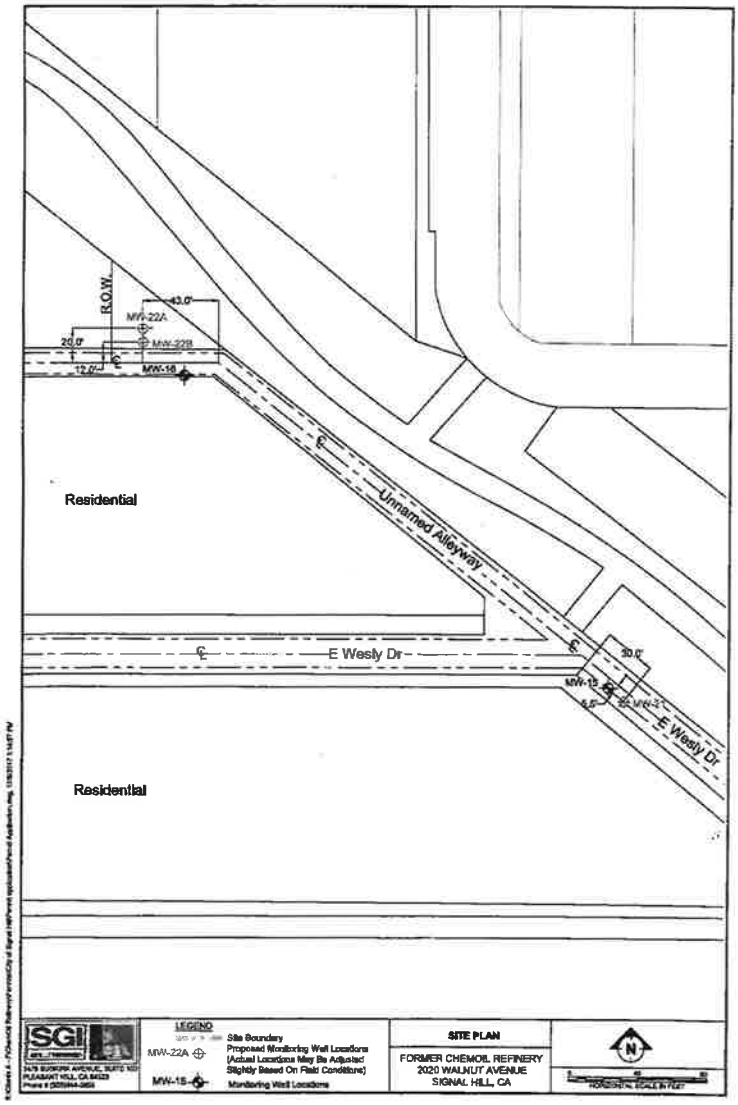
Excavation Permit Number PWP41227

Issued – 1/31/2018

Permittee – Apex "The Source Group"

Work Location – 1352 Wesley Drive

Project Description – Install 3 Monitoring Wells in Wesley Drive north of 20th Street per MW-283-17 about 65' deep per the attached map.



Permittee is responsible for making all required notifications

1. The permittee's insurance provided for this permit expires at midnight on **04/01/2018**. Should this insurance expire before the completion of the work under this permit, then on the last workday before the insurance expires permittee shall stop all work and make the work site safe. Work may resume only after an insurance renewal has been submitted and has been approved by the Risk Manager and the City Attorney's office.

2. Permittee shall notify the City of Long Beach, Public Works, Construction Inspection at (562) 570-5160, 48 hours prior to the start of any work. Please provide the following information:
   - Name of the permittee.
   - The permit number.
   - Type of construction.
   - Starting date and time of construction.
   - The name and telephone number of the permittee's representative who will be present at the work site.
   - The Underground Service Alert ticket number.
   - The permittee shall notify the City inspector of the daily work in progress and the type of inspection required.

3. After work begins, the permittee shall notify the City inspector of the daily work in progress and the type of inspection required. Failure to contact the City inspector or the use of unacceptable materials or unacceptable work shall result in a "Stop Construction Notice," being issued. Work shall not resume until corrections have been made.

4. California Government Code Section 4216.9 (a state law) requires you to obtain a DigAlert identification number before this "permit to excavate" can be valid. To get your DigAlert identification number, call Underground Service Alert of Southern California a.k.a. DigAlert at 8-1-1 or visit www.digalert.org at least two working days, but not more than 14 days before digging. In the case of an emergency, call 1 (800) 922-3459 (24-hrs) or 1 (800) 227-2600 your State One-Call Center Number.

5. Permittee shall comply with all applicable laws, ordinances, rules and regulations of and obtain permits from all federal, state and local governmental authorities having jurisdiction over the permit area and Permittee's use thereof.

6. If for any reason the City determines that these permit fees (if any) are considered to be inadequate to cover its costs, the City reserves the right to collect additional fees.

7. If and when temporary "NO PARKING" signs are used for this work, they shall be placed at least twenty-four (24) hours before hand and have the following information printed on them:

   - The name of the permittee/company or City Department performing the work.
   - The type of work being done.
   - The phone number to call for information about the work.
   - The starting date and ending date of the parking restriction.
   - The starting time and ending time of the parking restriction.
   - The emergency phone number of the permittee or contractor.
   - The applicable excavation permit number.

   Temporary "NO PARKING" signs can be obtained from the City of Long Beach, Public Works, Construction Inspection Section on the 10th Floor of City Hall.

8. Long Beach Municipal Code (LBMC) Chapter 14.08 states that:

   - This permit is not transferable.
   - This permit shall be kept at the work site and be shown on demand to a City representative.
   - The permittee shall comply with California Government Code Section 4216, and following, concerning Underground Service Alert paint markings (and any other construction related markings). These markings shall not be made more than 14 days prior to the start of work and the markings shall be

removed upon completion of the work. Consult with the Public Works Inspector for an approved removal method.

- The City Engineer may revoke this permit unless the work begins within (60) sixty days after its issuance and is diligently performed to completion, in the sole opinion of the City Engineer.
- All spoils, debris and excess materials shall be removed from the work site within 3 days after the completion of the work.
- Permittee shall, at their sole expense, within ten (10) days after receipt of written notification from the City Engineer to do so, remove any improvement or facilities or, with the prior approval of the City Engineer, relocate them to a site designated by the City Engineer if at any time the improvement or facilities interfere with the use, repair, improvement, widening, change in grade, or relocation of any right-of-way or highway, or interfere with the construction of any subway, viaduct or other underground conduit or structure of any kind.
- Any pavement restored by the permittee shall be maintained by permittee for a period of one (1) year after the completion of the work. If the permittee fails to maintain the pavement during this period, the permittee will be given a 5-day notice to repair or restore the pavement. If the permittee does not repair or restore the pavement, the City may have the work done and charge its cost plus 25% to the permittee.

9. **Standard working hours** shall be restricted to between 8:30 a.m. and 3:30 p.m. Additional work hour restrictions for certain streets may be stated further below in these special conditions, in the attached "Traffic Control Requirements" and/or in the attached traffic control plan(s).

10. Work is not permitted on Sundays.

11. Non-standard work hours, including work on Saturday, must be pre-approved by the Public Works Inspection office (562) 570-5160 and will include additional fees.

12. The City's noise ordinance restricts pre-approved work days and hours to Monday-Friday from 7:00a.m. to 7:00p.m. and on Saturdays from 9:00a.m. to 6:00p.m.

13. If noise from this work is not in compliance with the City's noise ordinance, Daniel Philips, Environmental Health Bureau, (562) 570-4297, shall be notified and the work hours shall be revised so that the noise is in compliance.

14. The Contractor shall become familiarized with all existing installations, both public and private, on the work site and shall provide adequate safeguards to prevent damage to existing structures and improvements. Any damage to property from any cause, which might have been prevented by the Contractor, the Contractor's employees, agents or subcontractors, shall be repaired within 10 calendar days after such damage at the Contractors own cost and expense. Any and all water service breaks shall be repaired the same day.

15. Approval of the attached plans by the City of Long Beach does not constitute a representation as to the accuracy of the location or the existence or non-existence of any underground utility pipe or structure within the limits of this project. The contractor is required to take due precautionary measures to protect the utility lines shown and any other line not on record or not shown on these plans. All utility lines and structures that may be damaged on account to the contractor's operations shall be repaired or replaced at the contractor's expense, to the satisfaction of the City.

16. The Contractor shall obtain a permit from California Division of Industrial Safety for the construction of trenches or excavations which are five feet or deeper. Sheeting, shoring and bracing for the trench excavation shall conform to the requirements of "Construction Safety Orders," Title 8, Division of Industrial Safety, State of California. Contact one of the Cal/OSHA Enforcement Unit district office nearest you: **Los Angeles:** 320 West 4th Street, Ste. 850, Los Angeles 90013, (213) 576-7451, fax (213) 576-7461; **Santa Ana:** 2000 E. McFadden Ave., Ste 122, Santa Ana 92705, (714) 558-4451, fax (714) 558-2035; **Torrance:** 680 Knox Street, Ste. 100, Torrance, 90502, (310) 516-3734, fax (310) 516-4253. Or check the web at: http://www.dir.ca.gov/dosh/DistrictOffices.htm.

17. Any changes made to the approved plan issued with this permit (such as a change in the permitted facility's location or its route) shall require approval by the City Engineer before starting or continuing any work. Provide seven sets of revised plans for approval before starting or continuing any work.

18. Removal, adjustment or relocation of utilities or any work on the area of their recorded easements shall be done only with the approval of the utility owners, obtained before starting the work.

19. No water or liquids, except potable water, shall be discharged onto city streets at anytime for any reason without proof of a National Pollutant Discharge Elimination System (NPDES) permit. To obtain a NPDES permit call (213) 576-6600.

20. The contractor is required to perform self-inspections to evaluate if minimum appropriate controls to reduce pollutant discharges from entering the storm drain system are being met. Frequent self-inspections are the most effective method to verify implementation of the Best Management Practices (BMP). The contractor shall make weekly self-inspections during the dry season and daily during the rainy season, October 1st through April 15th.

21. Best Management Practices (BMP's) are attached and are made a part of this permit. If the City Engineer, a Public Works inspector or an authorized city representative determines that additional BMP's or corrective steps for existing ones are necessary, permittee shall immediately comply with the requests.

22. The discharge of liquids from concrete truck washouts into storm drains, open ditches, streets, gutters or catch basins is strictly **prohibited**.

23. Paving, street saw cutting and sidewalk saw cutting are prohibited during a storm event of 0.25 inches or greater (except during emergency conditions).

24. If saw cutting P.C.C. sidewalks, do so on the score marks or as directed. **There shall be full sidewalk panel replacements only-no partial panel replacements.** Replace 3-inch thick sidewalks to match existing.

25. Concrete thrust blocks exist at all tees, bends, crosses and other water main fittings. Contractor shall work with caution when excavating in the vicinity of any thrust block. Contractor shall not disturb thrust blocks.

26. A minimum of 12-inches clearance shall be provided between the installation and any City of Long Beach facility crossed, including concrete encasement or sand cement slurry used as backfill. No part of any City of Long Beach facility is to be included within any concrete encasement or sand cement slurry backfill.

27. If 12-inches of separation cannot be made between the installation and any existing City of Long Beach, Gas & Oil Department gas line, the permittee shall contact the Long Beach Gas & Oil-Corrosion Prevention Section at (562) 570-2083 for specific procedures.

28. Extreme caution shall be exercised to avoid breaking sewer house and gas service lateral connections. In case of accidental or unavoidable breakage or disturbance, reconstruction shall be in accordance with the City of Long Beach Standard Specifications.

29. Do not disturb local depressions, concrete cross gutters or concrete bus stop street pads. If they are disturbed, the entire structure shall be replaced by the permittee.

30. Do not disturb decorative/patterned concrete or decorative/patterned asphaltic or concrete pavement. If encountered, notify the City of Long Beach, Construction Inspection office at (562) 570-5160 for approval to remove and instructions for replacement. If disturbed, the entire decorative/patterned asphaltic or concrete pavement shall be wholly replaced by the permittee.

31. Any landscaping or sprinklers disturbed by the construction shall be restored by the permittee.

32. A "Notice of Construction" shall be written by the permittee, and then shall be approved by a City of Long Beach, Public Works Inspector. After such approval, the notice shall then be delivered to the affected residences, property owners and businesses at least one (1) week in advance of any work. An outline for the notice is attached.

33. Traffic control on all local and collector streets shall comply with the guidelines and requirements set forth in the latest edition of the "Work Area Protection and Traffic Control Manual."

34. Provide roadway access for emergency vehicles at all times.

35. The City Traffic Engineer (562) 570-6331 and the Construction Inspection Section (562) 570-5160, shall be notified 24 hours before the removal of any striping, pavement markings, legends or raised pavement markers. All striping, legends and crosswalk striping removal shall be done by grinding. They shall be restored as directed by the City Traffic Engineer. The contractor shall make such replacement with like materials (i.e., thermoplastic replacing thermoplastic, paint replacing paint) and this shall be done in accordance with the City of Long Beach Standards and Specifications.

36. Existing traffic signal loop detectors damaged by construction shall be replaced in kind to match existing within five (5) working days. All loops shall be cut four-inches deep and advance loops shall have four (4) turns.

37. The office of the City Traffic Engineer (562) 570-6764 prohibits traffic lane closures on Carson St & Cherry Ave. between the hours of 6:00 a.m. - 8:30 a.m. and between the hours of 3:30 p.m. - 6:30 p.m., Monday through Friday. Lane closures are permitted only between the hours of 8:30 a.m. and 3:30 p.m., Monday through Friday

38. The permittee shall be responsible for resetting any disturbed or destroyed centerline monuments, benchmarks, or property line corners to the satisfaction of the City Engineer. Replace brass cap, spike & washer, etc...with same. See City Standard No. 202 for replacing Type "C" monuments.

39. Notify Long Beach Transit, of any work affecting public bus stops. Contact John Carlson at (562) 808-8801, 48 hours prior to start of work.

40. If work is within three blocks of a Long Beach Elementary School, notify Paul B. Bailey, Transportation Director of the Long Beach Unified School District, (562) 426-6176, 48 hours prior to start of work.

41. If work is within a block of a pedestrian school crossing, notify Cathy Medina, Crossing Guard Supervisor, Long Beach Police Department, (562) 570-7240, 48 hours prior to start of work.

42. If work is within three blocks of a Long Beach Fire Station, notify the fire station at the non-emergency dispatch number (562) 570-9400 of your working location and work schedule, 48 hours prior to start of work.

43. All backfill and pavement restoration shall be inspected by a City of Long Beach, Public Works inspector. Adhere to the attached City of Long Beach Standard Plan No. 127 for trench and ac pavement replacement. Adhere to the attached Green Book Standard Plan 132-2, Concrete Pavement Replacement, for concrete cuts and their replacement. Provide certified copies of the aggregate compaction tests and ac compaction tests to the Public Works inspector.

44. All temporary steel plate bridging up to 1 1/4-inch thick shall have 12-inches of regress with temporary AC.

45. All temporary steel plate bridging 1 1/2-inch thick and thicker shall have 18-inches of regress with temporary AC.

46. Should any work covered under this permit or should any part of the traffic control for work under this permit extend into the jurisdiction of another city or governmental agency, then a permit or some other form of approval for your work or traffic control shall be required before any work may start. This excavation permit is issued pending that permit or approval.

47. This permit is issued in association with the Department of Health & Human Services Permit # 2120, issued August 19, 2015.

48. Construction, alteration, maintenance and destruction of monitoring wells and cathodic protection wells shall be completed in accordance with the California Department of Water Resources Bulletin 74-81 "Water Well Standards: State of California, December 1981" and its supplement Bulletin 74-90.

49. The abandonment of all monitoring wells shall be performed as follows:

    a. Groundwater monitoring wells shall be abandoned by pressure grouting in-place with a Bentonite slurry or a sand slurry mix to be approved by the City Engineer. This method includes: continuous feed, pressure grouting of screened and blank sections of well casing; from the bottom of the well via tremie method. Also removal of the upper five feet of blank casing; capping the upper five feet with one sack sand slurry, and the addition of a surface seal to match the existing surface.
    b. All valves and road boxes shall be removed.
    c. Backfilling shall be done according to City Standard Plan No. 127 - Trench Requirements in Streets R/W, or, if in an unimproved site, restore similar to surrounding area.
    d. Any injury, damage or repair caused by the abandonment shall be corrected at the permittee's expense and to the satisfaction of the Director of Public Works, or otherwise reimbursed to the City.

50. **PARTIAL LIST OF AGENCIES TO CALL IN THE EVENT OF A HAZARDOUS MATERIAL SPILL/RELEASE:**

    You are required by law to report all significant releases or suspected significant releases of hazardous materials including oil.

    • To report a spill, call the following agencies:
    1. Dial 911.
    2. Call County of Los Angeles Hotline (800) 303-0003.
    3. Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).
    4. Call City of Long Beach Department of Public Works Inspection (562) 570-6150.
    5. For spills only on Airport property Airport Dispatch (562) 570-2640.

    • For spills of "Federal Reportable Quantities" of oil, chemicals, or other hazardous materials to land, air, or water, notify the National Response Center (800-424-8802). If you are not sure whether the spill is of a "reportable quantity," call the federal Environmental Protection Agency (800) 424-9346 for clarification.

    • Agencies to call if you find or suspect contaminated soil or groundwater
    Regional Water Quality Control Board:
    Los Angeles Basin (213) 266-7500, California Environmental Protection Agency (Cal EPA), Department of Toxic Substances Control (DTSC) (510) 540-3732

51. Either when the permit is issued or at any time thereafter until the completion of work or end of the temporary occupancy, the City Engineer may require additional conditions as he finds reasonably necessary for the protection of the right-of-way or highway, for the prevention of undue interference with traffic, or to assure the safety of persons using the right-of-way or highway.

52. The City Engineer reserves the right to adjust the working days and/or working hours as he finds reasonably necessary for the elimination of operational impacts to any school affected by the work allowed under this permit.

53. In accordance with Long Beach Municipal Code Sections 14.08.120(A.5), 14.08.130 & 14.08.320, the City Engineer reserves the right to: revoke the permit if work does not begin within sixty days, refuse to issue a permit if the permittee has previously failed or refused to comply with Chapter 14.08, or may stop any work if it is dangerous, unsafe, or a menace to life, health or property.

**********53 SPECIAL CONDITIONS ISSUED**********

ATTACHMENT 2

BORING LOGS

BORING ID: **MW-21**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/12/2018 FINISH DATE: 2/12/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 17.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1733878 CHECKED BY: Mark LaBrenz

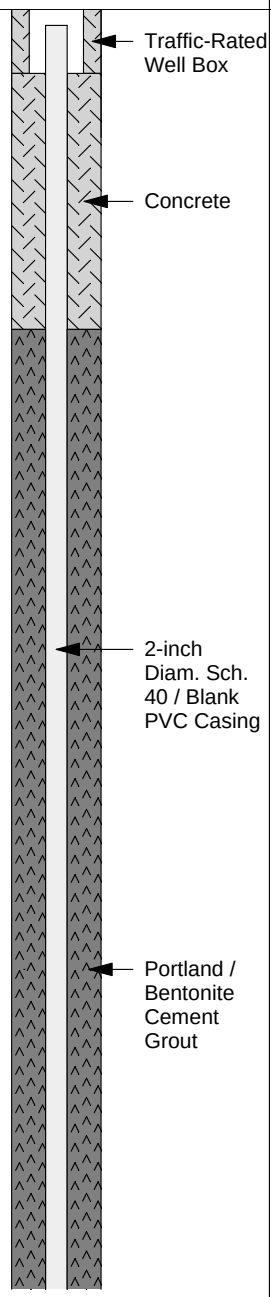
DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7948815

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/70'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]
0.0	9:15						--	Boring cleared to 10 feet bgs with hand auger. No lithology collected from 0 - 20 ft bgs.
							--	No lithology collected from 0 - 20 ft bgs.
-5.0							--	No lithology collected from 0 - 20 ft bgs.
-10.0							--	No lithology collected from 0 - 20 ft bgs.
-15.0							--	No lithology collected from 0 - 20 ft bgs.
-20.0								



WELL CONSTRUCTION DIAGRAM

BORING ID: **MW-21**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/12/2018 FINISH DATE: 2/12/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 17.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1733878 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7948815

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/70'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-20.0	10:28	3 5 5			>15,000		SP	Groundwater encountered at 20 feet bgs. POORLY GRADED SAND [0; 100; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, loose dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-25.0	10:35	5 7 9			3,651		SP	POORLY GRADED SAND [0; 100; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-30.0	10:41	6 9 11			>15,000		SP	POORLY GRADED SAND [0; 100; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-35.0	10:50	6 9 12			12,071		SP-SM	POORLY GRADED SILTY SAND [0; 85; 15; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-40.0									

BORING ID: **MW-21**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/12/2018 FINISH DATE: 2/12/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 17.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1733878 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7948815

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/70'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-40.0	11:00	6 9 11			252		CL	CLAY WITH SAND [0; 10; 0; 90] light brownish gray, 10YR 6/2, slightly moist, medium dense, fine-grained, poorly graded, medium plasticity, slight hydrocarbon odor.	
-45.0	11:13	6			179		SP	POORLY GRADED SAND WITH SILT [0; 90; 10; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
	11:13	7 11			19.4		ML	SILT WITH SAND [0; 10; 90; 0] brown, 10YR 4/3, slightly moist, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
	11:25	6 7 11			120		CL	CLAY WITH SAND [0; 10; 0; 90] light olive gray, 5Y 6/2, slightly moist, medium dense, fine-grained, poorly graded, high plasticity, no hydrocarbon odor. At 53' color change to olive brown, 2.5Y 4/3.	Hydrated Bentonite
-50.0		4 7 9 11			15.9				
		4 7 9			15.6				
	12:39	6 8 10			48				
-55.0	12:45	7 9 13 15			19.8		SP-SM	POORLY GRADED SILTY SAND [0; 85; 15; 0] dark grayish brown, 2.5Y 4/2, saturated, medium dense, fine-grained, poorly graded, non-plastic, no hydrocarbon odor.	# 2/12 Sand
	12:50	4 6 8			5.3		CL	CLAY WITH SAND [0; 10; 0; 90] light yellow brown, 10YR 6/4, saturated, medium dense, fine-grained, poorly graded, high plasticity, no hydrocarbon odor.	2-inch Diam. 0.020" Screened, Sch.40, PVC Casing
		7 9 12			3.8				
-60.0									

BORING ID: **MW-21**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/12/2018 FINISH DATE: 2/12/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 17.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1733878 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7948815

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/70'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-60.0	12:57	8			4.5		ML	SILT [0; 10; 90; 0] brownish yellow, 10YR 6/6, saturated, dense, fine-grained, poorly graded, non-plastic, no hydrocarbon odor.	
		10							
		13							
	13:01	17			4.8				
		6					CL	CLAY WITH SAND [0; 10; 0; 90] yellowish brown, 10YR 5/4, saturated, medium dense, fine-grained, poorly graded, medium plasticity, no hydrocarbon odor.	
		7							
	13:06	10			5.2				
		9							
		9							
-65.0	13:09	17			9.0		SP-SC	POORLY GRADED SAND WITH CLAY [0; 85; 0; 15] light olive brown, 2.5Y 5/6, saturated, dense, fine-grained, poorly graded, non-plastic, no hydrocarbon odor.	Threaded End Plug
		8							
		11							
		17							
	13:15	20			6.7		SP-SM	POORLY GRADED SAND WITH SILT [0; 90; 10; 0] olive brown, 2.5Y 4/3, saturated, medium dense, fine-grained, poorly graded, non-plastic, no hydrocarbon odor.	Portland / Bentonite Cement Grout
		7							
		11							
		14			16.0				
-70.0	13:50	9			4.3		CL	SANDY CLAY [0; 15; 0; 85] dark yellow brown, 10YR 4/4, saturated, medium dense, fine-grained, poorly graded, low plasticity, no hydrocarbon odor.	
		10							
		12							
		17							

BORING ID: **MW-22**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/6/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741356 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953403

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/65'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
0.0	9:30						--	Boring cleared to 10 feet bgs with hand auger. No lithology collected from 0 - 20 ft bgs.	Traffic-Rated Well Box
							--	No lithology collected from 0 - 20 ft bgs.	Concrete
-5.0							--	No lithology collected from 0 - 20 ft bgs.	
-10.0							--	No lithology collected from 0 - 20 ft bgs.	2-inch Diam. Sch. 40 / Blank PVC Casing
-15.0							--	No lithology collected from 0 - 20 ft bgs.	Portland / Bentonite Cement Grout
-20.0							--	No lithology collected from 0 - 20 ft bgs.	

BORING ID: **MW-22**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/6/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741356 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953403

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/65'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-20.0	9:50	7 9 9			>2,000		SP	Groundwater encountered at 20 feet bgs. POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 2.5/1, very moist, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-25.0	10:00	8 11 12			1,093		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-30.0	10:10				1,398		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-35.0	10:20	5 7 9			>2,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, strong hydrocarbon odor.	
-40.0									

BORING ID: **MW-22**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/6/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741356 CHECKED BY: Mark LaBrenz

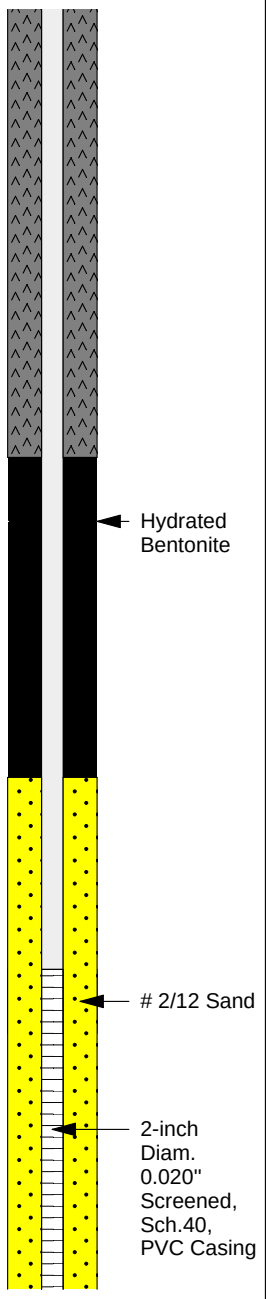
DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953403

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/65'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]
-40.0	10:25	6 8 11			1,070		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.
-45.0	10:32	4 5 7			>2,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.
-50.0	10:44	6 9 13			1,710		SP	POORLY GRADED SAND [15; 85; 0; 0] greenish black, GLEY 1 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.
-55.0	10:48	4 7			>2,000		SP	POORLY GRADED SAND [15; 85; 0; 0] greenish black, GLEY 1 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.
	10:51	10 6 8			1,302			
	10:54	11 4 6			1,280		SP	Color change to very dark gray, 5Y 3/1.
	11:00	8 5			674			
-60.0								



BORING ID: **MW-22**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/6/2018 GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.2 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741356 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953403

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/65'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout, #2/12 Sand, Hydrated Bent.

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-60.0	11:03	5 9 4			261		SP	Color change to olive gray, 5Y 4/2.	
	11:05	6 9 4			514		SP	Color change to dark gray, 5Y 4/1	
	11:10	7 7 5			72				
-65.0		6 7							Threaded End Plug

BORING ID: **AO-02 (Abandoned)**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/7/2018 (Abandoned) GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.0 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741357 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953162

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/76'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
0.0	9:15						--	Boring cleared to 10 feet bgs with hand auger. No lithology collected from 0 - 20 ft bgs.	
							--	No lithology collected from 0 - 20 ft bgs.	
-5.0							--	No lithology collected from 0 - 20 ft bgs.	
-10.0							--	No lithology collected from 0 - 20 ft bgs.	Portland / Bentonite Cement Grout
-15.0							--	No lithology collected from 0 - 20 ft bgs.	
-20.0									

BORING ID: **AO-02 (Abandoned)**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/7/2018 (Abandoned) GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.0 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741357 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953162

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/76'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-20.0	9:26	4 6 8			2.4		SP	Groundwater encountered at 20 feet bgs. POORLY GRADED SAND [0; 100; 0; 0] very dark greenish gray, GLEY 1 5GY 3/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-25.0	9:34	6 9 9			>15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] very dark greenish gray, GLEY 1 5GY 3/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, strong hydrocarbon odor.	
-30.0	9:41	4 7 10			>15,000		SP	POORLY GRADED GRAVELLY SAND [15; 85; 0; 0] dark greenish gray, GLEY 1 10Y 4/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, strong hydrocarbon odor.	
-35.0	9:49	6 8 11			>15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] very dark greenish gray, GLEY 1 5GY 3/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, strong hydrocarbon odor.	
-40.0									

BORING ID: **AO-02 (Abandoned)**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/7/2018 (Abandoned) GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.0 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741357 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953162

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/76'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-40.0	10:08	5 7 9			>15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-45.0	10:13	4 5 7			>15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-50.0	10:18	5 5 8			>15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-55.0	10:26	4 5 7			>15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-60.0									

BORING ID: **AO-02 (Abandoned)**

PROJECT NAME/NO.: 093-Chemoil-003 **LOCATION:** 1352 Wesley Drive

START DATE: 2/5/2018 FINISH DATE: 2/7/2018 (Abandoned) GW DEPTH (FT BGS): 20'

DRILLER: Gregg Drilling & Testing, Inc. SURFACE ELEV. (FT MSL): 18.0 LOGGED BY: Kevin Nguyen

DRILL EQUIP: Hand Auger / Air Knife / CME-95 NORTHING: 118.1741357 CHECKED BY: Mark LaBrenz

DRILL METHOD: Hand Auger / Air Knife / Hollow-Stem Auger EASTING: 33.7953162

SAMPLE METHOD: Split Spoon **BORE ANGLE:** Vertical

CONTRACTOR: Gregg Drilling & Testing, Inc. HOLE DIAM. (IN.)/DEPTH (FT BGS): 8"/76'

MONITORING DEVICE: Mini Rae 3000 PID BACKFILL MATERIAL: 95% Portland/5% Bentonite Cement Grout

DEPTH (FT. BGS)	Time	Blow Counts	SAMPLE ID	RECOVERY %	VOCs (PPM) PID	LITH. SYMBOL	USCS	SOIL DESCRIPTION [% Gravel; % Sand; % Silt; % Clay]	WELL CONSTRUCTION DIAGRAM
-60.0	10:31	4 7 7			>15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-65.0		4 6 8			15,000		SP	POORLY GRADED SAND WITH GRAVEL [5; 95; 0; 0] greenish black, GLEY 1 10Y 2.5/1, saturated, medium dense, fine-grained, poorly graded, non-plastic, hydrocarbon odor.	
-70.0	10:50	6 7			1,851		CL	SANDY CLAY [0; 30; 0; 70] dark brown, 10YR 3/3, saturated, medium dense, fine-grained, poorly graded, low plasticity, hydrocarbon odor.	
	10:55	11 4 6			124				
	11:05	9 4 5			162		CL	CLAY WITH TRACE SAND [0; 5; 0; 95] olive brown, 2.5Y 4/3, saturated, medium dense, fine-grained, poorly graded, high plasticity, hydrocarbon odor.	
	11:10	7 4 7			47				
-75.0		7							

ATTACHMENT 3

SURVEY REPORT

Evans Land Surveying and Mapping

The Source Group, Inc.

former Chemoil Refinery
2020 Walnut Avenue Signal Hill, California

Groundwater Monitoring Well & Boring Locations
February 14, 2018

Designation	Latitude (N)	Longitude (W)	Elevation (ft.)	Description
MW-21	33.7948815	118.1733878	16.90	TOC
			17.29	COVER
			17.2	GS
MW-22	33.7953403	118.1741356	17.60	TOC
			18.19	COVER
			18.2	GS
AO-2	33.7953162	118.1741357	18.0	GS

Legend:

TOC = Top of PVC well Casing
COVER = Existing Well access Cover
GS = Existing Ground Surface

Datum:

Horizontal = North American Datum of 1983 **(NAD'83)**
CCS'83, Zone V (0405) (2000.35 epoch)
Prior well survey, (provided by SGI, Inc.)

Vertical = National Geodetic Vertical Datum of 1929 (**NGVD'29**)
based on existing wells MW-1, MW-10 & MW-11
Prior well survey, (provided by SGI, Inc.)

LICENSED LAND SURVEYOR ★ STEPHEN E. EVANS Expires 6/30/18 No. 7017 ★ STATE OF CALIFORNIA

Stephen E. Evans , PLS 7017
Project Surveyor

56 N 3167 E Idaho Falls, Idaho 83402 **ph (951) 809-4400**

ATTACHMENT 4

WELL DEVELOPMENT FIELD NOTES

WELL GAUGING DATA

Project # 180216-HP1 Date 02-16-18 Client APEX

Site 2020 Walnut Ave, Signal Hill, CA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-22	0755	2					14.82	61.05		
MW-21	1142	2					14.14	61.04		

1/2

WELL DEVELOPMENT DATA SHEET

Project #: 180216 - HP1	Client: APEX
Developer: HP	Date Developed: 02-16-18
Well I.D. MW-21	Well Diameter: (circle one) (2) 3 4 6 ___
Total Well Depth: Before 61.04' After 66.02	Depth to Water: Before 14.14' After 14.85
Reason not developed: —	If Free Product, thickness: —
Additional Notations:	

Volume Conversion Factor (VCF): {12 x (d^2/4) x π} /231
where
12 = in / foot
d = diameter (in.)
π = 3.1416
231 = in 3/gal

Well dia.		VCF
2"	=	0.16
3"	=	0.37
4"	=	0.65
6"	=	1.47
10"	=	4.08
12"	=	6.87

96.90

7.5	X	10	=	75
1 Case Volume		Specified Volumes		gallons

Purging Device:
- ☐ Bailer
- ☐ Suction Pump
- ☐ Electric Submersible
- ☑ Positive Air Displacement

Type of Installed Pump _____
Other equipment used _____

TIME	TEMP (F)	pH	Cond. (mS or (µS))	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1146						Start Surging well
1201						Stop Surging well
1202						Begin Purging well
1211	74.9	7.01	6456	>1000	7.5	
1221	74.2	7.28	6416	>1000	15.0	
1231	74.4	6.87	6412	>1000	22.5	
1240	74.2	6.81	6467	>1000	30.0	Hard Bottom
1250	74.0	6.90	6435	>1000	37.5	
1300	74.4	6.80	6470	>1000	45.0	
1310	73.7	7.23	6390	>1000	52.5	
1320	74.2	7.30	6447	525	60.0	
1330	74.7	6.81	6500	369	67.5	
1340	74.8	6.76	6496	174	75.0	

Did Well Dewater? NO	If yes, note above.	Gallons Actually Evacuated:	120

WELL DEVELOPMENT DATA SHEET

Well I.D. MW-21	PAGE 2 OF 2
Project #: 180216-HP1	Client: ~~APEX~~

TIME	TEMP (F)	pH	Cond. (mS or µS)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1350	75.2	6.70	6510	110	82.5	
1400	75.1	6.67	6530	73	90.0	
1410	75.3	6.71	6508	70	97.5	
1420	75.2	6.73	6501	47	105	
1430	75.2	6.73	6505	43	112.5	
~~1440~~	75.1	6.75	6508	40	120	
		- well developed -				

(1/2)

WELL DEVELOPMENT DATA SHEET

Project #: 180216-HP1	Client: APEX
Developer: HP	Date Developed: 02-16-18
Well I.D. MW-22	Well Diameter: (circle one) (2) 3 4 6 ___
Total Well Depth: Before 61.05' After 65.11'	Depth to Water: Before 14.82' After 14.84'
Reason not developed:	If Free Product, thickness: —
Additional Notations:	

Volume Conversion Factor (VCF):
{12 x (d^2/4) x π} /231
where
12 = in / foot
d = diameter (in.)
π = 3.1416
231 = in 3/gal

Well dia.		VCF
2"	=	0.16
3"	=	0.37
4"	=	0.65
6"	=	1.47
10"	=	4.08
12"	=	6.87

46.23

7.4	X	10	=	74
1 Case Volume		Specified Volumes		gallons

Purging Device:
- ☐ Bailer
- ☐ Suction Pump
- ☐ Electric Submersible
- ☑ Positive Air Displacement

Type of Installed Pump ___
Other equipment used ___

TIME	TEMP (F)	pH	Cond. (mS or (µS))	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
0759						Start surging well
0815						Stop Surging well
0821						Begin Purging well
0830	70.3	6.73	3438	>1000	7.5	
0841	72.2	7.36	3433	>1000	15.0	
0851	71.1	7.34	3450	>1000	22.5	
0902	70.1	6.77	3626	>1000	30.0	Hard Bottom
0911	71.7	7.17	3568	>1000	37.5	
0922	71.4	6.94	3608	>1000	45.0	
0932	71.3	7.17	3581	>1000	52.5	
0943	73.0	6.78	3592	>1000	60.0	
0951	70.1	7.14	3550	>1000	67.5	
1001	71.6	6.96	3634	187	75.0	
Did Well Dewater? No		If yes, note above.		Gallons Actually Evacuated:		135.0

WELL DEVELOPMENT DATA SHEET

Well I.D. MW-22	PAGE 2 OF 2
Project #: 180216-HPI	Client: APEX

TIME	TEMP (F)	pH	Cond. (mS or µS)	TURBIDITY (NTUs)	VOLUME REMOVED:	NOTATIONS:
1011	72.6	6.75	3636	93	82.5	
1021	72.7	6.72	3645	93	90.0	
1031	72.7	6.71	3629	91	97.5	
1041	73.1	6.68	3648	73	105.0	
1051	73.2	6.71	3630	56	112.5	
1101	73.2	6.63	3644	46	120.0	
1111	73.0	6.62	3661	46	127.5	
1121	73.5	6.62	3659	47	135.0	

WELLHEAD INSPECTION CHECKLIST

Client APEX Date 02-16-18

Site Address 2020 Walnut Ave, Signal Hill, CA

Job Number 180216-HP1 Technician HP

Well ID	Well Inspected - No Corrective Action Required	WELL IS SECURABLE BY DESIGN (12"or less)	WELL IS CLEARLY MARKED WITH THE WORDS "MONITORING WELL" (12"or less)	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-22	X	X	X							
MW-21	X	X	X							

NOTES:

ATTACHMENT 5
GROUNDWATER MONITORING FIELD SHEETS

WELL GAUGING DATA

Project # 180220-M51 Date 2/20/18 Client APEX

Site 2020 Walnut Ave signal H.11

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-22	0815	2					14.81	65.21	TOC	
MW-21	0918	2					14.25	65.94	TOC	

WELL MONITORING DATA SHEET

Project #: 180220-MS1	Client: APEX
Sampler: MS	Date: 2/20/18
Well I.D.: MW-21	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 65.94	Depth to Water (DTW): 14.25
Depth to Free Product: 0	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 24.59	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible; Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; (Disposable Bailer); Extraction Port; Dedicated Tubing; Other: _____

8.3 (Gals.) X 3 = 24.9 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

51.61

Time	Temp (°F or (°C))	pH	Cond. (mS/cm or (µS/cm))	Turbidity (NTUs)	Gals. Removed	ORP Observations	DO Observations
0942	23.6	6.79	4830	194	8.5	63.0	0.06
0951	23.6	6.79	4831	14	17	58.3	0.04
0959	23.6	6.79	4845	13	25	56.3	0.04

Did well dewater? Yes (No) Gallons actually evacuated: 25

Sampling Date: 2/20/18 Sampling Time: 1002 Depth to Water: 14.43

Sample I.D.: MW-21 Laboratory: American Analytics

Analyzed for: See COC Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 180220-MS1	Client: APEX
Sampler: MS	Date: 2/20/18
Well I.D.: MW-22	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth (TD): 65.21	Depth to Water (DTW): 14.81
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): (YSI) HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 24.89	

Purge Method: Bailer; Disposable Bailer; Positive Air Displacement; Electric Submersible (E); Waterra; Peristaltic; Extraction Pump; Other_____

Sampling Method: Bailer; Disposable Bailer (D); Extraction Port; Dedicated Tubing; Other: _____

8.1 (Gals.) X 3 = 24.3 Gals.
1 Case Volume | Specified Volumes | Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius² * 0.163

5 - 0.40

Time	Temp (°F or (C))	pH	Cond. (mS/cm or (µS/cm))	Turbidity (NTUs)	Gals. Removed	ORP / ~~Observations~~	DO
0828	22.7	6.68	2830	4	8	62.5	0.10
0836	22.7	6.67	2802	2	16	55.4	0.08
0845	22.8	6.67	2809	2	~~24.5~~ 25	48.2	0.07

Did well dewater? Yes (No) Gallons actually evacuated: ~~24.5~~ 25

Sampling Date: 2/20/18 Sampling Time: 0847 Depth to Water: 14.85

Sample I.D.: MW-22 Laboratory: American Analytics

Analyzed for: See COC Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

Analyzed for: Other:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY

CLIENT **APEX Companies, LLC**

SITE CHEMOIL
2020 Walnut Ave
Signal Hill, CA

CONDUCT ANALYSIS TO DETECT

LAB American Analytics | DHS #

SPECIAL INSTRUCTIONS
Run the following analysis on a 48 Hour TAT: TPHg, TPHd, VOC's, and Oxygenates

SVOC's will be run on a standard TAT

INVOICING:
Invoice APEX Companies, LLC:
Attn: Casey Huff (925) 951-6414
casey.huff@apexcos.com
Send Report to APEX Companies, LLC:
Attn: Casey Huff (925) 951-6414

Global ID:

SAMPLE I.D.	DATE	TIME	MATRIX (S = Soil, W = H2O)	CONTAINERS TOTAL		TPHg, VOC's, and Oxygenates By 8260B (48HR TAT)	TPHd by 8015M (48HR TAT)	SVOC's By 8270 (Standard TAT)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-21	2/20/18	1002	W	5	Various	X	X	X				
MW-22	2/20/18	0847	W	5	Various	X	X	X				

SAMPLING COMPLETED DATE 2/20/18 TIME 1007

SAMPLING PERFORMED BY Todd Murdock

RESULTS NEEDED NO LATER THAN

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Todd Murdock	2/20/18	1130			
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #	

WELLHEAD INSPECTION CHECKLIST

Client APEX Date 2/20/18

Site Address 2020 Walnut Ave Signal Hill

Job Number 180220-MS1 Technician MS

Well ID	Well Inspected - No Corrective Action Required	WELL IS SECURABLE BY DESIGN (12"or less)	WELL IS CLEARLY MARKED WITH THE WORDS "MONITORING WELL" (12"or less)	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
MW-22	✓	✓	✓							
MW-21	✓	✓	✓							

NOTES:

SPH/Purge Water Drum Log Sheet

Site Address: _____

STATUS OF DRUM(S) UPON ARRIVAL						
Date	2/20/18					
Number of drum(s) empty:	0					
Number of drum(s) 1/4 full:	0					
Number of drum(s) 1/2 full:	0					
Number of drum(s) 3/4 full:	1					
Number of drum(s) full:	5					
Total drum(s) on site:	6					
Are the drum(s) properly labeled?	Y					
If any drum(s) are partially or totally filled, what is the first use date:	2/16/19					

If you add any product to an empty or partially filled drum, make sure the drum has at least 20 gals. of water in it first. Just offload purgewater into the drum, or DI water.
The drum MUST be steel AND labeled with the appropriate label.

STATUS OF DRUM(S) UPON DEPARTURE						
Date	2/20/18					
Number of drums empty:	0					
Number of drum(s) 1/4 full:	0					
Number of drum(s) 1/2 full:	0					
Number of drum(s) 3/4 full:	1					
Number of drum(s) full:	6					
Total drum(s) on site:	7					
Are the drum(s) properly labeled?	Y					

LOCATION OF DRUM(S)
Describe location of drum(s):

FINAL STATUS						
Number of new drum(s) left on site this event	1					
Date of inspection:	2/20/18					
Logged by BTS Field Tech:	MS					
Office reviewed by:						

ATTACHMENT 6

LABORATORY ANALYTICAL REPORTS

AMERICAN ANALYTICS

9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

February 27, 2018

Kirsten Duey

The Source Group, Inc. (PH)

3478 Buskirk Ave., Suite 100

Pleasant Hill, CA 94523

Re : Chemoil - Groundwater Monitoring

A596133 / 8B21012

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 02/21/18 11:41 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Viorel Vasile

Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
8260B+OXY+TPHG					
MW21	8B21012-01	Water	2	02/20/18 10:02	02/21/18 11:41
MW22	8B21012-02	Water	2	02/20/18 08:47	02/21/18 11:41
8270C					
MW21	8B21012-01	Water	5	02/20/18 10:02	02/21/18 11:41
MW22	8B21012-02	Water	5	02/20/18 08:47	02/21/18 11:41
Diesel Range Organics 8015M					
MW21	8B21012-01	Water	2	02/20/18 10:02	02/21/18 11:41
MW22	8B21012-02	Water	2	02/20/18 08:47	02/21/18 11:41

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring
Method: Semivolatile Organics by GC/MS

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18
Units: ug/L

Date Sampled:	02/20/18	02/20/18	
Date Prepared:	02/23/18	02/23/18	
Date Analyzed:	02/27/18	02/27/18	
AA ID No:	8B21012-01	8B21012-02	
Client ID No:	MW21	MW22	
Matrix:	Water	Water	
Dilution Factor:	1	1	MRL
8270C (EPA 8270C)			
3,3´-Dichlorobenzidine	<20	<20	20
Acenaphthene	<5.0	<5.0	5.0
Acenaphthylene	<5.0	<5.0	5.0
Aniline	<10	<10	10
Anthracene	<5.0	<5.0	5.0
Azobenzene	<5.0	<5.0	5.0
Benzidine	<20	<20	20
Benzo(a)anthracene	<20	<20	20
Benzo(a)pyrene	<5.0	<5.0	5.0
Benzo(b)fluoranthene	<5.0	<5.0	5.0
Benzo(g,h,i)perylene	<5.0	<5.0	5.0
Benzoic acid	<50	<50	50
Benzo(k)fluoranthene	<5.0	<5.0	5.0
Benzyl alcohol	<10	<10	10
4-Bromophenyl phenyl ether	<5.0	<5.0	5.0
Butyl benzyl phthalate	<10	<10	10
4-Chloro-3-methylphenol	<10	<10	10
4-Chloroaniline	<20	<20	20
Bis(2-chloroethoxy)methane	<5.0	<5.0	5.0
Bis(2-chloroethyl)ether	<5.0	<5.0	5.0
Bis(2-chloroisopropyl)ether	<5.0	<5.0	5.0
2-Chloronaphthalene	<5.0	<5.0	5.0
2-Chlorophenol	<5.0	<5.0	5.0
4-Chlorophenyl phenyl ether	<5.0	<5.0	5.0
Chrysene	<5.0	<5.0	5.0
Dibenzo(a,h)anthracene	<5.0	<5.0	5.0
Dibenzofuran	<5.0	<5.0	5.0

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring
Method: Semivolatile Organics by GC/MS

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18
Units: ug/L

Date Sampled:	02/20/18	02/20/18	
Date Prepared:	02/23/18	02/23/18	
Date Analyzed:	02/27/18	02/27/18	
AA ID No:	8B21012-01	8B21012-02	
Client ID No:	MW21	MW22	
Matrix:	Water	Water	
Dilution Factor:	1	1	MRL
8270C (EPA 8270C) (continued)			
Di-n-butyl phthalate	<100	<100	100
1,2-Dichlorobenzene	<5.0	<5.0	5.0
1,3-Dichlorobenzene	<5.0	<5.0	5.0
1,4-Dichlorobenzene	<5.0	<5.0	5.0
2,4-Dichlorophenol	<5.0	<5.0	5.0
Diethyl phthalate	<40	<40	40
2,4-Dimethylphenol	<20	<20	20
Dimethyl phthalate	<10	<10	10
4,6-Dinitro-2-methylphenol	<20	<20	20
2,4-Dinitrophenol	<20	<20	20
2,6-Dinitrotoluene	<5.0	<5.0	5.0
2,4-Dinitrotoluene	<5.0	<5.0	5.0
Di-n-octyl phthalate	<10	<10	10
1,2-Diphenylhydrazine	<5.0	<5.0	5.0
Bis(2-ethylhexyl)phthalate	<50	<50	50
Fluoranthene	<5.0	<5.0	5.0
Fluorene	<5.0	<5.0	5.0
Hexachlorobenzene	<10	<10	10
Hexachlorobutadiene	<10	<10	10
Hexachlorocyclopentadiene	<10	<10	10
Hexachloroethane	<5.0	<5.0	5.0
Indeno (1,2,3-cd) pyrene	<20	<20	20
Isophorone	<5.0	<5.0	5.0
2-Methylnaphthalene	<5.0	**6.0**	5.0
2-Methylphenol	<10	<10	10
3-Methylphenol	<10	<10	10
4-Methylphenol	<10	<10	10

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring
Method: Semivolatile Organics by GC/MS

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18
Units: ug/L

Date Sampled:	02/20/18	02/20/18	
Date Prepared:	02/23/18	02/23/18	
Date Analyzed:	02/27/18	02/27/18	
AA ID No:	8B21012-01	8B21012-02	
Client ID No:	MW21	MW22	
Matrix:	Water	Water	
Dilution Factor:	1	1	MRL
8270C (EPA 8270C) (continued)			
Naphthalene	<5.0	**12**	5.0
4-Nitroaniline	<20	<20	20
3-Nitroaniline	<20	<20	20
2-Nitroaniline	<20	<20	20
Nitrobenzene	<5.0	<5.0	5.0
2-Nitrophenol	<10	<10	10
4-Nitrophenol	<10	<10	10
N-Nitrosodimethylamine	<5.0	<5.0	5.0
N-Nitrosodiphenylamine	<5.0	<5.0	5.0
N-Nitrosodi-n-propylamine	<10	<10	10
Pentachlorophenol	<20	<20	20
Phenanthrene	<5.0	<5.0	5.0
Phenol	<5.0	<5.0	5.0
Pyrene	<5.0	<5.0	5.0
1,2,4-Trichlorobenzene	<10	<10	10
2,4,5-Trichlorophenol	<10	<10	10
2,4,6-Trichlorophenol	<10	<10	10
Surrogates			**%REC Limits**
2-Fluorobiphenyl	77%	72%	43-145
2-Fluorophenol	31%	35%	21-143
Nitrobenzene-d5	85%	89%	35-142
Phenol-d6	36%	38%	10-135
Terphenyl-dl4	91%	95%	33-148
2,4,6-Tribromophenol	66%	72%	10-150

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring
Method: VOCs, OXY & TPH Gasoline by GC/MS

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18
Units: ug/L

Date Sampled:	02/20/18	02/20/18	
Date Prepared:	02/22/18	02/22/18	
Date Analyzed:	02/22/18	02/22/18	
AA ID No:	8B21012-01	8B21012-02	
Client ID No:	MW21	MW22	
Matrix:	Water	Water	
Dilution Factor:	1	1	MRL
8260B+OXY+TPHG (EPA 8260B)			
Acetone	<10	<10	10
tert-Amyl Methyl Ether (TAME)	<2.0	<2.0	2.0
Benzene	<0.50	<0.50	0.50
Bromobenzene	<0.50	<0.50	0.50
Bromochloromethane	<0.50	<0.50	0.50
Bromodichloromethane	<0.50	<0.50	0.50
Bromoform	<0.50	<0.50	0.50
Bromomethane	<0.50	<0.50	0.50
2-Butanone (MEK)	<10	<10	10
tert-Butyl alcohol (TBA)	<10	<10	10
sec-Butylbenzene	**0.52**	**5.9**	0.50
tert-Butylbenzene	<0.50	<0.50	0.50
n-Butylbenzene	<0.50	**5.1**	0.50
Carbon Disulfide	<0.50	<0.50	0.50
Carbon Tetrachloride	<0.50	<0.50	0.50
Chlorobenzene	<0.50	<0.50	0.50
Chloroethane	<0.50	<0.50	0.50
Chloroform	<0.50	<0.50	0.50
Chloromethane	<0.50	<0.50	0.50
2-Chlorotoluene	<0.50	<0.50	0.50
4-Chlorotoluene	<0.50	<0.50	0.50
1,2-Dibromo-3-chloropropane	<1.0	<1.0	1.0
Dibromochloromethane	<0.50	<0.50	0.50
1,2-Dibromoethane (EDB)	<0.50	<0.50	0.50
Dibromomethane	<0.50	<0.50	0.50
1,3-Dichlorobenzene	<0.50	<0.50	0.50
1,2-Dichlorobenzene	<0.50	<0.50	0.50

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring
Method: VOCs, OXY & TPH Gasoline by GC/MS

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18
Units: ug/L

Date Sampled:	02/20/18	02/20/18	
Date Prepared:	02/22/18	02/22/18	
Date Analyzed:	02/22/18	02/22/18	
AA ID No:	8B21012-01	8B21012-02	
Client ID No:	MW21	MW22	
Matrix:	Water	Water	
Dilution Factor:	1	1	MRL
8260B+OXY+TPHG (EPA 8260B) (continued)			
1,4-Dichlorobenzene	<0.50	<0.50	0.50
Dichlorodifluoromethane (R12)	<0.50	<0.50	0.50
1,1-Dichloroethane	<0.50	<0.50	0.50
1,2-Dichloroethane (EDC)	**1.5**	**1.5**	0.50
1,1-Dichloroethylene	<0.50	<0.50	0.50
trans-1,2-Dichloroethylene	<0.50	<0.50	0.50
cis-1,2-Dichloroethylene	<0.50	**0.55**	0.50
1,2-Dichloropropane	<0.50	<0.50	0.50
2,2-Dichloropropane	<0.50	<0.50	0.50
1,3-Dichloropropane	<0.50	<0.50	0.50
cis-1,3-Dichloropropylene	<0.50	<0.50	0.50
trans-1,3-Dichloropropylene	<0.50	<0.50	0.50
1,1-Dichloropropylene	<0.50	<0.50	0.50
Diisopropyl ether (DIPE)	<2.0	**4.6**	2.0
Ethylbenzene	<0.50	**33**	0.50
Ethyl-tert-Butyl Ether (ETBE)	<2.0	<2.0	2.0
Gasoline Range Organics (GRO)	**140**	**2100**	100
Hexachlorobutadiene	<1.0	<1.0	1.0
2-Hexanone (MBK)	<10	<10	10
Isopropylbenzene	**0.62**	**15**	0.50
4-Isopropyltoluene	<1.0	**6.1**	1.0
Methyl-tert-Butyl Ether (MTBE)	<2.0	<2.0	2.0
Methylene Chloride	<5.0	<5.0	5.0
4-Methyl-2-pentanone (MIBK)	<10	<10	10
Naphthalene	<2.0	**14**	2.0
n-Propylbenzene	<0.50	**18**	0.50

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring
Method: VOCs, OXY & TPH Gasoline by GC/MS

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18
Units: ug/L

Date Sampled:	02/20/18	02/20/18	
Date Prepared:	02/22/18	02/22/18	
Date Analyzed:	02/22/18	02/22/18	
AA ID No:	8B21012-01	8B21012-02	
Client ID No:	MW21	MW22	
Matrix:	Water	Water	
Dilution Factor:	1	1	MRL
8260B+OXY+TPHG (EPA 8260B) (continued)			
Styrene	<0.50	<0.50	0.50
1,1,1,2-Tetrachloroethane	<0.50	<0.50	0.50
1,1,2,2-Tetrachloroethane	<0.50	<0.50	0.50
Tetrachloroethylene (PCE)	<0.50	<0.50	0.50
Toluene	<0.50	<0.50	0.50
1,2,3-Trichlorobenzene	<0.50	<0.50	0.50
1,2,4-Trichlorobenzene	<0.50	<0.50	0.50
1,1,1-Trichloroethane	<0.50	<0.50	0.50
1,1,2-Trichloroethane	<0.50	<0.50	0.50
Trichloroethylene (TCE)	<0.50	<0.50	0.50
Trichlorofluoromethane (R11)	<0.50	<0.50	0.50
1,2,3-Trichloropropane	<0.50	<0.50	0.50
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.50	<0.50	0.50
1,3,5-Trimethylbenzene	<0.50	**17**	0.50
1,2,4-Trimethylbenzene	<0.50	**43**	0.50
Vinyl chloride	<0.50	**2.4**	0.50
o-Xylene	<0.50	**3.2**	0.50
m,p-Xylenes	<1.0	**57**	1.0

Surrogates			**%REC Limits**
4-Bromofluorobenzene	105%	95%	70-140
Dibromofluoromethane	115%	109%	70-140
Toluene-d8	100%	100%	70-140

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring
Method: Diesel Range Organics by GC/FID

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18
Units: mg/L

Date Sampled:	02/20/18	02/20/18	
Date Prepared:	02/22/18	02/22/18	
Date Analyzed:	02/22/18	02/22/18	
AA ID No:	8B21012-01	8B21012-02	
Client ID No:	MW21	MW22	
Matrix:	Water	Water	
Dilution Factor:	5	1	MRL
Diesel Range Organics 8015M (EPA 8015M)			
Diesel Range Organics as Diesel	**4.7**	**3.9**	0.10
Surrogates			**%REC Limits**
o-Terphenyl	117%	67%	50-150

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Semivolatile Organics by GC/MS - Quality Control										
Batch B8B2303 - EPA 3510C_MS										
Blank (B8B2303-BLK1)				Prepared: 02/23/18 Analyzed: 02/27/18						
3,3´-Dichlorobenzidine	<20	20	ug/L							
Acenaphthene	<5.0	5.0	ug/L							
Acenaphthylene	<5.0	5.0	ug/L							
Aniline	<10	10	ug/L							
Anthracene	<5.0	5.0	ug/L							
Azobenzene	<5.0	5.0	ug/L							
Benzidine	<20	20	ug/L							
Benzo(a)anthracene	<20	20	ug/L							
Benzo(a)pyrene	<5.0	5.0	ug/L							
Benzo(b)fluoranthene	<5.0	5.0	ug/L							
Benzo(g,h,i)perylene	<5.0	5.0	ug/L							
Benzoic acid	<50	50	ug/L							
Benzo(k)fluoranthene	<5.0	5.0	ug/L							
Benzyl alcohol	<10	10	ug/L							
4-Bromophenyl phenyl ether	<5.0	5.0	ug/L							
Butyl benzyl phthalate	<10	10	ug/L							
4-Chloro-3-methylphenol	<10	10	ug/L							
4-Chloroaniline	<20	20	ug/L							
Bis(2-chloroethoxy)methane	<5.0	5.0	ug/L							
Bis(2-chloroethyl)ether	<5.0	5.0	ug/L							
Bis(2-chloroisopropyl)ether	<5.0	5.0	ug/L							
2-Chloronaphthalene	<5.0	5.0	ug/L							
2-Chlorophenol	<5.0	5.0	ug/L							
4-Chlorophenyl phenyl ether	<5.0	5.0	ug/L							
Chrysene	<5.0	5.0	ug/L							
Dibenzo(a,h)anthracene	<5.0	5.0	ug/L							
Dibenzofuran	<5.0	5.0	ug/L							
Di-n-butyl phthalate	<100	100	ug/L							
1,2-Dichlorobenzene	<5.0	5.0	ug/L							
1,3-Dichlorobenzene	<5.0	5.0	ug/L							
1,4-Dichlorobenzene	<5.0	5.0	ug/L							

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Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Semivolatile Organics by GC/MS - Quality Control										
Batch B8B2303 - EPA 3510C_MS										
Blank (B8B2303-BLK1) Continued				Prepared: 02/23/18 Analyzed: 02/27/18						
2,4-Dichlorophenol	<5.0	5.0	ug/L							
Diethyl phthalate	<40	40	ug/L							
2,4-Dimethylphenol	<20	20	ug/L							
Dimethyl phthalate	<10	10	ug/L							
4,6-Dinitro-2-methylphenol	<20	20	ug/L							
2,4-Dinitrophenol	<20	20	ug/L							
2,6-Dinitrotoluene	<5.0	5.0	ug/L							
2,4-Dinitrotoluene	<5.0	5.0	ug/L							
Di-n-octyl phthalate	<10	10	ug/L							
1,2-Diphenylhydrazine	<5.0	5.0	ug/L							
Bis(2-ethylhexyl)phthalate	<50	50	ug/L							
Fluoranthene	<5.0	5.0	ug/L							
Fluorene	<5.0	5.0	ug/L							
Hexachlorobenzene	<10	10	ug/L							
Hexachlorobutadiene	<10	10	ug/L							
Hexachlorocyclopentadiene	<10	10	ug/L							
Hexachloroethane	<5.0	5.0	ug/L							
Indeno (1,2,3-cd) pyrene	<20	20	ug/L							
Isophorone	<5.0	5.0	ug/L							
2-Methylnaphthalene	<5.0	5.0	ug/L							
2-Methylphenol	<10	10	ug/L							
3-Methylphenol	<10	10	ug/L							
4-Methylphenol	<10	10	ug/L							
Naphthalene	<5.0	5.0	ug/L							
4-Nitroaniline	<20	20	ug/L							
3-Nitroaniline	<20	20	ug/L							
2-Nitroaniline	<20	20	ug/L							
Nitrobenzene	<5.0	5.0	ug/L							
2-Nitrophenol	<10	10	ug/L							
4-Nitrophenol	<10	10	ug/L							
N-Nitrosodimethylamine	<5.0	5.0	ug/L							

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Semivolatile Organics by GC/MS - Quality Control										
Batch B8B2303 - EPA 3510C_MS										
Blank (B8B2303-BLK1) Continued				Prepared: 02/23/18 Analyzed: 02/27/18						
N-Nitrosodiphenylamine	<5.0	5.0	ug/L							
N-Nitrosodi-n-propylamine	<10	10	ug/L							
Pentachlorophenol	<20	20	ug/L							
Phenanthrene	<5.0	5.0	ug/L							
Phenol	<5.0	5.0	ug/L							
Pyrene	<5.0	5.0	ug/L							
1,2,4-Trichlorobenzene	<10	10	ug/L							
2,4,5-Trichlorophenol	<10	10	ug/L							
2,4,6-Trichlorophenol	<10	10	ug/L							
Surrogate: 2-Fluorobiphenyl	*20.9*		*ug/L*	*25*		*83.6*	*43-145*			
Surrogate: 2-Fluorophenol	*21.7*		*ug/L*	*50*		*43.3*	*21-143*			
Surrogate: Nitrobenzene-d5	*21.6*		*ug/L*	*25*		*86.5*	*35-142*			
Surrogate: Phenol-d6	*14.5*		*ug/L*	*50*		*29.0*	*10-135*			
Surrogate: Terphenyl-dl4	*18.9*		*ug/L*	*25*		*75.6*	*33-148*			
Surrogate: 2,4,6-Tribromophenol	*31.4*		*ug/L*	*50*		*62.8*	*10-150*			
LCS (B8B2303-BS1)				Prepared: 02/23/18 Analyzed: 02/27/18						
Acenaphthene	**19.0**	5.0	ug/L	30		63.3	20-93			
Acenaphthylene	**18.3**	5.0	ug/L	30		61.0	49-114			
Anthracene	**20.6**	5.0	ug/L	30		68.6	41-121			
Benzo(a)anthracene	**20.8**	20	ug/L	30		69.5	53-123			
Benzo(a)pyrene	**20.1**	5.0	ug/L	30		67.0	17-163			
Benzo(b)fluoranthene	**19.7**	5.0	ug/L	30		65.6	33-137			
Benzo(g,h,i)perylene	**20.7**	5.0	ug/L	30		69.1	50-125			
Benzo(k)fluoranthene	**19.4**	5.0	ug/L	30		64.7	54-126			
Butyl benzyl phthalate	**21.9**	10	ug/L	30		73.0	19-139			
4-Chloro-3-methylphenol	**20.6**	10	ug/L	30		68.6	22-147			
Bis(2-chloroethyl)ether	**19.1**	5.0	ug/L	30		63.6	26-122			
2-Chloronaphthalene	**20.5**	5.0	ug/L	30		68.3	15-105			
4-Chlorophenyl phenyl ether	**19.9**	5.0	ug/L	30		66.2	41-128			
Chrysene	**22.8**	5.0	ug/L	30		76.0	57-118			
Dibenzo(a,h)anthracene	**23.9**	5.0	ug/L	30		79.7	47-138			

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Semivolatile Organics by GC/MS - Quality Control										
Batch B8B2303 - EPA 3510C_MS										
LCS (B8B2303-BS1) Continued				Prepared: 02/23/18 Analyzed: 02/27/18						
Dibenzofuran	**20.6**	5.0	ug/L	30		68.8	40-115			
1,4-Dichlorobenzene	**18.2**	5.0	ug/L	30		60.6	26-105			
2,4-Dichlorophenol	**19.7**	5.0	ug/L	30		65.6	15-110			
Di-n-octyl phthalate	**24.8**	10	ug/L	30		82.8	4-146			
Bis(2-ethylhexyl)phthalate	**22.6**	50	ug/L	30		75.3	20-210			
Fluoranthene	**22.5**	5.0	ug/L	30		75.1	47-125			
Fluorene	**19.8**	5.0	ug/L	30		65.9	27-93			
Hexachlorobenzene	**19.4**	10	ug/L	30		64.8	2-152			
Hexachlorobutadiene	**18.0**	10	ug/L	30		60.1	24-116			
Hexachloroethane	**18.0**	5.0	ug/L	30		60.2	11-97			
Indeno (1,2,3-cd) pyrene	**25.7**	20	ug/L	30		85.8	49-139			
Isophorone	**20.6**	5.0	ug/L	30		68.8	21-196			
Naphthalene	**19.3**	5.0	ug/L	30		64.3	25-121			
Nitrobenzene	**20.3**	5.0	ug/L	30		67.7	38-133			
2-Nitrophenol	**20.1**	10	ug/L	30		66.9	2-163			
N-Nitrosodi-n-propylamine	**23.4**	10	ug/L	30		78.1	2-230			
Pentachlorophenol	**20.8**	20	ug/L	30		69.5	14-176			
Phenanthrene	**19.8**	5.0	ug/L	30		66.1	56-108			
Phenol	**9.26**	5.0	ug/L	30		30.9	5-112			
Pyrene	**17.7**	5.0	ug/L	30		58.9	13-111			
1,2,4-Trichlorobenzene	**18.8**	10	ug/L	30		62.5	15-115			
2,4,6-Trichlorophenol	**19.9**	10	ug/L	30		66.3	15-110			
Surrogate: 2-Fluorobiphenyl	*19.2*		*ug/L*	*25*		*76.6*	*43-145*			
Surrogate: 2-Fluorophenol	*22.2*		*ug/L*	*50*		*44.5*	*21-143*			
Surrogate: Nitrobenzene-d5	*20.1*		*ug/L*	*25*		*80.5*	*35-142*			
Surrogate: Phenol-d6	*14.1*		*ug/L*	*50*		*28.2*	*10-135*			
Surrogate: Terphenyl-dl4	*18.0*		*ug/L*	*25*		*72.1*	*33-148*			
Surrogate: 2,4,6-Tribromophenol	*34.2*		*ug/L*	*50*		*68.3*	*10-150*			
LCS Dup (B8B2303-BSD1)				Prepared: 02/23/18 Analyzed: 02/27/18						
Acenaphthene	**22.2**	5.0	ug/L	30		74.0	20-93	15.5	30	
Acenaphthylene	**21.0**	5.0	ug/L	30		70.0	49-114	13.7	30	

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Semivolatile Organics by GC/MS - Quality Control										
Batch B8B2303 - EPA 3510C_MS										
LCS Dup (B8B2303-BSD1) Continued				Prepared: 02/23/18 Analyzed: 02/27/18						
Anthracene	**23.0**	5.0	ug/L	30		76.8	41-121	11.3	30	
Benzo(a)anthracene	**24.7**	20	ug/L	30		82.4	53-123	17.0	30	
Benzo(a)pyrene	**23.2**	5.0	ug/L	30		77.2	17-163	14.2	30	
Benzo(b)fluoranthene	**22.7**	5.0	ug/L	30		75.6	33-137	14.2	30	
Benzo(g,h,i)perylene	**25.2**	5.0	ug/L	30		83.9	50-125	19.4	30	
Benzo(k)fluoranthene	**21.4**	5.0	ug/L	30		71.2	54-126	9.66	30	
Butyl benzyl phthalate	**26.8**	10	ug/L	30		89.4	19-139	20.1	30	
4-Chloro-3-methylphenol	**23.7**	10	ug/L	30		79.0	22-147	14.1	30	
Bis(2-chloroethyl)ether	**22.5**	5.0	ug/L	30		74.9	26-122	16.3	30	
2-Chloronaphthalene	**23.6**	5.0	ug/L	30		78.6	15-105	14.0	30	
4-Chlorophenyl phenyl ether	**23.4**	5.0	ug/L	30		77.9	41-128	16.3	30	
Chrysene	**27.4**	5.0	ug/L	30		91.4	57-118	18.4	30	
Dibenzo(a,h)anthracene	**28.7**	5.0	ug/L	30		95.6	47-138	18.2	30	
Dibenzofuran	**23.3**	5.0	ug/L	30		77.7	40-115	12.1	30	
1,4-Dichlorobenzene	**21.2**	5.0	ug/L	30		70.5	26-105	15.2	30	
2,4-Dichlorophenol	**21.8**	5.0	ug/L	30		72.7	15-110	10.3	30	
Di-n-octyl phthalate	**28.7**	10	ug/L	30		95.5	4-146	14.3	30	
Bis(2-ethylhexyl)phthalate	**26.7**	50	ug/L	30		89.1	20-210	16.9	30	
Fluoranthene	**25.4**	5.0	ug/L	30		84.7	47-125	12.0	30	
Fluorene	**23.1**	5.0	ug/L	30		77.1	27-93	15.8	30	
Hexachlorobenzene	**22.8**	10	ug/L	30		75.9	2-152	15.9	30	
Hexachlorobutadiene	**21.2**	10	ug/L	30		70.7	24-116	16.2	30	
Hexachloroethane	**20.7**	5.0	ug/L	30		68.9	11-97	13.6	30	
Indeno (1,2,3-cd) pyrene	**31.6**	20	ug/L	30		105	49-139	20.4	30	
Isophorone	**23.2**	5.0	ug/L	30		77.5	21-196	11.8	30	
Naphthalene	**22.0**	5.0	ug/L	30		73.4	25-121	13.3	30	
Nitrobenzene	**22.9**	5.0	ug/L	30		76.3	38-133	11.9	30	
2-Nitrophenol	**21.9**	10	ug/L	30		72.9	2-163	8.49	30	
N-Nitrosodi-n-propylamine	**27.3**	10	ug/L	30		90.9	2-230	15.2	30	
Pentachlorophenol	**22.1**	20	ug/L	30		73.6	14-176	5.73	30	
Phenanthrene	**22.8**	5.0	ug/L	30		76.0	56-108	13.9	30	

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Semivolatile Organics by GC/MS - Quality Control										
Batch B8B2303 - EPA 3510C_MS										
LCS Dup (B8B2303-BSD1) Continued				Prepared: 02/23/18 Analyzed: 02/27/18						
Phenol	**10.4**	5.0	ug/L	30		34.7	5-112	11.6	30	
Pyrene	**21.4**	5.0	ug/L	30		71.3	13-111	19.2	30	
1,2,4-Trichlorobenzene	**21.0**	10	ug/L	30		70.2	15-115	11.5	30	
2,4,6-Trichlorophenol	**22.5**	10	ug/L	30		75.1	15-110	12.5	30	
Surrogate: 2-Fluorobiphenyl	*21.3*		*ug/L*	*25*		*85.1*	*43-145*			
Surrogate: 2-Fluorophenol	*22.9*		*ug/L*	*50*		*45.9*	*21-143*			
Surrogate: Nitrobenzene-d5	*22.1*		*ug/L*	*25*		*88.6*	*35-142*			
Surrogate: Phenol-d6	*13.8*		*ug/L*	*50*		*27.5*	*10-135*			
Surrogate: Terphenyl-dl4	*21.8*		*ug/L*	*25*		*87.0*	*33-148*			
Surrogate: 2,4,6-Tribromophenol	*36.7*		*ug/L*	*50*		*73.4*	*10-150*			
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Blank (B8B2227-BLK1)				Prepared & Analyzed: 02/22/18						
Acetone	<10	10	ug/L							
tert-Amyl Methyl Ether (TAME)	<2.0	2.0	ug/L							
Benzene	<0.50	0.50	ug/L							
Bromobenzene	<0.50	0.50	ug/L							
Bromochloromethane	<0.50	0.50	ug/L							
Bromodichloromethane	<0.50	0.50	ug/L							
Bromoform	<0.50	0.50	ug/L							
Bromomethane	<0.50	0.50	ug/L							
2-Butanone (MEK)	<10	10	ug/L							
tert-Butyl alcohol (TBA)	<10	10	ug/L							
sec-Butylbenzene	<0.50	0.50	ug/L							
tert-Butylbenzene	<0.50	0.50	ug/L							
n-Butylbenzene	<0.50	0.50	ug/L							
Carbon Disulfide	<0.50	0.50	ug/L							
Carbon Tetrachloride	<0.50	0.50	ug/L							
Chlorobenzene	<0.50	0.50	ug/L							
Chloroethane	<0.50	0.50	ug/L							
Chloroform	<0.50	0.50	ug/L							

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Blank (B8B2227-BLK1) Continued				Prepared & Analyzed: 02/22/18						
Chloromethane	<0.50	0.50	ug/L							
2-Chlorotoluene	<0.50	0.50	ug/L							
4-Chlorotoluene	<0.50	0.50	ug/L							
1,2-Dibromo-3-chloropropane	<1.0	1.0	ug/L							
Dibromochloromethane	<0.50	0.50	ug/L							
1,2-Dibromoethane (EDB)	<0.50	0.50	ug/L							
Dibromomethane	<0.50	0.50	ug/L							
1,3-Dichlorobenzene	<0.50	0.50	ug/L							
1,2-Dichlorobenzene	<0.50	0.50	ug/L							
1,4-Dichlorobenzene	<0.50	0.50	ug/L							
Dichlorodifluoromethane (R12)	<0.50	0.50	ug/L							
1,1-Dichloroethane	<0.50	0.50	ug/L							
1,2-Dichloroethane (EDC)	<0.50	0.50	ug/L							
1,1-Dichloroethylene	<0.50	0.50	ug/L							
trans-1,2-Dichloroethylene	<0.50	0.50	ug/L							
cis-1,2-Dichloroethylene	<0.50	0.50	ug/L							
1,2-Dichloropropane	<0.50	0.50	ug/L							
2,2-Dichloropropane	<0.50	0.50	ug/L							
1,3-Dichloropropane	<0.50	0.50	ug/L							
cis-1,3-Dichloropropylene	<0.50	0.50	ug/L							
trans-1,3-Dichloropropylene	<0.50	0.50	ug/L							
1,1-Dichloropropylene	<0.50	0.50	ug/L							
Diisopropyl ether (DIPE)	<2.0	2.0	ug/L							
Ethylbenzene	<0.50	0.50	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<2.0	2.0	ug/L							
Gasoline Range Organics (GRO)	<100	100	ug/L							
Hexachlorobutadiene	<1.0	1.0	ug/L							
2-Hexanone (MBK)	<10	10	ug/L							
Isopropylbenzene	<0.50	0.50	ug/L							
4-Isopropyltoluene	<1.0	1.0	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<2.0	2.0	ug/L							

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Blank (B8B2227-BLK1) Continued				Prepared & Analyzed: 02/22/18						
Methylene Chloride	<5.0	5.0	ug/L							
4-Methyl-2-pentanone (MIBK)	<10	10	ug/L							
Naphthalene	<2.0	2.0	ug/L							
n-Propylbenzene	<0.50	0.50	ug/L							
Styrene	<0.50	0.50	ug/L							
1,1,1,2-Tetrachloroethane	<0.50	0.50	ug/L							
1,1,2,2-Tetrachloroethane	<0.50	0.50	ug/L							
Tetrachloroethylene (PCE)	<0.50	0.50	ug/L							
Toluene	<0.50	0.50	ug/L							
1,2,3-Trichlorobenzene	<0.50	0.50	ug/L							
1,2,4-Trichlorobenzene	<0.50	0.50	ug/L							
1,1,1-Trichloroethane	<0.50	0.50	ug/L							
1,1,2-Trichloroethane	<0.50	0.50	ug/L							
Trichloroethylene (TCE)	<0.50	0.50	ug/L							
Trichlorofluoromethane (R11)	<0.50	0.50	ug/L							
1,2,3-Trichloropropane	<0.50	0.50	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.50	0.50	ug/L							
1,3,5-Trimethylbenzene	<0.50	0.50	ug/L							
1,2,4-Trimethylbenzene	<0.50	0.50	ug/L							
Vinyl chloride	<0.50	0.50	ug/L							
o-Xylene	<0.50	0.50	ug/L							
m,p-Xylenes	<1.0	1.0	ug/L							
Surrogate: 4-Bromofluorobenzene	*53.5*		*ug/L*	*50*		*107*	*70-140*			
Surrogate: Dibromofluoromethane	*55.2*		*ug/L*	*50*		*110*	*70-140*			
Surrogate: Toluene-d8	*53.6*		*ug/L*	*50*		*107*	*70-140*			
LCS (B8B2227-BS1)				Prepared: 02/22/18 Analyzed: 02/23/18						
Acetone	**23.7**	10	ug/L	20		119	70-130			
tert-Amyl Methyl Ether (TAME)	**18.6**	2.0	ug/L	20		93.1	70-130			
Benzene	**20.3**	0.50	ug/L	20		102	75-125			
Bromobenzene	**20.2**	0.50	ug/L	20		101	70-130			

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
LCS (B8B2227-BS1) Continued				Prepared: 02/22/18 Analyzed: 02/23/18						
Bromochloromethane	**20.0**	0.50	ug/L	20		99.8	70-130			
Bromodichloromethane	**18.3**	0.50	ug/L	20		91.3	75-125			
Bromoform	**16.8**	0.50	ug/L	20		84.1	75-125			
Bromomethane	**22.3**	0.50	ug/L	20		111	75-125			
2-Butanone (MEK)	**17.6**	10	ug/L	20		87.8	70-130			
tert-Butyl alcohol (TBA)	**82.5**	10	ug/L	100		82.5	70-130			
sec-Butylbenzene	**21.8**	0.50	ug/L	20		109	70-130			
tert-Butylbenzene	**21.1**	0.50	ug/L	20		106	70-130			
n-Butylbenzene	**20.7**	0.50	ug/L	20		104	70-130			
Carbon Disulfide	**16.3**	0.50	ug/L	20		81.4	70-130			
Carbon Tetrachloride	**21.7**	0.50	ug/L	20		109	75-125			
Chlorobenzene	**19.4**	0.50	ug/L	20		97.0	75-125			
Chloroethane	**21.1**	0.50	ug/L	20		105	75-125			
Chloroform	**18.2**	0.50	ug/L	20		90.8	75-125			
Chloromethane	**20.4**	0.50	ug/L	20		102	65-125			
2-Chlorotoluene	**20.1**	0.50	ug/L	20		100	70-130			
4-Chlorotoluene	**20.2**	0.50	ug/L	20		101	70-130			
1,2-Dibromo-3-chloropropane	**14.0**	1.0	ug/L	20		70.2	70-130			
Dibromochloromethane	**18.9**	0.50	ug/L	20		94.4	75-125			
1,2-Dibromoethane (EDB)	**17.8**	0.50	ug/L	20		89.2	70-130			
Dibromomethane	**16.6**	0.50	ug/L	20		83.1	70-130			
1,3-Dichlorobenzene	**18.8**	0.50	ug/L	20		94.2	70-130			
1,2-Dichlorobenzene	**19.6**	0.50	ug/L	20		97.9	70-130			
1,4-Dichlorobenzene	**18.7**	0.50	ug/L	20		93.4	75-125			
Dichlorodifluoromethane (R12)	**15.4**	0.50	ug/L	20		77.2	70-130			
1,1-Dichloroethane	**16.8**	0.50	ug/L	20		84.2	70-125			
1,2-Dichloroethane (EDC)	**16.6**	0.50	ug/L	20		83.0	75-125			
1,1-Dichloroethylene	**20.3**	0.50	ug/L	20		102	70-130			
trans-1,2-Dichloroethylene	**17.4**	0.50	ug/L	20		87.0	75-125			
cis-1,2-Dichloroethylene	**20.8**	0.50	ug/L	20		104	75-125			
1,2-Dichloropropane	**19.7**	0.50	ug/L	20		98.3	75-130			

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
LCS (B8B2227-BS1) Continued				Prepared: 02/22/18 Analyzed: 02/23/18						
2,2-Dichloropropane	**18.3**	0.50	ug/L	20		91.4	70-130			
1,3-Dichloropropane	**19.6**	0.50	ug/L	20		98.1	70-130			
cis-1,3-Dichloropropylene	**20.2**	0.50	ug/L	20		101	75-125			
trans-1,3-Dichloropropylene	**18.9**	0.50	ug/L	20		94.6	70-130			
1,1-Dichloropropylene	**20.8**	0.50	ug/L	20		104	70-130			
Diisopropyl ether (DIPE)	**19.4**	2.0	ug/L	20		96.8	70-130			
Ethylbenzene	**22.3**	0.50	ug/L	20		112	75-125			
Ethyl-tert-Butyl Ether (ETBE)	**19.2**	2.0	ug/L	20		95.9	70-130			
Gasoline Range Organics (GRO)	**483**	100	ug/L	500		96.6	70-130			
Hexachlorobutadiene	**18.6**	1.0	ug/L	20		92.9	70-130			
2-Hexanone (MBK)	**19.1**	10	ug/L	20		95.6	70-130			
Isopropylbenzene	**22.8**	0.50	ug/L	20		114	70-130			
4-Isopropyltoluene	**21.4**	1.0	ug/L	20		107	70-130			
Methyl-tert-Butyl Ether (MTBE)	**35.0**	2.0	ug/L	40		87.6	75-125			
Methylene Chloride	**19.2**	5.0	ug/L	20		95.9	75-130			
4-Methyl-2-pentanone (MIBK)	**20.0**	10	ug/L	20		100	70-130			
Naphthalene	**18.2**	2.0	ug/L	20		91.0	70-130			
n-Propylbenzene	**21.7**	0.50	ug/L	20		108	70-130			
Styrene	**21.0**	0.50	ug/L	20		105	70-130			
1,1,1,2-Tetrachloroethane	**20.2**	0.50	ug/L	20		101	70-130			
1,1,2,2-Tetrachloroethane	**15.6**	0.50	ug/L	20		77.8	70-135			
Tetrachloroethylene (PCE)	**21.3**	0.50	ug/L	20		106	75-125			
Toluene	**20.9**	0.50	ug/L	20		105	75-125			
1,2,3-Trichlorobenzene	**17.6**	0.50	ug/L	20		88.1	70-130			
1,2,4-Trichlorobenzene	**19.0**	0.50	ug/L	20		95.2	70-130			
1,1,1-Trichloroethane	**20.6**	0.50	ug/L	20		103	75-125			
1,1,2-Trichloroethane	**18.1**	0.50	ug/L	20		90.4	75-125			
Trichloroethylene (TCE)	**20.8**	0.50	ug/L	20		104	75-125			
Trichlorofluoromethane (R11)	**24.0**	0.50	ug/L	20		120	70-130			
1,2,3-Trichloropropane	**15.8**	0.50	ug/L	20		79.0	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**20.4**	0.50	ug/L	20		102	70-130			

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
LCS (B8B2227-BS1) Continued				Prepared: 02/22/18 Analyzed: 02/23/18						
1,3,5-Trimethylbenzene	**22.2**	0.50	ug/L	20		111	70-130			
1,2,4-Trimethylbenzene	**22.1**	0.50	ug/L	20		111	70-130			
Vinyl chloride	**22.5**	0.50	ug/L	20		112	75-125			
o-Xylene	**20.6**	0.50	ug/L	20		103	75-125			
m,p-Xylenes	**42.5**	1.0	ug/L	40		106	70-130			
Surrogate: 4-Bromofluorobenzene	*50.5*		*ug/L*	*50*		*101*	*70-140*			
Surrogate: Dibromofluoromethane	*50.6*		*ug/L*	*50*		*101*	*70-140*			
Surrogate: Toluene-d8	*53.8*		*ug/L*	*50*		*108*	*70-140*			
Matrix Spike (B8B2227-MS1)			**Source: 8B14017-03** Prepared & Analyzed: 02/22/18							
Acetone	**19.9**	10	ug/L	20		99.4	70-130			
tert-Amyl Methyl Ether (TAME)	**18.6**	2.0	ug/L	20		93.1	70-130			
Benzene	**18.0**	0.50	ug/L	20		90.2	70-130			
Bromobenzene	**20.1**	0.50	ug/L	20		101	70-130			
Bromochloromethane	**18.1**	0.50	ug/L	20		90.5	70-130			
Bromodichloromethane	**16.9**	0.50	ug/L	20		84.7	70-130			
Bromoform	**18.2**	0.50	ug/L	20		90.8	70-130			
Bromomethane	**18.8**	0.50	ug/L	20		94.2	70-130			
2-Butanone (MEK)	**17.2**	10	ug/L	20		85.8	70-130			
tert-Butyl alcohol (TBA)	**98.2**	10	ug/L	100		98.2	70-130			
sec-Butylbenzene	**20.8**	0.50	ug/L	20		104	70-130			
tert-Butylbenzene	**20.6**	0.50	ug/L	20		103	70-130			
n-Butylbenzene	**20.0**	0.50	ug/L	20		100	70-130			
Carbon Disulfide	**15.6**	0.50	ug/L	20		77.8	70-130			
Carbon Tetrachloride	**19.6**	0.50	ug/L	20		98.2	70-130			
Chlorobenzene	**19.3**	0.50	ug/L	20		96.3	70-130			
Chloroethane	**20.3**	0.50	ug/L	20		101	70-130			
Chloroform	**16.7**	0.50	ug/L	20		83.5	70-130			
Chloromethane	**17.3**	0.50	ug/L	20		86.3	70-130			
2-Chlorotoluene	**19.3**	0.50	ug/L	20		96.6	70-130			
4-Chlorotoluene	**19.7**	0.50	ug/L	20		98.4	70-130			
1,2-Dibromo-3-chloropropane	**15.6**	1.0	ug/L	20		78.0	70-130			

Viorel Vasile
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LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Matrix Spike (B8B2227-MS1) Continued Source: 8B14017-03 Prepared & Analyzed: 02/22/18										
Dibromochloromethane	**18.3**	0.50	ug/L	20		91.7	70-130			
1,2-Dibromoethane (EDB)	**17.8**	0.50	ug/L	20		88.9	70-130			
Dibromomethane	**16.1**	0.50	ug/L	20		80.6	70-130			
1,3-Dichlorobenzene	**18.4**	0.50	ug/L	20		92.2	70-130			
1,2-Dichlorobenzene	**18.8**	0.50	ug/L	20		94.0	70-130			
1,4-Dichlorobenzene	**18.2**	0.50	ug/L	20		91.1	70-130			
Dichlorodifluoromethane (R12)	**15.9**	0.50	ug/L	20		79.6	70-130			
1,1-Dichloroethane	**20.3**	0.50	ug/L	20		102	70-130			
1,2-Dichloroethane (EDC)	**16.9**	0.50	ug/L	20		84.7	70-130			
1,1-Dichloroethylene	**17.0**	0.50	ug/L	20		85.0	70-130			
trans-1,2-Dichloroethylene	**20.5**	0.50	ug/L	20		102	70-130			
cis-1,2-Dichloroethylene	**19.1**	0.50	ug/L	20		95.6	70-130			
1,2-Dichloropropane	**17.9**	0.50	ug/L	20		89.3	70-130			
2,2-Dichloropropane	**18.1**	0.50	ug/L	20		90.6	70-130			
1,3-Dichloropropane	**16.9**	0.50	ug/L	20		84.6	70-130			
cis-1,3-Dichloropropylene	**19.0**	0.50	ug/L	20		94.8	70-130			
trans-1,3-Dichloropropylene	**18.9**	0.50	ug/L	20		94.4	70-130			
1,1-Dichloropropylene	**18.3**	0.50	ug/L	20		91.5	70-130			
Diisopropyl ether (DIPE)	**18.1**	2.0	ug/L	20		90.6	70-130			
Ethylbenzene	**20.7**	0.50	ug/L	20		103	70-130			
Ethyl-tert-Butyl Ether (ETBE)	**19.5**	2.0	ug/L	20		97.7	70-130			
Hexachlorobutadiene	**20.9**	1.0	ug/L	20		104	70-130			
2-Hexanone (MBK)	**16.6**	10	ug/L	20		83.2	70-130			
Isopropylbenzene	**21.6**	0.50	ug/L	20		108	70-130			
4-Isopropyltoluene	**20.7**	1.0	ug/L	20		104	70-130			
Methyl-tert-Butyl Ether (MTBE)	**37.9**	2.0	ug/L	40		94.8	70-130			
Methylene Chloride	**21.3**	5.0	ug/L	20		106	70-130			
4-Methyl-2-pentanone (MIBK)	**15.7**	10	ug/L	20		78.4	70-130			
Naphthalene	**17.6**	2.0	ug/L	20		87.8	70-130			
n-Propylbenzene	**20.7**	0.50	ug/L	20		103	70-130			
Styrene	**20.8**	0.50	ug/L	20		104	70-130			

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Matrix Spike (B8B2227-MS1) Continued Source: 8B14017-03 Prepared & Analyzed: 02/22/18										
1,1,1,2-Tetrachloroethane	**20.0**	0.50	ug/L	20		100	70-130			
1,1,2,2-Tetrachloroethane	**16.5**	0.50	ug/L	20		82.6	70-130			
Tetrachloroethylene (PCE)	**21.0**	0.50	ug/L	20		105	70-130			
Toluene	**19.7**	0.50	ug/L	20		98.6	70-130			
1,2,3-Trichlorobenzene	**18.7**	0.50	ug/L	20		93.6	70-130			
1,2,4-Trichlorobenzene	**19.7**	0.50	ug/L	20		98.7	70-130			
1,1,1-Trichloroethane	**18.8**	0.50	ug/L	20		93.8	70-130			
1,1,2-Trichloroethane	**19.2**	0.50	ug/L	20		95.8	70-130			
Trichloroethylene (TCE)	**18.2**	0.50	ug/L	20		90.8	70-130			
Trichlorofluoromethane (R11)	**17.4**	0.50	ug/L	20		87.0	70-130			
1,2,3-Trichloropropane	**16.3**	0.50	ug/L	20		81.6	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**21.8**	0.50	ug/L	20		109	70-130			
1,3,5-Trimethylbenzene	**21.3**	0.50	ug/L	20		106	70-130			
1,2,4-Trimethylbenzene	**20.9**	0.50	ug/L	20		104	70-130			
Vinyl chloride	**18.9**	0.50	ug/L	20		94.7	70-130			
o-Xylene	**20.1**	0.50	ug/L	20		100	70-130			
m,p-Xylenes	**40.9**	1.0	ug/L	40		102	70-130			
Surrogate: 4-Bromofluorobenzene	*49.2*		*ug/L*	*50*		*98.5*	*70-140*			
Surrogate: Dibromofluoromethane	*49.0*		*ug/L*	*50*		*97.9*	*70-140*			
Surrogate: Toluene-d8	*52.0*		*ug/L*	*50*		*104*	*70-140*			
Matrix Spike Dup (B8B2227-MSD1) **Source: 8B14017-03** Prepared & Analyzed: 02/22/18										
Acetone	**20.5**	10	ug/L	20		103	70-130	3.12	30	
tert-Amyl Methyl Ether (TAME)	**21.1**	2.0	ug/L	20		105	70-130	12.3	30	
Benzene	**19.4**	0.50	ug/L	20		97.0	70-130	7.26	30	
Bromobenzene	**20.7**	0.50	ug/L	20		103	70-130	2.70	30	
Bromochloromethane	**20.2**	0.50	ug/L	20		101	70-130	11.1	30	
Bromodichloromethane	**17.9**	0.50	ug/L	20		89.6	70-130	5.62	30	
Bromoform	**19.5**	0.50	ug/L	20		97.6	70-130	7.16	30	
Bromomethane	**18.4**	0.50	ug/L	20		92.2	70-130	2.15	30	
2-Butanone (MEK)	**20.0**	10	ug/L	20		100	70-130	15.4	30	

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Matrix Spike Dup (B8B2227-MSD1) **Source: 8B14017-03** Prepared & Analyzed: 02/22/18										
Continued										
tert-Butyl alcohol (TBA)	**96.1**	10	ug/L	100		96.1	70-130	2.15	30	
sec-Butylbenzene	**22.0**	0.50	ug/L	20		110	70-130	5.60	30	
tert-Butylbenzene	**21.4**	0.50	ug/L	20		107	70-130	4.05	30	
n-Butylbenzene	**21.1**	0.50	ug/L	20		105	70-130	5.06	30	
Carbon Disulfide	**15.2**	0.50	ug/L	20		76.0	70-130	2.21	30	
Carbon Tetrachloride	**21.1**	0.50	ug/L	20		106	70-130	7.26	30	
Chlorobenzene	**19.2**	0.50	ug/L	20		96.0	70-130	0.260	30	
Chloroethane	**19.4**	0.50	ug/L	20		97.2	70-130	4.23	30	
Chloroform	**17.6**	0.50	ug/L	20		88.0	70-130	5.30	30	
Chloromethane	**15.5**	0.50	ug/L	20		77.4	70-130	10.8	30	
2-Chlorotoluene	**20.3**	0.50	ug/L	20		102	70-130	5.15	30	
4-Chlorotoluene	**20.8**	0.50	ug/L	20		104	70-130	5.58	30	
1,2-Dibromo-3-chloropropane	**18.4**	1.0	ug/L	20		92.2	70-130	16.7	30	
Dibromochloromethane	**19.1**	0.50	ug/L	20		95.6	70-130	4.11	30	
1,2-Dibromoethane (EDB)	**19.2**	0.50	ug/L	20		96.2	70-130	7.89	30	
Dibromomethane	**17.8**	0.50	ug/L	20		88.9	70-130	9.79	30	
1,3-Dichlorobenzene	**19.4**	0.50	ug/L	20		96.9	70-130	4.92	30	
1,2-Dichlorobenzene	**20.7**	0.50	ug/L	20		103	70-130	9.52	30	
1,4-Dichlorobenzene	**19.6**	0.50	ug/L	20		98.2	70-130	7.55	30	
Dichlorodifluoromethane (R12)	**14.3**	0.50	ug/L	20		71.4	70-130	10.9	30	
1,1-Dichloroethane	**17.7**	0.50	ug/L	20		88.4	70-130	13.8	30	
1,2-Dichloroethane (EDC)	**17.7**	0.50	ug/L	20		88.6	70-130	4.44	30	
1,1-Dichloroethylene	**18.0**	0.50	ug/L	20		90.2	70-130	5.93	30	
trans-1,2-Dichloroethylene	**19.6**	0.50	ug/L	20		98.0	70-130	4.34	30	
cis-1,2-Dichloroethylene	**20.4**	0.50	ug/L	20		102	70-130	6.58	30	
1,2-Dichloropropane	**18.6**	0.50	ug/L	20		93.2	70-130	4.33	30	
2,2-Dichloropropane	**19.8**	0.50	ug/L	20		99.0	70-130	8.86	30	
1,3-Dichloropropane	**16.9**	0.50	ug/L	20		84.4	70-130	0.178	30	
cis-1,3-Dichloropropylene	**20.2**	0.50	ug/L	20		101	70-130	6.14	30	
trans-1,3-Dichloropropylene	**18.8**	0.50	ug/L	20		93.8	70-130	0.638	30	
1,1-Dichloropropylene	**20.7**	0.50	ug/L	20		104	70-130	12.4	30	

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Matrix Spike Dup (B8B2227-MSD1) Continued				**Source: 8B14017-03** Prepared & Analyzed: 02/22/18						
Diisopropyl ether (DIPE)	**19.6**	2.0	ug/L	20		97.8	70-130	7.64	30	
Ethylbenzene	**20.9**	0.50	ug/L	20		104	70-130	0.963	30	
Ethyl-tert-Butyl Ether (ETBE)	**21.0**	2.0	ug/L	20		105	70-130	7.06	30	
Hexachlorobutadiene	**21.6**	1.0	ug/L	20		108	70-130	3.25	30	
2-Hexanone (MBK)	**17.8**	10	ug/L	20		89.1	70-130	6.85	30	
Isopropylbenzene	**22.3**	0.50	ug/L	20		112	70-130	3.19	30	
4-Isopropyltoluene	**21.7**	1.0	ug/L	20		108	70-130	4.62	30	
Methyl-tert-Butyl Ether (MTBE)	**39.4**	2.0	ug/L	40		98.4	70-130	3.73	30	
Methylene Chloride	**19.3**	5.0	ug/L	20		96.6	70-130	9.65	30	
4-Methyl-2-pentanone (MIBK)	**17.2**	10	ug/L	20		86.1	70-130	9.43	30	
Naphthalene	**22.0**	2.0	ug/L	20		110	70-130	22.4	30	
n-Propylbenzene	**21.8**	0.50	ug/L	20		109	70-130	5.09	30	
Styrene	**21.3**	0.50	ug/L	20		106	70-130	2.09	30	
1,1,1,2-Tetrachloroethane	**20.2**	0.50	ug/L	20		101	70-130	0.697	30	
1,1,2,2-Tetrachloroethane	**16.5**	0.50	ug/L	20		82.6	70-130	0.121	30	
Tetrachloroethylene (PCE)	**21.2**	0.50	ug/L	20		106	70-130	0.851	30	
Toluene	**20.0**	0.50	ug/L	20		100	70-130	1.46	30	
1,2,3-Trichlorobenzene	**20.1**	0.50	ug/L	20		100	70-130	7.01	30	
1,2,4-Trichlorobenzene	**21.6**	0.50	ug/L	20		108	70-130	9.14	30	
1,1,1-Trichloroethane	**20.2**	0.50	ug/L	20		101	70-130	7.49	30	
1,1,2-Trichloroethane	**19.5**	0.50	ug/L	20		97.6	70-130	1.86	30	
Trichloroethylene (TCE)	**20.3**	0.50	ug/L	20		101	70-130	11.0	30	
Trichlorofluoromethane (R11)	**21.6**	0.50	ug/L	20		108	70-130	21.5	30	
1,2,3-Trichloropropane	**18.1**	0.50	ug/L	20		90.4	70-130	10.1	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**20.0**	0.50	ug/L	20		100	70-130	8.46	30	
1,3,5-Trimethylbenzene	**22.4**	0.50	ug/L	20		112	70-130	5.44	30	
1,2,4-Trimethylbenzene	**22.2**	0.50	ug/L	20		111	70-130	6.04	30	
Vinyl chloride	**17.2**	0.50	ug/L	20		85.8	70-130	9.80	30	
o-Xylene	**20.3**	0.50	ug/L	20		101	70-130	0.942	30	
m,p-Xylenes	**41.6**	1.0	ug/L	40		104	70-130	1.65	30	

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client: The Source Group, Inc. (PH)
Project No: NA
Project Name: Chemoil - Groundwater Monitoring

AA Project No: A596133
Date Received: 02/21/18
Date Reported: 02/27/18

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs, OXY & TPH Gasoline by GC/MS - Quality Control										
Batch B8B2227 - EPA 5030B										
Matrix Spike Dup (B8B2227-MSD1) Continued				**Source: 8B14017-03**		Prepared & Analyzed: 02/22/18				
Surrogate: 4-Bromofluorobenzene	*50.2*		*ug/L*	*50*		*100*	*70-140*			
Surrogate: Dibromofluoromethane	*49.8*		*ug/L*	*50*		*99.6*	*70-140*			
Surrogate: Toluene-d8	*51.3*		*ug/L*	*50*		*103*	*70-140*			
Diesel Range Organics by GC/FID - Quality Control										
Batch B8B2225 - EPA 3510C										
Blank (B8B2225-BLK1)						Prepared & Analyzed: 02/22/18				
Diesel Range Organics as Diesel	<0.10	0.10	mg/L							
Surrogate: o-Terphenyl	*0.0367*		*mg/L*	*0.040*		*91.8*	*50-150*			
LCS (B8B2225-BS1)						Prepared & Analyzed: 02/22/18				
Diesel Range Organics as Diesel	**0.873**	0.10	mg/L	0.80		109	75-125			
Surrogate: o-Terphenyl	*0.0558*		*mg/L*	*0.040*		*140*	*50-150*			
LCS Dup (B8B2225-BSD1)						Prepared & Analyzed: 02/22/18				
Diesel Range Organics as Diesel	**0.709**	0.10	mg/L	0.80		88.7	75-125	20.7	30	
Surrogate: o-Terphenyl	*0.0456*		*mg/L*	*0.040*		*114*	*50-150*			

Viorel Vasile
Operations Manager

LABORATORY ANALYSIS RESULTS

Client:	The Source Group, Inc. (PH)	**AA Project No:**	A596133
Project No:	NA	**Date Received:**	02/21/18
Project Name:	Chemoil - Groundwater Monitoring	**Date Reported:**	02/27/18

Special Notes

Viorel Vasile
Operations Manager

AS96133 14710

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY

CLIENT **APEX Companies, LLC**

SITE CHEMOIL
2020 Walnut Ave
Signal Hill, CA

8B21012

SAMPLE I.D.	DATE	TIME	MATRIX S = Soil W = H2O	CONTAINERS TOTAL		TPHg, VOC's, and Oxygenates By 8260B (48HR TAT)	TPHd by 8015M (48HR TAT)	SVOC's By 8270 (Standard TAT)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MW-21	2/20/18	1002	W	5	Various	X	X	X				8B21012-01
MW-22	2/20/18	0847	W	5	Various	X	X	X				-02

CONDUCT ANALYSIS TO DETECT

LAB American Analytics DHS #

SPECIAL INSTRUCTIONS
Run the following analysis on a 48 Hour TAT: TPHg, TPHd, VOC's, and Oxygenates

SVOC's will be run on a standard TAT

INVOICING:
Invoice APEX Companies, LLC:
Attn: Casey Huff (925) 951-6414
casey.huff@apexcos.com
Send Report to APEX Companies, LLC:
Attn: Casey Huff (925) 951-6414

Global ID:

PRIORITY Rush 48 Hrs Date 2/21/18 Time 1530 Sign SH

SAMPLING COMPLETED	DATE	TIME
	2/20/18	1002

SAMPLING PERFORMED BY Todd Murdock

RESULTS NEEDED NO LATER THAN

RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Todd Murdock	2/20/18	1130		2-21-18	8:05
	2-21-18	11:41		2-21-18	11:41

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #