DRAFT

Initial Study/Mitigated Negative Declaration for the Richland Elementary School Reconstruction Project

Prepared for:

San Marcos Unified School District
255 Pico Avenue, Suite 100
San Marcos, California 92069
Contact: Ms. Tova Corman

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Sean Kilkenny, Senior Project Manager

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APPENDICES

FIGURES

TABLES

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ADT	average daily traffic
BMP	best management practice
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CA MUTCD	California Manual of Uniform Traffic Control Devices
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
City	City of San Marcos
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of San Diego
CRHR	California Register of Historical Resources
dBA	A-weighted decibel
DPM	diesel particulate matter
DSA	Department of the State Architect
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GHG	greenhouse gas
HCM	Highway Capacity Manual
HIA	health impact assessment
HVAC	heating, ventilation, and air conditioning
ips	inches per second
IS	Initial Study
L_{eq}	equivalent noise level
LOS	level of service
MM	Mitigation Measure
MND	Mitigated Negative Declaration
MRZ	Mineral Resource Zone
MT	metric ton
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NOx	oxides of nitrogen
O_3	ozone
PDF	project design feature
PGM	photochemical grid model
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns

Acronym/Abbreviation	Definition
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
PPV	peak particle velocity
Project	Richland Elementary School Reconstruction Project
PV	photovoltaic
RAQS	Regional Air Quality Strategy
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMUSD	San Marcos Unified School District
SOx	sulfur oxides
SR	State Route
TAC	toxic air contaminant
VMT	vehicle miles traveled
VOC	volatile organic compound
VPH	vehicles per hour

1 Introduction

1.1 Project Overview

The Richland Elementary School Reconstruction Project (Project) is located at 910 Borden Road, San Marcos, CA 92069. The Project site is currently home to Richland Elementary School, a K–5 elementary school serving the San Marcos Unified School District (SMUSD). The existing Richland Elementary School was built in 1960 and has been expanded several times since its original construction, including in 1965 and portables being added from the 1980s onward through 2004. More recently, SMUSD identified Richland Elementary School for complete reconstruction, which would demolish the existing buildings and construct new facilities. This Project proposes reconstruction of an existing elementary school, including the redevelopment of play fields and playgrounds, to meet current SMUSD initiatives and Department of the State Architect (DSA) building standards.

Specifically, the proposed Project would reconfigure uses on the Project site to locate open lawn/fields along Borden Road and consolidate buildings toward the northeastern portion of the Project site. The parking area would be moved from the southern portion of the Project site to the eastern portion of the Project site.

The Project includes the following components:

- Demolition of the existing school buildings
- Construction of five new buildings, as follows:
    - Three single-story
    - Two, 2-story buildings
- 91,477 square feet (including internal hallways)
- 44 classrooms, including a new Maker's Space
- Reconfiguration of parking and drop off areas for 117 parking spaces
- New play structures, play fields, and a raised garden area

Table 1-1 provides a summary comparing the existing conditions on the Project site (i.e., the current Richland Elementary School) with the proposed Project. As shown in Table 1-1, the Project would consolidate the number of buildings, slightly increase the total square footage of buildings through the introduction of one new classroom for a Maker's Space and interior corridors, maintain the same overall capacity, and add 36 parking space.

Table 1-1. Summary of Proposed Project and Existing Richland Elementary School

Use	Existing Conditions	Proposed Project	Difference
Total Number of Buildings	Seven permanent single-story and 24 portable classrooms	Five, with three single-story and two 2-story buildings	Two fewer buildings
Total Building Square Feet	87,776 square feet (external hallways)	91,477 square feet (internal hallways)	+3,701 square feet
Total Capacity	850 students	850 students	0
Total Number of Classrooms	43 (with no designated Maker's Space)	44 (including a Maker's Space)	+One classroom (Maker's Space)

Table 1-1. Summary of Proposed Project and Existing Richland Elementary School

Use	Existing Conditions	Proposed Project	Difference
Outdoor Play Areas	Existing play structures, play fields, and raised garden area	New play structures, play fields, and raised garden area	
Drop-Off/Delivery Areas	Two pick-up and drop-off for all grade levels, bus drop-off, and deliveries	Three new pick-up and drop-off locations for Kindergarten, grades 1–5, and bus drop-off and food service deliveries	
Parking Spaces	81 parking spaces	117 parking spaces	+36 parking spaces

The Project includes the reconfiguration of ingress and egress on Richland Road and associated public improvements in the right-of-way on Richland Road and Borden Road, including improvements to the intersection of Borden Road and Richland Road.

1.2 California Environmental Quality Act Compliance

The proposed Project is a "project" under the California Environmental Quality Act (CEQA). The Project is proposed by the SMUSD, and the SMUSD is the lead agency under CEQA in accordance with Section 15051 of the CEQA Guidelines.

This document is an Initial Study (IS) and Mitigated Negative Declaration (MND) prepared by Dudek on behalf of SMUSD pursuant to Title 14 of the California Code of Regulations (CCR), Section 15063 of the CEQA Guidelines. Section 15063 of the CEQA Guidelines requires the lead agency to prepare an IS to analyze the potential environmental impacts associated with a project to determine if the project could have a significant effect on the environment. This IS/MND has been prepared (per CEQA Guidelines Sections 15070–15075) to identify potential environmental impacts of the proposed Project, and to identify mitigation measures to avoid or reduce the significance of those impacts. CEQA requires the lead agency to adopt a Mitigation Monitoring and Reporting Program for all required mitigation measures.

1.3 Project Planning Setting

The approximately 10.2-acre Project site is located within SMUSD property in the City of San Marco, in San Diego County, as shown in Figure 1, Project Vicinity and Location, and Figure 2, Project Site Plan. The Project address is 910 Borden Road, San Marcos, CA 92069. The site is composed of one Assessor's Parcel Number (218-101-05-00). The site is accessed via Borden Road and Richland Road.

The proposed Project would involve reconstruction of an elementary school on the existing Richland Elementary School site to serve grades Kindergarten through 5th grade. The Project would maintain the same capacity as the existing Richland Elementary School of 850 students. The Project site is currently used as an elementary school with buildings and uses, as summarized in Table 1-1. The Project site is relatively flat and is bounded by urban development, including homes, roadways, and related infrastructure. More specifically, the site is bounded by large-lot single-family homes to the west/northwest, the Foothills of San Marcos 55-plus residential community (909 Richland Road) and single-family homes to the east/northeast, the Rancho San Marcos mobile homes park to the south (971 Borden Road), and single-family detached homes to the southwest.

1.4 Public Review Process

This IS/MND has been made available for download or viewing at SMUSD's website (https://www.smusd.org/), SMUSD's main office at 255 Pico Avenue, Suite 250, San Marcos, California, and provided for review to state agencies via the California State Clearinghouse. While not required under Executive Order N-54-20 due to the COVID-19 public health emergency, notice of the document's availability has been posted around the project site.

The IS/MND is subject to a 30-day public review period. The public is encouraged to provide written comments during the 30-day review. Comments may be submitted to SMUSD at tova.corman@smusd.org or by U.S. mail at:

ATTN: Ms. Tova Corman, Executive Director, Facilities
San Marcos Unified School District
255 Pico Avenue, Suite 100
San Marcos, California 92069

The public may also attend the SMUSD Board of Directors hearing at which the Project and the IS/MND will be considered for approval. In accordance with Section 15074 of the CEQA Guidelines, SMUSD's Board of Directors must consider the IS/MND, along with any comments received during the public review process.

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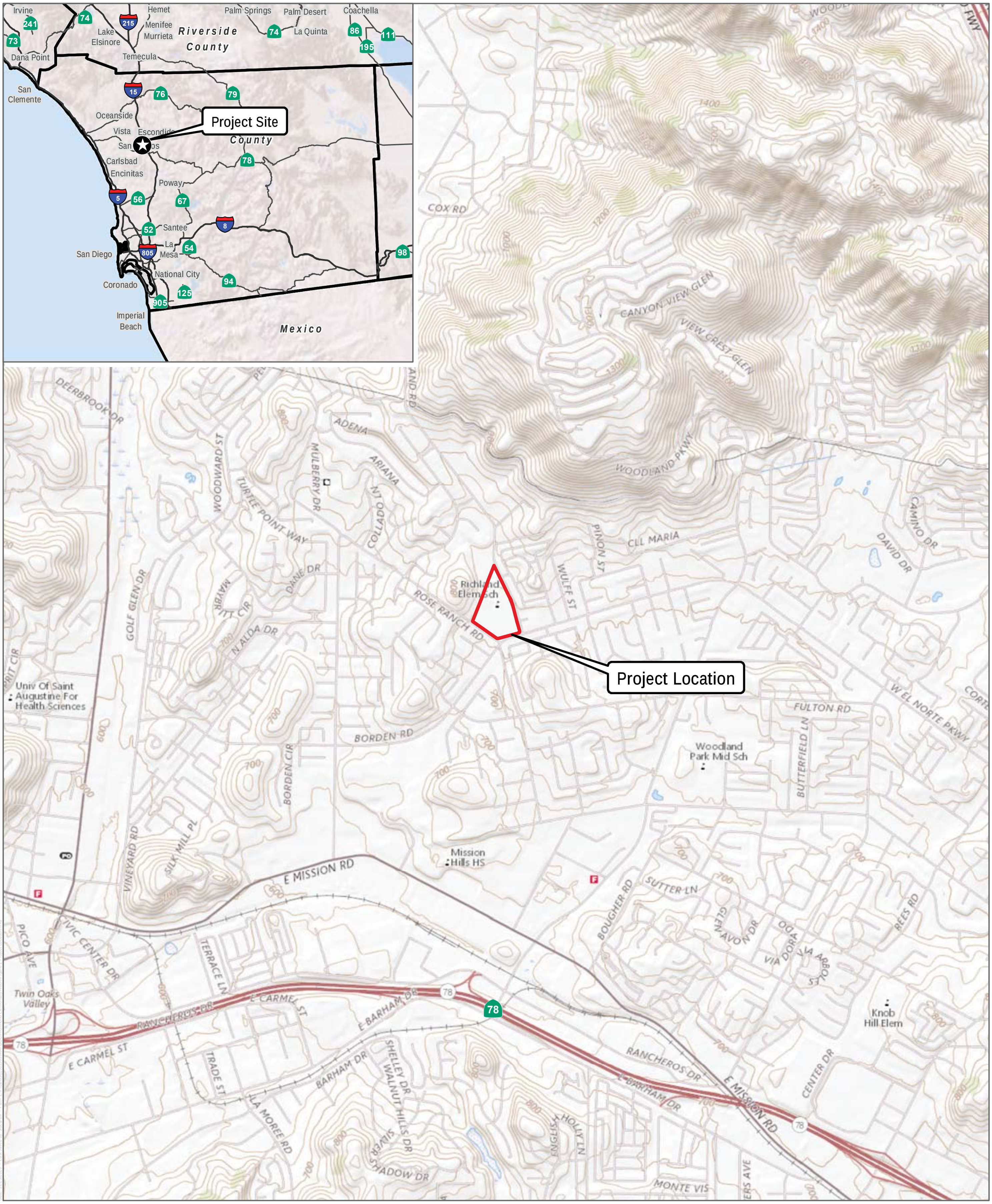

SOURCE: USGS National Map San Marcos Quadrangle

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

SMUSD Richland Elementary School Reconstruction Project

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SOURCE: SANGIS 2017

DUDEK

0 50 100 Feet

FIGURE 2

Site Plan

SMUSD Richland Elementary School Reconstruction Project

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2 Summary of Findings

2.1 Environmental Factors Potentially Affected

This IS/MND analyzes the environmental impacts of the Project consistent with the format and analysis prompts provided in Appendix G of the CEQA Guidelines. The analysis determined that the Project would result in potentially adverse impacts associated with biological resources, cultural resources, and tribal cultural resources. The analysis determined that all impacts identified in this IS/MND would be reduced to **less than significant** levels with implementation of mitigation measures to avoid or minimize the impacts identified. Detailed analyses of impacts are provided under each resource section evaluated in this IS/MND, provided in Section 3, Initial Study Checklist.

2.2 Environmental Determination

SMUSD finds that this IS/MND identifies potentially significant impacts, but that implementing the mitigation measures identified in Table 2-1 would avoid or minimize the impacts such that they would be less than significant. Therefore, the Project would not result in impacts that would remain significant and unavoidable following implementation of mitigation measures. All mitigation measures are identified by analysis topic in Table 2-1.

Table 2-1. Project Impacts and Mitigation Measures

Project Impact	Level of Significance	Proposed Mitigation	Level of Significance After Mitigation
Impacts to nesting bird and raptor species if implementation of the Project would require removal or substantial trimming of healthy mature trees during the bird nesting season.	Potentially Significant	**MM-BIO-1** Impacts from construction-related activities may occur to wildlife if construction occurs during the breeding season (i.e., February 15 through August 31 for most bird species; and January 1 through August 31 for raptors). Protection of general avian wildlife in compliance with the Migratory Bird Treaty Act and California Fish and Game Code shall be accomplished by either scheduling construction between July 15 and December 31 or, if construction must commence during the nesting season (January 1 through August 31), a one-time biological survey for nesting bird species shall be conducted in all suitable habitat for the presence of nesting birds by a qualified biologist 72 hours prior to the commencement of work. If any active nests are detected, the area shall be flagged and mapped on construction plans, along with a minimum 25-foot buffer and up to a 300-foot maximum buffer for raptors, or as recommended by the qualified biologist. Generally, a 25-foot buffer is suitable for most non-sensitive bird species. Larger buffers are required for raptors because they are particularly sensitive to disturbance during the breeding season. These typical buffer distances are generally accepted by the resource agencies (e.g.,	**Less than Significant.**

Table 2-1. Project Impacts and Mitigation Measures

Project Impact	Level of Significance	Proposed Mitigation	Level of Significance After Mitigation
		U.S. Fish and Wildlife Service, California Department of Fish and Wildlife). These buffer areas established by the qualified biologist shall be avoided until the nesting cycle is complete or it is determined that the nest has failed.	
Although no archaeological resources were identified as a result of the records search, there is a possibility of encountering previously undiscovered archaeological resources at subsurface levels during ground-disturbing activities associated with the Project.	Potentially Significant	**MM-CUL-1 Unanticipated Discovery of Cultural Resources.** In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed Project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether or not additional study is warranted. Depending on the significance of the find, the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA or Section 106 of the National Historic Preservation Act, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.	**Less than Significant.**
Ground-disturbing activities associated with construction of the Project are unlikely to uncover previously unknown archaeological resources; however, previously unknown human remains may be discovered on site during ground-disturbing activities.	Potentially Significant	**MM-CUL-2 Unanticipated Discovery of Human Remains.** In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the remains are determined to be Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours. In accordance with California Public Resources Code Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant (MLD) from the deceased Native American. The MLD shall complete their inspection within 48 hours of being granted access to the site. The MLD shall then determine, in consultation with the property owner, the disposition of the human remains.	**Less than Significant.**

Table 2-1. Project Impacts and Mitigation Measures

Project Impact	Level of Significance	Proposed Mitigation	Level of Significance After Mitigation
Although no specific tribal cultural resources were identified, possibility of encountering previously undiscovered tribal cultural resources at subsurface levels during ground-disturbing activities associated with the Project.		**MM-TCR-1Unanticipated Impact of Tribal Cultural Resources.** To minimize the potential of an unanticipated impact to tribal cultural resources, the proposed project would coordinate with the Rincon Band to develop a Worker Environmental Awareness Program (WEAP) training required to all personnel that will be performing grading and ground disturbance activities, including the Inspector and General Contractor prior to the start of work. In addition to the WEAP training, a part-time tribal monitor shall be required for weekly on-site visit to monitor ground disturbance. In the event of unanticipated cultural discoveries or human remains, the applicant shall follow measures of **MM-CUL-1 Unanticipated Discovery of Cultural Resources** and **MM-CUL-2 Unanticipated Discovery of Human Remains**	**Less Than Significant**

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3 Initial Study Checklist

1. **Project title:**

   Richland Elementary School Reconstruction

2. **Lead agency name and address:**

   San Marcos Unified School District, 255 Pico Avenue, Suite 100, San Marcos, CA 92069

3. **Contact person and phone number:**

   Tova Corman, (760) 290-2650

4. **Project location:**

   910 Borden Road, San Marcos, CA 92069

5. **Project sponsor's name and address:**

   San Marcos Unified School District, 255 Pico Avenue, Suite 100, San Marcos, CA 92069

6. **General plan designation:**

   The San Marcos General Plan land use designation is Public/Institutional (PI).

7. **Zoning:**

   The San Marcos Zoning Map designation is Public-Institutional, P-I.

8. **Description of project. (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary):**

   The proposed Project would reconfigure and re-construct the existing elementary school uses on the Project site to locate open lawn/fields along Borden Road and consolidate buildings toward the northeastern portion of the Project site. The parking area would be moved from the southern and eastern portions of the Project site to the eastern portion of the Project site.

   The reconstruction Project includes the following components:

   - Demolition of the existing school buildings
   - Construction of five new buildings:
     - Three single-story buildings
     - Two, 2-story buildings
   - 91,477 square feet (including internal hallways)

- 44 classrooms, including a new Maker's Space
- Reconfiguration of parking and drop-off areas for a total of 117 parking spaces
- New play structures, play fields, and a raised garden area

9. Surrounding land uses and setting (Briefly describe the project's surroundings):

The Project site is surrounded by Borden Road and the existing Rancho San Marcos Mobile Home Park to the south/southeast, Rose Ranch Road and existing single-family homes to the south/southwest, single-family homes and parcels to the west, existing single-family homes to the northwest, and Richland Road and the Foothills of San Marcos 55-plus residential community to the east.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement):

Regional Water Quality Control Board

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

See Section 3.18, below.

Environmental Factors Potentially Affected

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

☐ Aesthetics
☐ Agriculture and Forestry Resources
☐ Air Quality
☒ Biological Resources
☒ Cultural Resources
☐ Energy
☐ Geology and Soils
☐ Greenhouse Gas Emissions
☐ Hazards and Hazardous Materials
☐ Hydrology and Water Quality
☐ Land Use and Planning
☐ Mineral Resources
☐ Noise
☐ Population and Housing
☐ Public Services
☐ Recreation
☐ Transportation
☒ Tribal Cultural Resources
☐ Utilities and Service Systems
☐ Wildfire
☐ Mandatory Findings of Significance

Determination (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

2021-04-01

Date

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less Than Significant With Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any, to reduce the impact to less than significance

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS – Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐
II. AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐
IV. BIOLOGICAL RESOURCES – Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V. CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐
VI. Energy – Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐
VII. GEOLOGY AND SOILS – Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
VIII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐
IX. HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒
X. HYDROLOGY AND WATER QUALITY – Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on or off site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐
XI. LAND USE AND PLANNING – Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
XII. MINERAL RESOURCES – Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒
XIII. NOISE – Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐
XIV. POPULATION AND HOUSING – Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒
XVI. RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XVII. TRANSPORTATION – Would the project:				
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. TRIBAL CULTURAL RESOURCES				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐
XIX. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. WILDFIRE – If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐
XXI. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

3.1 Aesthetics

a) Would the project have a substantial adverse effect on a scenic vista?

The San Macros General Plan identifies scenic resources in the City of San Marcos. Although the General Plan Conservation and Open Space Element does not identify scenic vistas, it does describe scenic resources within the City of San Marcos, including "undeveloped hillsides; prominent landforms such as the San Marcos Mountains, Merriam Mountains, Mount Whitney, Cerro de La Posas, Double Peak, Owens Peak, and Franks Peak; creek corridors; eucalyptus stands; rock outcroppings; landmarks or historic buildings; and ocean views" (City of San Marcos 2012a). The Conservation and Open Space Element also describes that "Pacific Ocean views can be enjoyed from Double Peak Park and from roads and pathways within San Elijo Hills" (City of San Marcos 2012a). As shown in the City of San Marcos General Plan Conservation and Open Space Element Figure 4-5, City of San Marcos Scenic Resources, the Project site is not located adjacent to scenic resources and does not impact any of these identified scenic resources. Further, the Project site is currently developed as an existing elementary school. As noted in Section 1.1, Project Overview, the Project would replace seven existing single-story buildings and 24 relocatable classrooms with five buildings, including two, 2-story buildings, which would be reviewed and approved by the Department of the State Architect. In addition, carports (approximately 12 feet high) supporting solar panels with anti-reflective coatings are proposed and would be located at the proposed fields in the southern portion of the Project site. Because the Project proposes the reconstruction of the same use as the existing Richland Elementary School, and vertical features on the Project site would not substantially obscure or interrupt views of local scenic resources (as defined by the City), the Project would not be a substantial adverse change compared to existing conditions. Thus, the Project would have a **less than significant impact** on scenic vistas.

b) Would the project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The Project site is within the City of San Marcos. The San Marcos General Plan Conservation and Open Space Element designates scenic resources and highways/roadways. The Conservation and Open Space Element states that "State Route 78 is designated by the City as a view corridor and eligible as a State scenic highway. This highway corridor provides views of the Merriam Mountains, Mount Whitney, Double Peak, California State University San Marcos (CSUSM), and Palomar Community College" (City of San Marcos 2012a). The Project site is not visible from State Route (SR) 78 and does not preclude or restrict views of the Merriam Mountains, Mount Whitney, Double Peak, California State University San Marcos, or Palomar College. In addition, the segment of SR-78 is not an eligible state scenic highway. Further, the Project site is currently developed as an existing elementary school. As noted in Section 1.1, Project Overview, the Project would replace seven existing single-story buildings and 24 relocatable classrooms with five buildings, including two, 2-story buildings, which would be reviewed and approved by the Department of the State Architect. Because the Project proposes the reconstruction of the same use as the existing Richland Elementary School, the Project would not damage trees, rock-outcroppings, or historic buildings within a state scenic highway. Therefore, **no impact** to scenic resources, including trees, rock outcroppings, and historic resources, within a state scenic highway would occur.

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

The Project site is in an urbanized area within the City of San Marcos. The Project site is currently developed as an existing elementary school, consistent with the Public-Institutional (P-I) zoning designation, and is surrounded by development to the north, east, south, and west.

During construction, heavy equipment and construction materials may be temporarily visible from Borden Road, but these views would be temporary, occurring only during construction periods. As noted in Section 1.1, Project Overview, the Project would replace seven existing single-story buildings and 24 relocatable classrooms with five buildings, including two, 2-story buildings, which would be reviewed and approved by the Department of the State Architect.

Further, although not required to comply with the local municipal code, the San Marcos Zoning Ordinance permits schools within the Public-Institutional (P-I), subject to the following development regulations:

Table 20.240-3. Public-Institutional Zone Development Standards

Development Standards	Public-Institutional (P-I) Zone
Building Height	
Stories	3
Building Height	45 feet
Architectural Features	55 feet
Utilities/Communications/Energy Facilities	—
Setbacks	
Public Right-of-Way	10 feet
Internal Property Line	5 feet
Adjacent to Residential Zone	15 feet
Parking	6 feet
Between Buildings	10 feet

Source: City of San Marcos 2021

The proposed Project would be limited to two stories and would not exceed 45 feet for buildings heights or 55 feet for architectural features. Further, the Project would be consistent with setbacks from adjacent streets.

During operation, the Project would result in a new elementary school with landscaping that would be like the existing Richland Elementary School. The Project would have a **less than significant impact** because the Project would occur in an urbanized area and would construct a school, in compliance with the elementary school land use designation and the Public-Institutional (P-I) zoning designation.

d) ***Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?***

A Lighting Plan is included in the architectural plans. As shown therein, the proposed Project would include standard safety and security lighting. No field lighting is proposed; rather, light fixtures would be like existing lights on the Project site and would not be expected to generate substantial light or glare. Lighting would be subject to compliance with building code requirements and review by the State Architect's office.

The proposed Project would also include installation of solar panels, which may be a source of glare due to the reflection of light on the panels. As proposed, solar panels would be installed atop carports (approximately 12 feet high) located at the proposed fields in the southern portion of the Project site. Solar panels would feature anti-reflective coatings and would be oriented to minimize the potential generation of glare. The mounting height of proposed solar panels (i.e., atop 12-foot-high carports) would limit visibility of the features from nearby sidewalks, roads, and residences, and the application of anti-reflective coatings on panel surfaces (and precision orientation) would reduce the potential for glare to be received at higher-elevation terrain in the surrounding area. Impacts related to light and glare would be **less than significant.**

3.2 Agriculture and Forestry Resources

a) ***Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?***

The site is currently developed as an elementary school. The Project site is designated as Built Up/Urban by the California Department of Conservation Farmland Mapping and Monitoring Program (CDC 2021). Therefore, the Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses. **No impact** would occur.

b) ***Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?***

The Project site is currently zoning as Public-Institution (P-I) and is an existing elementary school. The Project would reconstruct the school, consistent with the existing use and underlying zoning. The Project site is not an agricultural use or subject to a Williamson Act contract. Therefore, **no impact** due to conflicts with existing zoning for agricultural use or a Williamson Act contract would occur.

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

The Project site is currently an existing elementary school and is not forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined in Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]). Therefore, **no impact** would occur.

d) ***Would the project result in the loss of forest land or conversion of forest land to non-forest use?***

See response to Threshold 3.2(c), above. **No impact** would occur due to the loss of forest land or conversion of forest land to non-forest uses.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The proposed Project would result in the reconstruction of Richland Elementary School. The same number of students, faculty, administration, and support staff are anticipated as the existing school; therefore, the proposed Project would not result in changes that could result in the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. **No impact** would occur.

3.3 Air Quality

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

This section is based on the Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Richland Elementary School Reconstruction Project (AQ-GHG Report) prepared by Dudek in January 2021. The AQ-GHG Report is included as Appendix A to this IS/MND. Background and methodologies regarding the AQ-GHG analysis are found in Appendix A.

As mentioned in Section 2.3, Regulatory Setting, of the AQ-GHG Report (Appendix A), the San Diego Air Pollution Control District (SDAPCD) is responsible for developing and implementing the clean air plans for attainment and maintenance of the ambient air quality standards in the basin—specifically, the State Implementation Plan (SIP) and Regional Air Quality Strategy (RAQS).[1] The San Diego Association of Governments (SANDAG) is responsible for developing forecasts and data that are used by the SDAPCD in preparing the SIP and RAQS. The federal Ozone Maintenance Plan, which is part of the SIP, was adopted in 2012. The SIP includes a demonstration that current strategies and tactics will maintain acceptable air quality in the basin based on the National Ambient Air Quality Standards (NAAQS). The RAQS, most recently updated in 2016, outlines SDAPCD's plans and control measures designed to attain the state air quality standards for ozone (O_3). The SIP and RAQS rely on information from the California Air Resources Board (CARB) and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in San Diego County as a whole and the cities in San Diego County, to project future emissions and determine the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the County of San Diego (County) and the cities in San Diego County as part of development of their general plans.

Although the SDAPCD and City of San Marcos (City) do not provide guidance regarding the analysis of impacts associated with air quality plan conformance, the County's Guidelines for Determining Significance and Report and Format and Content Requirements – Air Quality does discuss conformance with the RAQS (Appendix A). The guidance indicates that, if a project, in conjunction with other projects, contributes to growth projections that would not exceed SANDAG's growth projections for the City, that project would not be in conflict with the RAQS (Appendix A). If a project includes development that is greater than that anticipated in the local plan and SANDAG's growth projections, that project might be in conflict with the SIP and RAQS, and may contribute to a potentially significant cumulative impact on air quality.

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[1] For the purpose of this discussion, the relevant federal air quality plan is the Ozone Maintenance Plan (SDAPCD 2012). The RAQS is the applicable plan for purposes of state air quality planning. Both plans reflect growth projections in the basin.

The Project would involve demolition of an existing elementary school and would redevelop the site with a new 91,477-square-foot elementary school. Because development of the Project would replace the existing elementary school, the Project would not conflict with the existing zoning or land use designations for the site. Additionally, the Project would not induce population growth to the area. Per CEQA Guidelines Section 15206(b), the Project would not be considered regionally significant because it would not have the potential to substantially affect housing, employment, or population projections within the San Diego region, which are the basis of the RAQS projections. As such, the Project would not conflict with or obstruct implementation of the RAQS. Furthermore, the Project would not result in substantial construction or operational emissions that would conflict with the local air quality plan.

Therefore, implementation of the Project would not conflict with the RAQS or SIP, and proposed development would be consistent with growth projections in the region. Impacts would be **less than significant.**

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

Past, present, and future development projects may contribute to adverse air quality impacts in the San Diego Air Basin (SDAB) on a cumulative basis. By its nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SDAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are used in the determination of whether a project's individual emissions would have a cumulatively considerable contribution on air quality. If a project's emissions would exceed the applied significance thresholds, it would have a cumulatively considerable contribution. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.

Construction and operation of the Project would result in emissions of criteria air pollutants that may result in a cumulatively considerable net increase in emissions of criteria air pollutants for which the SDAB is designated as nonattainment under the NAAQS or California Ambient Air Quality Standards (CAAQS). The SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$). The following discussion quantitatively evaluates potential short-term construction and long-term operational impacts that would result from implementation of the Project.

Construction Emissions

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (e.g., off-road construction equipment, soil disturbance, and volatile organic compound [VOC] off-gassing from architectural coatings and asphalt pavement application) and off-site sources (e.g., on-road haul trucks, delivery trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day depending on the level of activity; the specific type of operation; and, for dust, the prevailing weather conditions. Therefore, such emissions levels can only be estimated, with a corresponding uncertainty in precise ambient air quality impacts.

Oxides of nitrogen (NO_x) and carbon monoxide (CO) emissions would primarily result from the use of construction equipment and motor vehicles. Fugitive dust (PM_{10} and $PM_{2.5}$) emissions would primarily result from grading and site preparation activities. The Project would be required to comply with SDAPCD Rule 55, Fugitive Dust Control. This rule requires that the Project take steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) generated during grading and construction activities. To account for dust control measures in the calculations, it was assumed that the Project would ensure that active sites be watered at least two times daily. The application of architectural coatings, such as exterior application/interior paint and other finishes, and application of asphalt pavement would also produce VOC emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of SDAPCD Rule 67.0.1, Architectural Coatings, and to limit the amount of VOC emissions from cutback asphalt in compliance with SDAPCD Rule 67.7, Cutback and Emulsified Asphalt.

As discussed in Section 2.4.2.1, Construction Emissions, of Appendix A, criteria air pollutant emissions associated with temporary construction activities were quantified using the California Emissions Estimator Model (CalEEMod). Construction emissions were calculated for the estimated worst-case day over the construction period associated with each phase and reported as the maximum daily emissions estimated during each year of construction (2021 through 2022). Construction schedule assumptions, including phase type, duration, and sequencing, were based on information provided by the Project applicant and is intended to represent a reasonable scenario based on the best information available. Default values provided in CalEEMod were used where detailed Project information was not available.

Table 3.3-1, Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Unmitigated, presents the estimated maximum daily construction emissions generated during construction of the Project. Details of the emissions calculations are provided in Appendix A.

Table 3.3-1. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Unmitigated

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
2021	4.29	47.24	31.60	0.07	10.32	6.39
2022	65.48	18.05	18.38	0.04	1.46	0.94
Maximum Daily Emissions	**65.48**	**47.24**	**31.60**	**0.07**	**10.32**	**6.39**
Emission Threshold	75	250	550	250	100	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix A

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter with an aerodynamic diameter equal to or less than 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns.

See Appendix A for complete results.

The values shown are the maximum summer or winter daily emissions results from CalEEMod and provided in Appendix A. The maximum emissions assumes compliance with SDAPCD Rule 67.0.1, Architectural Coatings, and SDAPCD Rule 55, Fugitive Dust Control.

As shown in Table 3.3-1, maximum daily construction emissions would not exceed the significance thresholds for VOC, NO_x, CO, sulfur oxides (SO_x), PM_{10}, or $PM_{2.5}$ during construction in all construction years.

Operational Emissions

Following completion of construction activities, the Project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicular traffic generated by the Project; energy sources from natural gas usage; area sources, including the use of landscaping equipment and consumer products; and architectural coatings. As discussed in Section 2.4.2.2, Operational Emissions, in Appendix A, pollutant emissions associated with long-term operations were quantified using CalEEMod using a combination of Project-specific information and CalEEMod default values. Criteria air pollutant emissions were also estimated for operation of the existing school using Project-specific information and CalEEMod default values.

Table 3.3-2, Estimated Operational Criteria Air Pollutant Emissions – Unmitigated, presents the maximum daily area, energy, and mobile-source emissions associated with Project operation (year 2023), as well as operational emissions from the existing school (year 2021) to estimate the net change in criteria air pollutant emissions. Details of the emissions calculations are provided in Appendix A.

Table 3.3-2. Estimated Operational Criteria Air Pollutant Emissions – Unmitigated

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Existing School						
Area	2.46	<0.01	0.02	0.00	<0.01	<0.01
Energy	0.02	0.14	0.12	<0.01	0.02	0.02
Mobile	1.89	6.90	20.22	0.07	6.41	1.75
Total	**4.37**	**7.04**	**20.36**	**0.07**	**6.43**	**1.77**
Proposed Project						
Area	2.57	<0.01	0.02	0.00	<0.01	<0.01
Energy	0.02	0.14	0.12	<0.01	0.01	0.01
Mobile	1.89	6.90	20.22	0.07	6.41	1.75
Total	**4.48**	**7.04**	**20.36**	**0.07**	**6.42**	**1.76**
Net Change (Project Minus Existing School)	**0.11**	**0**	**0**	**0**	**(0.01)**	**(0.01)**
Emissions Threshold	75	250	550	250	100	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Appendix A
Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter with an aerodynamic diameter equal to or less than 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; <0.01 = reported value less than 0.01; negative values are presented in parentheses.
See Appendix A for complete results.
Totals may not sum due to rounding.
Operation of the proposed Project assumes year 2023 and operation of the existing school assumes year 2021.

As shown in Table 3.3-2, the net change in maximum daily emissions between the proposed Project and the existing school would not exceed the significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$.

As discussed in Section 2.3, Regional and Local Air Quality Conditions, in Appendix A, the SDAB is designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment status is the result of cumulative emissions from various sources of air pollutants and their precursors within the SDAB, including motor vehicles, off-road equipment, and commercial and industrial facilities. Construction and operation of the Project would generate VOC and NO_x emissions (which are precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. However, as indicated in Table 3.3-1 and

Table 3.3-2, Project-generated construction emissions and net operational emissions would not exceed the emission-based significance thresholds for VOC, NO_x, PM_{10}, or $PM_{2.5}$.

Cumulative localized impacts would potentially occur if a construction project were to occur concurrently with another off-site project. Construction schedules for potential future projects near the Project site are currently unknown; therefore, potential construction impacts associated with two or more simultaneous projects would be considered speculative. However, future projects would be subject to CEQA and would require air quality analysis and, where necessary, mitigation if the project would exceed applied thresholds. Criteria air pollutant emissions associated with construction activity of future projects would be reduced through implementation of control measures required by the SDAPCD. For example, cumulative PM_{10} and $PM_{2.5}$ emissions would be reduced because all future projects would be subject to SDAPCD Rule 55, Fugitive Dust, which sets forth general and specific requirements for all construction sites in the SDAB. In addition, cumulative VOC emissions would be subject to SDAPCD Rule 67.0.1, Architectural Coatings.

Based on the Project-generated construction and operational emissions of VOC, NO_x, PM_{10}, and $PM_{2.5}$, the Project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants. Therefore, the Project's cumulative air quality impact would be **less than significant.**

Health Effects

Project construction and operation would not exceed significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. VOCs and NO_x are precursors to O_3, for which the SDAB is designated as nonattainment with respect to the NAAQS and CAAQS. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of ROGs and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SDAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations also depends on the time of year that the VOC emissions occur, because exceedances of the O_3 CAAQS/NAAQS tend to occur April through October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to assess this impact. Operation of the Project would not exceed the significance threshold for NO_x; therefore, implementation of the Project would contribute minimally to regional O_3 concentrations and the associated health effects.

Operation of the Project would not contribute to exceedances of the NAAQS or CAAQS for nitrogen dioxide (NO_2). Health effects that result from NO_2 and NO_x include respiratory irritation, which could be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, Project construction would be relatively short term, and off-road construction equipment would be operating at various portions of the site and would not be concentrated in one portion of the site at any one time. In addition, existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Because Project-generated NO_x emissions would not exceed the significance threshold, the Project would not result in potential health effects associated with NO_2 or NO_x.

CO tends to be a localized impact associated with congested intersections. The associated potential impact for CO hotspots was determined to be less than significant (see Threshold 3.3[c]). Furthermore, the existing CO concentrations in the area are well below the NAAQS and CAAQS standards. Thus, the Project's CO emissions would not contribute to significant health effects associated with this pollutant.

Construction and operation of the Project would not exceed thresholds for PM_{10} or $PM_{2.5}$, and would not contribute to exceedances of the NAAQS or CAAQS for particulate matter or obstruct the SDAB from coming into attainment for these pollutants. The Project would also not result in substantial diesel particulate matter (DPM) emissions during construction or operation, and, therefore, would not result in significant health effects related to DPM exposure. Additionally, the Project would implement dust control strategies and be required to comply with SDAPCD Rule 55, Fugitive Dust Control, which limits the amount of fugitive dust generated during construction. Due to the minimal contribution of particulate matter during construction and operation, the Project is not anticipated to result in health effects associated with PM_{10} or $PM_{2.5}$.

In summary, because operation of the Project would not result in exceedances of the significance thresholds for NO_x during construction or operation, the potential health effects associated with criteria air pollutants would be less than significant. Furthermore, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days, and there are currently no modeling tools that could provide reliable and meaningful additional information regarding health effects from criteria air pollutants generated by individual projects.

The California Supreme Court's *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 decision (referred to herein as the Friant Ranch decision) (issued on December 24, 2018) addresses the need to correlate mass emission values for criteria air pollutants to specific health consequences, and contains the following direction from the California Supreme Court: "The Environmental Impact Report (EIR) must provide an adequate analysis to inform the public how its bare numbers translate to create potential adverse impacts or it must explain what the agency *does* know and why, given existing scientific constraints, it cannot translate potential health impacts further" (italics in original) (Sierra Club v. County of Fresno 2018). Currently, the SDAPCD, CARB, and Environmental Protection Agency (EPA) have not approved a quantitative method to reliably, meaningfully, and consistently translate the mass emission estimates for criteria air pollutants resulting from projects to specific health effects.

In connection with the judicial proceedings culminating in issuance of the Friant Ranch decision, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) filed amicus briefs attesting to the extreme difficulty of correlating an individual project's criteria air pollutant emissions to specific health impacts. Both SJVAPCD and SCAQMD have among the most sophisticated air quality modeling and health impact evaluation capabilities of the air districts in California. The key, relevant points from SCAQMD and SJVAPCD briefs is summarized herein.

In requiring a health impact type of analysis for criteria air pollutants, it is important to understand how O_3 and particulate matter (PM) are formed, dispersed, and regulated. The formation of O_3 and PM in the atmosphere, as secondary pollutants,[2] involves complex chemical and physical interactions of multiple pollutants from natural and anthropogenic sources. The O_3 reaction is self-perpetuating (or catalytic) in the presence of sunlight because NO_2 is photochemically reformed from nitric oxide (NO). In this way, O_3 is controlled by both NO_x and VOC emissions (Appendix A). The complexity of these interacting cycles of pollutants means that incremental decreases in one emission may not result in proportional decreases in O_3 (Appendix A). Although these reactions and interactions are well understood, variability in emission source operations and meteorology creates uncertainty in the modeled O_3 concentrations to which downwind populations may be exposed (Appendix A). Once formed, O_3 can be transported long distances

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[2] Air pollutants formed through chemical reactions in the atmosphere are referred to as secondary pollutants.

by wind and due to atmospheric transport; contributions of precursors from the surrounding region can also be important (Appendix A). Because of the complexity of O_3 formation, a specific tonnage amount of VOCs or NO_X emitted in a particular area does not equate to a particular concentration of O_3 in that area (Appendix A). PM can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, like O_3, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as SO_x and NO_x. Because of the complexity of secondary PM formation, including the potential to be transported long distances by wind, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area. This is especially true for individual projects, like the proposed Project, where criteria air pollutant emissions are not derived from a single "point source," but from construction equipment and mobile sources (passenger cars and trucks) driving to, from, and around the project site.

Another important technical nuance is that health effects from air pollutants are related to the concentration of the air pollutant that an individual is exposed to, not necessarily the individual mass quantity of emissions associated with an individual project. For example, health effects from O_3 are correlated with increases in the ambient level of O_3 in the air a person breathes (Appendix A). However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient O_3 levels over an entire region. The lack of link between the tonnage of precursor pollutants and the concentration of O_3 and $PM_{2.5}$ formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects; rather, it is the concentration of resulting O_3 that causes these effects (Appendix A). Indeed, the ambient air quality standards, which are statutorily required to be set by the EPA at levels that are requisite to protect the public health, are established as concentrations of O_3 and $PM_{2.5}$ and not as tonnages of their precursor pollutants (Appendix A). Because the ambient air quality standards are focused on achieving a particular concentration region-wide, the tools and plans for attaining the ambient air quality standards are regional in nature. For CEQA analyses, project-generated emissions are typically estimated in pounds per day or tons per year and compared to mass daily or annual emission thresholds. Although CEQA thresholds are established at levels that the air basin can accommodate without affecting the attainment date for the ambient air quality standards, even if a project exceeds established CEQA significance thresholds, this does not mean that one can easily determine the concentration of O_3 or PM that will be created at or near the project site on a particular day or month of the year, or what specific health impacts will occur (Appendix A).

In regard to regional concentrations and air basin attainment, the SJVAPCD emphasized that attempting to identify a change in background pollutant concentrations that can be attributed to a single project, even one as large as the entire Friant Ranch Specific Plan, is a theoretical exercise. The SJVAPCD brief noted that it "would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have" (Appendix A). The situation is further complicated by the fact that background concentrations of regional pollutants are not uniform either temporally or geographically throughout an air basin, but are constantly fluctuating based on meteorology and other environmental factors. The SJVAPCD noted that the currently available modeling tools are equipped to model the impact of all emission sources in a basin on attainment (Appendix A). The SJVAPCD brief then indicated that "Running the photochemical grid model used for predicting O_3 attainment with the emissions solely from the Friant Ranch project (which equate to less than one-tenth of 1% of the total NO_x and VOC in the Valley) is not likely to yield valid information given the relative scale involved" (Appendix A).

The SCAQMD and SJVAPCD have indicated that it is not feasible to quantify project-level health impacts based on existing modeling (Appendix A). Even if a metric could be calculated, it would not be reliable because the models are equipped to model the impact of all emission sources in an air basin on attainment and would likely not yield valid information or a measurable increase in O_3 concentrations sufficient to accurately quantify O_3-related health impacts for an individual project.

Nonetheless, following the Supreme Court's Friant Ranch decision, some EIRs where estimated criteria air pollutant emissions exceeded applicable air district thresholds have included a quantitative analysis of potential project-generated health effects using a combination of a regional photochemical grid model (PGM)[3] and the EPA Benefits Mapping and Analysis Program (BenMAP or BenMAP–Community Edition [CE]).[4] The publicly available health impact assessments (HIAs) typically present results in terms of an increase in health incidences and/or the increase in background health incidence for various health outcomes resulting from a project's estimated increase in concentrations of O_3 and $PM_{2.5}$.[5] To date, the five publicly available HIAs have concluded that the evaluated project's health effects associated with the estimated project-generated increase in concentrations of O_3 and $PM_{2.5}$ represent a small increase in incidences and a very small percent of the number of background incidences, indicating that these health impacts are negligible and potentially within the models' margin of error. Also, although the results of the five available HIAs conclude that project emissions do not result in a substantial increase in health incidences, the estimated emissions and assumed toxicity is also conservatively inputted into the HIA and thus, overestimate health incidences, particularly for $PM_{2.5}$.

As explained in the SJVAPCD brief and noted previously, running the PGM used for predicting O_3 attainment with the emissions solely from an individual project like the Friant Ranch project or the proposed Project is not likely to yield valid information given the relative scale involved. The five examples reviewed support the SJVAPCD's brief contention that consistent, reliable, and meaningful results may not be provided by methods applied at this time. Accordingly, additional work in the industry, and more importantly, air district participation, is needed to develop a more meaningful analysis to correlate project-level mass criteria air pollutant emissions and health effects for decision makers and the public. Furthermore, at the time of writing, no HIA has concluded that health effects estimated using the PGM and BenMAP approach are substantial provided that the estimated project-generated incidences represent a very small percent of the number of background incidences, potentially within the models' margin of error.

Of importance, Project-generated construction and operational emissions would be less than the applied mass daily thresholds for all pollutants and health effects associated with Project-generated criteria air pollutant emissions. Impacts would be **less than significant.**

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[3] The first step in the publicly available health impact assessment (HIA) includes running a regional photochemical grid model (PGM), such as the Community Multiscale Air Quality (CMAQ) model or the Comprehensive Air Quality Model with extensions (CAMx) to estimate the increase in concentrations of O_3 and $PM_{2.5}$ as a result of project-generated emissions of criteria and precursor pollutants. Air districts, such as the SCAQMD, use photochemical air quality models for regional air quality planning. These photochemical models are large-scale air quality models that simulate the changes of pollutant concentrations in the atmosphere using a set of mathematical equations characterizing the chemical and physical processes in the atmosphere (EPA 2017).

[4] After estimating the increase in concentrations of O_3 and $PM_{2.5}$, the second step includes use of BenMAP or BenMAP-CE to estimate the resulting associated health effects. BenMAP estimates the number of health incidences resulting from changes in air pollution concentrations (EPA 2018). The health impact function in BenMAP-CE incorporates four key sources of data: (i) modeled or monitored air quality changes, (ii) population, (iii) baseline incidence rates, and (iv) an effect estimate. All of the five example HIAs focused on O_3 and $PM_{2.5}$.

[5] The following CEQA documents included a quantitative HIA to address Friant Ranch: (1) California State University Dominguez Hills 2018 Campus Master Plan EIR, (2) March Joint Powers Association K4 Warehouse and Cactus Channel Improvements EIR, (3) Mineta San Jose Airport Amendment to the Airport Master Plan EIR, (4) City of Inglewood Basketball and Entertainment Center Project EIR, and (5) San Diego State University Mission Valley Campus Master Plan EIR (see Appendix A).

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Health Impacts of Carbon Monoxide

Mobile-source impacts occur on two scales of motion. Regionally, Project-related travel would add to regional trip generation and increase the vehicle miles traveled within the local airshed and the SDAB. Locally, Project-generated traffic would be added to the County's roadway system near the Project site. If such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and is operating on roadways already crowded with non-Project traffic, there is a potential for the formation of microscale CO hotspots in the area immediately around points of congested traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SDAB is steadily decreasing.

CO transport is extremely limited, and CO disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors such as residents, school children, hospital patients, and older adults. Typically, high CO concentrations are associated with urban roadways or intersections operating at an unacceptable level of service (LOS). Projects contributing to adverse traffic impacts may result in the formation of CO hotspots.

To verify that the Project would not cause or contribute to a violation of CO standards, a screening evaluation of the potential for CO hotspots was conducted. The California Department of Transportation (Caltrans) and the University of California, Davis, Institute of Transportation Studies' Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1997) was followed. CO hotspots are typically evaluated when the LOS of an intersection or roadway decreases to LOS E or worse; signalization and/or channelization is added to an intersection; and/or sensitive receptors, such as residences, schools, and hospitals, are located in the vicinity of the affected intersection or roadway segment. Additionally, the County provides a screening threshold of 3,000 peak trips (Appendix A).

To verify that the Project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hotspots was conducted based on the Project's transportation assessment (Appendix F) results and the Caltrans Institute of Transportation Studies Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1997).

The Project's transportation assessment evaluated the Richland Road/Borden Road intersection. As determined by the assessment, in the existing and existing plus Project scenarios, the Project would not cause the intersection to decrease to LOS E or worse (Appendix F). Therefore, the Project would not result in a CO hotspot and would result in a **less than significant impact.**

Health Impacts of Toxic Air Contaminants

In addition to impacts from criteria pollutants, impacts may include emissions of pollutants identified by the state and federal government as toxic air contaminants (TACs) or hazardous air pollutants. State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and aimed at TACs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal hazardous air pollutants, and adopts appropriate control measures for sources of these TACs. The greatest potential for TAC emissions during construction would be DPM emissions from heavy equipment operations and heavy-duty trucks. The following measures are required by state law to reduce DPM emissions:

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-Use Off-Road Diesel Vehicles (13 CCR 2449), the purpose of which is to reduce DPM and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13, Section 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to 5 minutes; electric auxiliary power units shall be used whenever possible.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The SDAPCD recommends an incremental cancer risk threshold of 10 in 1 million (Appendix A). “Incremental cancer risk” is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology. The Project would not require the extensive operation of heavy-duty construction equipment, which is subject to a CARB Airborne Toxics Control Measure for in-use diesel construction equipment to reduce DPM emissions, nor would it involve extensive use of diesel trucks, which are also subject to a CARB Airborne Toxics Control Measure.

As shown in Table 3.3-2, Estimated Operational Criteria Air Pollutant Emissions – Unmitigated, maximum daily particulate matter (i.e., PM_{10} or $PM_{2.5}$) emissions generated by construction equipment operation and haul-truck trips during construction (exhaust particulate matter, or DPM), combined with fugitive dust generated by equipment operation and vehicle travel, would be well below the significance thresholds. Moreover, total construction of the Project would last approximately 18 months, after which Project-related TAC emissions would cease. Thus, the Project would not result in a long-term source of TAC emissions. No residual TAC emissions or corresponding cancer risk are anticipated after construction, and no long-term sources of TAC emissions are anticipated during operation of the Project. Therefore, the impact of exposure of Project-related TAC emissions to sensitive receptors would be less than significant.

Additionally, CARB’s Air Quality and Land Use Handbook: A Community Health Perspective identifies certain types of facilities or sources that may emit substantial quantities of TACs and therefore could conflict with sensitive land uses, such as “schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities” (CARB 2005). The Air Quality and Land Use Handbook is a guide for siting of new sensitive land uses, but it does not mandate specific separation distances to avoid potential health impacts. The evaluated facilities or sources include the following (CARB 2005):

- High-traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

CARB recommends that sensitive receptors not be located downwind or in proximity to such sources to avoid potential health hazards.

The Project would not include any of the above-listed land uses nor would it expose students, faculty, or visitors of the Project to TAC emissions from these sources. Impacts would be **less than significant.**

Valley Fever

As discussed in Section 2.1.2.2 in Appendix A, the average incidence rate of Valley Fever (coccidioidomycosis) within San Diego County is below the statewide average. Furthermore, construction of the Project would comply with SDAPCD Rule 55, Fugitive Dust Control, which limits the amount of fugitive dust generated during construction. SDAPCD Rule 55 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. The nearest sensitive-receptor land use (existing residences) are adjacent to Project site. Based on the low incidence rate of coccidioidomycosis on the Project site and in San Diego County, with the Project's implementation of dust control strategies and Valley Fever awareness and training, and based on the distance from the nearest sensitive receptors, it is not anticipated that earth-moving activities during Project construction would result in exposure of nearby sensitive receptors to Valley Fever. Therefore, the Project would have a **less than significant impact** with respect to Valley Fever exposure for sensitive receptors.

d) ***Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?***

The occurrence and severity of potential odor impacts depends on numerous factors: the nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be generated from vehicles and/or equipment exhaust emissions during construction of the Project. Odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and architectural coatings. Such odors would disperse rapidly from the Project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be **less than significant.**

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The Project would not involve any of these activities. Typical odors generated from operation of the Project would include vehicle exhaust generated by school buses, faculty/staff, and parents traveling to and from the Project site and through the periodic use of landscaping and maintenance equipment. Therefore, the Project would result in an odor impact that is **less than significant.**

3.4 Biological Resources

a) ***Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?***

The proposed Project is the reconstruction of the exiting Richland Elementary School. Due to the existing, developed nature of the Project site, it is not likely to support any candidate, sensitive, or special-status species. The surrounding areas of the Project site are also disturbed, developed urban areas that are unlikely to support candidate, sensitive, or special-status species. However, the Project site could still provide habitats for native plants and animals. Based on a site reconnaissance survey conducted on December 9, 2020, of the approximately 10.2-acre Project site plus a 100-foot buffer around the Project site, the biological survey area is characterized by ruderal and other non-native and ornamental species.

A few mature ornamental landscape trees are currently located on and adjacent to the Project site. Although it is unlikely because of the disturbed nature of the Project biological survey area, these trees could potentially provide nesting opportunities for bird and raptor species protected under the California Fish and Game Code and the Migratory Bird Treaty Act of 1918. Impacts to nesting bird and raptor species would be potentially significant if implementation of the Project would require removal or substantial trimming of healthy mature trees during the bird nesting season. Thus, the Project would be required to comply with the Migratory Bird Treaty Act to reduce impacts to nesting bird habitat. Compliance with Mitigation Measure (**MM-)BIO-1** would reduce impacts **to less than significant**.

Mitigation Measure

MM-BIO-1 Impacts from construction-related activities may occur to wildlife if construction occurs during the breeding season (i.e., February 15 through August 31 for most bird species; and January 1 through August 31 for raptors). Protection of general avian wildlife in compliance with the Migratory Bird Treaty Act and California Fish and Game Code shall be accomplished by either scheduling construction between July 15 and December 31 or, if construction must commence during the nesting season (January 1 through August 31), a one-time biological survey for nesting bird species shall be conducted in all suitable habitat for the presence of nesting birds by a qualified biologist 72 hours prior to the commencement of work. If any active nests are detected, the area shall be flagged and mapped on construction plans, along with a minimum 25-foot buffer and up to a 300-foot maximum buffer for raptors, or as recommended by the qualified biologist. Generally, a 25-foot buffer is suitable for most non-sensitive bird species. Larger buffers are required for raptors because they are particularly sensitive to disturbance during the breeding season. These typical buffer distances are generally accepted by the resource agencies (e.g., U.S. Fish and Wildlife Service, California Department of Fish and Wildlife). These buffer areas established by the qualified biologist shall be avoided until the nesting cycle is complete or it is determined that the nest has failed.

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

The entire Project site is characterized by disturbed and ornamental land cover. No riparian habitat or other natural vegetation communities considered sensitive are present within the Project site. As a result, there would be **no impact** to riparian or sensitive vegetation communities.

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

The Federal Clean Water Act, Section 404, defines wetlands as follows (33 USC 1251 et seq.):

> Those areas that are inundated or saturated by surface or ground water (hydrology) at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands generally include swamps, marshes, bogs, and similar areas.

No state or federally defined waters of the United States or waters of the state occur within the Project site. This includes the absence of federally defined wetlands and other waters (e.g., drainages), and state-defined waters (e.g., streams and riparian extent). Therefore, **no impacts** to jurisdictional waters or wetlands would occur.

Although no state or federally protected wetlands are present on site, the Project would include filling a concrete-lined ditch that conveys stormwater runoff through the Project site. The concrete-lined ditched is subject to regular maintenance and is unvegetated. Under existing conditions, a 60-inch-diameter reinforced concrete pipe in Richland Road, north of the Project site, outlets into the concrete-lined ditch in the northern edge of the Project site. From there, runoff drains southwesterly in the open, concrete-lined ditch for approximately 850 lineal feet before it re-enters the existing storm drain in Rose Ranch Road. The Project would install a 60-inch-diameter reinforced concrete pipe to convey these flows and grade the existing concrete-lined ditch.

Biological review of the Project site determined the drainage was not a defined wetland; however, it may be regulated as a non-wetland feature by the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and/or the Regional Water Quality Control Board. These agencies have adopted regulatory processes for appropriately permitting impacts to non-wetland features. Accordingly, the Project would be subject to these permitting requirements; however, because the existing concrete-lined ditch is not considered a wetland, and because there are other regulatory processes that exist to permit impacts to such features, impacts would be **less than significant.**

d) ***Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?***

According to the City's General Plan – Conservation and Open Space Element, the City offers limited opportunities for wildlife movement along the northern and southern prats of the City. However, wildlife movement could also occur along riparian creeks and drainage corridors, including San Marcos Creek, Las Posas Creek, Twin Oaks Valley Creek, Buena Creek, Agua Hedionda Creek, and some tributaries (City of San Marcos 2012a). The Project site is not located within a wildlife corridor as mapped in the City's General Plan – Conservation and Open Space Element.

Several mature trees exist on site, as described in response to Threshold 3.4(a), above. These trees present a potential nesting habitat for raptors and other birds. Birds protected under the federal Migratory Bird Treaty Act have the potential to nest on site. Some existing trees would be removed during Project construction that could directly affect protected nesting birds, should construction occur during the bird breeding season. Additionally, construction could result in indirect effects to nesting birds through increases in noise and vibration should construction occur during the bird breeding season. Therefore, a potentially significant impact to migratory nesting birds would occur. Implementation of **MM-BIO-1**, which requires construction to occur outside of the bird breeding season or requires pre-construction nesting bird surveys and avoidance measures, would reduce potentially significant impacts to **less than significant.**

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The City of San Marcos General Plan – Conservation and Open Space Element, includes tree preservation policies that state that preservation of "healthy mature trees [shall occur] where feasible; where removal is necessary, trees shall be replaced at a ratio of 1:1" (City of San Marcos 2012a). The proposed Project would not conflict with this policy or any local policies or ordinances protecting biological resources. Some existing vegetation, including trees, would be removed, and new trees and complimentary landscaping would be planted in compliance with the ratio specified in the policy above. Impacts due to conflicts with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, would be **less than significant**.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Project site is not within or adjacent to any conservation plan areas or a designated conservation area. As a result, the proposed Project would not conflict with any local, regional, or state habitat conservation plans, and there would be **no impact.**

3.5 Cultural Resources

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

A Cultural Resources Technical Report for the proposed Project was prepared by Dudek in January 2021 (Appendix B). On November 11, 2020, a California Historical Resources Information System (CHRIS) records search of the Project site and a 1-mile search radius was completed by the South Coastal Information Center, located on the campus of San Diego State University. This search included mapped prehistoric, historical, and built-environment resources; Department of Parks and Recreation site records; technical reports; archival resources; and ethnographic references.

Results of the cultural resources records search indicated that 46 previous cultural resource studies have been conducted within 1 mile of the Project site between 1975 and 2019. Of the 46 studies, three studies have covered the entire site or intersect the Project site: SD-02043, SD-08588, and SD-14140. The records search indicates that no previously recorded resources have been identified within the Project site, but 19 cultural resources have been recorded within 1 mile of the Project site. The 19 resources consist of nine historic sites, eight prehistoric sites, one prehistoric isolate, and one protohistoric building (Appendix B).

Dudek Architectural Historian Nicole Frank, MSHP, conducted a pedestrian survey of the Project site for historic built-environment resources on December 7, 2020. During the course of the pedestrian survey, Ms. Frank identified one educational property over 60 years old requiring recordation and evaluation for historical significance: Richland Elementary School (Appendix B).

The Project site presently contains one educational property (Richland Elementary School) constructed in two phases in 1960 and 1965, with multiple temporary classrooms added to the site between circa 1980 and into the 2000s. Surrounding the Project site are chain-link, combination chain-link and concrete masonry unit block, and metal fences. East and south of the buildings are two asphalt parking lots. An asphalt play area and playground are located west and northwest of the buildings, with an additional playground, asphalt play area, and shade structure located south of the buildings. In the late 1990s, individual clay tiles were installed as a decorative wall installation on Buildings 5 and 6 (Appendix B).

Buildings 1, 2, 3, 4, and 5 were constructed in 1960 and repeat similar character-defining features, including their rectangular plan, stucco exterior cladding, flat roof sheathed in rolled composition, eave overhang with simple metal posts, angled metal roof paneling, lack of exterior decoration, one-story in height, and large expanses of windows. The buildings are connected by a flat-roof open-air pedestrian walkway held up by simple metal posts and a wooden ceiling along the southeast elevations. Buildings 6 and 7 were constructed in 1965 and repeat similar character-defining features, including stucco exterior cladding, eave overhangs, and lack of exterior decoration. The buildings are connected by a flat-roof open-air pedestrian walkway held up by simple metal posts and a wooden ceiling along the southeast and northwest elevations. Buildings 8 through 20 are all temporary classrooms constructed on the Project site between circa 1980 and the 2000s.

The following alterations (dates unknown) were identified during the course of the survey and archival research (Appendix B):

- 1965: Addition of Building 6 (auditorium/cafeteria) and Building 7 (classroom) northeast of the original buildings.
- Between 1980 and early 2000s: Addition of 24 portable buildings on the site.
- Dates unknown: Window and door replacements.

The buildings on the Project site do not meet the criteria that determines eligibility for the California Register of Historical Resources (CRHR). Archival research failed to indicate that the construction of Richland Elementary School was important to the history of elementary school development in the United States, California, or San Marcos. There is no indication that construction of the school marked an important moment in history or that it is associated with a pattern of events. Archival research failed to indicate any such direct association with Richland Elementary School and individuals who are known to be historic figures at the national, state, or local level. As such, the school is not known to have any historical associations with people important to the nation’s or state’s past. Richland Elementary School does not embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, and it does not possess high artistic values. Richland was constructed in two phases by two architectural firms. There is no evidence to indicate that Richland Elementary School is likely to yield any additional information important to prehistory or history beyond what is already known. The school is also not associated with an archaeological site or a known subsurface cultural component. The evaluation found that Richland Elementary School is not eligible under any National Register of Historic Places or CRHR designation criteria at the individual level due to lack of important historical associations and architectural merit (Appendix B).

In addition to meeting one or more of the CRHR criteria, an eligible resource must retain integrity, which is expressed in seven aspects: location, design, setting, materials, workmanship, feeling, and association. The buildings at the Project site retain integrity of location, design, materials, workmanship, and feeling. The buildings at the Project site do not retain integrity of setting or association (Appendix B).

No cultural resources were identified within the Project site as a result of the CHRIS records search, extensive archival research, Sacred Lands File search, field survey, and property significance evaluation.

The property at 910 Borden Road, Richland Elementary School, does not appear eligible for National Register of Historic Places or CRHR designation due to a lack of significant historical associations and architectural merit. Therefore, the property is not considered a historical resource for the purposes of CEQA. Further, no potential indirect impacts to historical resources were identified (Appendix B). Therefore, the Project would not cause a substantial adverse change to any known historical resource, and impacts would be **less than significant.**

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

A Cultural Resources Technical Report for the proposed Project was prepared by Dudek in January 2021 (Appendix B). On November 11, 2020, a CHRIS records search of the Project site and a 1-mile search radius was completed at the South Coastal Information Center, located on the campus of San Diego State University. This search included mapped prehistoric, historical, and built-environment resources; Department of Parks and Recreation site records; technical reports; archival resources; and ethnographic references.

During the records search, no archeological resources were found within the Project site. The Project site is entirely developed and contains no exposed sediment, therefore, an archaeological survey was not completed (Appendix B).

Although no archaeological resources were identified as a result of the records search, there is a possibility of encountering previously undiscovered archaeological resources at subsurface levels during ground-disturbing activities associated with the Project. Implementation of **MM-CUL-1** would ensure that potential impacts to archaeological resources during construction activities would be reduced to less than significant. Therefore, the Project would not result in a substantial adverse change in the significance of an archaeological resource, and impacts would be **less than significant with mitigation incorporated.**

Mitigation Measure

MM-CUL-1 **Unanticipated Discovery of Cultural Resources.** In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed Project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether or not additional study is warranted. Depending on the significance of the find, the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA or Section 106 of the National Historic Preservation Act, additional work, such as preparation of an archaeological treatment plan, testing, or data recovery, may be warranted.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

As stated previously, there are no previously recorded cultural resources on the Project site. Given that the site is a developed urban site, ground-disturbing activities associated with construction of the Project are unlikely to uncover previously unknown archaeological resources. However, in the unlikely event that human remains are discovered on site during ground-disturbing activities, implementation of **MM-CUL-2** would set forth proper procedure. Therefore, impacts would be **less than significant with mitigation incorporated.**

Mitigation Measure

MM-CUL-2 **Unanticipated Discovery of Human Remains.** In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the remains are determined to be Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours. In accordance with California Public Resources Code Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant (MLD) from the deceased Native American. The MLD shall complete their inspection within 48 hours of being granted access to the site. The MLD shall then determine, in consultation with the property owner, the disposition of the human remains.

3.6 Energy

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

The analysis presented below is based on information obtained through CalEEMod, as detailed in Appendix A.

Energy Consumption

Electricity

Construction Use

Temporary electric power for as-necessary lighting and electronic equipment (such as computers inside temporary construction trailers, and heating, ventilation, and air conditioning) would be provided by San Diego Gas & Electric. The amount of electricity used during construction would be minimal; typical demand would stem from the use of electrically powered hand tools and several construction trailers by managerial staff during the hours of construction activities. The majority of the energy used during construction would be from petroleum. The electricity used for construction activities would be temporary and minimal; therefore, impacts would be **less than significant.**

Operational Use

The operational phase would require electricity for multiple purposes, including building heating and cooling, lighting, appliances, electronics, and for water and wastewater conveyance. CalEEMod Version 2016.3.2 and the default value for electricity consumption was applied for the Project (CAPCOA 2017). Table 3.6-1 presents the electricity demand for the Project.

Table 3.6-1. Project Operations – Electricity Demand

Project Facility	Kilowatt Hours per Year
Building and Lighting Electricity Demand	
Elementary School	453,481.00
Parking Lot	5,157.50
Water/Wastewater Electricity Demand	
Elementary School	57,138.42
Total	**515,776.92**

Source: Appendix A.

The Project is estimated to have a total electrical demand of 515,777 kilowatt-hours per year. By comparison, the existing school was estimated to have an electricity demand of approximately 527,337 kilowatt-hours per year. The Project's buildings would be built in accordance with the current Title 24 standards at the time of construction and per the California Green Building Standards (CALGreen). Furthermore, the Project would implement several features that would reduce electricity consumption, such as sensors that turn off lights if there is no activity and LED fixtures. The Project would use a variable air volume system that is able to take advantage of diversified heat loads, which provides a reduction in energy consumption. High-occupancy areas would be provided with demand control ventilation to save on energy, the Project would use high-efficient water fixtures and irrigation systems, and the Project would install solar photovoltaic (PV) systems to offset approximately 75% of the school's energy.

Therefore, through the inherent increase in efficiency of building code regulations and implementation of the above features, the Project would not result in a wasteful use of energy. Impacts related to operational electricity use would be **less than significant.**

Natural Gas

<u>Construction Use</u>

Natural gas is not anticipated to be required during construction of the Project. Fuels used for construction would primarily consist of diesel and gasoline. Any minor amounts of natural gas that may be consumed as a result of Project construction would be temporary and negligible and would not have an adverse effect; therefore, impacts would be **less than significant.**

<u>Operational Use</u>

Natural gas would be directly consumed throughout operation of the Project, primarily through building heating. As previously described and consistent with electricity use, the Project's natural gas use was estimated using CalEEMod.

The Project is estimated to use 536,970 kilo-British thermal units, which is equivalent to 5,370 therms, of natural gas per year. By comparison, the existing elementary school consumed approximately 5,196 therms per year (Appendix A). Therefore, due to the inherent increase in efficiency of building code regulations, the Project would not result in a wasteful use of energy. Impacts related to operational natural gas use would be **less than significant.**

Petroleum

Construction Use

Petroleum would be consumed throughout construction of the Project. Fuel consumed by construction equipment would be the primary energy resource expended over the course of construction, and vehicle miles traveled (VMT) associated with the transportation of construction materials and construction worker commutes would also result in petroleum consumption. Heavy-duty construction equipment associated with construction activities and vendor trucks would rely on diesel fuel. Construction workers would travel to and from the Project site throughout the duration of construction. It is assumed that construction workers would travel to and from the Project site in gasoline-powered vehicles. Project construction would not include haul truck trips, thus they were not included in the tables below.

Heavy-duty construction equipment of various types would be used during construction. CalEEMod was used to estimate construction equipment usage. Based on that analysis, diesel-fueled construction equipment would operate for an estimated 24,850 hours, as summarized in Table 3.6-2.

Table 3.6-2. Hours of Operation for Construction Equipment

Phase	Hours of Equipment Use
Demolition	960
Site Preparation	490
Grading	1,920
Building Construction	20,400
Paving	960
Architectural Coating	120
Total	**24,850**

Source: Appendix A.

Fuel consumption from construction equipment was estimated by converting the total carbon dioxide (CO_2) emissions from each construction phase to gallons using conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton (MT) CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per MT CO_2 per gallon (The Climate Registry 2020). The estimated diesel fuel use from construction equipment is shown in Table 3.6-3.

Table 3.6-3. Construction Equipment Diesel Demand

Phase	Pieces of Equipment	Equipment CO_2 (MT)	Kilograms CO_2 per Gallon	Gallons
Demolition	6	34.00	10.21	3,330.14
Site Preparation	7	16.72	10.21	1,637.39
Grading	2	81.74	10.21	8,006.11
Building Construction	9	347.55	10.21	34,039.80
Paving	6	20.03	10.21	1,961.56
Architectural Coating	1	2.55	10.21	250.08
			Total	**49,225.08**

Sources: Appendix A.
Notes: CO2 = carbon dioxide; MT = metric ton.

Fuel consumption from worker vehicle and vendor truck trips was estimated by converting the total CO_2 emissions from the construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Worker vehicles were assumed to be gasoline fueled, and vendor trucks were assumed to be diesel fueled. The estimated fuel use for worker vehicles, vendor trucks, and haul trucks are presented in Tables 3.6-4 through 3.6-6.

Table 3.6-4. Construction Worker Vehicle Gasoline Demand

Phase	Trips	Vehicle CO_2 (MT)	Kilograms CO_2 per Gallon	Gallons
Demolition	320	1.12	8.78	127.65
Site Preparation	180	0.63	8.78	71.81
Grading	600	2.10	8.78	239.36
Building Construction	17,400	59.41	8.78	6,766.67
Paving	320	1.08	8.78	122.98
Architectural Coating	240	0.81	8.78	92.23
			Total	**7,420.72**

Sources: Appendix A.
Notes: CO_2 = carbon dioxide; MT = metric ton.

Table 3.6-5. Construction Vendor Truck Diesel Demand

Phase	Trips	Vehicle CO_2 (MT)	Kilograms CO_2 per Gallon	Gallons
Demolition	160	2.09	10.21	204.85
Site Preparation	0	0.00	10.21	0.00
Grading	0	0.00	10.21	0.00
Building Construction	7,200	93.51	10.21	9,158.32
Paving	80	1.04	10.21	101.46
Architectural Coating	40	0.52	10.21	50.72
			Total	**3,897.40**

Sources: Appendix A.
Notes: CO_2 = carbon dioxide; MT = metric ton.

Table 3.6-6. Construction Haul Truck Diesel Demand

Phase	Trips	Vehicle CO_2 (MT)	Kilograms CO_2 per Gallon	Gallons
Demolition	400	15.23	10.21	1,491.91
Site Preparation	0	0.00	10.21	0.00
Grading	92	3.50	10.21	343.14
Building Construction	0	0.00	10.21	0.00
Paving	0	0.00	10.21	0.00
Architectural Coating	0	0.00	10.21	0.00
			Total	**1,835.05**

Sources: Appendix A.
Notes: CO_2 = carbon dioxide; MT = metric ton.

As shown in Tables 3.6-4 through 3.6-6, the Project is estimated to consume approximately 67,996 gallons of petroleum during the construction phase. By comparison, approximately 36 billion gallons of petroleum would be consumed in California over the course of the Project's construction phase based on the California daily petroleum consumption estimate of approximately 78.6 million gallons per day (EIA 2019). The Project would be required to comply with the CARB's Airborne Toxics Control Measure, which restricts heavy-duty diesel vehicle idling time to 5 minutes. Furthermore, the Project would be subject to CARB's In-Use Off-Road Diesel Vehicle Regulation that requires the vehicle fleet to reduce emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emissions Control Strategies. Overall, because petroleum use during construction would be temporary and relatively minimal, and would not be wasteful or inefficient, impacts would be less than significant.

Operational Use

The majority of fuel consumption resulting from the Project's operational phase would be attributable to the use of motor vehicles traveling to and from the Project site. Petroleum fuel consumption associated with motor vehicles traveling to and from the Project site is a function of VMT as a result of Project operation. The annual VMT attributable to the Project is expected to be 2,142,011 VMT per year based on CalEEMod default trip lengths. Similar to construction trips, fuel consumption was estimated by converting the total CO_2 emissions from each land use type to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. Based on the Countywide proportion of gasoline and diesel on-road-vehicle generated CO_2 in EMFAC2017, the vehicles associated with Project operations were assumed to be approximately 84% gasoline powered and 16% diesel powered. The estimated fuel use from Project operational mobile sources is shown in Table 3.6-7.

Table 3.6-7. Petroleum Consumption – Operation

Fuel	Vehicle MT CO_2	Kilograms CO_2 per Gallon	Gallons
Gasoline	775.22	8.78	88,293.95
Diesel	49.92	10.21	4,888.97
		Total	**93,182.92**

Sources: Appendix A.
Notes: CO_2 = carbon dioxide; MT = metric ton.

Mobile sources from the Project would result in approximately 88,294 gallons of gasoline per year and 4,889 gallons of diesel consumed per year beginning in 2023. By comparison, California as a whole consumes approximately 28.7 billion gallons of petroleum per year (EIA 2019).

Over the lifetime of the Project, the fuel efficiency of the vehicles being used is expected to increase. As such, the amount of petroleum consumed as a result of vehicular trips to and from the Project site during operation would decrease over time. There are numerous regulations in place that require and encourage increased fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and greenhouse gas (GHG) emissions into a single, coordinated package of standards. The approach also includes efforts to support and accelerate the numbers of plug-in hybrids and zero-emissions vehicles in California (CARB 2011). Additionally, in response to Senate Bill (SB) 375, CARB adopted the goal of reducing per-capita GHG emissions from 2005 levels by 8% by 2020 and 13% by 2035 for light-duty passenger vehicles in the planning area for SANDAG. This reduction would occur by reducing VMT through the integration of land use and transportation planning (SANDAG 2015).

In summary, the use of fuel would be a small fraction of the statewide use and, due to efficiency increases, diminish over time. Given these considerations, petroleum consumption associated with the Project would not be considered inefficient or wasteful and would result in a **less than significant impact.**

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Title 24 of the California Code of Regulations contains energy efficiency standards for residential and non-residential buildings based on a state mandate to reduce California's energy demand. Specifically, Title 24 addresses a number of energy efficiency measures that impact energy used for lighting, water heating, heating, and air conditioning, including the energy impact of the building envelope such as windows, doors, wall/floor/ceiling assemblies, and roofs.

CCR Part 6 of Title 24 specifically establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 11 of Title 24 also includes the CALGreen standards, which established mandatory minimum environmental performance standards for new construction projects. The Project would comply with CCR Title 24, Part 6 and Part 11, per state regulations.

Based on the foregoing, the Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency; therefore, impacts during construction and operation of the Project would be **less than significant.**

3.7 Geology and Soils

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

This section is based on the Geotechnical Investigation prepared for the Project (Appendix C).

The Project would result in the reconstruction of the existing Richland Elementary School with a modern campus, including new classrooms, administration buildings, play fields, and parking lots. Reconstruction of the school would comply with the latest California Building Code (CBC) and DSA requirements, including seismic and other geotechnical considerations. Further, the Project would provide for the same number of students, faculty, administration and support staff as currently supported. Because the proposed Project would occur on the same site as the existing use; would not result in an increase in the number of students, faculty, or support staff; and would be built to the latest CBC requirements, it would not result in an increased risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure/liquefaction, or landslides. Impacts would be **less than significant.**

b) Would the project result in substantial soil erosion or the loss of topsoil?

The Project would be required to prepare and comply with a Stormwater Pollution Prevention Plan, which would provide for best management practices (BMPs) during construction to prevent soil erosion and the loss of topsoil. These measures may include requirements to install straw waddles to prevent erosion, restrictions on stockpiling soil during grading or requiring stockpiles to be covered or stabilized, and other commonly accepted practices. With implementation of the requirements of the BMPs contained in the Stormwater Pollution Prevention Plan, the proposed Project would not be expected to result in soil erosion or the loss of topsoil. Impacts would be **less than significant.**

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

The Project proposes to reconstruct the existing Richland Elementary School with a modern campus, including new classrooms, administration buildings, play fields, and parking lots. Reconstruction of the school on the same site as the existing school would comply with the latest CBC and DSA requirements, including seismic and other geotechnical considerations. Construction of the Project would be performed in accordance with a grading plan and follow the recommendations of the geotechnical engineer. With adherence to the requirements provided by a geotechnical engineer, impacts related to landslides, lateral spreading, subsidence, liquefaction, or collapse would be **less than significant.**

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

The Project proposes to reconstruct the existing Richland Elementary School with a modern campus, including new classrooms, administration buildings, play fields, and parking lots. Reconstruction of the school on the same site as the existing school would comply with the latest CBC and DCA requirements, including seismic and other geotechnical considerations. With adherence to the requirements provided by a geotechnical engineer, impacts related to expansive soils would be **less than significant.**

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

The Project would connect to the City's municipal sewer system and would not be served by septic tanks or alternative waste water disposal systems. **No impact** would occur.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The Project site is underlain by Mesozoic (approximately 252 to 66 million years ago), undivided metasedimentary, and metavolcanic rocks, according to surficial geological mapping by Kennedy et al. (2007, see also Appendix D) at 1:100,000 scale and the paleontological records search requested from the San Diego Natural History Museum on January 27, 2021 (Appendix D). The records search results, which were received on February 2, 2021, indicated no paleontological localities are located within a 1-mile radius of the Project site (Appendix D). Although metavolcanic portions of sites are not known to yield fossils other than rare, petrified wood from volcanic breccias, the metasedimentary portions have produced fossil radiolarians, belemnites, and clams (Appendix D). Due to the lack of fossil localities near the Project site, the San Diego Natural History Museum determined the fossil potential to be low, and did not recommend a paleontological mitigation program. In addition, Mesozoic, undivided metasedimentary and metavolcanic rocks in the Project vicinity are not considered unique geological features (Appendix D). Given the low potential for the underlying geological unit to produce scientifically significant paleontological resources and the lack of unique geological features within the Project site, impacts to paleontological resources and unique geological features would be **less than significant.**

3.8 Greenhouse Gas Emissions

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction Emissions

Construction of the Project would result in GHG emissions, which are primarily associated with the use of off-road construction equipment, haul trucks, on-road vendor trucks, and worker vehicles.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 2.4.2.1 of the AQ-GHG Report (Appendix A). Construction of the Project is anticipated to commence in June 2021 and would last approximately 18 months, ending in December 2022. On-site sources of GHG emissions would include off-road equipment and off-site sources, including vendor trucks and worker vehicles. Table 3.8-1, Estimated Annual Construction Greenhouse Gas Emissions – Unmitigated, presents construction emissions for the Project in 2021 and 2022 from on-site and off-site emission sources.

Table 3.8-1. Estimated Annual Construction Greenhouse Gas Emissions - Unmitigated

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
2021	314.60	0.07	0.00	316.41
2022	369.03	0.07	0.00	370.78
			Total	**687.19**

Source: Appendix A
Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent
See Appendix A for complete results.
Totals may not add due to rounding.

As shown in Table 3.8-1, Estimated Annual Construction Greenhouse Gas Emissions – Unmitigated, the estimated total GHG emissions during construction would be approximately 687 MT of carbon dioxide equivalent (CO_2e) over the construction period. Estimated Project-generated construction emissions amortized over 30 years would be approximately 23 MT CO_2e per year. As with Project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the Project would be short term, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Operational Emissions

Operation of the Project would generate GHG emissions through motor vehicle and delivery truck trips to and from the Project site; landscape maintenance equipment operation; energy use (natural gas and generation of electricity consumed by the Project); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. CalEEMod was used to calculate the annual GHG emissions based on the operational assumptions described in Section 3.4.2.2, Operation, of the AQ-GHG Report (Appendix A).

The estimated existing and operational Project-generated GHG emissions from area sources, energy usage, motor vehicles, solid waste generation, and water usage and wastewater generation are shown in Table 3.8-2, Estimated Annual Operational Greenhouse Gas Emissions.

Table 3.8-2. Estimated Annual Operational Greenhouse Gas Emissions

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons Per Year			
Existing School				
Area	<0.01	<0.01	0.00	<0.01
Energy	125.28	<0.01	<0.01	125.79
Mobile	825.15	0.04	0.00	826.22
Solid Waste	23.16	1.37	0.00	57.39
Water Supply and Wastewater	22.72	0.08	<0.01	25.45
Total	**996.31**	**1.49**	**0.00**	**1,034.85**
Proposed Project				
Area	<0.01	<0.01	0.00	<0.01
Energy	123.58	<0.01	<0.01	124.10
Mobile	825.14	0.04	0.00	826.21
Solid Waste	24.14	1.43	0.00	59.81
Water Supply and Wastewater	22.08	0.07	<0.01	24.37
Total	**994.94**	**1.54**	**0.00**	**1,034.49**
Amortized 30-Year Construction Emissions				*22.91*
Project Operations + Amortized Construction Total				**1,057.40**
Net Change (Project Minus Existing School)				**22.55**

Source: Appendix A

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; <0.01 = reported value less than 0.01. See Appendix A for complete results.

CalEEMod limits various user inputs to specific decimal places (e.g., two decimal places), including the trip rate and land use metric inputs; therefore, there is the potential for rounding to result in slightly different values, including a minimal discrepancy in estimated Project-generated trips. The Project and the existing school are expected to result in the same amount of vehicle trips; however, due to rounding, the trips and associated emissions are slightly different.

As shown in Table 3.8-2, estimated annual Project-generated GHG emissions would be approximately 1,057 MT CO_2e per year as a result of Project operations and amortized construction. The existing school is estimated to generate approximately 1,035 MT CO_2e per year; therefore, the Project is estimated to result in a net increase in emissions of approximately 23 MT CO_2e per year. This would be less than the significance threshold of 900 MT CO_2e per year. Therefore, the Project would have a **less than significant** impact.

b) Would the project generate conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Consistency with City of San Marcos Climate Action Plan

This section evaluates the Project's impacts to GHG in accordance with the City's 2020 Climate Action Plan (CAP) Consistency Review Checklist (City of San Marcos 2020). Notably, although not applicable to the Project, the analysis discussed herein has been provided for informational purposes to demonstrate that the Project would not conflict with the objectives identified within the City's CAP. The first step in this Section evaluates a project's GHG emissions consistent with the City's Guidance to Demonstrating Consistency with the City of San Marcos Climate Action Plan: For Discretionary Projects Subject to CEQA (Appendix A). New discretionary development projects subject to CEQA review that emit less than 500 MT CO_2e annually would not contribute considerably to cumulative climate change impacts as stated in the City's Guidance Document, and therefore, would be considered consistent with the CAP and associated emissions projections.

For projects that are subject to CAP consistency review, the next step in determining consistency is to assess that project's consistency with the growth projections used in development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

Step 1

Question 1

Step 1 of the CAP Consistency Review Checklist determines land use consistency. Question 1 of Step 1 asks if a project is less than a certain size. A project is deemed consistent with the City's CAP by emitting less than 500 MT CO_2e per year. The proposed Project is larger than the screening size and therefore, would answer Yes to this question and must proceed to Question 2 of Step 1.

Question 2

Question 2 of Step 1 asks if a project is consistent with the existing General Plan land use designation. The proposed Project would involve demolishing the existing elementary school and would redevelop the site with a new 91,477-square-foot elementary school. The General Plan currently designates the site as Public/Institutional (P-I) (City of San Marcos 2018). Therefore, the site can be redeveloped with a new elementary school. The Project would be consistent with the General Plan designation for the site and would not require a General Plan amendment. Because the Project would be consistent with the City's existing land use designation for the site, the second step of CAP consistency review is to evaluate a project's consistency with the applicable strategies and measures of the CAP.

Step 2

The CAP Consistency Review Checklist includes specific mandatory and voluntary measures pertaining to land use and CAP measures consistency (City of San Marcos 2020). The Project would be consistent with most of the applicable mandatory project design features in the CAP Consistency Review Checklist. The Project would not conflict with the City's existing land use designation for the Project site. As previously discussed, the Project site is designated as Public/Institutional (P-I), which allows the site to be developed with public facilities, such as redevelopment of the site with a new elementary school. Thus, the Project would be consistent with the General Plan land use designation for the site. The Project would also incorporate solar PV panels. According to the SMUSD, it is estimated that 202.8 kilowatts of PV panels would be installed to offset approximately 75% of the school's electrical energy consumption. In addition, the PV panel system would be installed with battery storage that would have a rating of 220 kilowatt hours. In regards to indoor water use, the Project would install low-flow bathroom and kitchen faucets and low-flow toilets. Furthermore, the Project would install water-efficient devices and landscaping in accordance with applicable ordinances, including use of drought-tolerant species appropriate to the climate and region.

Accordingly, although the City's CAP would not apply to the Project, for disclosure, the Project would not conflict with the City's CAP.

Consistency with GHG-Related Laws and Regulations

The Project's consistency with statewide GHG reduction strategies is summarized in detail in Table 3.8-3, Applicable Greenhouse Gas–Related Laws and Regulations.

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
Building Components/Facility Operations		
Roofs/Ceilings/ Insulation	CALGreen Code (Title 24, Part 11) California Energy Code (Title 24, Part 6)	The Project must comply with efficiency standards regarding roofing, ceilings, and insulation. Roofs/Ceilings: New construction must reduce roof heat island effects per CALGreen Code Section 106.11.2, which requires use of roofing materials having a minimum aged solar reflectance, thermal emittance complying with Section A5.106.11.2.2 and A5.106.11.2.3 or a minimum aged Solar Reflectance Index as specified in Tables A5.106.11.2.2, or A5.106.11.2.3. Roofing materials must also meet solar reflectance and thermal emittance standards contained in Title 20 Standards. Roof/Ceiling Insulation: Requirements for the installation of roofing and ceiling insulation (see Title 24, Part 6 Compliance Manual at Section 3.2.2).
Flooring	CALGreen Code	The Project must comply with efficiency standards regarding flooring materials. For example, for 80% of floor area receiving "resilient flooring," the flooring must meet applicable installation and material requirements contained in CALGreen Code Section 5.504.4.6.
Window and Doors (Fenestration)	California Energy Code	The Project must comply with fenestration efficiency requirements. For example, the choice of windows, glazed doors, and any skylights for the Project must conform to energy consumption requirements affecting size, orientation, and types of fenestration products used (see Title 24, Part 6 Compliance Manual, Section 3.3).
Building Walls/Insulation	CALGreen Code California Energy Code	The Project must comply with efficiency requirements for building walls and insulation. Exterior Walls: Must meet requirements in current edition of California Energy Code, and comply with Sections A5.106.7.1 or A5.106.7.2 of CALGreen Code for wall surfaces, as well as Section 5.407.1, which requires weather-resistant exterior walls and foundation envelope as required by California Building Code

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
		Section 1403.2. Construction must also meet requirements contained in Title 24, Part 6, which vary by material of the exterior walls (see Title 24, Part 6 Compliance Manual, Part 3.2.3). Demising (Interior) Walls: Mandatory insulation requirements for demising walls (which separate conditioned from non-conditions space) differ by the type of wall material used (see Title 24, Part 6 Compliance Manual, Part 3.2.4). Door Insulation: Mandatory requirements for air infiltration rates to improve insulation efficiency; they differ according to the type of door (see Title 24, Part 6 Compliance Manual, Part 3.2.5). Flooring Insulation: Mandatory requirements for insulation that depend on the material and location of the flooring (see Title 24, Part 6 Compliance Manual, Part 3.2.6).
Finish Materials	CALGreen Code	The Project must comply with pollutant control requirements for finish materials. For example, materials including adhesives, sealants, caulks, paints and coatings, carpet systems, and composite wood products must meet requirements in CALGreen Code to ensure pollutant control (CALGreen Code Section 5.504.4).
Wet Appliances (Toilets/Faucets/ Urinal, Dishwasher/ Clothes Washer, Spa and Pool/Water Heater)	CALGreen Code California Energy Code Appliance Efficiency Regulations (Title 20 Standards)	Wet appliances associated with the Project must meet various efficiency requirements. Spa and Pool: Use associated with the Project is subject to appliance efficiency requirements for service water heating systems and equipment, and spa and pool heating systems and equipment (Title 24, Part 6, Sections 110.3, 110.4, 110.5; Title 20 Standards, Sections 1605.1(g), 1605.3(g); see also California Energy Code). Toilets/Faucets/Urinals: Use associated with the Project is subject to new maximum rates for toilets, urinals, and faucets, effective January 1, 2016 (Title 20 Standards, Sections 1605.1(h),(i) 1065.3(h),(i)): • Showerheads maximum flow rate 2.5 gpm at 80 psi • Wash fountains 2.2 x (rim space in inches/20) gpm at 60 psi • Metering faucets 0.25 gallons per cycle • Lavatory faucets and aerators 1.2 gpm at 60 psi • Kitchen faucets and aerators 1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi • Public lavatory faucets 0.5 gpm at 60 psi • Trough-type urinals 16 inches length • Wall mounted urinals 0.125 gallons per flush • Other urinals 0.5 gallons per flush Water Heaters: Use associated with the Project is subject to appliance efficiency requirements for water heaters (Title 20 Standards, Sections 1605.1(f), 1605.3(f)). Dishwasher/Clothes Washer: Use associated with the Project is subject to appliance efficiency requirements for dishwashers and clothes washers (Title 20 Standards, Sections 1605.1(o),(p),(q), 1605.3(o),(p),(q)).

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
Dry Appliances (Refrigerator/Freezer, Heater/Air Conditioner, Clothes Dryer)	Title 20 Standards CALGreen Code	Dry appliances associated with the Project must meet various efficiency requirements. Refrigerator/Freezer: Use associated with the Project is subject to appliance efficiency requirements for refrigerators and freezers (Title 20 Standards, Sections 1605.1(a), 1605.3(a)). Heater/Air Conditioner: Use associated with the Project is subject to appliance efficiency requirements for heaters and air conditioners (Title 20 Standards, Sections 1605.1(b),(c),(d),(e), 1605.3(b),(c),(d),(e) as applicable). Clothes Dryer: Use associated with the Project is subject to appliance efficiency requirements for clothes dryers (Title 20 Standards, Section 1605.1(q)).
	CALGreen Code	Installations of heating, ventilation, and air conditioning; refrigeration; and fire suppression equipment must comply with CALGreen Code Sections 5.508.1.1 and 508.1.2, which prohibits CFCs, halons, and certain HCFCs and HFCs.
Lighting	Title 20 Standards	Lighting associated with the Project will be subject to energy efficiency requirements contained in Title 20 Standards. General Lighting: Indoor and outdoor lighting associated with the Project must comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(j),(k),(n), 1605.3(j),(k),(n)). Emergency Lighting and Self-Contained Lighting: The Project must also comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(l), 1605.3(l)). Traffic Signal Lighting: For any necessary Project improvements involving traffic lighting, traffic signal modules and traffic signal lamps will need to comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(m), 1605.3(m)).
	California Energy Code	Lighting associated with the Project will also be subject to energy efficiency requirements contained in Title 24, Part 6, which contains energy standards for non-residential indoor lighting and outdoor lighting (see Title 24 Part 6 Compliance Manual, at Sections 5, 6). Mandatory lighting controls for indoor lighting include, for example, regulations for automatic shut-off, automatic daytime controls, demand responsive controls, and certificates of installation (see Title 24 Part 6 Compliance Manual, at Section 5). Regulations for outdoor lighting include, for example, creation of lighting zones, lighting power requirements, a hardscape lighting power allowance, requirements for outdoor incandescent and luminaire lighting, and lighting control functionality (see Title 24 Part 6 Compliance Manual at Section 6).
	AB 1109	Lighting associated with the Project will be subject to energy efficiency requirements adopted pursuant to AB 1109. Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general purpose lighting to reduce electricity consumption 25% for indoor commercial lighting.

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
Bicycle and Vehicle Parking	CALGreen Code	The Project will be required to provide compliant bicycle parking, fuel-efficient vehicle parking, and electric vehicle charging spaces (CALGreen Code Sections 5.106.4, 5.106.5.1, 5.106.5.3).
	California Energy Code	The Project is subject to parking requirements contained in Title 24, Party 6. For example, parking capacity is to meet but not exceed minimum local zoning requirements, and the Project should employ approved strategies to reduce parking capacity (Title 24, Part 6, section 106.6).
Landscaping	CALGreen Code	The CALGreen Code requires and has further voluntary provisions for the following: • A water budget for landscape irrigation use. • For new water service, separate meters or submeters must be installed for indoor and outdoor potable water use for landscaped areas of 1,000–5,000 square feet. • Provide water-efficient landscape design that reduces use of potable water beyond initial requirements for plant installation and establishment.
	Model Water Efficient Landscaping Ordinance	The model ordinance promotes efficient landscaping in new developments and establishes an outdoor water budget for new and renovated landscaped areas that are 500 square feet or larger (CCR, Title 23, Division 2, Chapter 2.7).
	Cap-and-Trade Program	Transportation fuels used in landscape maintenance equipment (e.g., gasoline) would be subject to the Cap-and-Trade Program (see “Energy Use,” below).
Refrigerants	CARB Management of High GWP Refrigerants for Stationary Sources	Any refrigerants associated with the Project will be subject to CARB standards. CARB’s Regulation for the Management of High GWP Refrigerants for Stationary Sources reduces emissions of high-GWP refrigerants from leaky stationary, non-residential refrigeration equipment; reduces emissions resulting from the installation and servicing of stationary refrigeration and air conditioning appliances using high-GWP refrigerants; and requires verification GHG emission reductions (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5.1, Section 95380 et seq.).
Consumer Products	CARB High GWP GHGs in Consumer Products	All consumer products associated with the Project will be subject to CARB standards. CARB’s consumer products regulations set volatile organic compound limits for numerous categories of consumer products, and limits the reactivity of the ingredients used in numerous categories of aerosol coating products (CCR, Title 17, Division 3, Chapter 1, Subchapter 8.5).
Construction		
Use of Off-Road Diesel Engines, Vehicles, and Equipment	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the Project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulation (1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; (2) requires all vehicles to be reported to CARB

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
		(using the Diesel Off-Road Online Reporting System) and labeled; (3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and (4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The requirements and compliance dates of the Off-Road regulation vary by fleet size, as defined by the regulation.
	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in equipment operation would be subject to the Cap-and-Trade Program (see "Energy Use," below).
Greening New Construction	CALGreen Code	All new construction, including the Project, must comply with the CALGreen Code, as discussed in more detail throughout this table. Adoption of the mandatory CALGreen Code standards for construction has been essential for improving the overall environmental performance of new buildings; it also sets voluntary targets for builders to exceed the mandatory requirements.
Construction Waste	CALGreen Code	The Project will be subject to CALGreen Code requirements for construction waste reduction, disposal, and recycling, such as a requirement to recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction waste in accordance with Section 5.408.1.1, 5.408.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
Worker, vendor, and truck vehicle trips (on-road vehicles)	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in worker, vendor, and truck vehicle trips would be subject to the Cap-and-Trade Program.
Solid Waste		
Solid Waste Management	Landfill Methane Control Measure	Waste associated with the Project will be disposed of per state requirements for landfills, material recovery facilities, and transfer stations. Per the statewide GHG emissions inventory, the largest emissions from waste management sectors come from landfills and are in the form of methane. In 2010, CARB adopted a regulation that reduces emissions from methane in landfills, primarily by requiring owners and operators of certain uncontrolled municipal solid waste landfills to install gas collection and control systems, and requires existing and newly installed gas and control systems to operate in an optimal manner. The regulation allows local air districts to voluntarily enter into a memorandum of understanding with CARB to implement and enforce the regulation and to assess fees to cover costs of implementation.
	Mandatory Commercial Recycling (AB 341)	AB 341 will require the Project, if it generates 4 cubic yards or more of commercial solid waste per week, to arrange for recycling services, using one of the following: self-haul, subscribe to a hauler(s), arranging for pickup of recyclable materials, or subscribing to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation. The Project will also be subject to local commercial

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
		solid waste recycling program required to be implemented by each jurisdiction under AB 341.
	CALGreen Code	The Project will be subject to the CALGreen Code requirement to provide areas that serve the entire building and are identified for the depositing, storage, and collection of nonhazardous materials for recycling (CALGreen Code Section 5.410.1).
Energy Use		
Electricity/Natural Gas Generation	Cap-and-Trade Program	Electricity and natural gas usage associated with the Project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase. Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for suppliers of natural gas, reformulated gasoline blendstock for oxygenate blending (RBOB), distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 metric tons or more of CO_2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Renewable Energy	California RPS (SB X1-2, SB 350, and SB 100)	Energy providers associated with the Project will be required to comply with the RPS set by SB X1 2, SB 350, and SB 100. SB X1 2 required investor-owned utilities, publicly owned utilities, and electric service providers to increase purchases of renewable energy such that at least 33% of retail sales are procured from renewable energy resources by December 31, 2020. In the interim, each entity was required to procure an average of 20% of renewable energy for the period of January 1, 2011 through December 31, 2013; and to procure an average of 25% by December 31, 2016, and 33% by 2020. SB 350 requires retail sellers and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030. SB 100 increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California by 2045.
	Million Solar Roofs Program (SB 1)	The Project will participate in California's energy market, which is affected by implementation of the Million Solar Roofs Program. As part of Governor Schwarzenegger's Million Solar Roofs Program, California set a goal to install 3,000 megawatts of new, solar capacity through 2016. The program was a ratepayer-

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
		financed incentive program aimed at transforming the market for rooftop solar systems by driving down costs over time.
	California Solar Initiative – Thermal Program	The Project will participate in California's energy market, which is affected by implementation of the California Solar Initiative – Thermal Program. Multifamily and commercial properties qualify for rebates of up to $800,000 on solar water heating systems and eligible solar pool heating systems qualify for rebates of up to $500,000. Funding for the California Solar Initiative-Thermal program comes from ratepayers of Pacific Gas & Electric, Southern California Edison, Southern California Gas Company, and San Diego Gas & Electric. The rebate program is overseen by the CPUC as part of the California Solar Initiative.
	Waste Heat and Carbon Emissions Reduction Act (AB 1613, AB 2791)	The Project will participate in California's energy market, which is affected by implementation of the Waste Heat and Carbon Emissions Reduction Act. Originally enacted in 2007 and amended in 2008, this act directed the CEC, CPUC, and CARB to implement a program that would encourage the development of new combined heat and power systems in California with a generating capacity of not more than 20 megawatts to increase combined heat and power use by 30,000 gigawatt-hours. The CPUC publicly owned electric utilities and CEC duly established policies and procedures for the purchase of electricity from eligible combined heat and power systems. CEC guidelines require combined heat and power systems to be designed to reduce waste energy; have a minimum efficiency of 60%; have oxides of nitrogen (NO_x) emissions of no more than 0.07 pounds per megawatt-hour; be sized to meet eligible customer generation thermal load; operate continuously in a manner that meets expected thermal load and optimizes efficient use of waste heat; and be cost effective, technologically feasible, and environmentally beneficial.
Vehicular/Mobile Sources		
General	SB 375 and SANDAG RTP/SCS	The Project complies with, and is subject to, the SANDAG RTP/SCS, which CARB approved as meeting its regional GHG targets in 2016.
Fuel	Low Carbon Fuel Standard/ EO S-01-07	Auto trips associated with the Project will be subject to the Low Carbon Fuel Standard (EO S-01-07), which required a 10% or greater reduction in the average fuel carbon intensity by 2020 with a 2010 baseline for transportation fuels in California regulated by CARB. The program establishes a strong framework to promote the low carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG goals.
	Cap-and-Trade Program	Use of gasoline associated with the Project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase.

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
		Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for suppliers of natural gas, RBOB, distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 metric tons or more of CO_2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Automotive Refrigerants	CARB Regulation for Small Containers of Automotive Refrigerant	Vehicles associated with the Project will be subject to CARB's Regulation for Small Containers of Automotive Refrigerant (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5, Section 95360 et seq.). The regulation applies to the sale, use, and disposal of small containers of automotive refrigerant with a GWP greater than 150. The regulation achieves emission reductions through implementation of four requirements: (1) use of a self-sealing valve on the container, (2) improved labeling instructions, (3) a deposit and recycling program for small containers, and (4) an education program that emphasizes best practices for vehicle recharging. This regulation went into effect on January 1, 2010, with a 1-year sell-through period for containers manufactured before January 1, 2010. The target recycle rate is initially set at 90%, and rose to 95% beginning January 1, 2012.
Light-Duty Vehicles	AB 1493 (or the Pavley Standard)	Cars that drive to and from the Project site will be subject to AB 1493, which directed CARB to adopt a regulation requiring the maximum feasible and cost-effective reduction of GHG emissions from new passenger vehicles. Pursuant to AB 1493, CARB adopted regulations that establish a declining fleet average standard for CO_2, methane, N_2O, and HFCs (air conditioner refrigerants) in new passenger vehicles and light-duty trucks beginning with the 2009 model year and phased-in through the 2016 model year. These standards are divided into those applicable to lighter and those applicable to heavier portions of the passenger vehicle fleet. The regulations will reduce "upstream" smog-forming emissions from refining, marketing, and distribution of fuel.
	Advanced Clean Car and ZEV Programs	Cars that drive to and from the Project site will be subject to the Advanced Clean Car and ZEV Programs. In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of ZEVs into a single package of standards called Advanced Clean Cars. By 2025, new automobiles will emit 34% fewer global warming gases and 75% fewer smog-forming emissions. The ZEV Program will act as the focused technology of the Advanced Clean Cars Program by requiring manufacturers to

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
		produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018–2025 model years.
	Tire Inflation Regulation	Cars that drive to and from the Project site will be subject to the CARB Tire Inflation Regulation, which took effect on September 1, 2010, and applies to vehicles with a gross vehicle weight rating of 10,000 pounds or less. Under this regulation, automotive service providers must check and inflate each vehicle's tires to the recommended tire pressure rating, with air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service, and to keep a copy of the service invoice for a minimum of 3 years, and make the vehicle service invoice available to the CARB, or its authorized representative upon request.
	EPA and NHTSA GHG and CAFE Standards	Mobile sources that travel to and from the Project site will be subject to EPA and NHTSA GHG and CAFE standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles (75 FR 25324–25728 and 77 FR 62624–63200).
Medium- and Heavy-Duty Vehicles	CARB In-Use On-Road Heavy-Duty Diesel Vehicles Regulation (Truck and Bus Regulation)	While the Project is not anticipated to generate heavy-duty truck trips, any heavy-duty trucks associated with the Project will be subject to CARB standards. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds.
	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the Project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulations impose limits on idling, require a written idling policy, and require a disclosure when selling vehicles; require all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; restrict the adding of older vehicles into fleets starting on January 1, 2014; and require fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The requirements and compliance dates of the off-road regulation vary by fleet size, as defined by the regulation.
	Heavy-Duty Vehicle GHG Emission Reduction Regulation	Any relevant vehicle or machine use associated with the Project will be subject to CARB standards. The CARB Heavy-Duty Vehicle GHG Emission Reduction Regulation applies to heavy-duty tractors that pull 53-foot or longer box-type trailers (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 1, Section 95300 et seq.). Fuel efficiency is improved

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
		through improvements in tractor and trailer aerodynamics and the use of low rolling resistance tires.
	EPA and NHTSA GHG and CAFE Standards	Mobile sources that travel to and from the Project site would be subject to EPA and NHTSA GHG and CAFE standards for medium- and heavy-duty vehicles (76 FR 57106–57513).
Water Use		
Water Use Efficiency	Emergency State Water Board Regulations	Water use associated with the Project will be subject to emergency regulations. On May 18, 2016, partially in response to EO B-27-16, the State Water Board adopted emergency water use regulations (CCR, title 23, Section 864.5 and amended and re-adopted Sections 863, 864, 865, and 866). The regulation directs the State Water Board, Department of Water Resources, and CPUC to implement rates and pricing structures to incentivize water conservation, and calls on water suppliers, homeowner's associations, California businesses, landlords and tenants, and wholesale water agencies to take stronger conservation measures.
	EO B-37-16	Water use associated with the Project will be subject to Emergency EO B-37-16, issued May 9, 2016, which directed the State Water Resources Control Board to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The Water Board must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The Water Board and Department of Water Resources will develop new, permanent water use targets to which the Project will be subject. The Water Board will permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.
	EO B-40-17	EO B-40-17 lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinds EO B-29-15, but expressly states that EO B-37-16 remains in effect and directs the State Water Resources Control Board to continue development of permanent prohibitions on wasteful water use to which the Project will be subject.
	SB X7-7	Water provided to the Project will be affected by SB X7-7's requirements for water suppliers. SB X7-7, or the Water Conservation Act of 2009, requires all water suppliers to increase water use efficiency. It also requires, among other things, that the Department of Water Resources, in consultation with other state agencies, develop a single standardized water use reporting form, which would be used by both urban and agricultural water agencies.

Table 3.8-3. Applicable Greenhouse Gas–Related Laws and Regulations

Project Component	Applicable Laws and Regulations	Greenhouse Gas Reduction Measures Required for Project
	CALGreen Code	The Project is subject to CALGreen Code's water efficiency standards, including a required 20% mandatory reduction in indoor water use (CALGreen Code, Division 4.3).
	California Water Code, Division 6, Part 2.10, Sections 10910–10915	Development and approval of the Project requires the development of a Project-specific Water Supply Assessment.
	Cap-and-Trade Program	Electricity usage associated with water and wastewater supply, treatment, and distribution would be subject to the Cap-and-Trade Program.
	California RPS (SB X1-2, SB 350, SB 100)	Electricity usage associated with water and wastewater supply, treatment, and distribution associated with the Project will be required to comply with the RPS set by SB X1-2, SB 350, and SB 100.

Source: Appendix A

AB = Assembly Bill; CAFE = Corporate Average Fuel Economy; CARB = California Air Resources Board; CCR = California Code of Regulations; CEC = California Energy Commission; CFC = chlorofluorocarbon; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; CPUC = California Public Utilities Commission; EO = Executive Order; EPA = U.S. Environmental Protection Agency; GHG = greenhouse gas; GWP = global warming potential; HCFC = hydrochlorofluorocarbon; HFC = hydrofluorocarbon; gpm = gallons per minute; N_2O = nitrous oxide; NHTSA = National Highway Traffic Safety Administration; PM = particulate matter; psi = pounds per square inch; RPS = Renewable Portfolio Standard; RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SANDAG = San Diego Association of Governments; SB = Senate Bill; ZEV = zero emission vehicle

As shown in Table 3.8-3, the Project would be consistent with and would not conflict with the applicable GHG-reducing strategies of the state.

Consistency with SANDAG's RTP/SCS

At the regional level, SANDAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) has been adopted for the purpose of reducing GHG emissions attributable to passenger vehicles in the San Diego region. In October 2015, SANDAG adopted its Regional Plan, which meets CARB's 2020 and 2035 reduction targets for the region. The RTP/SCS does not regulate land use or supersede the exercise of land use authority by SANDAG's member jurisdictions, but it is a relevant regional reference document for purposes of evaluating the intersection of land use and transportation patterns and the corresponding GHG emissions. CARB has recognized that the approved RTP/SCS is consistent with SB 375 (Appendix A).

Even though the RTP/SCS does not regulate land use or supersede the exercise of land use authority by SANDAG's member jurisdictions (i.e., the City), the RTP/SCS is a relevant regional reference document for purposes of evaluating the intersection of land use and transportation patterns and the corresponding GHG emissions. The RTP/SCS is not directly applicable to the Project because the underlying purpose of the RTP/SCS is to provide direction and guidance on future regional growth (i.e., the location of new residential and non-residential land uses) and transportation patterns throughout the City and greater San Diego County, as stipulated under SB 375. CARB has recognized that the approved RTP/SCS is consistent with SB 375 (Appendix A). As previously discussed, the Project would be consistent with existing land use designations for the site. In addition, the traffic generated by the Project would not result in a net increase vehicle trips. Thus, the Project would be consistent with SANDAG's RTP/SCS.

Scoping Plan Consistency

The Scoping Plan, approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs (CARB 2017). As such, the Scoping Plan is not directly applicable to specific projects. Relatedly, in the Final Statement of Reasons for the Amendments to the CEQA Guidelines, the California Natural Resources Agency observed that "[t]he [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (Appendix A). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high global warming potential GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., low-carbon fuel standard), among others (CARB 2017). The Project would comply with all applicable regulations adopted in furtherance of the Scoping Plan to the extent required by law.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32 and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions (CARB 2017). Table 3.8-4, Project Consistency with Scoping Plan GHG Emission Reduction Strategies, highlights measures that have been developed under the Scoping Plan and the Project's consistency with those measures. To the extent that these regulations are applicable to the Project, its inhabitants, or uses, the Project would comply with all applicable regulations adopted in furtherance of the Scoping Plan.

Table 3.8-4. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Transportation Sector		
Advanced Clean Cars	T-1	*Consistent.* The Project would not result in a net increase in operational vehicle trips.
1.5 million zero-emission and plug-in hybrid light-duty electric vehicles by 2025 (4.2 million Zero-Emissions Vehicles by 2030)	Proposed	*Consistent.* The Project would install conduit for future electric vehicle charging stations (6% of parking spaces) in accordance with CALGreen standards.
Low Carbon Fuel Standard	T-2	*Consistent.* Motor vehicles driven by the Project's employees would use compliant fuels.
Low Carbon Fuel Standard (18% reduction in carbon intensity by 2030)	Proposed	*Consistent.* Motor vehicles driven by the Project's employees would use compliant fuels.
Regional Transportation-Related GHG Targets	T-3	*Not applicable.* The Project is not related to developing GHG emission reduction targets. The Project would not preclude the implementation of this strategy.
Advanced Clean Transit	Proposed	*Not applicable.* This measure does not apply to the Project. The Project would not inhibit CARB from implementing this Scoping Plan measure.
Last Mile Delivery	Proposed	*Not applicable.* This measure does not apply to the Project. The Project would not inhibit CARB from implementing this Scoping Plan measure.

Table 3.8-4. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Reduction in Vehicle Miles Traveled	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Vehicle Efficiency Measures 1. Tire Pressure 2. Fuel Efficiency Tire Program 3. Low-Friction Oil 4. Solar-Reflective Automotive Paint and Window Glazing	T-4	*Consistent.* These standards would be applicable to the light-duty vehicles that would access the Project site. Motor vehicles driven by the Project's employees would maintain proper tire pressure when their vehicles are serviced. The Project's employees would replace tires in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase. Motor vehicles driven by the Project's employees would use low-friction oils when their vehicles are serviced. The Project's employees would purchase vehicles in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase. In addition, the Project would not prevent CARB from implementing this measure.
Ship Electrification at Ports (Shore Power)	T-5	*Not applicable.* This measure does not apply to the Project. The Project would not inhibit CARB from implementing this Scoping Plan measure.
Goods Movement Efficiency Measures 1. Port Drayage Trucks 2. Transport Refrigeration Units Cold Storage Prohibition 3. Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification 4. Goods Movement Systemwide Efficiency Improvements 5. Commercial Harbor Craft Maintenance and Design Efficiency 6. Clean Ships 7. Vessel Speed Reduction	T-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
California Sustainable Freight Action Plan	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Heavy-Duty Vehicle GHG Emission Reduction 1. Tractor-Trailer GHG Regulation 2. Heavy-Duty Greenhouse Gas Standards for New Vehicle and Engines (Phase I)	T-7	*Consistent.* The Project would not result in an increase in operational heavy-duty vehicle trips. During construction, heavy-duty truck use would be temporary. In addition, the Project would not prevent CARB from implementing this measure.
Medium- and Heavy-Duty Vehicle Hybridization Voucher Incentive Project	T-8	*Consistent.* The Project would not result in an increase in operational medium- or heavy-duty vehicle trips. In addition, the Project would not prevent CARB from implementing this measure.
Medium and Heavy-Duty GHG Phase 2	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
High-Speed Rail	T-9	*Not applicable.* The Project would not prevent CARB from implementing this measure.

Table 3.8-4. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Electricity and Natural Gas Sector		
Energy Efficiency Measures (Electricity)	E-1	*Consistent.* The Project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.
Energy Efficiency (Natural Gas)	CR-1	*Consistent.* The Project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.
Solar Water Heating (California Solar Initiative Thermal Program)	CR-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Combined Heat and Power	E-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Renewable Portfolios Standard (33% by 2020)	E-3	*Consistent.* The electricity used by the Project would benefit from reduced GHG emissions resulting from increased use of renewable energy sources.
Renewable Portfolios Standard (50% by 2050)	Proposed	*Consistent.* The electricity used by the Project would benefit from reduced GHG emissions resulting from increased use of renewable energy sources.
Senate Bill 1 Million Solar Roofs (California Solar Initiative, New Solar Home Partnership, Public Utility Programs) and Earlier Solar Programs	E-4	*Consistent.* The Project would include the installation of 202.8 kilowatt hours of photovoltaic solar system.
Water Sector		
Water Use Efficiency	W-1	*Consistent.* The Project would include the installation of low-flow water fixtures. The Project would not prevent CARB from implementing this measure.
Water Recycling	W-2	*Not applicable.* Recycled water is not available to the Project site. The Project would not prevent CARB from implementing this measure.
Water System Energy Efficiency	W-3	*Not applicable.* This is applicable for the transmission and treatment of water, and is not applicable for the Project.
Reuse Urban Runoff	W-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Renewable Energy Production	W-5	*Not applicable.* Applicable for wastewater treatment systems; not applicable for the Project.
Green Buildings		
State Green Building Initiative: Leading the Way with State Buildings (Greening New and Existing State Buildings)	GB-1	*Consistent.* The Project would be required to be constructed in compliance with state or local green building standards in effect at the time of building construction.
Green Building Standards Code (Greening New Public Schools, Residential and Commercial Buildings)	GB-2	*Consistent*. The Project's buildings would meet green building standards that are in effect at the time of construction.

Table 3.8-4. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Beyond Code: Voluntary Programs at the Local Level (Greening New Public Schools, Residential and Commercial Buildings)	GB-3	*Consistent*. The Project would be required to be constructed in compliance with local green building standards in effect at the time of building construction.
Greening Existing Buildings (Greening Existing Homes and Commercial Buildings)	GB-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Industry Sector		
Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	I-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Oil and Gas Extraction GHG Emission Reduction	I-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Reduce GHG Emissions by 20% in Oil Refinery Sector	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
GHG Emissions Reduction from Natural Gas Transmission and Distribution	I-3	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Refinery Flare Recovery Process Improvements	I-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Work with the local air districts to evaluate amendments to their existing leak detection and repair rules for industrial facilities to include methane leaks	I-5	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Recycling and Waste Management Sector		
Landfill Methane Control Measure	RW-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Increasing the Efficiency of Landfill Methane Capture	RW-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Mandatory Commercial Recycling	RW-3	*Consistent.* During construction and operation, the Project would comply with all state regulations related to solid waste generation, storage, and disposal, including the California Integrated Waste Management Act, as amended. During construction, all wastes would be recycled to the maximum extent possible.
Increase Production and Markets for Compost and Other Organics	RW-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Anaerobic/Aerobic Digestion	RW-5	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Extended Producer Responsibility	RW-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Environmentally Preferable Purchasing	RW-7	*Not applicable.* The Project would not prevent CARB from implementing this measure.

Table 3.8-4. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Forests Sector		
Sustainable Forest Target	F-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
High Global Warming Potential Gases Sector		
Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	H-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
SF_6 Limits in Non-Utility and Non-Semiconductor Applications	H-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Reduction of Perfluorocarbons in Semiconductor Manufacturing	H-3	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Limit High Global Warming Potential Use in Consumer Products	H-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	H-5	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Stationary Equipment Refrigerant Management Program – Refrigerant Tracking/Reporting/Repair Program	H-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Stationary Equipment Refrigerant Management Program – Specifications for Commercial and Industrial Refrigeration	H-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
SF_6 Leak Reduction Gas Insulated Switchgear	H-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
40% reduction in methane and hydrofluorocarbon emissions	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
50% reduction in black carbon emissions	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Agriculture Sector		
Methane Capture at Large Dairies	A-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.

Sources: Appendix A; CARB 2017
CARB = California Air Resources Board; GHG = greenhouse gas.

Based on the analysis in Table 3.8-4, the Project would be consistent with the applicable strategies and measures in the Scoping Plan.

The Project is consistent with the City's Climate Action Plan and the GHG emission reduction measures in the CARB Scoping Plan, which promote economic growth while achieving greater energy efficiency. The Project would be consistent with SB 32 and Executive Order S-3-05. The Project would not conflict with any plans adopted with the purpose of reducing GHG emissions; therefore, the Project's impacts on GHG emissions would be **less than significant.**

3.9 Hazards and Hazardous Materials

a) ***Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?***

Construction of the Project would require the transport of potentially hazardous materials, including fuels, lubricants, and various other liquids needed for operation of construction equipment. Proper BMPs and hazardous materials handling protocols would be prepared and implemented to ensure safe storage, handling, transport, use, and disposal of all hazard materials during the construction phase of the Project. Construction would also adhere to any local standards set forth by the City, as well as state and federal health and safety requirements that are intended to minimize hazardous materials risk to the public, such as the California Occupational Safety and Health requirements, Hazardous Waste Control Act, California Accidental Release Prevention Program, and the California Health and Safety Code. Furthermore, all construction waste, including trash, litter, garbage, solid waste, petroleum products, and any other potentially hazardous materials, would be removed and transported to a permitted waste facility for treatment, storage, or disposal. Use of these materials during construction for their intended purpose would not pose a significant risk to the public or the environment. Therefore, impacts related to routine transport, use, or disposal of hazardous materials during construction would be **less than significant.**

The Project would involve the redevelopment of a school site and associated landscaping and facilities. During operation of the Project, use of hazardous materials would primarily involve the private use of commercially available cleaning products, landscaping chemicals and fertilizers, and various other commercially available substances. These substances are required to comply with relevant federal, state, and local health and safety laws, which are intended to minimize health risk to the public associated with hazardous materials. Therefore, impacts related to routine transport, use, or disposal of hazardous materials during operation would be **less than significant.**

b) ***Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?***

As discussed in Threshold 3.9(a), a variety of hazardous substances and wastes typical to standard construction projects would be stored and used on the Project site during construction of the Project. Accidental spills, leaks, fires, explosions, or pressure releases involving hazardous materials represent a potential threat to human health and the environment. During construction and operation of the Project, there is potential for release of hazardous materials related to storage, transport, use, and disposal from construction debris, landscaping, and commercial products. However, the Project would be required to adhere to federal, state, and local laws, such as the California Occupational Safety and Health requirements, Hazardous Waste Control Act, California Accidental Release Prevention Program, and the California Health and Safety Code, which are intended to minimize risk to public health associated with hazardous materials. Therefore, impacts would be **less than significant.**

c) ***Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?***

The Project is an existing schooled. The Project site is Richland Elementary School, located at 910 Borden Road, San Marcos, CA 92069. There are no other existing or proposed schools within 0.25 miles of the Project site.

As discussed in Threshold 3.9(a), a variety of hazardous substances and wastes typical to standard construction projects would be stored and used on the Project site during construction. Thus, the Project would involve handling hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of the existing Richland Elementary School site. However, the Project would involve reconstructing the school site, and no students, faculty, or associated persons would be on the school site during construction of the Project. Still, accidental spills, leaks, fires, explosions, or pressure releases involving hazardous materials represent a potential threat to human health and the environment. During construction and operation of the Project, there is potential for release of hazardous materials related to storage, transport, use, and disposal from construction debris, landscaping, and commercial products. However, the Project would be required to adhere to federal, state, and local laws, such as the California Occupational Safety and Health requirements, Hazardous Waste Control Act, California Accidental Release Prevention Program, and the California Health and Safety Code, which are intended to minimize risk to public health associated with hazardous materials. Therefore, impacts would be **less than significant**.

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

The Project site is not on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5; therefore, the Project would have **no impact**.

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

The Project site is not within the boundaries of an airport land use plan. The nearest airport is the Carlsbad McClellan Palomar Airport, located approximately 7.5 miles west of the Project site at 2198 Palomar Airport Road, Carlsbad, CA 92008. Therefore, **no impact** would occur, and the Project would not result in a safety hazard or excessive noise for people working in the Project area.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The City adopted an Emergency Operations Plan in 2009 to plan for and address response to a moderate evacuation emergency scenario (City of San Marcos 2012b). There are no official evacuation routes determined by the City because evacuation routes are determined based on the type of emergency event. However, several main thoroughfares would serve as primary evacuation corridors, such as Twin Oaks Valley Road (away from SR-78), Las Poses Road, Rancho Santa Fe Road, Woodland Parkway, Nordhal Road, Mission Road, South Santa Fe Road, Barham Drive, Craven Road, West San Marcos Boulevard (away from SR-78), Borden Road, Buena Creek Road, Knob Hill Road, and Montiel Road (City of San Marcos 2012b).

Access to these evacuation routes and all local roads would be maintained during construction and operation of the Project. Emergency procedures or design features required by federal, state, or City regulations would be implemented as appropriate during construction and operation. Maintaining access along all local roads during construction would minimize the potential for traffic conflicts with designated evacuation routes, and implementation of emergency procedures would minimize the potential for interference with an adopted emergency response plan. The Project would not impede access to local roadways or evacuation routes. Operation of the reconstructed school would not induce a substantial increase in traffic, as the overall student capacity/enrollment would remain the same. Therefore, impacts resulting from the Project would be **less than significant.**

g) ***Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?***

The Project site is surrounded by existing development and is within an urbanized area and not within a Very High Hazard Severity Zone as mapped by the California Department of Forestry and Fire Protection (CAL FIRE) (CAL FIRE 2020). The Project would not create new housing and would not increase enrollment compared to the existing condition of the Project site. Therefore, it would not increase the exposure of people or structures directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. The Project would result in **no impact** from increasing the risk of exposure to wildfire.

3.10 Hydrology and Water Quality

a) ***Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?***

Construction activities associated with the Project could result in wind and water erosion of the disturbed area leading to sediment discharges. Similarly, as described in Section 3.9, Hazards and Hazardous Materials, fuels, oils, lubricants, and other hazardous substances used during construction could be released and impact water quality. The Project is required to comply with the National Pollutant Discharge Elimination System State Water Resources Control Board Construction General Permit Order No. 2009-0009-DWQ for stormwater discharges and general construction activities; to incorporate standard BMPs, such as regular cleaning or sweeping of construction areas and impervious areas; and to incorporate various stormwater BMPs, such as filtration media screens. In compliance with the Construction General Permit, a Stormwater Pollution Prevention Plan would be prepared that specifies BMPS that would be implemented during construction to minimize impacts to water quality. Therefore, impacts would be **less than significant.**

b) ***Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?***

The Project would not use groundwater during construction or operation. As such, impacts to groundwater supplies would be **less than significant.**

c) ***Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:***

i) ***result in substantial erosion or siltation on or off site?***

The majority of the existing site is a developed urban area with little to no vegetative cover. The Project would result in reconstruction of the existing Richland Elementary School with a modern campus, including new classrooms, administration buildings, play fields, and parking lots. However, the Project would decrease the amount of impervious surface per the Project's landscaping plans, and the Project would comply with all permitting requirements to treat runoff. As such, the Project would not substantially alter the existing drainage pattern such that substantial erosion would occur on or off site. Therefore, impacts would be **less than significant.**

ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?

See the response to Threshold 3.10(c)(i). With implementation of the Project, the flow patterns of the site would largely stay the same. As such, the Project would not substantially alter the existing drainage patterns such that it would increase flooding on or off site. Impacts would be **less than significant.**

iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Refer to the responses in Thresholds 3.10(c)(ii) and 3.10(c)(iii). The Project would decrease the amount of impervious surface at the site compared to existing conditions. As such, impacts would be **less than significant.**

iv) impede or redirect flood flows?

According to Figure 6-3 of the City's General Plan Safety Element (City of San Marcos 2012b), the Project site is not is not located in any type of flood zone as defined by the Federal Emergency Management Agency. Impacts would be **less than significant.**

d) In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

The Project site is not located in a flood hazard, tsunami, or seiche zone. **No impact** would occur.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Project would be required to comply with all applicate plans, including policies and programs referred to in the City's General Plan Safety Element (City of San Marcos 2012b). The Project would not conflict with or obstruct applicable water quality plans. Additionally, as described above, the Project would not use or interfere with groundwater recharge or use. Therefore, impacts would be **less than significant.**

3.11 Land Use and Planning

a) Would the project physically divide an established community?

The Project would involve reconstruction of Richland Elementary School, an existing use within the City of San Marcos, consistent with the City's underlying General Plan and zoning designations. The Project would not increase the number of students, faculty, or support staff, and therefore would not require facilities upsizing such as widening or roads that would divide a community. Therefore, the Project would not directly or indirectly result in a physical division to the established community. **No impact** would occur.

b) ***Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?***

The Project would involve reconstruction of Richland Elementary School, an existing use within the City of San Marcos, consistent with the City's underlying General Plan and zoning designations. The Project is part of SMUSD's plans to reconstruct and modernize campuses. Because the Project is consistent with the underlying land use plan, it would not result in a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigation an environmental effect. **No impact** would occur.

3.12 Mineral Resources

a) ***Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?***

The City of San Marcos General Plan Conservation and Open Space Element identified the following Mineral Resource Zones (MRZs) (City of San Marcos 2012a):

- MRZ-1 areas are located north of SR-78.
- MRZ-2 areas include small portions between Double Peak, Mt. Whitney, and Franks Peak, and small portions in the northern Sphere of Influence within Twin Oaks Valley Neighborhood.
- MRZ-3 areas include the majority of the undeveloped northern and southern areas of the City.
- MRZ-4 covers the majority of the developed areas.

The Project site does not fall in any of these areas. Further, the Project would involve reconstruction of the elementary school on the same site as the existing Richland Elementary School. Because the Project site is already developed and is surrounded by noise-sensitive land uses, including residential land uses, mineral extraction activities would be precluded because such activity would be an incompatible use based on noise and other considerations. Therefore, impacts due to the loss of availability of a known mineral resource that would be of value to the region and the residents of the state would be **less than significant.**

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

As described above, the Project site is not located in an area identified by the City of San Marcos General Plan Conservation and Open Space Element as a locally important mineral resource recovery site; therefore, **no impact** would occur.

3.13 Noise

a) ***Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?***

This Section is based on the Noise Technical Report for the Richland Elementary School Reconstruction Project (Noise Report) prepared by Dudek in December 2020. The noise report is included as Appendix E to this IS/MND. Background and methodologies regarding the noise analysis are found in Appendix E.

Short-Term Construction

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor.

Equipment that would be in use during construction would include, in part, graders, scrapers, backhoes, rubber-tired dozers, loaders, cranes, forklifts, cement mixers, pavers, rollers, and air compressors. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 3.13-1, Typical Construction Equipment Maximum Noise Levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the listed maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 3.13-1. Typical Construction Equipment Maximum Noise Levels

Equipment Type	Typical Equipment (L_{max}, dBA at 50 Feet)
Air compressor	78
Backhoe	78
Concrete pump truck	81
Concrete Saw	90
Grader	85
Crane	81
Dozer	82
Excavator	81
Generator	72
Front-end loader	79
Paver	77
Pneumatic tools	85
Welder	74

Source: Appendix E
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emissions from Project construction activities, broken down by sequential phase, was predicted at two distances to the nearest existing noise-sensitive receptor: from the nearest position of the construction site boundary, and from the geographic center of the construction site, which serves as the time-averaged location (or geographic acoustical centroid) of active construction equipment for the phase under study. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary for some period of time, which would be most appropriate for phases such as site preparation, grading, and paving. The latter distance is used in a manner similar to the general assessment technique as described in the Federal Highway Administration's guidance for construction noise assessment (DOT 2006), when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety of) the construction site. Because of this uncertainty, all the equipment for a construction phase is assumed to operate—on average—from the acoustical centroid. Table 3.13-2, Estimated Distances between Construction Activities and the Nearest Noise-Sensitive Receptors, summarizes these two distances to the apparent closest noise-sensitive receptor for each of the five sequential construction phases. At the site boundary, this analysis assumes that up to only one piece of equipment of each listed type per phase will be involved in the construction activity for a limited portion of the 8-hour period. In other words, at such proximity, the operating equipment cannot "stack" or crowd the vicinity and still operate. For the acoustical centroid case, which intends to be a geographic average position for all equipment during the indicated phase, this analysis assumes that the equipment may be operating up to all 8 hours per day.

Table 3.13-2. Estimated Distances Between Construction Activities and the Nearest Noise-Sensitive Receptors

Construction Phase (and Equipment Types Involved)	Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet)	Distance from Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (Feet)
Demolition (concrete saw, excavator, dozer)	60	250
Site preparation (backhoe, dozer)	60	250
Grading (grader, dozer, backhoe, excavator)	60	250
Building construction (crane, man-lift, generator, backhoe, welder/torch)	60	250
Architectural finishes (air compressor)	60	250
Paving (paver, roller, concrete mixer truck, backhoe, other equipment)	60	250

Source: Appendix E

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration's Roadway Construction Noise Model (DOT 2018) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the Roadway Construction Noise Model was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type and number of each (e.g., two graders, one loader, one tractor), the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 3.13-2), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. Conservatively, no topographical or structural shielding was assumed in the modeling. The Roadway Construction Noise Model has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis (Appendix E), and produce the predicted results shown in Table 3.13-3, Predicted Construction Noise Levels per Activity Phase.

Table 3.13-3. Predicted Construction Noise Levels per Activity Phase

Construction Phase (and Equipment Types Involved)	8-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA)	8-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (dBA)
Demolition (concrete saw, excavator, dozer)	83.4	72.8
Site preparation (backhoe, dozer)	77.9	70.7
Grading (grader, dozer, backhoe, excavator)	82.7	71.0
Building construction (crane, man-lift, generator, backhoe, welder/torch)	76.3	66.8
Architectural finishes (air compressor)	71.2	58.8
Paving (paver, roller, concrete mixer truck, backhoe, other equipment)	81.6	71.6

Source: Appendix E
Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As shown in Table 3.13-3, the estimated construction noise levels are predicted to be as high as 83 A-weighted decibels (dBA) equivalent noise level (L_{eq}) over an 8-hour period at the nearest occupied property (as close as 60 feet away) when demolition activities take place near the western Project boundaries. Note that these estimated noise levels at a source-to-receiver distance of 60 feet are conservatively high, in that they presume the noted pieces of heavy equipment would each operate, on average at this distance, for a cumulative period of 8 hours a day. The reality of construction progress on site would likely be different. By way of example, a grader might make multiple passes on site that are this close to a receiving occupied property, but, for the remaining time during the day, the grader is sufficiently farther away and either performing work at a more distant location or simply not operating. Other processes and/or equipment, such as a continuously operating air compressor at a fixed installation position, could be expected to produce noise at a fairly constant level over the entire 8-hour period. Hence, for these instances when operation of construction equipment and processes are sufficiently proximate, activity noise levels are predicted to be as high as 83 dBA L_{eq}. Although the City of San Marcos does not enforce a threshold for construction noise exposure over an 8-hour period at the property line, the following practices have been incorporated into the Project's construction program as project design features (**PDF-1**):

- Administrative controls (e.g., reduce operating time of equipment and/or prohibit usage of equipment type[s] within certain distances to a nearest receiving occupied off-site property).
- Engineering controls (upgrade noise controls, such as install better engine exhaust mufflers).
- Install noise abatement on the site boundary fencing (or within, as practical and appropriate) in the form of sound blankets or comparable temporary barriers to occlude construction noise emission between the site (or specific equipment operation as the situation may define) and the noise-sensitive receptor(s) of concern.

The above design features would be implemented as indicated site conditions may warrant. Proper application of temporary noise barriers or comparable sound abatement can feasibly reduce noise levels by at least 8 decibels (dB), which would correspondingly reduce the predicted 83 dBA 8-hour L_{eq} for the site preparation to 75 dBA $L_{eq.}$

It is anticipated that construction activities associated with the proposed Project would take place only Monday through Friday between 7:00 a.m. and 6:00 p.m. and on Saturdays between 8:00 a.m. and 5:00 p.m., in compliance with the City's noise ordinance. Therefore, temporary construction-related noise impacts would be **less than significant.**

Long-Term Operational

Increase of Off-Site Roadway Traffic Noise

Based on information provided by the SMUSD, the newly designed and constructed elementary school would not result in an increase in traffic noise, since the new school would not increase the number of students, teachers, administrators, or other staff. Thus, the same number of vehicle trips would occur either with or without the Project, under existing and future traffic years, and related traffic noise would be equivalent either with or without the Project. Therefore, impacts would be **less than significant.**

Stationary Operations Noise

The proposed Project would result in construction of non-contiguous buildings. Although the Project site would be reconfigured and reconstructed, the essential components of the Project (e.g., indoor classrooms, outdoor activity areas) and the nature of the activities that occur on site would be almost equivalent to existing conditions. The proposed Project has an addition of 3,701 square feet of building space and one additional classroom, but two fewer permanent buildings and the elimination of 24 relocatable classrooms. Additionally, the number of students, teachers, administrators, and other staff would not increase as a result of the proposed Project. The play areas, for example, would be relocated; however, the distances from the nearest residences to the play areas would be equivalent for the new site design as under existing conditions.

Most of these noise-producing equipment or sound sources would be considered stationary or limited in mobility to a defined area. Using a Microsoft Excel–based outdoor sound propagation prediction model, Project-attributed operational noise at nearby community receptors was predicted on the assumption that noise-producing equipment are point-type sources with point-source geometric divergence (i.e., 6 dB noise reduction per doubling of distance) that conservatively ignores acoustical absorption from atmospheric and ground surface effects. Please see Appendix E for quantitative details of these predictions.

Facility Unit Heating, Ventilation, and Air Conditioning Noise

According to its mechanical roof plan and schedule, the proposed Project would feature 55 Carrier rooftop package units spread across the five buildings roofs. Using the overall sound levels appearing on the Carrier product data sheets (Carrier 2020), these distinct units of rooftop heating, ventilation, and air conditioning (HVAC) equipment individually have a sound emission source level between 68 dBA and 70 dBA at 3 feet. The Project site plan suggests that the rooftop package units would be installed behind screening walls. The closest existing noise-sensitive residential receptor to the west of the Project's building would be as close as approximately 150 horizontal feet to what would be an arrangement of up to four rooftop package units. However, due to the higher relative elevation of the sources on the roof and sound occlusion of the noise wall, and their horizontal distances away from the noise-sensitive receivers as modeled, the predicted sound emission level from the combination of these units would be no more than 44 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 50 dBA hourly $L_{eq.}$ Please see Appendix E for a graphical display of the predicted aggregate noise level from these units, superimposed on an aerial image of the expected layout of the HVAC equipment with the Project building and the proximate neighboring residences to the west. It is also noted that these units are turned off each night and do not operate on weekends (Corman 2020). Under such conditions, operation of residential air-conditioning units would result in **less than significant** noise impacts.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities. Information from Caltrans indicates that continuous vibrations with a peak particle velocity (PPV) of approximately 0.2 inches per second (ips) is considered annoying (Caltrans 2020a). For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the Project site, have PPVs of approximately 0.089 ips or less at a reference distance of 25 feet (Appendix E).

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in Caltrans and Federal Transit Administration guidance (Caltrans 2020a; FTA 2018). By way of example, for a bulldozer operating on site and as close as the western Project boundary (i.e., 60 feet from the nearest occupied property), the estimated vibration velocity level would be 0.024 ips per the following equation (Appendix E):

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.089 * (25/60)^{1.5} = 0.024 \text{ ips}$$

In the above equation, PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and D is the actual horizontal distance to the receiver. Therefore, at this predicted PPV, the impact of vibration-induced annoyance to occupants of nearby existing homes would be **less than significant.**

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, anticipated construction vibration associated with the proposed Project would yield levels of 0.024 ips, which do not surpass the guidance limit of 0.2 to 0.3 ips PPV for preventing damage to residential structures (Appendix E). Because the predicted vibration level at 60 feet is less than this guidance limit, the risk of vibration damage to nearby structures would be **less than significant.**

Once operational, the proposed Project would not be expected to feature major producers of groundborne vibration. Anticipated mechanical systems like heating, ventilation, and air-conditioning units are designed and manufactured to feature rotating (fans, motors) and reciprocating (compressors) components that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, potential vibration impacts due to proposed Project operation would be **less than significant.**

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

There are no private airstrips within the vicinity of the Project site. The closest airport to the Project site is the McClellan Palomar Airport, approximately 7.5 miles southwest of the site. According to the McClellan-Palomar Airport Land Use Compatibility Plan (San Diego County Regional Airport Authority 2011), the Project site is not located within a noise exposure contour and would therefore not expose people residing or working in the Project area to excessive noise levels. Impacts from aviation overflight noise exposure would be **less than significant.**

3.14 Population and Housing

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

The proposed Project would involve reconstruction of Richland Elementary School, an existing use within the City of San Marcos, and would not increase the number of students, faculty, or administrative or support staff. The Project does not propose to construct new residents or establish new business, nor would it require facilities upsizing such as widening of roads that induce new, unplanned growth. Therefore, the Project would not induce substantial unplanned population growth in an area, either directly or indirectly. **No impact** would occur.

b) ***Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?***

The Project proposes to reconstruct Richland Elementary School on the same site as the existing school. The proposed Project would not require off-site improvements that would displace residents or require the construction of replacement housing. **No impact** would occur.

3.15 Public Services

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

Fire protection?

Fire protection services are provided to the Project site by the San Marcos Fire Department. The nearest fire station to the Project site is San Marcos Fire Station #3, located at 404 Woodland Pkwy, San Marcos, CA 92069, approximately 1.2 road miles south of the Project site.

Police protection?

Police protection services are provided to the Project site by the San Diego County Sheriff's Department. The nearest sheriff's station is approximately 2.3 road miles south of the Project site at 182 Santar Place, San Marcos, CA 92069.

Schools?

The Project would involve the reconstruction of the Richland Elementary School and would provide for the same capacity as the existing school. Construction would be phased such that students would not be required to attend other elementary schools during construction; therefore, the Project would not result in demand for new or physically altered schools during construction.

Parks?

The nearest parks to the Project site include Mulberry Park (751 Mulberry Dr, San Marcos, CA 92069), Hollandia Park (12 Mission Hills Ct, San Marcos, CA 92069), and Woodland Park (671 Woodland Pkwy, San Marcos, CA 92069), which are all within 0.66 miles of Richland Elementary School.

Other public facilities?

The nearest library is the San Marcos Public Library, located at 2 Civic Center Drive, San Marcos, CA 92069, approximately 1.5 road miles southwest of the Project site.

The Project would result in the reconstruction of an existing elementary school in an already developed neighborhood. Once complete, the reconstructed Richland Elementary School would have the same capacity as the existing use and would not create new housing that would increase demand for public services. All improvements and construction would be confined to areas within the boundaries of the Project site or immediately adjacent within the right-of-way. The Project would not result in additional population in the area and thus would require no new or expanded facilities to support adequate fire or police protection, schools, parks, or other public facilities; therefore, the Project would result in **no impact** from physical impacts associated with providing new or modified facilities.

3.16 Recreation

a) ***Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?***

The Project would involve reconstruction of Richland Elementary School and would include recreational facilities, such as three play structures, black top area with games and sport courts (including basketball courts, hand ball, foursquare, hopscotch), and athletic fields for soccer and track. The Project also includes passive uses such as outdoor eating areas and reading areas. The Project site is designated for Public-Institutional uses in the City's General Plan, and is currently an existing school with recreational uses, including play fields and structures. The Project would not result in the construction of additional housing or induce additional housing that would increase the use of existing parks or remove access to any recreational facilities. The Project would not increase demand on recreational facilities and, therefore, would have **no impact** to the substantial physical deterioration of recreational facilities.

b) ***Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?***

The Project would include construction of recreational facilities as part of the reconstruction of Richland Elementary School. These improvements would be constructed within the Project's disturbance area, and no new or expanded off-site recreational facilities that might have an adverse physical effect on the environment would be required. Therefore, the Project would have **no impact** because it would not result in an increased population that would require the construction of new, or the expansion of existing, recreational facilities off site.

3.17 Transportation

a) ***Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?***

3.17.1 Existing Conditions

The existing pick-up and drop-off area for students in Kindergarten through 3rd grade is located at the front of the school where cars enter from Richland Road and exit onto Borden Road. For 4th and 5th grade students, the pick-up and drop-off location is on site with access to and from Richland Road. School buses also use the driveways on Richland Road. The Project proposes that all vehicular access would occur at four driveways located along Richland Road, and there would no longer be access on Borden Road. With the new layout of the school, all school-related traffic from Borden Road would travel through the intersection of Richland Road/Borden Road. Attachment A of the Transportation Assessment (Appendix F) illustrates the proposed site plan for the school.

Descriptions of the primary roadways and intersection that would serve the reconstructed school are provided below.

Richland Road is within San Diego County and the City of San Marcos. Richland Road is not classified on the City of San Marcos Mobility Element or the County of San Diego Mobility Element. The segment of Richland Road along the Project site is within the City of San Marcos. It is currently constructed as a two-lane undivided north/south roadway. There are no bike lanes. Curbside parking is provided intermittently along the roadway. The posted speed limit is 35 miles per hour near the school.

Borden Road is classified as a secondary four-lane arterial per the City of San Marcos Mobility Element (City of San Marcos 2012c), and is currently constructed as a four-lane undivided east/west roadway generally from Los Posas Road up to the Mulberry Drive/Borden Road intersection. In the vicinity of the school, Borden Road is constructed with one lane in each direction with a two-way-left-turn lane, with additional turn lanes at its intersection with Rose Ranch Road and Richland Road. Class II (striped) bike lanes are provided along Borden Road. Curbside parking is provided intermittently along the roadway. The posted speed limit along Borden Road ranges from 25 to 40 miles per hour within the school's vicinity.

Richland Road/Borden Road intersection is a one-way stop-controlled intersection located at the southeast corner of the school site. The main vehicular access to the Project would be via the Richland Road/Borden Road intersection because the reconstruction would move the access for pick-up/drop-off for all students to driveways on Richland Road. Currently, the intersection provides an eastbound left-turn lane and a westbound right-turn lane on Borden Road to northbound Richland Road. The southbound approach of Richland Road is stop-controlled. There is a pedestrian crosswalk along Richland Road at this intersection.

Existing average daily traffic (ADT) volumes along the roadway segments near Richland Elementary School are shown in Table 3.17-1, Existing Average Daily Traffic Volumes.

Table 3.17-1. Existing Average Daily Traffic Volumes

Roadway Segment	Average Daily Traffic	Date
Richland Road, North of Borden Road	1,263	3/13/2019
Borden Road, Mulberry Drive to Rose Ranch Road	11,921	4/23/2019
Borden Road, Rose Ranch Road/Richland Road to Woodland Parkway	13,978	4/18/2019
Rose Ranch Road, Mulberry Drive to Borden Road	3,318	4/23/2019
Richland Road, Borden Road to Fulton Road	1,923	4/18/2019

Source: Appendix F

Bike Facilities

As defined in the City's General Plan Mobility Element (City of San Marcos 2012c), the following classes are used to identify bicycle facilities within the City of San Marcos:

- **Class I Bikeway (Bike Path)** is a paved "Bike Path" within an exclusive right-of-way, physically separated from vehicular roadways and intended specifically for non-motorized use.
- **Class II Bikeway (Bike Lane)** are signed and striped "Bike Lane" within a street right-of-way.
- **Class III Bikeway (Bike Route)** are "Bike Route" within a street right-of-way identified by signage only.

As noted above, there is an existing Class II bike lane along Borden Road.

Pedestrian Facilities

Richland Road and Borden Road are generally constructed with curbs, gutters, and sidewalks along both sides of the street. There are pedestrian crosswalks with Americans with Disabilities Act–compliant curb ramps at the intersections of Rose Ranch Road/Borden Road and Richland Road/Borden Road. Also, there are crossing guards at those intersections who serve pedestrians and school children during school arrival and dismissal times in the morning and mid-day periods.

Transit Facilities

The North County Transit District provides public transit service (bus and rail) in North San Diego County. There are no transit facilities in the vicinity of the Project site. The nearest bus stop for Route 305 is located along Mission Avenue, near its intersection with Mulberry Drive, approximately 1.2 miles of the Project site (Appendix F).

3.17.2 Analysis Methodology

LOS is used as a qualitative description of segments and intersection operations based on the design capacity of the segment or intersection configuration, compared to the volume of traffic using the segment or intersection. The analysis is used to determine whether a project may result in traffic effects that could require improvements to maintain or improve traffic operation. It is not used to determine impacts under CEQA.

Intersections

For the study area intersections, the Highway Capacity Manual (HCM) methodology (TRB 2016) was used. The intersection was analyzed per HCM methodology using Synchro LOS software (Version 10). The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions) based on the corresponding control delay experienced per vehicle.

Table 3.17-2, Levels of Service for Intersections Using HCM Methodology, shows the LOS values by delay ranges for unsignalized and signalized intersections under the HCM methodology.

Table 3.17-2. Levels of Service for Intersections Using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds)	Signalized Intersections Control Delay (in seconds)
A	< 10.0	<10.0
B	>10.0 to < 15.0	>10.0 to <20.0
C	>15.0 to <25.0	>20.0 to <35.0
D	>25.0 to <35.0	>35.0 to <55.0
E	>35.0 to <50.0	>55.0 to <80.0
F	>50.0	>80.0

Source: Appendix F
HCM = Highway Capacity Manual

Traffic Signal Warrant Analysis

A traffic signal warrant analysis for the study area intersection (Richland/Borden Road) was investigated using the traffic signal warrants provided in the California Manual of Uniform Traffic Control Devices (CA MUTCD) (Caltrans 2020b).

3.17.3 Screening Analysis

Trip Generation

The Project proposes to demolish the school and reconstruct the school buildings, as shown in the proposed site plan (Appendix F). Trip generation estimates for the proposed Project are based on daily and AM and PM peak-hour trip generation rates obtained from the SANDAG Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (SANDAG 2002). Trip generation estimates for the proposed Project are based on the trip generation rates for elementary schools. Reconstruction of the school would provide for a capacity of 850 students. Attendance data from the SMUSD for 2019–2020 indicated that approximately 766 students currently attend the school.

As shown in Table 3.17-3, Project Trip Generation Summary, at capacity (maximum enrollment) of 850 students, the proposed Project would generate approximately 1,360 daily trips, with 435 trips (261 inbound and 174 outbound) in the AM peak hour, and 122 trips (49 inbound and 73 outbound) in the PM peak hour. Based on 2019–2020 attendance data, the existing school generates approximately 1,226 daily trips, with 392 trips (235 inbound and 157 outbound) in the AM peak hour, and 110 trips (44 inbound and 66 outbound) in the PM peak hour. The intersection analysis for the existing condition is based on the day the traffic counts were collected (in 2019), which reflects the school's attendance of 766 students during that period. The existing plus Project condition is based on the relocation of the school's driveways and conservatively assumes the maximum permitted enrollment (capacity) of the school at 850 students. The net increase of 134 ADT (1,360 – 1,226 = 134) is only reflective of a single day when students may be absent and not the maximum ADT generated at full capacity/attendance.

Table 3.17-3. Project Trip Generation Summary

<table>
<tr><th rowspan="2">Land Use</th><th rowspan="2">Daily Trip Rate/Unit</th><th colspan="3">AM Peak Hour</th><th colspan="4">PM Peak Hour</th></tr>
<tr><th><i>In</i></th><th><i>Out</i></th><th><i>Total</i></th><th><i>In</i></th><th><i>Out</i></th><th colspan="2"><i>Total</i></th></tr>
<tr><td colspan="9"><i>Trip Rates</i></td></tr>
<tr><td>Elementary School</td><td>1.6/Students</td><td>60%</td><td>40%</td><td>32%</td><td>40%</td><td>60%</td><td colspan="2">9%</td></tr>
<tr><td colspan="9"><i>Trip Generations</i></td></tr>
<tr><td rowspan="2">Land Use</td><td rowspan="2">No. of Units</td><td rowspan="2">Daily</td><td colspan="3">AM Peak Hour</td><td colspan="3">PM Peak Hour</td></tr>
<tr><td><i>In</i></td><td><i>Out</i></td><td><i>Total</i></td><td><i>In</i></td><td><i>Out</i></td><td><i>Total</i></td></tr>
<tr><td>Capacity (Proposed Richland Elementary)</td><td>850 Students</td><td>1,360</td><td>261</td><td>174</td><td>435</td><td>49</td><td>73</td><td>122</td></tr>
<tr><td>Existing (Based on attendance data for 2019 – 2020)</td><td>766 Students</td><td>1,226</td><td>235</td><td>157</td><td>392</td><td>44</td><td>66</td><td>110</td></tr>
</table>

Source: Appendix F

Level of Service Screening Analysis

Per City of San Marcos guidelines (City of San Marcos 2020b), a local transportation analysis is required if a project generates more than 1,000 daily vehicle trips or more than 100 peak-hour vehicle trips if consistent with the latest version of the City's General Plan, or generates at least 500 daily vehicle trips or at least 50 peak-hour trips if inconsistent with the City's latest General Plan.

As explained above, the proposed Project would not increase the total capacity of the school. For purposes of this analysis, a representative random school day during pre-COVID conditions was selected to determine ADT. Based on that day, the net new traffic generated from approximately 84 additional students (maximum enrollment of 850 minus current enrollment of 766) is estimated to be 134 net new daily trips, with 43 trips in the AM peak hour, and 12 trips in the PM peak hour. Since the proposed Project would generate fewer than 500 daily trips or 50 peak-hour trips, it would not warrant a local transportation analysis per City guidelines.

Intersection Control and Traffic Signal Warrant Analysis

The main access to the school would be via the Richland Road/Borden Road intersection. Therefore, a focused analysis of the operating conditions at this one-way stop-controlled intersection has been included in the Transportation Assessment (Appendix F) to assess if any improvements to the intersection control would be warranted under existing or existing plus Project conditions.

Traffic Volumes and Levels of Service

Existing weekday ADT counts at the Borden Road and Richland Road segments and peak-hour turn movement counts at the Borden Road/Richland Road intersection were obtained during a typical non-holiday week while area schools were in session for pre-COVID conditions (April 2019 and May 2019). The traffic count worksheets are provided in Appendix F.

To estimate existing plus Project traffic volumes, the existing peak-hour volumes at the intersection were compared with the trip generation, distribution, and assignment of existing school traffic based on the 2019–2020 attendance data provided by SMUSD. A distribution percentage for the existing school traffic was estimated from the attendance boundary and student density map of Richland Elementary School (see Appendix F) and existing traffic volumes at the Richland Road/Borden Road intersection. A majority of the student population resides in the areas east of the school and accesses the site by traveling westbound along Borden Road. Approximately 60% and 30% of the school traffic is estimated to travel westbound and eastbound, respectively, along Borden Road. Approximately, 10% of the school traffic is estimated to travel southbound along Richland Road to access the site. Based on the new site plan and the proposed location of drop-off/pick-up zones, all inbound and outbound traffic from the school would travel along Richland Road, and therefore, use the Richland Road/Borden Road intersection. Therefore, existing traffic volumes at the Richland Road/Borden Road intersection were adjusted to estimate the existing plus Project conditions to account for the redistribution of school traffic.

This operational analysis focuses on the AM (7:00 a.m. to 9:00 a.m.) and PM (4:00 p.m. to 6:00 p.m.) peak periods at the Borden Road/Richland Road intersection. The peak periods represent the highest volume of traffic for the adjacent street system. After-school peak hour (i.e., mid-day) traffic counts were unavailable for pre-COVID conditions. Since the school was operating at reduced student capacity and implementing a hybrid learning model due to COVID restrictions, any new traffic counts collected would not represent typical school or adjacent street traffic conditions. Therefore, the operational analysis includes only the AM and the PM peak hours. For adjacent street traffic, the AM and PM commute peak hours represent the worst-case operating conditions. As shown in Table 3.17-4, Intersection Level of Service, the Richland Road/Borden Road intersection currently operates at LOS E and F during the AM and PM peak hours, respectively. With the adjusted existing Project traffic, the Richland Road/Borden Road intersection would operate at LOS F during both AM and PM peak hours. Appendix F includes the detailed Synchro LOS analysis worksheets.

Table 3.17-4. Intersection Level of Service

			Existing				Existing Plus Project			
			AM Peak		*PM Peak*		*AM Peak*		*PM Peak*	
No.	**Intersection**	**Control**	*Delay[1]*	*LOS*	*Delay[1]*	*LOS*	*Delay[1]*	*LOS*	*Delay[1]*	*LOS*
1	Richland Road/ Borden Road	Stop-Control	42.5	E	283.1	F	129.9	F	308.8	F

Source: Appendix F.
Notes: LOS Method from HCM (TRB 2016).
LOS = level of service
[1] Delay = Delay in seconds per vehicle.

Since the Richland Road/Borden Road intersection operates at a deficient LOS under existing and existing plus Project conditions, a traffic signal warrant analysis was conducted to determine if a traffic signal is warranted for the intersection.

The CA MUTCD contains minimum guidelines regarding traffic volumes, collisions, speeds, and other criteria to satisfy the requirements for the recommendation of a traffic signal, all-way-stop, or other traffic control device. To justify and recommend the installation of traffic control signals, there are nine CA MUTCD traffic signal warrants that should be analyzed. Per CA MUTCD, if any one, or a combination, of these warrants is met, then a traffic signal should be considered; however, satisfaction of a traffic signal warrant or warrants does not in itself require the installation of a traffic control signal (Caltrans 2020b). The analysis of all applicable traffic signal warrants is provided below.

Warrant 1: Eight-Hour Vehicular Volume Condition A or B—Not Satisfied

The need for a traffic control signal is considered if an engineering study finds that one of the following conditions (Condition A or Condition B) exists for each of any 8 hours of an average day (Caltrans 2020b). As shown in Table 3.17-5, 8-Hour Vehicular Volume (Conditions A and B), the 8-hour vehicular warrant is not met for either of the conditions.

Table 3.17-5. 8-Hour Vehicular Volume (Conditions A and B)

	Condition A—Minimum Vehicular Volume (80% shown in brackets)					
	Existing		*Signal Warrant Met?*	*Existing Plus Project*		*Signal Warrant Met?*
Warrant 1—Eight-Hour Vehicular Volume	*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)*		*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)*	
Threshold	*600 (480)*	*150 (120)*		*600 (480)*	*150 (120)*	
7:00 AM – 8:00 AM	1,256	47	No	N/A	N/A	No
8:00 AM – 9:00 AM	1,070	31		1,106	107	
12:00 PM – 1:00 PM	641	31		N/A	N/A	

Table 3.17-5. 8-Hour Vehicular Volume (Conditions A and B)

Warrant 1—Eight-Hour Vehicular Volume	Condition A—Minimum Vehicular Volume (80% shown in brackets)					
	Existing		*Signal Warrant Met?*	*Existing Plus Project*		*Signal Warrant Met?*
	VPH on Major Street Approach[1] (Borden Rd)	*VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)*		*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)*	
Threshold	*600 (480)*	*150 (120)*		*600 (480)*	*150 (120)*	
2:00 PM – 3:00 PM	930	32		N/A	N/A	
3:00 PM – 4:00 PM	1,327	44		N/A	N/A	
4:00 PM – 5:00 PM	1,512	89		1,517	95	
5:00 PM – 6:00 PM	1,502	67		N/A	N/A	
6:00 PM – 7:00 PM	1,001	42		N/A	N/A	
Warrant 1—Eight-Hour Vehicular Volume	Condition B—Interruption of Continues Traffic (80% shown in brackets)					
	Existing		*Signal Warrant Met?*	*Existing Plus Project*		*Signal Warrant Met?*
	VPN on Major Street Approach[1] (Borden Rd)	*VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)*		*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)*	
Threshold	*900 (720)*	*75 (60)*		*900 (720)*	*75 (60)*	
7:00 AM – 8:00 AM	1,256	47	No	N/A	N/A	No
8:00 AM – 9:00 AM	1,070	31		1,106	107	
12:00 PM – 1:00 PM	641	31		N/A	N/A	
2:00 PM – 3:00 PM	930	32		N/A	N/A	
3:00 PM – 4:00 PM	1,327	44		N/A	N/A	
4:00 PM – 5:00 PM	1,512	89		1,517	95	
5:00 PM – 6:00 PM	1,502	67		N/A	N/A	
6:00 PM – 7:00 PM	1,001	42		N/A	N/A	

Source: Appendix F
VPH = vehicles per hour; N/A = not applicable
Notes: Based on ADT collected for Borden Road and Richland Road.

[1] VPH on the major street (total of both approaches).

[2] VPH on the minor street (one direction only for higher-volume approach).

Warrant 2: Four Hour Vehicular Volume – Satisfied

The 4-hour vehicular volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. As shown in Table 3.17-6, 4-Hour Vehicular Volume, under existing conditions, the warrant is met for 3 out of 4 hours, and under existing plus Project conditions, the warrant is met for all 4 hours.

Table 3.17-6. 4-Hour Vehicular Volume

Warrant 2 – Four Hour Vehicular Volume	*Existing*		*Signal Warrant Met?*	*Existing Plus Project*		*Signal Warrant Met?*
	VPH on Major Street Approach[1] (Borden Rd)	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*		*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*	
7:00 AM – 8:00 AM	1,243	100	**Yes**	1,279	176	**Yes**
8:00 AM – 9:00 AM	1,073	116	No	1,109	192	**Yes**
4:00 PM – 5:00 PM	1,207	120	**Yes**	1,212	126	**Yes**
5:00 PM – 6:00 PM	1,318	152	**Yes**	1,323	158	**Yes**

Source: Appendix F
VPH = vehicles per hour
Notes: Based on AM and PM turn movement counts collected for Richland Road/Borden Road intersection.
[1] VPH on the major street (total of both approaches).
[2] VPH on the minor street (one direction only for higher-volume approach).

Warrant 3: Peak-Hour Vehicular Volume: Conditions A and B – Satisfied

The peak-hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, minor-street traffic suffers undue delay when entering or crossing the major street. The need for a traffic control signal is considered if an engineering study finds that the criteria in either of the following conditions are met (Caltrans 2020b):

Condition A: If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

- The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a "Stop" sign equals or exceeds: 4 vehicle-hours for a 1-lane approach or 5 vehicle-hours for a 2-lane approach; and
  - Delay on southbound lane at Richland Road/Borden Road intersection = 135 veh*269.1 sec or 0.07 hour = 10 vehicle-hours under existing conditions during the PM peak hour. Therefore, the stopped time delay exceeds 4 vehicle-hours for a 1-lane approach.
- The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour (VPH) for two moving lanes; and
  - As shown in Table 3.17-7, Peak-Hour Vehicular Volumes (Condition B), minor-street approach along Richland Road carries 165 VPH under existing conditions and 171 VPH under existing plus Project conditions, and therefore, exceeds 100 VPH.
- The total entering volume serviced during the hour equals or exceeds 650 VPH for intersections with three approaches or 800 VPH for intersections with four or more approaches.
  - Total entering volumes during the PM peak hour exceeds 650 VPH for the Richland Road/Borden Road intersection during both peak hours under existing and existing plus Project conditions.

Condition B: The plotted point representing the VPHs on the major street (total of both approaches) and the corresponding VPH on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 (Caltrans 2020b) for the existing combination of approach lanes.

- As shown in Table 3.17-7, this condition is met under existing and existing plus Project conditions during the PM peak hour.

Table 3.17-7. Peak-Hour Vehicular Volumes (Condition B)

Warrant 3 – Peak Hour Vehicular Volume	Existing		Signal Warrant Met?	Existing Plus Project		Signal Warrant Met?
	VPH on Major Street Approah[1] (Borden Rd)	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*		*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*	
4:45 PM – 5:45 PM	1,389	165	**Yes**	1,394	171	**Yes**

Source: Appendix F
VPH = vehicles per hour
Notes: Based on AM and PM turn movement counts collected for Richland Road/Borden Road intersection.
[1] VPH on the major street (total of both approaches).
[2] VPH on the minor street (one direction only for higher-volume approach).

Warrant 4: Pedestrian Volume – *<u>Not Satisfied</u>*

Because pedestrians do not cross the major street (i.e., Borden Street), the warrant conditions as mentioned in CA MUTCD (Caltrans 2020b) are not applicable. Additionally, the pedestrians and school children crossing the intersection along Richland Road (as noted in the intersection count collected in 2019) were significantly fewer than the 100 pedestrians-per-hour requirement per minimum volume for the pedestrian volume warrant.

Warrant 5: School Crossing – *<u>Not Applicable</u>*

Because pedestrians do not cross the major street (i.e., Borden Street), the warrant conditions as mentioned in CA MUTCD (Caltrans 2020b) are not applicable.

Warrant 6: Coordinated Signal System – *<u>Not Applicable</u>*

Because the closest traffic signal at Rose Ranch Road/Borden Road is located closer than 1,000 feet from Richland Road/Border Road intersection, the warrant conditions as mentioned in CA MUTCD (Caltrans 2020b) are not applicable.

Warrant 7: Crash Experience – *<u>Not Satisfied</u>*

The crash experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. Based on review of the California Highway Patrol's Statewide Integrated Traffic Records System report for 2019, two crashes were reported along Borden Road near the Richland Road intersection. The reason for both the crashes was reported as unsafe speed (CHP 2020). Because the number of crashes reported is fewer than five in one year as required per warrant, the intersection is not considered to have a high rate of crashes. Further, the intersection does not meet the 8-hour vehicular, roadway network, or pedestrian volume warrant which are required as part of the crash experience warrant. Although this warrant is not met, vehicles traveling east and west along Borden Road pass through this intersection at unsafe speeds (as noted in the reason for the crashes above), and impede safe movement of southbound left-turning vehicles from Richland Road to eastbound Borden Road.

Warrant 8: Roadway Network – Not Satisfied

Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network. There are a few conditions per CA MUTCD that need to be met for the common intersection where two or more major routes meet in order to install a traffic signal. Although the Project intersection meets partial requirements of this warrant (i.e., Warrant 2 and Warrant 3), the ADT estimate as shown in Table 3.17-8, Warrant 8 Roadway Network, is not met.

Table 3.17-8. Warrant 8 Roadway Network

	Condition A – Minimum Vehicular Volume (80% shown in brackets)					
	Existing		*Signal Warrant Met?*	*Existing Plus Project*		*Signal Warrant Met?*
Average Traffic Estimate Form Figure 4C-103 (CA)	*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*		*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*	
Threshold	*9,600*	*2,400*		*9,600*	*2,400*	
Average Daily Traffic Volume	13,978	584	No	14,099	651	No
	Condition B – Interruption of Continuous Traffic (80% shown in brackets)					
	Existing		*Signal Warrant Met?*	*Existing Plus Project*		*Signal Warrant Met?*
Average Traffic Estimate Form Figure 4C-103 (CA)	*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*		*VPH on Major Street Approach[1] (Borden Rd)*	*VPH on Higher Volumes Minor Street Approach[2] (Richland Rd)*	
Threshold	*14,400*	*1,600*		*14,400*	*1,600*	
Average Daily Traffic Volume	13,978	584	No	14,099	651	No

Source: Appendix F
VPH = vehicles per hour

[1] VPH on the major street (total of both approaches).

[2] VPH on the minor street (one direction only for higher-volume approach).

Warrant 9: Intersection Near a Grade Crossing – Not Applicable

The Intersection near a grade crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity of the intersection to a grade crossing on an intersection approach controlled by a "Stop" or "Yield" sign is the principal reason to consider installing a traffic control signal. This warrant does not apply to the Richland Road/Borden Road intersection.

Improvement Measures

Based on the results of the traffic signal warrants analysis, the intersection was analyzed with an all-way stop-control and a signal control. As shown in Table 3.17-9, Intersection Level of Service – With Improvement Measures, the Richland Road/Borden Road intersection would continue to operate at LOS F in both peak hours with an all-way-stop control. With traffic signal control, the intersection would operate at an acceptable LOS C in both peak hours. Appendix F includes the detailed synchro analysis worksheets for the intersection with an all-way stop-control and a traffic signal.

Table 3.17-9. Intersection Level of Service – With Improvement Measures

No	Intersection	Control	Existing plus Project			
			AM Peak		*PM Peak*	
			Delay[1]	*LOS*	*Delay*[1]	*LOS*
1	Richland Road / Borden Road	All-way stop-control	101.1	F	127.6	F
		Signalized	26.7	C	24.9	C

Source: Appendix F
LOS = level of service
Notes: LOS Method from HCM (TRB 2016)
[1] Delay = delay in seconds per vehicle.

Therefore, because several of the traffic warrants are met, and because a traffic signal would reduce vehicle delay at the Richland Road/Borden Road intersection, it is recommended that a traffic signal be installed at the Richland Road/Borden Road intersection to address the existing deficient intersection operation. The intersection would operate acceptably with the installation of a traffic signal, and no further improvements are recommended. The Project-projected traffic would operate at a level consistent with City ordinances and requirements, and impacts would be **less than significant.**

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

The Governor's Office of Planning and Research was directed to amend the CEQA Guidelines to provide an alternative to LOS for evaluating transportation impacts with the passage of SB 743. CEQA Guidelines Section 15064.3(b) focuses on specific criteria (VMT) for determining the significance of transportation impacts. Under SB 743 and CEQA Section 15064.3(b), LOS, or vehicle delay, no longer constitutes an environmental impact. VMT has been adopted as the most appropriate measure of transportation impacts under CEQA. The City of San Marcos has adopted the VMT metric and significance criteria for transportation impact analysis. The City's Transportation Impact Analysis Guidelines provides guidance on the requirements to evaluate transportation impacts for projects (City of San Marcos 2020b).

The City developed VMT metrics and impact thresholds for land use projects, including residential uses, employment projects, and retail uses. A project screening approach can be used to determine if a project would require a detailed VMT analysis. A project that meets at least one of the screening criteria would be considered to have a **less than significant** VMT impact due to project or location characteristics (City of San Marcos 2020b).

The proposed Project was screened using the following criteria (City of San Marcos 2020b):

Local-Serving Public Facility: Uses that are local-serving public facilities can be presumed to have a less than significant transportation impact and would not require a detailed analysis, absent substantial evidence that they will generate significant VMT. These uses include the following:

- Public services (e.g., police, fire stations, public utilities)
- Local-serving neighborhood schools
- Local neighborhood parks

Because the proposed Project is a local-serving neighborhood school, it would have a **less than significant** impact.

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

The Project does not include any elements that could potentially create a traffic hazard for motor vehicles, bicycles, or pedestrians due to a proposed, non-standard design feature. The Project's circulation system is designed to interconnect with the existing adjacent public street system and discourage cut-through automobile traffic. Additionally, the Project would not result in a hazardous roadway design or unsafe roadway configuration; place incompatible uses on existing roadways; or create or place curves, slopes, or walls that impede adequate sight distance on a roadway. Moreover, because the Project would be required to comply with City standards for any road improvements, the proposed Project would not significantly increase hazards due to design features or incompatible uses. Therefore, impacts would be **less than significant.**

d) Would the project result in inadequate emergency access?

All roadways have been designed or planned based on City standards. Consistency with City standards indicates that adequate emergency access is available on these facilities. Additionally, the Project has been reviewed by the City of San Marcos Fire Department to ensure compliance with applicable safety standards.

Regarding evacuation, the Project would not result in an impairment during a community-wide emergency event. The primary evacuation route identified in the County of San Diego's Emergency Operations Plan nearest the Project site is SR-78, which is 1.2 miles south of the Project site (County of San Diego 2018).

The County's Emergency Operations Plan includes an Evacuation Annex, which provides for the effective mobilization of all emergency resources in San Diego. The Evacuation Annex is based on general estimates on the number of residents within each jurisdiction of the County's Operational Area that may be impacted by specific hazards or may need to evacuate, the number of residents that may require sheltering or transportation assistance, and the estimated number of pets that may need to be accommodated in an evacuation effort (County of San Diego 2018). The proposed Project does not include residential uses and, thus, would not result in a change in the number of permanent residents in the area.

As part of City standard development procedures, Project development plans would be submitted to the City for review and approval to ensure that adequate circulation, ingress and egress, and emergency access is provided. The Project would be constructed in compliance with the Uniform Fire Code, Uniform Building Code, and the California Building Standards Code. The Project would also comply with applicable City regulations related to fire prevention and safety, transportation and circulation, structural design, and brush management. The Project would provide such provisions as adequate turn-around for fire trucks at all "turn-around" locations, key placement and installation of fire hydrants, installation of sprinkler systems in all occupied buildings, and conform to brush management regulations. Therefore, impacts would be **less than significant.**

3.18 Tribal Cultural Resources

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

i) ***Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?***

The project proposes to reconstruction an existing elementary school in a developed area. Section 21080.3.1(b) of the California Public Resources Code (AB 52) requires a lead agency formally notify a California Native American tribes that is traditionally and culturally affiliated within the geographic area of the discretionary project when such tribe has formally requested notification. On December 30, 2020, SMUSD received a consultation request from the Rincon Band of Luiseño Indians (Rincon Band) requesting notification or consultation pursuant to Public Resources Code section 21080.3. SMUSD is currently in consultation with the Rincon Band.

As stated in Section 3.5, Cultural Resources, no evidence of archeological or tribal cultural resources have been identified. The majority of the project site has been disturbed with the existing school development. However, there remains the potential to encounter unidentified resources during the project grading activities should construction go deeper than previously disturbed depths. To further ensure tribal cultural resources are protected, implementation of MM-CUL-1, MM-CUL-2, and MM-TRC-1 provides additional protections for significant resources and describes the process for proper treatment and handling to ensure impacts would be minimized. Therefore, the Project would not result in a substantial adverse change in the significance of a tribal cultural resource, and impacts would be **less than significant with mitigation incorporated.**

Mitigation Measure

MM-TCR-1 Unanticipated Impact of Tribal Cultural Resources. To minimize the potential of an unanticipated impact to tribal cultural resources, the proposed project would coordinate with the Rincon Band to develop a Worker Environmental Awareness Program (WEAP) training required to all personnel prior that will be performing grading and ground disturbance activities, including the Inspector and General Contractor to the start of work. In addition to the WEAP training, a part-time tribal monitor shall be required for weekly on-site visit to monitor ground disturbance. In the event of unanticipated cultural discoveries or human remains, the applicant shall follow measures of **MM-CUL-1 Unanticipated Discovery of Cultural Resources** and **MM-CUL-2 Unanticipated Discovery of Human Remains**

ii) ***A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?***

As stated above in Section 3.18 ai), there is no evidence of archaeological or tribal cultural resources identified on the project site. The project has the potential to disturb unidentified archaeological resources during project grading. Mitigation measures MM-CUL-1, MM-CUL-2 and MM-TCR-1 are provided for the presence of archaeological and Rincon Band monitors during ground disturbing activities that would be able to identify any previously unidentified cultural resources and to prevent inadvertent disturbance of any intact cultural deposits that may be present.

To further ensure tribal cultural resources are protected, implementation of MM-CUL-1, MM-CUL-2, and MM-TCR-1 provides protections for significant resources and describes the process for proper treatment and handling to ensure impacts would be minimized. Therefore, the project impacts would be **less than significant with mitigation incorporated.**

3.19 Utilities and Service Systems

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

The Project would result in the reconstruction of an existing elementary school in an already developed neighborhood. Once complete, the reconstructed Richland Elementary School will have the same capacity as the existing use, and would not create new housing or induce additional population growth that would increase demand for utilities or service systems. All improvements and construction would be confined to areas within the boundaries of the Project site or immediately adjacent within the right-of-way. The Project would not result in additional population in the area, and thus would not require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage; electric power; natural gas; or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. The Project would result in **no impact** from physical impacts associated with providing new or modified facilities.

b) ***Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?***

The Project would result in the reconstruction of an existing elementary school. Once complete, the reconstructed Richland Elementary School will have the same capacity as the existing use, and would not create new housing or induce additional population growth that would increase demand for water supply; rather, the Project would be built to the most recent, water-efficient standards and would reasonably be expected to be more water efficient than the existing school use. The Project would not increase the number of students or faculty/staff at the school, and would not result in additional population in the area and thus would not increase demand for water supply. Therefore, the Project would result in **no impact** to water supply.

c) ***Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?***

The Project would result in the reconstruction of an existing elementary school. Once complete, the reconstructed Richland Elementary School will have the same capacity as the existing use, and would not create new housing or induce additional population growth that would increase demand for wastewater treatment. The Project would not increase the number of students or faculty/staff at the school, and would not result in additional population in the area, and thus, would not increase demand for wastewater treatment. Therefore, the Project would result in **no impact.**

d) ***Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?***

The Project would generate solid waste, mostly related to demolition of the existing Richland Elementary School; however, construction would comply with all applicable recycling measures to reduce waste. During construction activities, a minimum of 75% of construction waste would be recycled, and the contractor would install recycling bins throughout the campus to collect recyclables, including paper, plastic, and glass. Because the Project would construct a new elementary school on a site planned for, and currently serving as, an elementary school, Project-generated waste is not anticipated to adversely affect landfill capacity. Therefore, the Project would have **no impact** related to solid waste disposal.

e) ***Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?***

The Project would involve reconstruction of a new elementary school on a site planned for, and currently serving as, an elementary school. The Project would generate solid waste similar to the existing waste, including paper, food waste, used school supplies, packaging materials, and wastes associated with general property maintenance and cleaning. The Project would comply with federal, state, and local statutes and regulations related to solid waste, and would have **no impact** related to solid waste regulations.

3.20 Wildfire

a) ***Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?***

The Project would not increase traffic in the Project area that could impede emergency response because it would reconstruct the existing Richland Elementary School with the same capacity as the existing school. Further, the Project would be built in compliance with the Department of the State Architect and would not include structures or features that would physically interfere with implementation of emergency response or evacuation plans. The Project would reconfigure driveways/access points, as described in Section 3.17, Transportation; however, the Project would not alter any public streets serving as emergency evacuation routes. The Project would reconstruct Richland Elementary School on a site designated for Public-Institutional uses, and therefore, would not have any indirect effects associated with impairing implementation of emergency response or evacuation plans due to unplanned uses. Therefore, the Project would have **no impact**.

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

The Project site is not located within a Very High Fire Hazard Severity Zone as mapped by CAL FIRE (CAL FIRE 2020). The Project site is surrounded by existing development and would include typical school site fire-suppression infrastructure. The Project would not create new housing, and therefore would not result in additional population in the area that could be exposed to the wildland fire risks. The Project would result in **no impact** associated with exacerbating wildfire risks or the potential for people to be exposed to pollutant concentrations or uncontrolled spread of wildfire.

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

The Project would rely on an existing roadway for access and would not require the installation or maintenance of a road, fuel break, or emergency water source. Implementation of the Project would not increase fire risk. Therefore, the Project would have **no impact** related to installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

d) ***Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?***

The Project site is relatively flat. The Project would include subdrains, a bioswale, and storm drain infrastructure sufficient to receive stormwater drainage from the site. Because the Project site is flat and does not support highly combustible vegetation, it would not be susceptible to post-fire slope instability or drainage changes. The Project site is located downhill of a hillside where post-fire slope instability or drainage changes could potentially lead to adverse effects within the Project site. However, like the Project site itself, this off-site area is not within a Very High Fire Hazard Severity Zone as mapped by CAL FIRE. Further, the Project would not impact this area, nor would the Project increase the number of individuals on the Project site compared to the existing condition. Therefore, the Project would have a **less than significant impact** related to exposing people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

3.21 Mandatory Findings of Significance

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

As discussed in Section 3.4, Biological Resources, the study area around the Project site contains trees, shrubs, and bare ground that would potentially be used by migratory birds for breeding. To avoid potential indirect impacts to nesting birds, and in conformance with the requirements of the Migratory Bird Treaty Act and California Fish and Game Code, **MM-BIO-1** would be implemented. Therefore, with implementation of **MM-BIO-1**, direct and indirect impacts to biological resources would be **less than significant.**

As discussed in Section 3.5, Cultural Resources, there is a possibility of encountering previously undiscovered archaeological resources at subsurface levels during ground-disturbing activities associated with the Project. Implementation of **MM-CUL-1** would ensure that potential impacts to archaeological resources during construction activities would be reduced to less than significant. Further, while ground-disturbing activities associated with construction of the Project are unlikely to uncover previously unknown archaeological resources, in the unlikely event that human remains are discovered during ground-disturbing activities, implementation of **MM-CUL-2** would set forth proper procedure. Therefore, with implementation of **MM-CUL-1** and **MM-CUL-2**, impacts would be reduced to **less than significant.**

Lastly, as discussed in Section 3.18, Tribal Cultural Resources, there is a possibility of encountering tribal cultural resources during ground disturbing activities. Implementation of MM-TCR-1 requiring training and weekly monitoring, along with implementation of MM-CR-1 and MM-CR-2, would ensure that impacts to tribal cultural resources are reduced to **less than significant.**

Therefore, with the incorporation of mitigation, the Project would not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or create a significant hazard to the public or the environment.

b) ***Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?***

"Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. When evaluating cumulative impacts, Section 15064(h) of the CEQA Guidelines states that an EIR must be prepared if the cumulative impact may be significant and the project's incremental effect, although individually limited, would be cumulatively considerable.

Alternatively, a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable through mitigation measures set forth in an IS/MND, or if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to, water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, and/or plans or regulations for the reduction of GHG emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area where the Project is located.

The Richland Elementary School Reconstruction Project would potentially result in Project-related impacts related to biological resources and cultural resources that could be potentially significant without the incorporation of mitigation. Thus, when coupled with implementation of other projects throughout the broader Project area, the Project may potentially result in cumulative-level impacts if these significant impacts are left unmitigated. However, with the incorporation of mitigation identified herein, the Project's impacts on biological resources and cultural resources would be reduced to less than significant levels and would not considerably contribute to cumulative impacts in the greater region. In addition, these other related projects would presumably be bound by their applicable lead agency to comply with the all applicable federal, state, and local regulatory requirements, and to incorporate all feasible mitigation measures, consistent with CEQA, to further ensure that their potentially cumulative impacts would be reduced to **less than significant.**

Therefore, by incorporating all mitigation measures outlined herein, the Project would reduce its contribution to any such cumulative impacts to less than cumulatively considerable. Therefore, the Project would result in individually limited, but not cumulatively considerable, impacts.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

As evaluated in Sections 3.1 through 3.20, with the incorporation of mitigation, environmental impacts associated with the Project would be reduced to less than significant. Therefore, with mitigation incorporated, the Project would not directly or indirectly cause substantial adverse effects on human beings. Impacts would be **less than significant with mitigation incorporated.**

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4 References and Preparers

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4.2 List of Preparers

Dudek

Sean Kilkenny, Project Manager
Carolyn Somvilay, Project Analyst
Ian McIntyre, Air Quality/GHG
Mark Storm, Noise
Dennis Pascua, Transportation
Sabita Tawani, Transportation
Samantha Murray, Historic Resources
Nicole Frank, Historic Resources
Jessica Colston, Cultural Resources

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Appendix A

Air Quality and Greenhouse Gas Technical Report

Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Richland Elementary School Reconstruction Project San Marcos Unified School District City of San Marcos, California

Prepared for:

San Marcos Unified School District
255 Pico Avenue, Suite 250
San Marcos, California 92069
Contact: Tova K. Corman, Facilities Department

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Jennifer Reed

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APPENDIX

FIGURES

TABLES

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
BenMAP	Benefits Mapping and Analysis Program
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CALGreen	California's Green Building Standards
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	climate action plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFCs	chlorofluorocarbons
CH_4	methane
City	City of San Marcos
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
DPM	diesel particulate matter
EIR	environmental impact report
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EV	electric vehicle
GHG	greenhouse gas
gpm	gallons per minute
GWP	global warming potential
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HCFCs	hydrochlorofluorocarbons
HFC	hydrofluorocarbon
HIA	health impact assessment
HVAC	heating, ventilation, and air conditioning
IPCC	Intergovernmental Panel on Climate Change
kW	kilowatt
LCFS	Low Carbon Fuel Standard
LOS	level of service
MMT	million metric ton
MPO	metropolitan planning organization
MT CO_2e	metric tons of CO_2 equivalent
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards

Acronym/Abbreviation	Definition
NF_3	nitrogen trifluoride
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
O_3	ozone
PFC	perfluorocarbon
PGM	photochemical grid model
P-I	Public-Institutional
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
ppb	parts per billion
ppm	parts per million
Project	San Marcos Unified School District Richland Elementary School Reconstruction Project
psi	pounds per square inch
PV	photovoltaic
RAQS	Regional Air Quality Strategy
RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
SAFE	Safer Affordable Fuel-Efficient
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCS	Sustainable Communities Strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLCP	short-lived climate pollutant
SMUSD	San Marcos Unified School District
SO_2	sulfur dioxide
SO_4	sulfates
SO_x	sulfur oxides
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
VOC	volatile organic compound
ZEV	zero emission vehicle

Executive Summary

The purpose of this technical report is to assess the potential air quality and greenhouse gas (GHG) emissions impacts associated with implementation of the proposed San Marcos Unified School District Richland Elementary School Reconstruction Project (Project). This assessment utilizes the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.).

Project Overview

The Project proposes to reconstruct the existing Richland Elementary School with a new 91,477-square-foot elementary school, including the redevelopment of the play fields and playgrounds, in the City of San Marcos (City). The Project would have a capacity of 850 students and 44 classrooms. In addition, the Project includes three new pick-up and drop-off locations for: 1) Kindergarten, 2) Grades 1-5, and 3) Bus drop-off and food service deliveries and the addition of 36 parking spaces, totaling 117. The Project would also relocate the existing access to the Project site from Borden Road to Richland Road.

The Project site is located within the San Diego Air Basin and is under the jurisdiction of the San Diego Air Pollution Control District (SDAPCD). Construction and operational criteria air pollutant and GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2.

Air Quality

The air quality impact analysis evaluated the potential for adverse impacts to air quality due to construction and operational emissions resulting from the Project. Impacts were evaluated for their significance based on the County of San Diego's mass daily criteria air pollutant thresholds of significance (County of San Diego 2007), which is based on SDAPCD Rules 20.2 and 20.3 (SDAPCD 1998 and 2018). Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Criteria air pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and lead. Pollutants that are evaluated include volatile organic compounds (VOCs), oxides of nitrogen (NO_x), CO, sulfur oxides (SO_x), PM_{10}, and $PM_{2.5}$. VOCs and NO_x are important because they are precursors to O_3.

Air Quality Plan Consistency

Regarding consistency with local air quality plans, the Project would not result in a more intensive land use than currently allowed under the City's General Plan (City of San Marcos 2013), which SDAPCD's Regional Air Quality Strategy (RAQS) emissions forecast is based on. Because the Project would not contribute to local population and employment growth and associated vehicle miles traveled (VMT) in an amount greater than anticipated for the Project area by the City's General Plan, the Project would be consistent with relevant air quality plans, and impacts would be less than significant.

Construction Criteria Air Pollutant Emissions

Construction of the Project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Estimated maximum daily construction emissions would not exceed the applied significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years (2021–2022). Therefore, Project construction air quality impacts would be less than significant.

Operational Criteria Air Pollutant Emissions

Operational year 2023 was assumed, consistent with the construction schedule, while the existing school was assumed to be operational up until 2021. Operation of the Project would generate operational criteria air pollutants from mobile sources (i.e., vehicle trips), area sources (i.e., consumer product use, architectural coatings, and landscape maintenance equipment), and energy (i.e., natural gas). Net (Project minus Existing School) maximum daily operational emissions would not exceed the County of San Diego's operational significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Therefore, Project operational air quality impacts would be less than significant.

Exposure of Sensitive Receptors

Carbon Monoxide Hotspots

Operation of the Project would not expose sensitive receptors to localized high concentrations of CO or contribute traffic volumes to intersections that would cause a CO hotspot. As the Project would not cause the Richland Road/Borden Road intersection to degrade to level of service E or worse, potential operational CO hotspot impacts would be less than significant.

Toxic Air Contaminants

Construction activities would not generate emissions in excess of the applied mass daily thresholds; therefore, Project-generated construction emissions are not anticipated to be substantial. Diesel equipment used during Project construction would be subject to the California Air Resources Board air toxic control measures for in-use off-road diesel fleets, which would minimize diesel particulate matter emissions.

No long-term sources of toxic air contaminant (TAC) emissions are anticipated during operation of the Project because the Project would only include residential units, recreational land uses, and commercial land uses; the Project would not include heavy industrial uses or other land uses typically associated with stationary sources and TACs. Additionally, the Project would not be located next to a major source of TACs or high-volume roadway. As such, the Project would not result in substantial TAC emissions that may affect nearby receptors, nor would the Project be exposed to nearby sources of TACs. Impact would be less than significant.

Others

Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application, which would disperse rapidly from the Project site and generally occur at magnitudes that would not affect substantial numbers of people. Impacts associated with odors during construction would be less than significant. The Project would not include land-use types that would generate odors during operation. Therefore, Project construction and operations would result in odor impacts that are less than significant.

Greenhouse Gas Emissions

Global climate change is primarily considered a cumulative impact, but must also be evaluated on a project-level under CEQA. A project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHG emissions. GHGs are gases that absorb infrared radiation in the atmosphere. Principal GHGs regulated under state and federal law and regulations include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). GHG emissions are measured in metric tons of CO_2 equivalent (MT CO_2e), which account for weighted global warming potential factors for CH_4 and N_2O.

Project-Generated Construction and Operational Greenhouse Gas Emissions

The threshold applied to assess the potential for the Project to generate GHG emissions either directly or indirectly that may have a significant impact on the environment was the California Air Pollution Control Officers Association (CAPCOA) evaluated threshold of 900 MT CO_2e per year. Construction emissions were amortized over a 30-year project lifetime and added to net operational emissions consistent with industry practice.

Construction of the Project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The estimated total GHG emissions during construction would be approximately 687 MT CO_2e. Estimated Project-generated construction emissions amortized over 30 years would be approximately 23 MT CO_2e per year.

Operation of the Project would generate GHG emissions from area sources (e.g., landscape maintenance), energy sources (e.g., natural gas and electricity), mobile sources, solid waste, and water supply and wastewater treatment. Estimated annual Project-generated GHG emissions would be approximately 1,034 MT CO_2e per year as a result of project operations. Estimated annual Project-generated operational emissions plus amortized Project construction emissions (23 MT CO_2e per year) would be approximately 1,057 MT CO_2e per year. The existing school is estimated to generate approximately 1,035 MT CO_2e per year. Therefore, the Project is estimated to result in a net increase in emissions of approximately 23 MT CO_2e per year. Total annual emissions would not exceed the GHG significance threshold of 900 MT CO_2e per year and would not be cumulatively considerable.

Consistency with Applicable Greenhouse Gas Reduction Plans

Development of the Project site would be consistent with the City's 2020 Climate Action Plan and would not conflict with the California Air Resources Board Scoping Plan, San Diego Association of Governments Regional Transportation Plan/Sustainable Communities Strategy, and other applicable GHG-related regulations. While the Project is not subject to the City's Climate Action Plan, the evaluation of the Project's potential to conflict with key Climate Action Plan goals and strategies was evaluated for disclosure. As such, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and no mitigation is required. This impact would be less than significant.

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1 Introduction

1.1 Report Purpose and Scope

The purpose of this technical report is to assess the potential air quality and greenhouse gas (GHG) emissions impacts associated with implementation of the proposed San Marcos Unified School District (SMUSD) Richland Elementary School Reconstruction Project (Project). This assessment uses the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), and is based on the emissions-based significance thresholds recommended by the County of San Diego (County), which is based on the San Diego Air Pollution Control District (SDAPCD) rules, and other applicable thresholds of significance.

This introductory Section provides a description of the Project and the Project location. Chapter 2, Air Quality, describes the air quality–related environmental setting, regulatory setting, existing air quality conditions, and thresholds of significance and analysis methodology, and presents an air quality impact analysis per Appendix G of the CEQA Guidelines. Chapter 3, Greenhouse Gas Emissions, follows the same format as Chapter 2 and similarly describes the GHG emissions–related environmental setting, regulatory setting, existing climate changes conditions, and thresholds of significance and analysis methodology, and presents a GHG emissions impact analysis per Appendix G of the CEQA Guidelines. Chapter 4, References Cited, includes a list of the references cited. Chapter 5, List of Preparers, includes a list of those who prepared this technical report.

1.2 Regional and Local Setting

Surrounding Land Uses

The Project is located in a suburban setting and is surrounded by residential uses to the north, south, east, and west.

Project Site Conditions

The Project is located at 910 Borden Road in the City of San Marcos (City), California (see Figure 1). The Project site is located within the San Diego Air Basin (SDAB), which covers roughly 4,200 square miles and lies in the southwest corner of California, encompassing all of San Diego County.

General Plan and Zoning

The Project site is designated as Public-Institutional (P-I), which allows the site to be developed with public facilities. Thus, the Project would be consistent with the General Plan land use designation for the site.

1.3 Project Description

The Project proposes to reconstruct the existing Richland Elementary School with a new 91,477-square-foot elementary school, including the redevelopment of the play fields and playgrounds. The Project would have a capacity of 850 students and 44 classrooms. In addition, the Project includes three new pick-up and drop-off locations for: 1) Kindergarten, 2) Grades 1-5, and 3) Bus drop-off and food service deliveries and the addition of 36 parking spaces, totaling 117 (see Figure 2). The Project would also relocate the existing access to the Project site from Borden Road to Richland Road.

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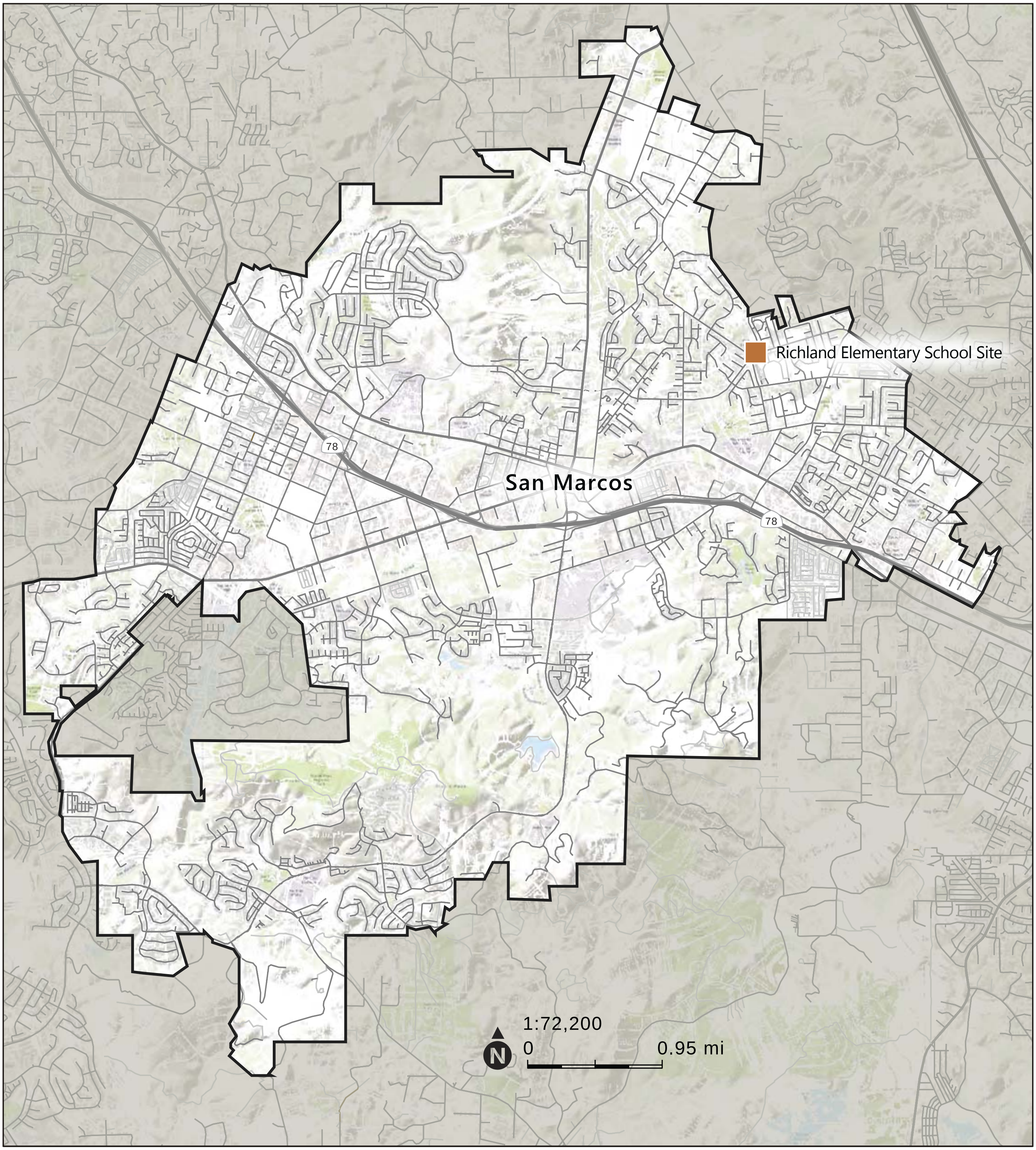

SOURCE: SanGIS, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA | U.S. Census

FIGURE 1

Site Location

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SOURCE: San Marcos Unified School District

FIGURE 2

Site Plan

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2 Air Quality

2.1 Environmental Setting

As stated previously, the Project site is located within the SDAB.

2.1.1 Meteorological and Topographical Conditions

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted. Meteorological and topographical conditions, however, are also important. Factors such as wind speed and direction, air temperature gradients and sunlight, and precipitation and humidity interact with physical landscape features to determine the movement and dispersal of air pollutants. Meteorological and topographical factors that affect air quality in the SDAB are described below.[1]

Regional Climate and Meteorological Conditions

The climate of the San Diego region, as in most of Southern California, is influenced by the strength and position of the semi-permanent high-pressure system over the Pacific Ocean, known as the Pacific High. This high-pressure ridge over the west coast often creates a pattern of late-night and early-morning low clouds, hazy afternoon sunshine, daytime onshore breezes, and little temperature variation year-round. The SDAB is characterized as a Mediterranean climate with dry, warm summers and mild, occasionally wet winters. Average temperature ranges (in degrees Fahrenheit (°F)) from the mid-40s to the high 90s, with an average of 201 days warmer than 70°F. The SDAB experiences 9 to 13 inches of rainfall annually, with most of the region's precipitation falling from November through March, with infrequent (approximately 10%) precipitation during the summer. El Niño and La Niña patterns have large effects on the annual rainfall received in San Diego, where San Diego receives less than normal rainfall during La Niña years.

The interaction of ocean, land, and the Pacific High maintains clear skies for much of the year and influences the direction of prevailing winds (westerly to northwesterly). The winds tend to blow onshore in the day and offshore at night. Local terrain is often the dominant factor inland, and winds in inland mountainous areas tend to blow through the valleys during the day and down the hills and valleys at night.

The favorable climate of San Diego also works to create air pollution problems. Sinking, or subsiding air from the Pacific High, creates a temperature inversion known as a subsidence inversion, which acts as a "lid" to vertical dispersion of pollutants. Weak summertime pressure gradients further limit horizontal dispersion of pollutants in the mixed layer below the subsidence inversion. Poorly dispersed anthropogenic emissions combined with strong sunshine leads to photochemical reactions that result in the creation of ozone (O_3) at this surface layer. In addition, light winds during the summer further limit ventilation.

In the fall months, the SDAB is often impacted by Santa Ana winds, which are the result of a high-pressure system over the Nevada and Utah regions that overcomes the westerly wind pattern and forces hot, dry winds from the east

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[1] The discussion of meteorological and topographical conditions of the SDAB is based on information provided in the SDAPCD *2016 Monitoring Plan* (SDAPCD 2017a), the County of San Diego *Guidelines for Determining Significance – Air Quality* (County of San Diego 2007), the County of San Diego *General Plan Update EIR* (County of San Diego 2011), and the CARB *Recommended Area Designation for the 2010 Federal Sulfur Dioxide Standard* (CARB 2011).

to the Pacific Ocean. The Santa Ana winds are powerful and can blow the SDAB's pollutants out to sea. However, a weak Santa Ana can transport air pollution from the South Coast Air Basin and greatly increase O_3 concentrations in the San Diego area.

Under certain conditions, atmospheric oscillation results in the offshore transport of air from the Los Angeles region to San Diego County. This often produces high O_3 concentrations, as measured at air pollutant monitoring stations within San Diego County. The transport of air pollutants from Los Angeles to San Diego can also occur within the stable layer of the elevated subsidence inversion, where high levels of O_3 are transported.

Site-Specific Meteorological Conditions

The local climate in northwestern San Diego County is characterized as semi-arid with consistently mild, warmer temperatures throughout the year. The average summertime high temperature in the region is approximately 75.1°F, with highs approaching 86.4°F in August on average. The average wintertime low temperature is approximately 49.9°F, although record lows have approached 38.6°F in January. Average precipitation in the local area is approximately 13 inches per year, with the bulk of precipitation falling between November and March (WRCC 2016).

Topographical Conditions

Topography in the San Diego region varies greatly, from beaches in the west to mountains and desert in the east; much of the topography in between consists of mesa tops intersected by canyon areas. Along with local meteorology, topography influences the dispersal and movement of pollutants in the SDAB. Mountains to the east prohibit dispersal of pollutants in that direction and help trap pollutants in inversion layers.

The topography of the SDAB also drives pollutant levels, and the SDAB is classified as a "transport recipient," whereby pollutants are transported from the South Coast Air Basin to the north and, when the wind shifts direction, from Tijuana, Mexico, to the south.

2.1.2 Pollutants and Effects

2.1.2.1 Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The national and California standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and lead. In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following paragraphs.[2]

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[2] The descriptions of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency's "Criteria Air Pollutants" (EPA 2016a), as well as the California Air Resources Board's "Glossary" (CARB 2019a) and "Fact Sheet: Air Pollution Sources, Effects and Control" (CARB 2009).

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly oxides of nitrogen (NO_x) and volatile organic compounds (VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric O_3) and at the Earth's surface in the troposphere (ground-level O_3).[3] The O_3 that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good," O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013).

Inhalation of O_3 causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms. Exposure to O_3 can reduce the volume of air that the lungs breathe in, thereby causing shortness of breath. O_3 in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. The occurrence and severity of health effects from O_3 exposure vary widely among individuals, even when the dose and the duration of exposure are the same. Research shows adults and children who spend more time outdoors participating in vigorous physical activities are at greater risk from the harmful health effects of O_3 exposure. While there are relatively few studies on the effects of O_3 on children, the available studies show that children are no more or less likely to suffer harmful effects than adults. However, there are a number of reasons why children may be more susceptible to O_3 and other pollutants. Children and teens spend nearly twice as much time outdoors and engaged in vigorous activities as adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults. Also, children are less likely than adults to notice their own symptoms and avoid harmful exposures. Further research may be able to better distinguish between health effects in children and adults. Children, adolescents and adults who exercise or work outdoors, where O_3 concentrations are the highest, are at the greatest risk of harm from this pollutant (CARB 2019b).

Nitrogen Dioxide. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas. NO_x plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers. NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016b).

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[3] The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

A large body of health science literature indicates that exposure to NO_2 can induce adverse health effects. The strongest health evidence, and the health basis for the ambient air quality standards for NO_2, results from controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics. In addition, a number of epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses. Infants and children are particularly at risk because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration. Several studies have shown that long-term NO_2 exposure during childhood, the period of rapid lung growth, can lead to smaller lungs at maturity in children with higher levels of exposure compared to children with lower exposure levels. In addition, children with asthma have a greater degree of airway responsiveness compared with adult asthmatics. In adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease (CARB 2019c).

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the Project location, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

CO is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen. This interferes with oxygen delivery to the body's organs. The most common effects of CO exposure are fatigue, headaches, confusion and reduced mental alertness, light-headedness, and dizziness due to inadequate oxygen delivery to the brain. For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress. Inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance. Unborn babies whose mothers experience high levels of CO exposure during pregnancy are at risk of adverse developmental effects. Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO (CARB 2019d).

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

Controlled human exposure and epidemiological studies show that children and adults with asthma are more likely to experience adverse responses with SO_2 exposure, compared with the non-asthmatic population. Effects at levels near the 1-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath, and chest tightness, especially during exercise or physical activity. Also, exposure at elevated levels of SO_2 (above 1 parts per million [ppm]) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality. Older people and people with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most likely to experience these adverse effects (CARB 2019e).

SO_2 is of concern both because it is a direct respiratory irritant and because it contributes to the formation of sulfate and sulfuric acid in particulate matter (NRC 2005). People with asthma are of particular concern, both because they have increased baseline airflow resistance and because their SO_2-induced increase in airflow resistance is greater than in healthy people, and it increases with the severity of their asthma (NRC 2005). SO_2 is thought to induce airway constriction via neural reflexes involving irritant receptors in the airways (NRC 2005).

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) consists of particulate matter that is 10 microns or less in diameter, which is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) consists of particulate matter that is 2.5 microns or less in diameter, which is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOCs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the bloodstream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

A number of adverse health effects have been associated with exposure to both $PM_{2.5}$ and PM_{10}. For $PM_{2.5}$, short-term exposures (up to 24-hour duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. These adverse health effects have been reported primarily in infants, children, and older adults with preexisting heart or lung diseases. In addition, of all of the common air pollutants, $PM_{2.5}$ is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide based on the World Health Organization's Global Burden of Disease Project. Short-term exposures to PM_{10} have been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits (CARB 2017).

Long-term exposure (months to years) to $PM_{2.5}$ has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children. The effects of long-term exposure to PM_{10} are less clear, although several studies suggest a link between long-term PM_{10} exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer (CARB 2017).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient (IQ) performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Sulfates. Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere and can result in respiratory impairment, as well as reduced visibility.

Vinyl Chloride. Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide. Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

Visibility-Reducing Particles. Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$.

Volatile Organic Compounds. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate ambient air quality standards for VOCs as a group.

2.1.2.2 Non-Criteria Air Pollutants

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic non-cancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and non-carcinogenic effects. Non-carcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70 the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB 2019f). DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2019f). The CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) (17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines, including trucks, buses, and cars, and off-road diesel engines, including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2019f). Those most vulnerable to non-cancer health effects are children, whose lungs are still developing, and older people, who often have chronic health problems.

Valley Fever. Coccidioidomycosis, more commonly known as "Valley Fever," is an infection caused by inhalation of the spores of the *Coccidioides immitis* fungus, which grows in the soils of the southwestern United States. When fungal spores are present, any activity that disturbs the soil, such as digging, grading, or other earth-moving operations, can cause the spores to become airborne and thereby increase the risk of exposure. The ecologic factors that appear to be most conducive to survival and replication of the spores are high summer temperatures, mild winters, sparse rainfall, and alkaline sandy soils.

Valley Fever is not considered highly endemic to San Diego. Per the San Diego County Health and Human Services Agency, the 10-year average (2008–2017) for Coccidioidomycosis cases in the County of San Diego is 4.5 cases per 100,000 people per year. Statewide incidences in 2016 were 13.7 per 100,000 people (CDPH 2017).

Even if present at a site, earth-moving activities may not result in increased incidence of Valley Fever. Propagation of *Coccidioides immitis* is dependent on climatic conditions, with the potential for growth and surface exposure highest following early seasonal rains and long dry spells. *Coccidioides immitis* spores can be released when filaments are disturbed by earth-moving activities, although receptors must be exposed to and inhale the spores to be at increased risk of developing Valley Fever. Moreover, exposure to *Coccidioides immitis* does not guarantee that an individual will become ill—approximately 60% of people exposed to the fungal spores are asymptomatic and show no signs of an infection (USGS 2000).

Odorous Compounds. Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

2.1.3 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air-pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air-pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005).

The nearest existing sensitive receptors are located adjacent to the Project site's eastern, northwestern, and southern boundaries. Sensitive receptors also include students of the Project.

2.2 Regulatory Setting

2.2.1 Federal Regulations

2.2.1.1 Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the NAAQS within mandated time frames.

2.2.1.2 Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify National Emission Standards for Hazardous Air Pollutants to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 187 substances and chemical families were identified as HAPs.

2.2.2 State Regulations

2.2.2.1 Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. As stated previously, an ambient air quality standard defines the maximum amount of a pollutant averaged over a specified period of time that can be present in outdoor air without harm to the public's health. For each pollutant, concentrations must be below the relevant CAAQS before a basin can attain the corresponding

CAAQS. Air quality is considered “in attainment” if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded.

California air districts have based their thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the air basin can accommodate without affecting the attainment date for the NAAQS or CAAQS. Since an ambient air quality standard is based on maximum pollutant levels in outdoor air that would not harm the public's health, and air district thresholds pertain to attainment of the ambient air quality standard, this means that the thresholds established by air districts are also protective of human health.

All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 1.

Table 1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 $\mu g/m^3$)	—	Same as Primary Standard[f]
	8 hours	0.070 ppm (137 $\mu g/m^3$)	0.070 ppm (137 $\mu g/m^3$)[f]	
NO_2[g]	1 hour	0.18 ppm (339 $\mu g/m^3$)	0.100 ppm (188 $\mu g/m^3$)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)	
CO	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	None
	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	
SO_2[h]	1 hour	0.25 ppm (655 $\mu g/m^3$)	0.075 ppm (196 $\mu g/m^3$)	—
	3 hours	—	—	0.5 ppm (1,300 $\mu g/m^3$)
	24 hours	0.04 ppm (105 $\mu g/m^3$)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$	Same as Primary Standard
	Annual Arithmetic Mean	20 $\mu g/m^3$	—	
$PM_{2.5}$[i]	24 hours	—	35 $\mu g/m^3$	Same as Primary Standard
	Annual Arithmetic Mean	12 $\mu g/m^3$	12.0 $\mu g/m^3$	15.0 $\mu g/m^3$
Lead[j,k]	30-day Average	1.5 $\mu g/m^3$	—	—
	Calendar Quarter	—	1.5 $\mu g/m^3$ (for certain areas)[k]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 $\mu g/m^3$	
Hydrogen sulfide	1 hour	0.03 ppm (42 $\mu g/m^3$)	—	—

Table 1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
Vinyl chloride[j]	24 hours	0.01 ppm (26 µg/m³)	—	—
Sulfates	24 hours	25 µg/m³	—	—
Visibility reducing particles	8 hours (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016.

Notes: µg/m³ = micrograms per cubic meter; mg/m³= milligrams per cubic meter; ppm = parts per million by volume; O_3 = ozone; NO_2 = nitrogen dioxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns.

[a] California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[f] On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

[g] To attain the national 1-hour standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

[h] On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until 1 year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[i] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 µg/m³ to 12.0 µg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m³ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

[j] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[k] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

2.2.2.2 Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the Legislature enacted the Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. “High-priority” facilities are required to perform a health risk assessment, and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. There are several Airborne Toxic Control Measures that reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

California Health and Safety Code Section 41700

Section 41700 of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This Section also applies to sources of objectionable odors.

2.2.3 Local Regulations

2.2.3.1 San Diego Air Pollution Control District

San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management districts and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The Project site is located within the SDAB, which is under the jurisdiction of the SDAPCD, and is therefore, subject to the guidelines and regulations of SDAPCD. Federal and State attainment plans adopted by the SDAPCD are summarized below.

Federal Attainment Plans

SDAPCD has prepared the 2020 Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County (2020 Attainment Plan) that demonstrates how the region will further reduce air pollutant emissions in order to attain the current NAAQS for ozone. The 2020 Attainment Plan was approved by the SDAPCD on October 14, 2020. On November 19, 2020, CARB adopted the 2020 Attainment Plan for attaining the Federal 8-hour 75 ppb and 70 ppb Ozone standards and projects attainment for the standards by 2026 and 2032, respectively (SDAPCD 2020a). The 2020 Attainment Plan will be submitted to the EPA as a revision to the California State Implementation Plan (SIP) for attaining the ozone NAAQS.

In December 2016, the SDAPCD adopted an update to the Eight-Hour Ozone Attainment Plan for San Diego County (2008 O_3 NAAQS). The 2016 Final Eight-Hour Ozone Attainment Plan for San Diego County indicates that local controls and state programs would allow the region to reach attainment of the federal 8-hour O_3 standard (1997 O_3 NAAQS) by 2018 (SDAPCD 2016a). In this plan, SDAPCD relies on the Regional Air Quality Strategy (RAQS) to demonstrate how the region will comply with the federal O_3 standard. The RAQS details how the region will manage and reduce O_3 precursors (NO_x and VOCs) by identifying measures and regulations intended to reduce these pollutants. The control measures identified in the RAQS generally focus on stationary sources; however, the emissions inventories and projections in the RAQS address all potential sources, including those under the authority of CARB and EPA. Incentive programs for reduction of emissions from heavy-duty diesel vehicles, off-road equipment, and school buses are also established in the RAQS.

Currently, the County is designated as moderate nonattainment for the 2008 O_3 NAAQS and maintenance for the 1997 O_3 NAAQS. As documented in the 2016 Final Eight-Hour Ozone Attainment Plan for San Diego County, the County has a likely chance of obtaining attainment due to the transition to low emission cars, stricter new source review rules, and continuing the requirement of general conformity for military growth and the San Diego International Airport. SDAPCD will also continue emission control measures including ongoing implementation of existing regulations in ozone precursor reduction to stationary and area-wide sources, subsequent inspections of facilities and sources, and the adoption of laws requiring Best Available Retrofit Control Technology for control of emissions (SDAPCD 2016a).

State Attainment Plans

SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The RAQS for the SDAB was initially adopted in 1991 and is updated every 3 years, most recently in 2016 (SDAPCD 2016b). The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County and the cities in the County, to forecast future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. The CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the County and the cities in the County as part of the development of their general plans (SANDAG 2017a, 2017b).

In December 2016, SDAPCD adopted the revised RAQS for the County. Since 2007, the San Diego region has reduced daily VOC emissions and NO_x emissions by 3.9% and 7.0%, respectively; SDAPCD expects to continue reductions through 2035 (SDAPCD 2016b). These reductions were achieved through implementation of six VOC control measures and three NO_x control measures adopted in SDAPCD's 2009 RAQS (SDAPCD 2009a); in addition, SDAPCD is considering additional measures, including three VOC measures and four control measures to reduce 0.3 daily tons of VOCs and 1.2 daily tons of NO_x, provided they are found to be feasible region-wide. In addition, SDAPCD has implemented nine incentive-based programs, has worked with SANDAG to implement regional transportation control measures, and has reaffirmed the state emission offset repeal.

In regard to particulate matter emissions reduction efforts, in December 2005, SDAPCD prepared a report titled "Measures to Reduce Particulate Matter in San Diego County" to address implementation of Senate Bill (SB) 656 in San Diego County (SB 656 required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$) (SDAPCD 2005). In the report, SDAPCD evaluated the implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion; various construction activities including earthmoving, demolition, and grading; bulk material storage and handling; carryout and trackout removal and cleanup methods; inactive disturbed land; disturbed open areas; unpaved parking lots/staging areas; unpaved roads; and windblown dust (SDAPCD 2005).

SDAPCD Rules and Regulations

As stated previously, SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD:

- **SDAPCD Regulation IV: Prohibitions; Rule 50: Visible Emissions.** Prohibits any activity causing air contaminant emissions darker than 20% opacity for more than an aggregate of 3 minutes in any consecutive 60-minute time period. In addition, Rule 50 prohibits any diesel pile-driving hammer activity causing air contaminant emissions for a period or periods aggregating more than 4 minutes during the driving of a single pile (SDAPCD 1997).
- **SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance.** Prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property (SDAPCD 1976).
- **SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust.** Regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project site (SDAPCD 2009b).
- **SDAPCD Regulation IV: Prohibitions; Rule 67.0.1: Architectural Coatings.** Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories (SDAPCD 2015a).
- **SDAPCD Regulation IV: Prohibitions; Rule 67.7: Cutback and Emulsified Asphalts.** This rule prohibits manufacturers, distributors, and end users of cutback and emulsified asphalt materials for the paving, construction or maintenance of parking lots, driveways, streets and highways from applying asphalt material or road oils which contain more than 0.5 percent by volume VOC which evaporate at 260° C (500 ° F) or less (SDAPCD 1979).
- **SDAPCD Regulation XII: Toxic Air Contaminants; Rule 1206: Asbestos Removal, Renovation, and Demolition.** This rule revised requirements for asbestos testing prior to renovation and demolition in the County (SDAPCD 2017b).

2.2.3.2 City of San Marcos

The City's General Plan (City of San Marcos 2013) includes various policies related to reducing Air Quality and GHG emissions. While the City's General Plan is not an applicable plan to SMUSD or the Project, the following air quality policies are provided for informational purposes:

Land Use and Community Design Element

Policy LU-2.1: Promote compact development patterns that reduce air pollution and automobile dependence and facilitate walking, bicycling, and transit use.

Policy LU-3.1: Require that new development and redevelopment incorporate connections and reduce barriers between neighborhoods, transit corridors, and activity centers within the City.

Mobility Element

Policy M-2.1: Work with new development to design roadways that minimize traffic volumes and/or speed, as appropriate within residential neighborhoods; while maintaining the City's desire to provide connectivity on the roadway network.

Conservation and Open Space Element

Policy COS-4.2: Require new sensitive-use development, such as schools, day care centers and hospitals, located near mobile and stationary toxic air contaminants be designed with consideration of site and building orientation, location of trees, and incorporation of appropriate technology (i.e., ventilation and filtration) for improved air quality to lessen any potential health risks.

2.3 Regional and Local Air Quality Conditions

2.3.1 San Diego Air Basin Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are re-designated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on CAAQS rather than the NAAQS. Table 2 depicts the current attainment status of the Project site with respect to the NAAQS and CAAQS, as well as the attainment classifications for the criteria pollutants are outlined in Table 2.

Table 2. San Diego Air Basin Attainment Status

Pollutant	**Designation/Classification**	
	National Standards	***State Standards***
Ozone (O_3) – 1-hour	Attainment (maintenance)[a]	**Nonattainment**
Ozone (O_3) – 8-hour	Attainment (maintenance) **Nonattainment (moderate)**	**Nonattainment**
Nitrogen dioxide (NO_2)	Unclassifiable/attainment[b]	Attainment
Carbon monoxide (CO)	Unclassifiable/attainment	Attainment
Sulfur dioxide (SO_2)	Unclassifiable/attainment	Attainment
Respirable particulate matter (PM_{10})	Unclassifiable/attainment	**Nonattainment**
Fine particulate matter ($PM_{2.5}$)	Unclassifiable/attainment	**Nonattainment**
Lead (Pb)	Attainment	Attainment
Sulfates (SO_4)	No national standard	Attainment
Hydrogen sulfide (H_2S)	No national standard	Unclassified
Vinyl chloride	No national standard	No designation
Visibility-reducing particles	No national standard	Unclassified

Sources: EPA 2020a (national); CARB 2019b (state).

Definitions: Attainment = meets the standards; attainment/maintenance = achieve the standards after a nonattainment designation; nonattainment = does not meet the standards; unclassified or unclassifiable = insufficient data to classify; unclassifiable/attainment = meets the standard or is expected to be meet the standard despite a lack of monitoring data.

Notes: SDAB = San Diego; O_3 = ozone; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide.

[a] The national 1-hour standard of 0.12 parts per million (ppm) was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in SIPs.

[b] The western and central portions of the SDAB are designated attainment, while the eastern portion is designated unclassifiable/ attainment.

In summary, the EPA has designated the SDAB as a nonattainment area for the federal 8-hour O_3 standard, and CARB has designated the SDAB as a nonattainment area for the state 1-hour and 8-hour O_3 standards. The SDAB has been designated as a nonattainment area for the state 24-hour and annual PM_{10} standards and as a nonattainment area for the state annual $PM_{2.5}$ standard. The SDAB is designated as unclassified or attainment for all other criteria air pollutants.

2.3.2 Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. SDAPCD operates a network of ambient air monitoring stations throughout San Diego County, which measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The SDAPCD monitors air quality conditions at 11 locations throughout the SDAB. Escondido – East Valley Parkway monitoring station cease to collect data post-2015; thus, due to proximity to the site and similar geographic and climactic characteristics, the Camp Pendleton, San Diego-Rancho Carmel Drive, San Diego–Kearny Villa Road, and El Cajon-Lexington Elementary School monitoring station concentrations for all pollutants are considered most representative of the Project site. Data for this site was available for 8-hour O_3, 1-hour O_3, CO, SO_2, NO_2, PM_{10}, and

$PM_{2.5}$ concentrations. Ambient concentrations of pollutants from 2017 through 2019 are presented in Table 3. The state 8-hour O_3 standards were exceeded in 2017. Air quality within the Project region was in compliance with both the CAAQS and NAAQS for NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ during this monitoring period.

Table 3. Local Ambient Air Quality Data

Averaging Time	Unit	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
				2017	*2018*	*2019*	*2017*	*2018*	*2019*
Ozone (O_3) – Camp Pendleton									
Maximum 1-hour concentration	ppm	State	0.12	0.094	0.084	0.075	0	0	0
Maximum 8-hour concentration	ppm	State	0.070	0.082	0.069	0.065	5	0	0
		Federal	0.070	0.081	0.068	0.064	4	0	0
Nitrogen Dioxide (NO_2) – San Diego – Rancho Carmel Drive									
Maximum 1-hour concentration	ppm	State	0.18	0.062	0.055	0.054	0	0	0
		Federal	0.100	0.062	0.055	0.054	0	0	0
Annual concentration	ppm	State	0.030	0.016	0.015	0.014	—	—	—
		Federal	0.053	0.016	0.015	0.014	—	—	—
Carbon Monoxide (CO) – San Diego – Rancho Carmel Drive									
Maximum 1-hour concentration	ppm	State	20	2.0	1.9	4.1	0	0	0
		Federal	35	2.0	1.9	4.1	0	0	0
Maximum 8-hour concentration	ppm	State	9.0	1.5	1.4	2.5	0	0	0
		Federal	9	1.5	1.4	2.5	0	0	0
Sulfur Dioxide (SO_2) – El Cajon-Lexington Elementary School									
Maximum 1-hour concentration	ppm	Federal	0.075	0.011	0.03.5	0.008	0	0	0
Maximum 24-hour concentration	ppm	Federal	0.14	0.004	0.004	0.003	0	0	0
Annual concentration	ppm	Federal	0.030	0.0011	0.001	0.0007	—	—	—
Coarse Particulate Matter (PM_{10})[a] – San Diego – Kearny Villa Road									
Maximum 24-hour concentration	μg/m^3	State	50	47.0	38.0	ND	0.0 (0)	0.0 (0)	ND (0)
		Federal	150	46.0	38.0	ND	0.0 (0)	0.0 (0)	ND (0)
Annual concentration	μg/m^3	State	20	17.6	18.4	ND	—	—	—
Fine Particulate Matter ($PM_{2.5}$)[a] – San Diego – Kearny Villa Road									
Maximum 24-hour concentration	μg/m^3	Federal	35	27.5	32.2	16.2	0.0 (0)	0.0 (0)	0.0 (0)
Annual concentration	μg/m^3	State	12	8.0	8.3	ND	—	—	—
		Federal	12.0	7.9	8.3	7.0	—	—	—

Sources: CARB 2020a; EPA 2020b.

Notes: ppm = parts per million by volume; ND = insufficient data available to determine the value; — = not available; μg/m^3 = micrograms per cubic meter.

Data taken from CARB iADAM (http://www.CARB.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.

Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
The Camp Pendleton monitoring station is located at 21441 West B Street, Camp Pendleton, California.
The San Diego-Rancho Carmel Drive monitoring station is located at 11403 Rancho Carmel Drive, San Diego, California.
The El Cajon-Lexington Elementary School monitoring station is located at 533 First Street, El Cajon, California.
The San Diego-Kearny Villa Road monitoring station is located at 6125A Kearny Villa Road, San Diego, California.

[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

2.4 Significance Criteria and Methodology

2.4.1 Thresholds of Significance

The significance criteria used to evaluate the Project impacts to air quality is based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this air quality analysis, a significant impact would occur if the Project would (14 CCR 15000 et seq.):

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the Project would have a significant impact on air quality.

County of San Diego and SDAPCD

The SDAPCD has not developed CEQA thresholds of significance for air quality; however, the County of San Diego has established CEQA screening-level thresholds for air quality impact analyses based on the SDAPCD Air Quality Impact Assessments trigger levels, which are based on emissions levels identified under the New Source Review program. As part of its air quality permitting process, SDAPCD has established thresholds in Rule 20.2 and Rule 20.3 requiring the preparation of Air Quality Impact Assessments for permitted stationary sources (non-major and major stationary sources, respectively) (SDAPCD 2020b, 2020c). SDAPCD sets forth quantitative emission thresholds below which a stationary source would not have a significant impact on ambient air quality. Because SDAPCD Rules 20.2 and 20.3 do not identify a VOC threshold, the County of San Diego established a VOC threshold based on the South Coast Air Quality Management District's VOC threshold.

For CEQA purposes, the screening-level thresholds established by the County of San Diego can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality for projects within San Diego County. Accordingly, the thresholds listed in Table 4 are used to evaluate whether Project-related emissions could cause a significant impact on air quality. For nonattainment pollutants, if emissions exceed the thresholds shown in Table 4, the Project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus, could have a significant impact on the ambient air quality; conversely, emissions below the screening-level thresholds would not cause a significant impact. A project that involves a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of off-site receptors.

Table 4. Air Quality Significance Thresholds

Construction and Operational Emissions			
	Total Emissions		
Pollutant	*Pounds per Hour*	*Pounds per Day*	*Tons per Year*
Respirable particulate matter (PM_{10})	—	100	15
Fine particulate matter ($PM_{2.5}$)	—	55	10
Oxides of nitrogen (NO_x)	25	250	40
Sulfur oxides (SO_x)	25	250	40
Carbon monoxide (CO)	100	550	100
Lead and lead compounds	—	3.2	0.6
Volatile organic compounds (VOC)	—	75[a]	13.7

Source: SDAPCD Rules 20.2(d)(2) and 20.3(d)(2).

[a] VOC threshold based on South Coast Air Quality Management District (SCAQMD) levels per the SCAQMD for Coachella Valley, which have similar federal and state attainment status to San Diego.

2.4.2 Approach and Methodology

2.4.2.1 Construction Emissions

Emissions from the construction phase of the Project were estimated using CalEEMod Version 2016.3.2. Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided by the Project applicant and CalEEMod default values when Project specifics were not known.

For purposes of estimating Project emissions, and based on information provided by the Project applicant, it is assumed that construction of the Project would commence in June 2021[4] and would last approximately 19 months, ending in December 2022. The analysis contained herein is based on the following assumptions (duration of phases is approximate):

- Demolition: 4 weeks (June 1, 2021 – June 28, 2021)
- Site Preparation: 2 weeks (June 29, 2021 – July 12, 2021)
- Grading: 1 month (July 13, 2021 – August 23, 2021)
- Building Construction: 14 months (August 24, 2021 – October 17, 2022)
- Paving: 4 weeks (October 18, 2022– November 14, 2022)
- Architectural Coating: 4 weeks (November 15, 2022 – December 12, 2022)

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[4] The analysis assumes a construction start date of June 2021, which represents the earliest date construction would initiate. Assuming the earliest start date for construction represents the worst-case scenario for criteria air pollutant and GHG emissions because equipment and vehicle emission factors for later years would be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.

Demolition of the existing 87,776-square-foot elementary school buildings would occur first. It was assumed that demolition would result in 400 haul truck trips over the entirety of the demolition subphase. Grading was conservatively assumed to include 10.32 acres and is estimated to involve 45 cubic yards of soil for export and 685 cubic yards of import resulting in a net import of approximately 640 cubic yards. Assuming a haul truck capacity of 16 cubic yards per truck, earth-moving activities would result in approximately 92 truck trips during the grading phase. The construction equipment mix and vehicle trips used for estimating the Project-generated construction emissions are shown in Table 5.

Table 5. Construction Scenario Assumptions

	One-Way Vehicle Trips			Equipment		
Construction Phase	***Average Daily Worker Trips***	***Average Daily Vendor Truck Trips***	***Total Haul Truck Trips***	***Equipment Type***	***Quantity***	***Usage Hours***
Demolition	16	8	400	Concrete/ Industrial Saws	1	8
				Excavators	3	8
				Rubber-Tired Dozers	2	8
Site Preparation	18	0	0	Rubber-Tired Dozers	3	8
				Tractors/Loaders/ Backhoes	4	8
Grading	20	0	92	Excavators	2	8
				Graders	1	8
				Rubber-Tired Dozers	1	8
				Scrapers	2	8
				Tractors/Loaders/ Backhoes	2	8
Building Construction	58	24	0	Cranes	1	7
				Forklifts	3	8
				Generator Sets	1	8
				Tractors/Loaders/ Backhoes	3	7
				Welders	1	8
Paving	16	4	0	Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
Architectural Coating	12	2	0	Air Compressors	1	6

Notes: See Appendix A for details.

Construction of project components would be subject to SDAPCD Rule 55 – Fugitive Dust Control. This rule requires that construction of project components include steps to restrict visible emissions of fugitive dust beyond the property line (SDAPCD 2009b). Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) that may be generated during grading and construction activities. The Project would implement dust control strategies as a project design feature. To reflect implementation of proposed dust control strategies, it was assumed that the Project site would be watered exposed area two times per day (55% reduction in PM_{10} and $PM_{2.5}$).

2.4.2.2 Operational Emissions

Emissions from the operational phase of the Project were estimated using CalEEMod Version 2016.3.2. Operational year 2023 was assumed consistent with completion of Project construction. Emissions from the existing elementary school buildings were also estimated using CalEEMod to present the net change in criteria air pollutant emissions. Operational year 2021 was assumed for the existing school.

Area Sources

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating and water heating are calculated in the building energy use module of CalEEMod, as described in the following text.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2017). Consumer product VOC emissions are estimated in CalEEMod based on the floor area of nonresidential buildings and on the default factor of pounds of VOC per building square foot per day. For parking lot land uses, CalEEMod estimates VOC emissions associated with use of parking surface degreasers based on a square footage of parking surface area and pounds of VOC per square foot per day.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers using during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of nonresidential surface coatings based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and SDAPCD Rule 67.0.1 (Architectural Coatings) governs the VOC (or ROG) content for interior and exterior coatings. The model default reapplication rate of 10% of area per year is assumed. Consistent with CalEEMod defaults, it is assumed that the nonresidential surface area for painting equals 2.0 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating (CAPCOA 2017). For the parking lot, the architectural coating area is assumed to be 6% of the total square footage, consistent with the supporting CalEEMod studies provided as an appendix to the CalEEMod User's Guide (CAPCOA 2017).

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions associated from landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of nonresidential building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days. For San Diego County, the average annual "summer" days are estimated to 365 days; however, it is assumed that landscaping equipment would likely only operate during the week (not weekends), so operational days were assumed to be 180 days per year in CalEEMod (CAPCOA 2017).

Energy Sources

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage (non-hearth). Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for GHGs in CalEEMod, because criteria pollutant emissions occur at the site of the power plant, which is typically off-site. Therefore, for the purposes of the air quality analysis, the energy source parameters focus on criteria air pollutants generated as a result of natural gas consumption within the built environment. Natural gas consumption is attributed to systems like heating, ventilation, and air conditioning and water heating.

Mobile Sources

Mobile sources for the Project would be motor vehicles (e.g., automobiles) traveling to and from the Project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Default vehicle trip generation rates included in CalEEMod for both the existing elementary school and the Project were adjusted to match the trip generation rates presented in the Transportation Assessment prepared for the Project (Dudek 2021). CalEEMod default data, including trip lengths and emissions factors were used for the model inputs to estimate daily emissions from proposed mobile sources. Emission factors representing the vehicle mix and emissions for 2023 were used to estimate emissions associated with operation of the Project. The existing school and proposed school are assumed to generate the same amount of trips because while the Project would increase total square footage by 3,701 square feet, no increase in students, faculty, or staff is anticipated to occur and thus, no increase in trips to and from the school are expected. As such, a trip rate was calculated for the existing school and proposed Project to both result in 1,360 trips per day on weekdays consistent with the Transportation Assessment prepared for the Project (Dudek 2021). No trips are anticipated to occur on Saturday or Sunday for the existing school and proposed Project consistent with CalEEMod default trip rate values for elementary schools, which is based on the Institute of Transportation Engineers 9th edition trip rates.

2.5 Impact Analysis

2.5.1 Would the Project conflict with or obstruct implementation of the applicable air quality plan?

As mentioned in Section 2.3, Regulatory Setting, the SDAPCD is responsible for developing and implementing the clean air plans for attainment and maintenance of the ambient air quality standards in the basin—specifically, the SIP and RAQS.[5] SANDAG is responsible for developing forecasts and data that are used by SDAPCD in preparing the SIP and RAQS. The federal O_3 maintenance plan, which is part of the SIP, was adopted in 2012. The SIP includes a demonstration that current strategies and tactics will maintain acceptable air quality in the basin based on the NAAQS. The RAQS, most recently updated in 2016, outlines SDAPCD's plans and control measures designed to attain the state air quality standards for O_3. The SIP and RAQS rely on information from CARB and SANDAG, including mobile and area source emissions as well as information regarding projected growth in the County as a whole and the cities in the County, to project future emissions and determine the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections

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[5] For the purpose of this discussion, the relevant federal air quality plan is the Ozone Maintenance Plan (SDAPCD 2012). The RAQS is the applicable plan for purposes of State air quality planning. Both plans reflect growth projections in the basin.

are based on population, vehicle trends, and land use plans developed by the County and the cities in the County as part of the development of their general plans.

While the SDAPCD and City do not provide guidance regarding the analysis of impacts associated with air quality plan conformance, the County's *Guidelines for Determining Significance and Report and Format and Content Requirements – Air Quality* does discuss conformance with the RAQS (County of San Diego 2007). The guidance indicates that, if the Project, in conjunction with other projects, contributes to growth projections that would not exceed SANDAG's growth projections for the City, the Project would not be in conflict with the RAQS (County of San Diego 2007). If a project includes development that is greater than that anticipated in the local plan and SANDAG's growth projections, the Project might be in conflict with the SIP and RAQS and may contribute to a potentially significant cumulative impact on air quality.

The Project would demolish the existing elementary school and would redevelop the site with a new 91,477-square-foot elementary school. Because development of the Project would replace the existing elementary school, the Project would not conflict with the existing zoning and land use designations for the site. Additionally, the Project would not induce population growth to the area. Per CEQA Guideline Section 15206(b), the Project would not be considered regionally significant because it would not have the potential to substantially affect housing, employment, or population projections within the San Diego region, which are the basis of the RAQS projections. As such, the Project would not conflict with or obstruct implementation of the RAQS. Furthermore, the Project would not result in substantial construction or operational emissions that would conflict with the local Air Quality plan.

Therefore, implementation of the Project would not conflict with the RAQS or SIP and proposed development would be consistent with the growth in the region. Impacts would be **less than significant.**

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Impacts would be less than significant without mitigation.

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

Past, present, and future development projects may contribute to the SDAB adverse air quality impacts on a cumulative basis. By its nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and SDAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are used in the determination of whether a project's individual emissions would have a cumulatively considerable contribution on air quality. If a project's emissions would exceed the applied significance thresholds, it would have a cumulatively considerable contribution. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.

Construction and operation of the Project would result in emissions of criteria air pollutants, which may result in a cumulatively considerable net increase in emissions of criteria air pollutants for which the SDAB is designated as nonattainment under the NAAQS or CAAQS. As discussed previously, the SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The following discussion quantitatively evaluates potential short-term construction and long-term operational impacts that would result from implementation of the Project.

Construction Emissions

Proposed construction activities would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing from architectural coatings and asphalt pavement application) and off-site sources (i.e., on-road haul trucks, delivery trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions. Therefore, such emissions levels can only be estimated, with a corresponding uncertainty in precise ambient air quality impacts.

NO_x and CO emissions would primarily result from the use of construction equipment and motor vehicles. Fugitive dust (PM_{10} and $PM_{2.5}$) emissions would primarily result from grading and site preparation activities. The Project would be required to comply with SDAPCD Rule 55, Fugitive Dust Control. This rule requires that the Project take steps to restrict visible emissions of fugitive dust beyond the property line. Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) generated during grading and construction activities. To account for dust control measures in the calculations, it was assumed that the Project would ensure that active sites be watered at least two times daily. The application of architectural coatings, such as exterior application/interior paint and other finishes, and application of asphalt pavement would also produce VOC emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of Rule 67.0.1, Architectural Coatings. and limit the amount of VOC emissions from cutback asphalt in compliance with the requirements of SDAPCD's Rule 67.7, Cutback and Emulsified Asphalt.

As discussed in Section 2.4.2.1, Construction Emissions, criteria air pollutant emissions associated with temporary construction activity were quantified using CalEEMod. Construction emissions were calculated for the estimated worst-case day over the construction period associated with each phase and reported as the maximum daily emissions estimated during each year of construction (2021 through 2022). Construction schedule assumptions, including phase type, duration, and sequencing, were based on information provided by the Project applicant and is intended to represent a reasonable scenario based on the best information available. Default values provided in CalEEMod were used where detailed project information was not available.

Table 6 presents the estimated maximum daily construction emissions generated during construction of the Project. Details of the emission calculations are provided in Appendix A.

Table 6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions - Unmitigated

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
2021	4.29	47.24	31.60	0.07	10.32	6.39
2022	65.48	18.05	18.38	0.04	1.46	0.94
Maximum daily emissions	**65.48**	**47.24**	**31.60**	**0.07**	**10.32**	**6.39**
Emission threshold	75	250	550	250	100	55
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter with an aerodynamic diameter equal to or less than 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns.
See Appendix A for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod and provided in Appendix A. The maximum emissions assumes compliance with SDAPCD Rule 67.0.1, Architectural Coatings and SDAPCD Rule 55, Fugitive Dust Control.

As shown in Table 6, maximum daily construction emissions would not exceed the significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years.

Operational Emissions

Following the completion of construction activities, the Project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicular traffic generated by residents of the Project; energy sources from natural gas usage; area sources, including the use of landscaping equipment and consumer products; and from architectural coatings. As discussed in Section 2.4.2.2, Operational Emissions, pollutant emissions associated with long-term operations were quantified using CalEEMod using a combination of project-specific information and CalEEMod default values. Criteria air pollutant emissions were also estimated for operation of the existing school using project-specific and CalEEMod default values.

Table 7 presents the maximum daily area, energy, and mobile source emissions associated with Project operation (year 2023) as well as operational emissions from the existing school (year 2021) to estimate the net change in criteria air pollutant emissions. Details of the emission calculations are provided in Appendix A.

Table 7. Estimated Operational Criteria Air Pollutant Emissions - Unmitigated

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Existing School						
Area	2.46	<0.01	0.02	0.00	<0.01	<0.01
Energy	0.02	0.14	0.12	<0.01	0.02	0.02
Mobile	1.89	6.90	20.22	0.07	6.41	1.75
Total	**4.37**	**7.04**	**20.36**	**0.07**	**6.43**	**1.77**
Proposed Project						
Area	2.57	<0.01	0.02	0.00	<0.01	<0.01
Energy	0.02	0.14	0.12	<0.01	0.01	0.01
Mobile	1.89	6.90	20.22	0.07	6.41	1.75
Total	**4.48**	**7.04**	**20.36**	**0.07**	**6.42**	**1.76**

Table 7. Estimated Operational Criteria Air Pollutant Emissions - Unmitigated

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Net Change (Project minus Existing School)	0.11	0	0	0	(0.01)	(0.01)
Emission Threshold	75	250	550	250	100	55
Threshold Exceeded?	No	No	No	No	No	No

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = particulate matter with an aerodynamic diameter equal to or less than 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns; <0.01 = reported value less than 0.01; negative values are presented in parentheses.
See Appendix A for complete results.
Totals may not sum due to rounding.
Operation of the Proposed Project assumes year 2023 and operation of the Existing School assumes year 2021.

As shown in Table 7, the net change in maximum daily emissions between the Proposed Project and the existing school would not exceed the significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$.

As discussed in Section 2.3, Regional and Local Air Quality Conditions, the SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment status is the result of cumulative emissions from various sources of air pollutants and their precursors within the SDAB, including motor vehicles, off-road equipment, and commercial and industrial facilities. Construction and operation of the Proposed Project would generate VOC and NO_x emissions (which are precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. However, as indicated in Tables 6 and 7, Project-generated construction emissions and net operational emissions would not exceed the emission-based significance thresholds for VOC, NO_x, PM_{10}, or $PM_{2.5}$.

Cumulative localized impacts would potentially occur if a construction project were to occur concurrently with another off-site project. Construction schedules for potential future projects near the Project area are currently unknown; therefore, potential construction impacts associated with two or more simultaneous projects would be considered speculative. However, future projects would be subject to CEQA and would require air quality analysis and, where necessary, mitigation if the project would exceed applied thresholds. Criteria air pollutant emissions associated with construction activity of future projects would be reduced through implementation of control measures required by the SDAPCD. For example, cumulative PM_{10} and $PM_{2.5}$ emissions would be reduced because all future projects would be subject to SDAPCD Rule 55 (Fugitive Dust), which sets forth general and specific requirements for all construction sites in the SDAB. In addition, cumulative VOC emissions would be subject to SDAPCD Rule 67.0.1 (Architectural Coatings).

Based on the Project-generated construction and operational emissions of VOC, NO_x, PM_{10}, and $PM_{2.5}$ the Project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants. Therefore, the Project's cumulative air quality impact would be **less than significant.**

Health Effects

Project construction and operation would not exceed significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. VOCs and NO_x are precursors to O_3, for which the SDAB is designated as nonattainment with respect to the NAAQS and CAAQS. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of ROGs and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SDAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the VOC emissions would occur because exceedances of the O_3 CAAQS/NAAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to assess this impact. Operation of the Project would not exceed the significance threshold for NO_x; therefore, implementation of the Project would contribute minimally to regional O_3 concentrations and the associated health effects.

Operation of the Project would not contribute to exceedances of the NAAQS and CAAQS for NO_2. Health effects that result from NO_2 and NO_x include respiratory irritation, which could be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, Project construction would be relatively short term, and off-road construction equipment would be operating at various portions of the site and would not be concentrated in one portion of the site at any one time. In addition, existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Because Project generated NO_x emissions would not exceed the significance threshold, the Project would not result in potential health effects associated with NO_2 and NO_x.

CO tends to be a localized impact associated with congested intersections. The associated potential for CO hotspots were discussed previously and are determined to be a less-than-significant impact. Furthermore, the existing CO concentrations in the area are well below the NAAQS and CAAQS standards. Thus, the Project's CO emissions would not contribute to significant health effects associated with this pollutant.

Construction and operation of the Project would also not exceed thresholds for PM_{10} or $PM_{2.5}$ and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter or would obstruct the SDAB from coming into attainment for these pollutants. the Project would also not result in substantial DPM emissions during construction and operation, and therefore, would not result in significant health effects related to DPM exposure. Additionally, the Project would implement dust control strategies and be required to comply with SDAPCD Rule 55, Fugitive Dust Control, which limits the amount of fugitive dust generated during construction. Due to the minimal contribution of particulate matter during construction and operation, the Project is not anticipated to result in health effects associated with PM_{10} or $PM_{2.5}$.

In summary, because operation of the Project would not result in exceedances of the significance thresholds for NO_x during construction and operation, the potential health effects associated with criteria air pollutants are considered less than significant. Furthermore, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days, and there are currently no modeling tools that could provide reliable and meaningful additional information regarding health effects from criteria air pollutants generated by individual projects.

The California Supreme Court's *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 decision (referred to herein as the Friant Ranch decision) (issued on December 24, 2018), addresses the need to correlate mass emission values for criteria air pollutants to specific health consequences, and contains the following direction from the California Supreme Court: "The Environmental Impact Report (EIR) must provide an adequate analysis to inform the public how its bare numbers translate to create potential adverse impacts or it must explain what the agency *does* know and why, given existing scientific constraints, it cannot translate potential health impacts further." (Italics original.) (Sierra Club v. County of Fresno 2018.) Currently, the SDAPCD, CARB, and EPA have not approved a quantitative method to reliably, meaningfully, and consistently translate the mass emission estimates for the criteria air pollutants resulting from the proposed project to specific health effects. In addition, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days.

In connection with the judicial proceedings culminating in issuance of the Friant Ranch decision, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) filed amicus briefs attesting to the extreme difficulty of correlating an individual project's criteria air pollutant emissions to specific health impacts. Both SJVAPCD and SCAQMD have among the most sophisticated air quality modeling and health impact evaluation capabilities of the air districts in California. The key, relevant points from SCAQMD and SJVAPCD briefs is summarized herein.

In requiring a health impact type of analysis for criteria air pollutants, it is important to understand how O_3 and PM is formed, dispersed and regulated. The formation of O_3 and PM in the atmosphere, as secondary pollutants,[6] involves complex chemical and physical interactions of multiple pollutants from natural and anthropogenic sources. The O_3 reaction is self-perpetuating (or catalytic) in the presence of sunlight because NO_2 is photochemically reformed from nitric oxide (NO). In this way, O_3 is controlled by both NO_x and VOC emissions (NRC 2005). The complexity of these interacting cycles of pollutants means that incremental decreases in one emission may not result in proportional decreases in O_3 (NRC 2005). Although these reactions and interactions are well understood, variability in emission source operations and meteorology creates uncertainty in the modeled O_3 concentrations to which downwind populations may be exposed (NRC 2005). Once formed, O_3 can be transported long distances by wind and due to atmospheric transport, contributions of precursors from the surrounding region can also be important (EPA 2008). Because of the complexity of O_3 formation, a specific tonnage amount of VOCs or NO_X emitted in a particular area does not equate to a particular concentration of O_3 in that area (SJVAPCD 2015). PM can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, like O_3, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as SO_x and NO_x (SJVAPCD 2015). Because of the complexity of secondary PM formation, including the potential to be transported long distances by wind, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area (SJVAPCD 2015). This is especially true for individual projects, like the proposed project, where project-generated criteria air pollutant emissions are not derived from a single "point source," but from construction equipment and mobile sources (passenger cars and trucks) driving to, from and around the FMP project sites.

Another important technical nuance is that health effects from air pollutants are related to the concentration of the air pollutant that an individual is exposed to, not necessarily the individual mass quantity of emissions associated with an individual project. For example, health effects from O_3 are correlated with increases in the ambient level of O_3 in the air a person breathes (SCAQMD 2015). However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient O_3 levels over an entire region (SCAQMD 2015). The lack of link between the tonnage of precursor pollutants and the concentration of O_3 and $PM_{2.5}$ formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects; rather, it is the concentration of resulting O_3 that causes these effects (SJVAPCD 2015). Indeed, the ambient air quality standards, which are statutorily required to be set by EPA at levels that are requisite to protect the public health, are established as concentrations of O_3 and $PM_{2.5}$ and not as tonnages of their precursor pollutants (EPA 2018a). Because the ambient air quality standards are focused on achieving a particular concentration region-wide, the tools and plans for attaining the ambient air quality standards are regional in nature. For CEQA analyses, project-generated emissions are typically estimated in pounds per day or tons per year and compared to mass daily or annual emission thresholds. While CEQA thresholds are established at levels that the air basin can accommodate without affecting

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[6] Air pollutants formed through chemical reactions in the atmosphere are referred to as secondary pollutants.

the attainment date for the AAQS, even if a project exceeds established CEQA significance thresholds, this does not mean that one can easily determine the concentration of O_3 or PM that will be created at or near the project site on a particular day or month of the year, or what specific health impacts will occur (SJVAPCD 2015).

In regard to regional concentrations and air basin attainment, the SJVAPCD emphasized that attempting to identify a change in background pollutant concentrations that can be attributed to a single project, even one as large as the entire Friant Ranch Specific Plan, is a theoretical exercise. The SJVAPCD brief noted that it "would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have" (SJVAPCD 2015). The situation is further complicated by the fact that background concentrations of regional pollutants are not uniform either temporally or geographically throughout an air basin, but are constantly fluctuating based upon meteorology and other environmental factors. SJVAPCD noted that the currently available modeling tools are equipped to model the impact of all emission sources in the San Joaquin Valley Air Basin on attainment (SJVAPCD 2015). The SJVAPCD brief then indicated that, "Running the photochemical grid model used for predicting O_3 attainment with the emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NO_x and VOC in the Valley) is not likely to yield valid information given the relative scale involved" (SJVAPCD 2015).

SCAQMD and SJVAPCD have indicated that it is not feasible to quantify project-level health impacts based on existing modeling (SCAQMD 2015; SJVAPCD 2015). Even if a metric could be calculated, it would not be reliable because the models are equipped to model the impact of all emission sources in an air basin on attainment and would likely not yield valid information or a measurable increase in O_3 concentrations sufficient to accurately quantify O_3-related health impacts for an individual project.

Nonetheless, following the Supreme Court's Friant Ranch decision, some EIRs where estimated criteria air pollutant emissions exceeded applicable air district thresholds have included a quantitative analysis of potential project-generated health effects using a combination of a regional photochemical grid model (PGM)[7] and the EPA Benefits Mapping and Analysis Program (BenMAP or BenMAP–Community Edition [CE])[8]. The publicly available health impact assessments (HIAs) typically present results in terms of an increase in health incidences and/or the increase in background health incidence for various health outcomes resulting from the project's estimated increase in concentrations of O_3 and $PM_{2.5}$.[9] To date, the five publicly available HIAs reviewed herein have concluded that the evaluated project's health effects associated with the estimated project-generated increase in concentrations of O_3 and $PM_{2.5}$ represent a small increase in incidences and a very small percent of the number of background incidences, indicating that these health impacts are negligible and potentially within the models' margin of error. It

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[7] The first step in the publicly available HIAs includes running a regional PGM, such as the Community Multiscale Air Quality (CMAQ) model or the Comprehensive Air Quality Model with extensions (CAMx) to estimate the increase in concentrations of O_3 and $PM_{2.5}$ as a result of project-generated emissions of criteria and precursor pollutants. Air districts, such as the SCAQMD, use photochemical air quality models for regional air quality planning. These photochemical models are large-scale air quality models that simulate the changes of pollutant concentrations in the atmosphere using a set of mathematical equations characterizing the chemical and physical processes in the atmosphere (EPA 2017a).

[8] After estimating the increase in concentrations of O_3 and $PM_{2.5}$, the second step in the five examples includes use of BenMAP or BenMAP-CE to estimate the resulting associated health effects. BenMAP estimates the number of health incidences resulting from changes in air pollution concentrations (EPA 2018b). The health impact function in BenMAP-CE incorporates four key sources of data: (i) modeled or monitored air quality changes, (ii) population, (iii) baseline incidence rates, and (iv) an effect estimate. All of the five example HIAs focused on O_3 and $PM_{2.5}$.

[9] The following CEQA documents included a quantitative HIA to address Friant Ranch: (1) California State University Dominguez Hills 2018 Campus Master Plan EIR (CSU Dominguez Hills 2019), (2) March Joint Powers Association K4 Warehouse and Cactus Channel Improvements EIR (March JPA 2019), (3) Mineta San Jose Airport Amendment to the Airport Master Plan EIR (City of San Jose 2019), (4) City of Inglewood Basketball and Entertainment Center Project EIR (City of Inglewood 2019), and (5) San Diego State University Mission Valley Campus Master Plan EIR (SDSU 2019).

is also important to note that while the results of the five available HIAs conclude that the project emissions do not result in a substantial increase in health incidences, the estimated emissions and assumed toxicity is also conservatively inputted into the HIA and thus, overestimate health incidences, particularly for $PM_{2.5}$.

As explained in the SJVAPCD brief and noted previously, running the PGM used for predicting O_3 attainment with the emissions solely from an individual project like the Friant Ranch project or the proposed project is not likely to yield valid information given the relative scale involved. The five examples reviewed support the SJVAPCD's brief contention that consistent, reliable, and meaningful results may not be provided by methods applied at this time. Accordingly, additional work in the industry and more importantly, air district participation, is needed to develop a more meaningful analysis to correlate project-level mass criteria air pollutant emissions and health effects for decision makers and the public. Furthermore, at the time of writing, no HIA has concluded that health effects estimated using the PGM and BenMAP approach are substantial provided that the estimated project-generated incidences represent a very small percent of the number of background incidences, potentially within the models' margin of error.

Of importance, Project-generated construction and operational emissions are less than the applied mass daily thresholds for all pollutants and health effects associated with Project-generated criteria air pollutant emissions are **less than significant.**

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Impacts would be less than significant without mitigation.

2.5.3 Would the Project expose sensitive receptors to substantial pollutant concentrations?

Health Impacts of Carbon Monoxide

Mobile source impacts occur on two scales of motion. Regionally, Project-related travel would add to regional trip generation and increase the vehicle miles traveled within the local airshed and the SDAB. Locally, project generated traffic would be added to the County's roadway system near the Project site. If such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and is operating on roadways already crowded with non-project traffic, there is a potential for the formation of microscale CO hotspots in the area immediately around points of congested traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SDAB is steadily decreasing.

CO transport is extremely limited and CO disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors such as residents, school children, hospital patients, and the elderly. Typically, high CO concentrations are associated with urban roadways or intersections operating at an unacceptable level of service (LOS). Projects contributing to adverse traffic impacts may result in the formation of CO hotspots.

To verify that the Project would not cause or contribute to a violation of the CO standards, a screening evaluation of the potential for CO hotspots was conducted. The California Department of Transportation (Caltrans) and the University of California, Davis, Institute of Transportation Studies' *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) (Caltrans 1997) was followed. CO hotspots are typically evaluated when (1) the LOS of an intersection or roadway decreases to LOS E or worse; (2) signalization and/or channelization is added to an intersection; and (3) sensitive receptors such as residences, schools, and hospitals are located in the vicinity of the affected intersection or roadway segment. Additionally, the County of San Diego provides an additionally screening threshold of 3,000 peak trips (County of San Diego 2007).

To verify that the Project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hotspots was conducted based on the Transportation Assessment (Dudek 2021) results and the Caltrans Institute of Transportation Studies *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol; Caltrans 1997).

The Project's Transportation Assessment evaluated the Richland Road/Borden Road intersection. As determined by the Transportation Assessment, in the existing and existing plus project scenarios, the Project would not cause the intersection to decrease to LOS E or worse. Therefore, the Project would not result in a CO hotspot and would result in a **less than significant** impact.

Health Impacts of Toxic Air Contaminants

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as TACs or hazardous air pollutants. State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and aimed at TACs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal hazardous air pollutants, and is adopting appropriate control measures for sources of these TACs. The greatest potential for TAC emissions during construction would be diesel particulate emissions from heavy equipment operations and heavy-duty trucks and the associated health impacts to sensitive receptors. The following measures are required by state law to reduce DPM emissions:

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-use Off-road Diesel Vehicles (13 CCR 2449), the purpose of which is to reduce DPM and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13, Section 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to five minutes; electric auxiliary power units should be used whenever possible.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The SDAPCD recommends an incremental cancer risk threshold of 10 in a million (SDAPCD 2015b). "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology. The Project would not require the extensive operation of heavy-duty construction equipment, which is subject to a CARB Airborne Toxics Control Measure for in-use diesel construction equipment to reduce diesel particulate emissions and would not involve extensive use of diesel trucks, which are also subject to a CARB Airborne Toxics Control Measure.

As shown in Table 7, maximum daily particulate matter (i.e., PM_{10} or $PM_{2.5}$) emissions generated by construction equipment operation and haul-truck trips during construction (exhaust particulate matter, or DPM), combined with fugitive dust generated by equipment operation and vehicle travel, would be well below the significance thresholds. Moreover, total construction of the Project would last approximately 19 months, after which Project-related TAC emissions would cease. Thus, the Project would not result in a long-term source of TAC emissions. No residual TAC emissions and corresponding cancer risk are anticipated after construction, and no long-term sources of TAC emissions are anticipated during operation of the Project. Therefore, the exposure of Project-related TAC emission impacts to sensitive receptors would be less than significant.

Additionally, CARB has published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005), which identifies certain types of facilities or sources that may emit substantial quantities of TACs and therefore could conflict with sensitive land uses, such as "schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities." The *Air Quality and Land Use Handbook* is a guide for siting of new sensitive land uses, but it does not mandate specific separation distances to avoid potential health impacts. The enumerated facilities or sources include the following:

- High-traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities.

CARB recommends that sensitive receptors not be located downwind or in proximity to such sources to avoid potential health hazards.

The Project would neither include any of the previously listed land uses nor expose students, faculty, and visitors of the Project to TAC emissions from these sources. Impacts would be **less than significant**.

Valley Fever

As discussed above in Section 2.1.2.2, the average incidence rate within the County is below the statewide average. Furthermore, construction of the Project would comply with SDAPCD Rule 55, Fugitive Dust Control, which limits the amount of fugitive dust generated during construction. SDAPCD Rule 55 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. The nearest sensitive-receptor land use (existing residences) are adjacent to project site. Based on the low incidence rate of coccidioidomycosis on the Project site and in the County, and with the Project's implementation of dust control strategies and Valley Fever awareness and training, and the distance from the nearest sensitive receptors, it is not anticipated that earth-moving activities during project construction would result in exposure of nearby sensitive receptors to valley fever. Therefore, the Project would have a **less-than-significant** impact with respect to valley fever exposure for sensitive receptors.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Impacts would be less than significant without mitigation.

2.5.4 Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be generated from vehicles and/or equipment exhaust emissions during construction of the Project. Odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment and architectural coatings. Such odors would disperse rapidly from the Project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be considered **less than significant.**

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The Project would not engage in any of these activities. Moreover, typical odors generated from operation of the Project would include vehicle exhaust generated by school buses, faculty/staff, and parents traveling to and from the Project site and through the periodic use of landscaping or maintenance equipment. Therefore, the Project would result in an odor impact that is **less than significant**.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Impacts would be less than significant without mitigation.

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3 Greenhouse Gas Emissions

3.1 Environmental Setting

3.1.1 Climate Change Overview

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, lasting for an extended period of time (i.e., decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017b).

The greenhouse effect is the trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth, the Earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, in particular the warming observed over the past century, however, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of that warming since the mid-twentieth century and is the most significant driver of observed climate change (IPCC 2013; EPA 2017b). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013). Continued emissions of GHGs will cause further warming and changes in all components of the climate system, which is discussed further in Section 3.3.2, Potential Effects of Climate Change.

3.1.2 Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code, Section 38505(g), for purposes of administering many of the State's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). (See also CEQA Guidelines, Section 15364.5.) Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as HFCs, PFCs, and SF_6, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.[10]

Carbon Dioxide. CO_2 is a naturally occurring gas and a by-product of human activities and is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO_2 include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO_2 are from the combustion of fuels such as coal, oil, natural gas, and wood and changes in land use.

Methane. CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Nitrous Oxide. N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N_2O as a propellant (e.g., rockets, racecars, and aerosol sprays).

Fluorinated Gases. Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons [CFCs], hydrochlorofluorocarbons [HCFCs], and halons). The most prevalent fluorinated gases include the following:

- **Hydrofluorocarbons:** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- **Perfluorocarbons:** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to the ozone depleting substances. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- **Sulfur Hexafluoride:** SF_6 is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride:** NF_3 is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

Chlorofluorocarbons. CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere) and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

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[10] The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (1995), IPCC Fourth Assessment Report (2007), CARB's "Glossary of Terms Used in GHG Inventories" (2015a), and EPA's "Glossary of Climate Change Terms" (2016d).

Hydrochlorofluorocarbons. HCFCs are a large group of compounds, whose structure is very close to that of CFCs—containing hydrogen, fluorine, chlorine, and carbon atoms—but including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

Black Carbon. Black carbon is a component of fine particulate matter, which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influences cloud formation, and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived species that varies spatially, which makes it difficult to quantify the global warming potential. Diesel particulate matter emissions are a major source of black carbon and are TACs that have been regulated and controlled in California for several decades to protect public health. In relation to declining diesel particulate matter from the CARB's regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have reduced by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

Water Vapor. The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and maintains a climate necessary for life.

Ozone. Tropospheric O_3, which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric O_3, which is created by the interaction between solar ultraviolet radiation and molecular oxygen (O_2), plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric O_3, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

Aerosols. Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

3.1.3 Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2016c). The Intergovernmental Panel on Climate Change (IPCC) developed the global warming potential (GWP) concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons of CO_2 equivalent (MT CO_2e).

The current version of CalEEMod (version 2016.3.2) assumes that the GWP for CH_4 is 25 (so emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the IPCC Fourth Assessment Report (IPCC 2007). The GWP values identified in CalEEMod were applied to the Project.

3.2 Regulatory Setting

3.2.1 Federal Regulations

Massachusetts v. EPA. In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is the "endangerment finding."
- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act of 2007. The Energy Independence and Security Act of 2007 (December 2007), among other key measures, would do the following, which would aid in the reduction of national GHG emissions (EPA 2007):

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and directs National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Federal Vehicle Standards. In response to the U.S. Supreme Court ruling previously discussed, the Bush Administration issued Executive Order (EO) 13432 in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016 (75 FR 25324–25728).

In 2010, President Barack Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks (EPA 2017c).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018 (76 FR 57106–57513). The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6%–23% over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

In August 2018, EPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards now in place, the 2018 proposal would increase U.S. fuel consumption by about half a million barrels per day (2%–3% of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of 1° Celsius by 2100 (EPA and NHTSA 2018). California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives. Thus, the timing and consequences of the 2018 federal proposal are speculative at this time.

On September 27, 2019, EPA and NHTSA published the “Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program.” (84 FR 51,310), which became effective November 26, 2019. The Part One Rule revokes California’s authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. On March 31, 2020, the EPA and NHTSA issued Part Two of the SAFE Rule, which will go into effect 60 days after being published in the Federal Register. The Part Two Rule sets CO_2 emissions standards and corporate average fuel economy standards for passenger vehicles and light duty trucks for model years 2021 through 2026. This issue is evolving as California and 22 other states, as well as the District of Columbia and four cities, filed suit against the EPA and a petition for reconsideration of the rule on November 26, 2019. The litigation is not expected to be resolved for at least several months.

Clean Power Plan and New Source Performance Standards for Electric Generating Units. On October 23, 2015, EPA published a final rule (effective December 22, 2015) establishing the Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (80 FR 64510–64660), also known as the Clean Power Plan. These guidelines prescribe how states must develop plans to reduce GHG emissions from existing fossil-fuel-fired electric generating units. The guidelines establish CO_2 emission performance rates representing the best system of emission reduction for two subcategories of existing fossil-fuel-fired electric generating units: (1) fossil-fuel-fired electric utility steam-generating units, and (2) stationary combustion turbines. Concurrently, the EPA published a final rule (effective October 23, 2015) establishing Standards of Performance for Greenhouse Gas

Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units (80 FR 64661–65120). The rule prescribes CO_2 emission standards for newly constructed, modified, and reconstructed affected fossil-fuel-fired electric utility generating units. The U.S. Supreme Court stayed implementation of the Clean Power Plan pending resolution of several lawsuits.

3.2.2 State Regulations

The statewide GHG emissions regulatory framework is summarized below by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, solid waste, water, and other state regulations and goals. The following text describes EOs, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

The state has taken a number of actions to address climate change. These include EOs, legislation, and CARB plans and requirements. These are summarized below.

EO S-3-05. EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010 (CAT 2016).

AB 32. In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the state's long-range climate objectives.

SB 32 and AB 197. SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, in order to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and, requires CARB to identify specific information for GHG emissions reduction measures when updating the scoping plan.

CARB's 2007 Statewide Limit. In 2007, in accordance with California Health and Safety Code, Section 38550, CARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 million metric tons [MMT] CO_2e).

CARB's Climate Change Scoping Plan. One specific requirement of AB 32 is for CARB to prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code, Section 38561(a)), and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan. The *Climate Change Scoping Plan: A Framework for Change* (*Scoping Plan*) included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
2. Achieving a statewide renewable energy mix of 33%
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 CCR, Section 95480 et seq.)
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15% from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The *First Update to the Climate Change Scoping Plan: Building on the Framework* (*First Update)* defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012. The *First Update* concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The *First Update* recommended a mix of technologies in key economic sectors to reduce emissions through 2050 including: energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and, the rapid market penetration of efficient and clean energy technologies. As part of the *First Update*, CARB recalculated the state's 1990 emissions level, using more recent global warming potentials identified by the IPCC, from 427 MMT CO_2e to 431 MMT CO_2e (CARB 2014).

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. The Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In the summer of 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In December 2017, CARB's Governing Board adopted the *2017 Climate Change Scoping Plan Update (2030 Scoping Plan)* (CARB 2017). The 2030 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' "known commitments" include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the Low Carbon Fuel Standard, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, it recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%.

For local governments, the 2030 Scoping Plan replaced the initial Scoping Plan's 15% reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO_2e per capita by 2030 and no more than 2 MT CO_2e per capita by 2050, which are consistent with the state's long-term goals. These goals are also consistent with the Under 2 Memorandum of Understanding (Under 2 2016) and the Paris Agreement, which are developed around the scientifically based levels necessary to limit global warming below 2°C. The 2030 Scoping Plan recognized the benefits of local government GHG planning (e.g., through climate action plans [CAPs]) and provide more information regarding tools CARB is working on to support those efforts. It also recognizes the CEQA streamlining provisions for project level review where there is a legally adequate CAP.[11]

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it meets the general policies in reducing GHG emissions to facilitate the achievement of the state's goals and does not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with each and every planning policy or goals to be consistent. A project would be consistent, if it will further the objectives and not obstruct their attainment.

CARB's Regulations for the Mandatory Reporting of Greenhouse Gas Emissions. CARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of Greenhouse Gases (Title 40, CFR, Part 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT CO_2e per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are

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[11] *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490; *San Francisco Tomorrow et al. v. City and County of San Francisco* (2015) 229 Cal.App.4th 498; *San Franciscans Upholding the Downtown Specific Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656; *Sequoyah Hills Homeowners Assn. v. City of Oakland* (1993) 23 Cal.App.4th 704, 719.

required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emission report verified by a CARB-accredited third-party verified.

EO B-18-12. EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

EO B-30-15. EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT CO_2e. The EO also called for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

SB 605 and SB 1383. SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants (SLCPs) in the state; and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of SLCPs (40% below 2013 levels by 2030 for methane and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its *Short-Lived Climate Pollutant Reduction Strategy* (*SLCP Reduction Strategy*) in March 2017. The *SLCP Reduction Strategy* establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases.

EO B-55-18. EO B-55-18 (September 2018) establishes a new statewide goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." This EO directs CARB to "work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal."

Building Energy

Title 24, Part 6. Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC) (and revised if necessary) (California Public Resources Code, Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (California Public Resources Code, Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code, Section 25402[d]) and cost effectiveness (California Public Resources Code, Sections 25402[b][2] and [b][3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The 2019 Title 24 standards are the currently applicable building energy efficiency standards, and became effective on January 1, 2020. The 2019 Title 24 Building Energy Efficiency Standards will further reduce energy used and associated GHG emissions compared to prior standards. In general, single-family residences built to the 2019 standards are anticipated to use approximately 7% less energy due to energy efficiency measures than those built to the 2016 standards; once rooftop solar electricity generation is factored in, single-family residences built under the 2019 standards will use approximately 53% less energy than those under the 2016 standards (CEC 2018a). Nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018a).

Title 24, Part 11. In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as California's Green Building Standards (CALGreen), and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The CALGreen 2019 standards, which are the current standards, became effective January 1, 2020.

For nonresidential projects, some of the key mandatory CALGreen 2019 standards include the following (24 CCR Part 11):

- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 of the CALGreen Code (5.106.5.2).
- Electric vehicle (EV) charging stations. Construction shall comply with Section 5.106.5.3.1 (single charging space requirements) or Section 106.5.3.2 (multiple charging space requirements) to facilitate future installation of electric vehicle supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. Table 5.106.5.3.3 of the CALGreen Code shall be used to determine if single or multiple charging space requirements apply for the future installation of electric vehicle supply equipment (5.106.5.3).[12]
- Shade trees. Shade trees shall be planted to comply with Sections 5.106.12.1 (surface parking areas), 5.106.12.2 (landscape areas), and 5.106.12.3 (hardscape areas). Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6. (5.106.12).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)

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[12] Table 5.106.5.3.3 of the CALGreen code establishes a range of EV charging space requirements based on the total number of parking places of a project. At the minimum, no EV charging spaces are required if the project has a total of 0 to 9 parking spaces. At the maximum, 6% of the total parking spaces are required to be EV charging spaces for projects with a total number of actual parking spaces of 201 and over.

  - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute (gpm) and 80 pounds per square inch (psi) (5.303.3.3.1). When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm at 80 psi (5.303.3.3.2).
  - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gpm at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gpm of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gpm/20 [rim space (inches) at 60 psi] (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle/20 [rim space (inches) at 60 psi] (5.303.3.4.5).
- Outdoor potable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).
- Recycled water supply systems. Recycled water supply systems shall be installed in accordance with Sections 5.305.1.1 (outdoor recycled water supply systems), 5.305.1.2 (technical requirements for outdoor recycled water supply systems), and the California Plumbing Code (5.305.1).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1 (construction waste management plan). 5.405.1.2 (waste management company), or 5.408.1.3 (waste stream reduction alternative); or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Outdoor Air Quality. Installations of heating, ventilation, and air conditioning (HVAC), refrigeration, and fire suppression equipment shall comply with Section 5.508.1.1 (no CFCs) and Section 5.508.1.2 (no halons).

The CALGreen standards also include voluntary efficiency measures that are implemented at the discretion of local agencies and applicants.

Title 20. Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

SB 1. SB 1 (Murray) (August 2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for both homes and businesses within 10 years of adoption, and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed “Go Solar California,” was previously titled “Million Solar Roofs.”

California AB 1470 (Solar Water Heating). This bill established the Solar Water Heating and Efficiency Act of 2007. The bill makes findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand. The bill defines several terms for purposes of the act. The bill requires the commission to evaluate the data available from a specified pilot program, and, if it makes a specified determination, to design and implement a program of incentives for the installation of 200,000 solar water heating systems in homes and businesses throughout the state by 2017.

Renewable Energy and Energy Procurement

SB 1078. SB 1078 (Sher) (September 2002) established the Renewable Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and S-21-09).

SB 1368. SB 1368 (September 2006), required the CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC).

AB 1109. Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting, to reduce electricity consumption 50% for indoor residential lighting and 25% for indoor commercial lighting.

EO S-14-08. EO S-14-08 (November 2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. The California Natural Resources Agency (CNRA), through collaboration with the CEC and California Department of Fish and Wildlife (formerly the California Department of Fish and Game), was directed to lead this effort.

EO S-21-09 and SBX1-2. EO S-21-09 (September 2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with the CPUC and CEC to ensure that the regulation builds upon the RPS program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a

Renewable Electricity Standard. However, this regulation was not finalized because of subsequent legislation (SB X1-2, Simitian, statutes of 2011) signed by Governor Brown in April 2011.

SB X1 2 expanded the Renewables Portfolio Standard by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

SB X1-2 applies to all electricity retailers in the state including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must meet the renewable energy goals previously listed.

SB 350. SB 350 (October 2015, Clean Energy and Pollution Reduction Act) further expanded the RPS by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (e.g., heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the California Public Utilities Commission, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal. Regarding mobile sources, as one of its elements, SB 350 establishes a statewide policy for widespread electrification of the transportation sector, recognizing that such electrification is required for achievement of the state's 2030 and 2050 reduction targets (see California Public Utilities Code Section 740.12).

SB 100. SB 100 (2018) increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

Mobile Sources

State Vehicle Standards (AB 1493 and EO B-16-12). AB 1493 (July 2002) was enacted in a response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. It ordered CARB, CEC, California Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare. As explained under the “Federal Vehicle Standards” description above, EPA and NHTSA approved the SAFE Vehicles Rule Part One and Two, which revoked California’s authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. As the EPA rule is the subject of pending legal challenges, and CARB has not issued GHG adjustment factors for EMFAC, this analysis continues to utilize the best available information at this time, as set forth in EMFAC.

Heavy Duty Diesel. CARB adopted the final Heavy-Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce PM and NO_x emissions from heavy-duty diesel vehicles. The rule requires PM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR 2485).

EO S-1-07. EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining LCFS for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

SB 375. SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035 and to update those targets every 8 years. SB 375 requires the state’s 18 regional metropolitan planning organizations (MPOs) to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP) that will achieve the GHG reduction targets set by CARB. If a MPO is unable to devise an SCS to achieve the GHG reduction target, the MPO must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to Government Code, Section 65080(b)(2)(K), a SCS does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city’s or county’s land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

In 2010, CARB adopted the SB 375 targets for the regional metropolitan planning organizations. The targets for SANDAG are a 7% reduction in emissions per capita by 2020 and a 13% reduction by 2035.

SANDAG completed and adopted its 2050 RTP/SCS in October 2011 (SANDAG 2011). In November 2011, CARB, by resolution, accepted SANDAG’s GHG emissions quantification analysis and determination that, if implemented, the 2050 RTP/SCS would achieve CARB’s 2020 and 2035 GHG emissions-reduction targets for the region.

In October 2015, SANDAG adopted the Regional Plan. Like the 2050 RTP/SCS, the Regional Plan meets CARB’s 2020 and 2035 reduction targets for the region (SANDAG 2015). In December 2015, CARB, by resolution, accepted

SANDAG's GHG emissions quantification analysis and determination that, if implemented, the Regional Plan would achieve CARB's 2020 and 2035 GHG emissions reduction targets for the region.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program. The Advanced Clean Cars program (January 2012) is a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2012). To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The zero emission vehicle (ZEV) program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018 to 2025 model years.

AB 1236. AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill provided for appeal of that decision to the planning commission, as specified. The bill provided that the implementation of consistent statewide standards to achieve the timely and cost-effective installation of electric vehicle charging stations is a matter of statewide concern. The bill required electric vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric vehicle charging stations, as specified. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt this ordinance by September 30, 2017.

Water

EO B-29-15. In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

EO B-37-16. Issued May 2016, EO B-37-16 directed the State Water Resources Control Board (SWRCB) to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The SWRCB also developed a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The SWRCB and Department of Water Resources will develop new, permanent water use targets that build upon the existing state law requirements that the state achieve 20% reduction in urban water usage by 2020. EO B-37-16 also specifies that the SWRCB permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

Solid Waste

AB 939, AB 341, and AB 1826. In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code, Sections 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by the year 2000.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal. CalRecycle conducted several general stakeholder workshops and several focused workshops and in August 2015 published a discussion document titled AB 341 Report to the Legislature, which identifies five priority strategies that CalRecycle believes would assist the state in reaching the 75% goal by 2020, legislative and regulatory recommendations and an evaluation of program effectiveness (CalRecycle 2012).

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires businesses to recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

Other State Actions

SB 97. SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities (OPR 2008). The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4(a)). The Guidelines require a lead agency to consider the extent to which the Project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)). The Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. The CNRA also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009).

With respect to GHG emissions, the CEQA Guidelines state in Section 15064.4(a) that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance-based standards" (14 CCR 15064.4(a)). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

EO S-13-08. EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009 (CNRA 2009), and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: Agriculture, Biodiversity and Habitat, Emergency Management, Energy, Forestry, Ocean and Coastal Ecosystems and Resources, Public Health, Transportation, and Water. Issuance of the Safeguarding California: Implementation Action Plans followed in March 2016 (CNRA 2016). In January 2018, the CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that state government should take to build climate change resiliency (CNRA 2018a).

3.2.3 Local Regulations

3.2.3.1 San Diego County Air Pollution Control District

The SDAPCD does not have established GHG rules, regulations, or policies.

3.2.3.2 City of San Marcos

City of San Marcos Climate Action Plan

On December 8, 2020, the San Marcos City Council unanimously approved the 2020 Climate Action Plan (CAP) update. The CAP was developed to support the State's goals of reducing GHG emissions to 1990 levels by 2020, and 40% below 1990 levels by 2030. The CAP relies upon a screening threshold based on land use size as well as a CAP Consistency Review Checklist to determine whether the Project's emissions would be consistent with GHG emissions estimated within the City's CAP. The CAP Consistency Review Checklist is used to determine significance in accordance with CEQA Guidelines Section 15183.5. Although not applicable to the Project, the analysis discussed within this technical report have been provided for informational purposes.

City of San Marcos General Plan

The City's General Plan (City of San Marcos 2013) includes various policies related to reducing Air Quality and GHG emissions. Applicable policies include the following:

Land Use and Community Design Element

Policy LU-2.1: Promote compact development patterns that reduce air pollution and automobile dependence and facilitate walking, bicycling, and transit use.

Policy LU-2.3: Promote landscaping (e.g., native, drought tolerant plants) that minimizes demands on water supply.

Policy LU-2.7: Promote the instillation of trees to reduce the urban heat-island effect and green infrastructure to reduce storm water runoff.

Policy LU-3.1: Require that new development and redevelopment incorporate connections and reduce barriers between neighborhoods, transit corridors, and activity centers within the City.

Mobility Element

Policy M-2.1: Work with new development to design roadways that minimize traffic volumes and/or speed, as appropriate within residential neighborhoods; while maintaining the City's desire to provide connectivity on the roadway network.

Conservation and Open Space Element

Policy COS-4.5: Encourage energy conservation and the use of alternative energy sources within the community.

Policy COS-4.6: Promote efficient use of energy and conservation of available resources in the design, construction, maintenance and operation of public and private facilities, infrastructure and equipment.

Policy COS-4.8: Encourage and support the generation, transmission and use of renewable energy.

Policy COS-4.9: Encourage use and retrofitting of existing buildings under Title 24 of the California Building Energy Code.

3.3 Greenhouse Gas Inventories and Climate Change Conditions

3.3.1 Sources of Greenhouse Gas Emissions

Anthropogenic GHG emissions worldwide in 2017 (the most recent year for which data is available) totaled approximately 50,860 MMT CO_2e, excluding land use change and forestry (PBL 2018). Six countries—China, the

United States, the Russian Federation, India, Japan, and Brazil—and the European community accounted for approximately 65% of the total global emissions, or approximately 33,290 MMT CO_2e (PBL 2018).

Per the EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2018 (EPA 2020c), total United States GHG emissions were approximately 6,676.6 MMT CO_2e in 2018 (EPA 2020c). The primary GHG emitted by human activities in the United States was CO_2, which represented approximately 81.3% of total GHG emissions (5,428.1 MMT CO_2e). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 92.8% of CO_2 emissions in 2018 (5,031.8 MMT CO_2e). Relative to 1990, gross United States GHG emissions in 2018 are higher by 3.7%, down from a high of 15.2% above 1990 levels in 2007. GHG emissions decreased from 2017 to 2018 by 2.9% (188.4 MMT CO_2e) and overall, net emissions in 2018 were 10.2% below 2005 levels (EPA 2020c).

According to California's 2000–2018 GHG emissions inventory (2020 edition), California emitted 425 MMT CO_2e in 2018, including emissions resulting from out-of-state electrical generation (CARB 2020b). The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high-GWP substances, and recycling and waste. The California GHG emission source categories and their relative contributions in 2018 are presented in Table 8.

Table 8. Greenhouse Gas Emissions Sources in California

Source Category	Annual GHG Emissions (MMT CO_2e)	Percent of Total
Transportation	169.50	40%
Industrial uses	89.18	21%
Electricity generation[a]	63.11	15%
Residential and commercial uses	41.37	10%
Agriculture	32.57	8%
High GWP substances	20.46	5%
Recycling and waste	9.09	2%
Totals	**425.28**	**100%**

Source: CARB 2020b.
Notes: GHG = greenhouse gas; GWP = global warming potential; MMT CO_2e = million metric tons of carbon dioxide equivalent.
Emissions reflect 2018 California GHG inventory.
Totals may not sum due to rounding.
[a] Includes emissions associated with imported electricity, which account for 24.57 MMT CO_2e.

The City has established a goal to reduce its community-wide GHG to reduce GHG emissions 40% below 1990 levels by 2030 (City of San Marcos 2020). The City's community-wide GHG emissions inventory for baseline year 2012 is presented in Table 9 for informational purposes.

Table 9. City of San Marcos (Year 2012) Communitywide Greenhouse Gas Emissions Inventory

Community Sector	Total MT CO_2e/year	CO_2e (%)[1]
On-Road Transportation	322,000	54%
Electricity	162,000	27%
Natural Gas	75,000	12%
Solid Waste	15,000	3%
Off-Road Transportation	14,000	2%
Water	9,000	1%

Table 9. City of San Marcos (Year 2012) Communitywide Greenhouse Gas Emissions Inventory

Community Sector	Total MT CO_2e/year	CO_2e (%)[1]
Wastewater	3,000	<1%
Total	**599,000**	**100%**

Source: City of San Marcos 2020.
Note: GHG = greenhouse gas; MT CO_2e = metric tons of carbon dioxide equivalent per year
[1] Totals may not sum due to rounding.

3.3.2 Potential Effects of Climate Change

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed mean surface temperature for the decade 2006–2015 was 0.87°C (likely between 0.75°C and 0.99°C) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0°C (1.8°F) of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C (1.4°F to 2.2°F) (IPCC 2018). Global warming is likely to reach 1.5°C (2.7°F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed, including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2018).

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed, such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2018).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health, as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has been increasing.

The CNRA has released four California Climate Change Assessments (2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. To address local and regional governments need for information to support action in their communities, the Fourth Assessment (CNRA 2018b) includes reports for nine regions of the state, including the San Diego Region, where the Project is located. Key projected climate changes for the San Diego Region include the following (CNRA 2018b):

- Temperature is projected to increase substantially, along with mean temperature, heat wave frequency will increase, with more intensity and longer duration.
- Precipitation will remain highly variable but will change in character, with wetter winters, drier springs, and more frequent and severe droughts punctuated by more intense individual precipitation events.
- Wildfire risk will increase in the future as climate warms. The risk for large catastrophic wildfires driven by Santa Ana wind events will also likely increase as a result of a drier autumns leading to low antecedent precipitation before the height of the Santa Ana wind season.
- The sea level along San Diego County is expected to rise. High tides combined with elevated shoreline water levels produced by locally and distantly driven wind-driven waves will drive extreme events. Longer-term sea level will increase rapidly in the second half of the century and will be punctuated by short periods of storm-driven extreme sea levels that will imperil existing infrastructure, structures, and ecosystems with increasing frequency.

Agriculture. Some of the specific challenges faced by the agricultural sector and farmers include more drastic and unpredictable precipitation and weather patterns; extreme weather events that range from severe flooding to extreme drought, to destructive storm events; significant shifts in water availably and water quality; changes in pollinator lifecycles; temperature fluctuations, including extreme heat stress and decreased chill hours; increased risks from invasive species and weeds, agricultural pests and plant diseases; and disruptions to the transportation and energy infrastructure supporting agricultural production.

Biodiversity and Habitat. Specific climate change challenges to biodiversity and habitat include species migration in response to climatic changes, range shift and novel combinations of species; pathogens, parasites and disease; invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; threshold effects (i.e., a change in the ecosystem that results in a "tipping point" beyond which irreversible damage or loss has occurred).

Energy. Specific climate change challenges for the energy sector include temperature, fluctuating precipitation patterns, increasing extreme weather events, and sea-level rise.

Forestry. The most significant climate change related risk to forests is accelerated risk of wildfire and more frequent and severe droughts. Droughts have resulted in more large-scale mortalities and combined with increasing temperatures have led to an overall increase in wildfire risks. Increased wildfire intensity subsequently increases public safety risks, property damage, fire suppression and emergency response costs, watershed and water quality impacts, and vegetation conversions.

Ocean and Coastal Ecosystems and Resources. Sea-level rise, changing ocean conditions, and other climate change stressors are likely to exacerbate long-standing challenges related to ocean and coastal ecosystems in addition to threatening people and infrastructure located along the California coastline and in coastal communities. Sea-level rise, in addition to more frequent and severe coastal storms and erosion, are threatening vital infrastructure such as roads, bridges, power plants, ports and airports, gasoline pipes, and emergency facilities, as well as negatively impacting the coastal recreational assets such as beaches and tidal wetlands.

Public Health. Climate change can impact public health through various environmental changes and is the largest threat to human health in the twenty-first century. Changes in precipitation patterns affect public health primarily through potential for altered water supplies, and extreme events such as heat, floods, droughts, and wildfires. Increased frequency, intensity, and duration of extreme heat and heat waves are likely to increase the risk of mortality due to heat-related illness, as well as exacerbate existing chronic health conditions. Other extreme weather events are likely to negatively impact air quality and increase or intensify respiratory illness, such as asthma and allergies.

Transportation. Although the transportation industry is a source of GHG emissions, it is also vulnerable to climate change risks. Increasing temperatures and extended periods of extreme heat threaten the integrity of the roadways and rail lines. High temperatures cause the road surfaces to expand, which leads to increased pressure and pavement buckling. High temperatures can also cause rail breakages, which could lead to train derailment. Other forms of extreme weather events, such as extreme storm events, can negatively impact infrastructure, which can impair movement of peoples and goods, or potentially block evacuation routes and emergency access roads. Increased wildfires, flooding, erosion risks, landslides, mudslides, and rockslides can all profoundly impact the transportation system and pose a serious risk to public safety.

Water. Climate change could seriously impact the timing, form, amount of precipitation, runoff patterns, and frequency and severity of precipitation events. Higher temperatures reduce the amount of snowpack and lead to earlier snowmelt, which can impact water supply availability, natural ecosystems, and winter recreation. Water supply availability during the intense dry summer months is heavily dependent on the snowpack accumulated during the winter time. Increased risk of flooding has a variety of public health concerns, including water quality, public safety, property damage, displacement, and post-disaster mental health problems. Prolonged and intensified droughts can also negatively groundwater reserves and result in increased overdraft and subsidence. The higher risk of wildfires can lead to increased erosion, which can negatively impact watersheds and result in poor water quality.

3.4 Significance Criteria and Methodology

3.4.1 Thresholds of Significance

The significance criteria used to evaluate the Project's GHG emissions impacts is based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this GHG emissions analysis, the Project would have a significant environmental impact if it would (14 CCR 15000 et seq.):

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project, such as the Project, would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change. In addition, while GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008), GHG emissions impacts must also be evaluated on a project-level under CEQA.

The CEQA Guidelines do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009). The State of California has not adopted emission-based thresholds for GHG emissions under CEQA. The Governor's Office of Planning and Research's Technical Advisory, titled "Discussion Draft CEQA and Climate Change Advisory," states that

> "Neither the CEQA statute nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for perming an impact analysis. This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable. Even in the absence of clearly defined thresholds for GHG emissions, such emissions must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact." (OPR 2018)

Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice." Section 15064.7(c) of the CEQA Guidelines specifies that "when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

Amendments to Section 15064.4 of the CEQA Guidelines were adopted to assist lead agencies in determining the significance of the impacts of GHG emissions. Section 15064.4 specifies that a lead agency "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." Section 15064.4 also provides lead agencies with the discretion to determine whether to assess those emissions quantitatively or to rely on a qualitative analysis or performance-based standards. In addition, the CEQA Guidelines specify that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7[c]).

In the absence of a locally adopted numeric threshold by the SMUSD or other regional experts and agencies (e.g., SDAPCD, City of San Marcos, or County of San Diego), the Project is be evaluated according to CEQA Guidelines Section 15064.7(c) by considering whether a project's GHG emissions meet the CAPCOA 900 MT CO_2e per year screening level threshold. The screening level threshold was developed based on various land use densities and future discretionary project types to determine the size of projects that would likely have a less than cumulatively considerable contribution to climate change.

The CAPCOA threshold was developed to ensure capture of 90 percent or more of likely future discretionary developments. The objective was to set the emissions threshold low enough to capture a substantial fraction of future development while setting the emission threshold high enough to exclude small development projects that would contribute a relatively small fraction of cumulative statewide GHG emissions. A development capacity threshold was determined to capture approximately 90 percent of residential units. GHG emissions associated with 50 single-family residential units were estimated and found to be 900 MT CO_2e, establishing the basis for demonstrating that cumulative reductions are being achieved across the state for residential development.

CAPCOA's 900 MT CO_2e per year threshold was developed to meet AB 32 State target of reducing emissions to 1990 levels by year 2020. Since adoption evaluation of this threshold, SB 32 was passed to set a revised statewide reduction target to reduce emissions to 40 percent below 1990 levels by year 2030. Though the CAPCOA threshold does not consider the reduction targets set by SB 32, the CAPCOA threshold was developed with an aggressive project-level GHG emission capture rate of 90 percent.

The CAPCOA threshold of 900 MT CO_2e represents a more stringent screening level than has been approved by other air districts in compliance with 2030 statewide reduction targets.[13] Due to the aggressive GHG emission capture rate, the CAPCOA threshold would still act as a viable threshold to reduce project GHG emissions proposed after 2020 and meet SB 32 targets. Furthermore, as State legislative requirements such as Building Energy Efficiency Standards and transportation-related efficiency measures become increasingly more stringent overtime, future project GHG emissions would be reduced helping to meet State emission reduction targets. Projects that would generate emissions beyond the 900 MT CO_2e per year screening level threshold would be required to implement feasible on-site mitigation measures to reduce their impacts on climate change. Projects that meet or fall below CAPCOA's screening level threshold are expected to result in 900 MT CO_2e per year of GHG emissions or less and would not require additional analysis. Therefore, this assessment utilizes the 900 MT CO_2e per year screening threshold to evaluate whether the Project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

3.4.2 Approach and Methodology

3.4.2.1 Construction

CalEEMod Version 2016.3.2 was used to estimate potential project-generated GHG emissions during construction. Construction of the Project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. All details for construction criteria air pollutants discussed in Section 2.4.2.1, are also applicable for the estimation of construction-related GHG emissions. As such, see Section 2.4.2.1 for a discussion of construction emissions calculation methodology and assumptions.

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[13] As a comparison to the CAPCOA threshold, other regional air districts such as the Sacramento Metropolitan Air Quality Management District (SMAQMD) have update their GHG emission significance thresholds to ensure future proposed projects help meet the State's 2030 emission reduction target and do not result in a cumulative impact to climate change. In April 2020 the SMAQMD published updated project screening levels and determined that project's estimated to generate less than 1,100 MT CO_2e per year would not result in a significant cumulative impact. This threshold was developed to demonstrate compliance with the statewide reduction targets in 2030 and the screening-level threshold was determined by SMAQMD to capture 98 percent of total GHG emissions (SMAQMD 2020).

3.4.2.2 Operation

As with Air Quality, emissions from the operational phase of the Project were estimated using CalEEMod Version 2016.3.2. Operational year 2023 was assumed consistent with completion of project construction. Emissions from the existing elementary school buildings were also estimated using CalEEMod to present the net change in criteria air pollutant emissions. Operational year 2021 was assumed for the existing school.

Area Sources

CalEEMod was used to estimate GHG emissions from the Project's area sources, which include operation of gasoline-powered landscape maintenance equipment, which produce minimal GHG emissions. See Section 2.4.2.2, for a discussion of landscaping equipment emissions calculations.

Energy Sources

The estimation of operational energy emissions for both the Project and the existing elementary school were based on CalEEMod land use defaults and total area (i.e., square footage) of the Project's land use.

Title 24 of the California Code of Regulations serves to enhance and regulate California's building standards. The current Title 24, Part 6 standards, referred to as the 2019 Title 24 Building Energy Efficiency Standards, became effective on January 1, 2020. As such, the analysis herein assumes compliance with the 2019 Title 24 Standards because the Project would be constructed after January 1, 2020. The CEC anticipates that nonresidential buildings will use approximately 30% less energy compared to the prior code. The CalEEMod defaults for Title 24 – Electricity and Lighting Energy were adjusted accordingly in order to reflect consistency with the 2019 Title 24 standard.

Furthermore, the Project would incorporate solar photovoltaic (PV) panels in available field space. According to the SMUSD, it was estimated that a total of 202.8 kilowatts (kW) of PV panels would be installed to offset a portion of the school's electrical energy consumption. Overall, the PV panels would produce approximately 22,445 kW of energy per year.

CalEEMod default energy intensity factors (CO_2, CH_4, and N_2O mass emissions per kilowatt-hour) for San Diego Gas and Electric (SDG&E) is based on the value for SDG&E's energy mix in 2008. As explained in Section 3.2.2, SB X1 2 established a target of 33% from renewable energy sources for all electricity providers in California by 2020, and SB 100 calls for further development of renewable energy, with a target of 60% by 2030. The CO_2 emissions intensity factor for utility energy use was based on SDG&E's energy portfolio in 2018, which assumes 43% of the power mix consists of eligible renewables (CEC 2018b).

Mobile Sources

All details for criteria air pollutants discussed in Section 2.4.2.2 are also applicable for the estimation of operational mobile source GHG emissions.

Regulatory measures related to mobile sources include AB 1493 (Pavley) and related federal standards. AB 1493 required that CARB establish GHG emission standards for automobiles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for noncommercial personal transportation in the state. In addition, the NHTSA and EPA have established corporate fuel economy standards and GHG emission standards, respectively, for automobiles and light-, medium-, and heavy-duty vehicles. Implementation of these standards and fleet turnover (replacement of older vehicles with newer ones) will gradually reduce emissions from the Project's motor vehicles. The effectiveness of fuel economy improvements was evaluated using the CalEEMod emission factors for motor vehicles in 2023 to the extent it was captured in EMFAC2014.

Solid Waste

The Project would generate solid waste, and therefore, result in CO_2e emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation were used to estimate GHG emissions associated with solid waste for both the Project and the existing school.

Water and Wastewater

Supply, conveyance, treatment, and distribution of water for the Project require the use of electricity, which would result in associated indirect GHG emissions. Similarly, wastewater generated by the Project requires the use of electricity for conveyance and treatment, and GHG emissions will be generated during wastewater treatment. Water consumption estimates for both indoor and outdoor water use and associated electricity consumption from water use and wastewater generation were estimated using CalEEMod default values. The electricity use for water supply, treatment, distribution, and wastewater treatment are based on the electricity intensity factors from CalEEMod for the County and the indoor and outdoor water use default values in CalEEMod. Regarding indoor water use, the Project would install low-flow water fixtures including, low-flow bathroom and kitchen faucets, and low-flow toilets which would reduce the Project's water consumption.

3.5 Impact Analysis

3.5.1 Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction Emissions

Construction of the Project would result in GHG emissions, which are primarily associated with the use of off-road construction equipment, haul trucks, on-road vendor trucks, and worker vehicles.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 2.4.2.1. Construction of the Project is anticipated to commence in June 2021 and would last approximately 19 months, ending in December 2022. On-site sources of GHG emissions include off-road equipment and off-site sources including vendor trucks and worker vehicles. Table 10 presents construction emissions for the Project in 2021 and 2022 from on-site and off-site emission sources.

Table 10. Estimated Annual Construction Greenhouse Gas Emissions - Unmitigated

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
2021	314.60	0.07	0.00	316.41
2022	369.03	0.07	0.00	370.78
			Total	**687.19**

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; <0.01 = reported value less than 0.01.
See Appendix A for complete results.
The values shown are the annual emissions reflect CalEEMod "mitigated" output.
Totals may not add due to rounding.

As shown in Table 10, the estimated total GHG emissions during construction of would be approximately 687 MT CO_2e over the construction period. Estimated Project-generated construction emissions amortized over 30 years would be approximately 23 MT CO_2e per year. As with Project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the Project would be short-term in nature, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Operational Emissions

Operation of the project would generate GHG emissions through motor vehicle and delivery truck trips to and from the Project site; landscape maintenance equipment operation; energy use (natural gas and generation of electricity consumed by the Project); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. CalEEMod was used to calculate the annual GHG emissions based on the operational assumptions described in Section 3.4.2.2, Operation.

The estimated existing and operational Project-generated GHG emissions from area sources, energy usage, motor vehicles, solid waste generation, and water usage and wastewater generation are shown in Table 11.

Table 11. Estimated Annual Operational Greenhouse Gas Emissions

Emission Source	CO_2	CH_4	N_2O	CO_2e
	metric tons per year			
Existing School				
Area	<0.01	<0.01	0.00	<0.01
Energy	125.28	<0.01	<0.01	125.79
Mobile	825.15	0.04	0.00	826.22
Solid waste	23.16	1.37	0.00	57.39
Water supply and wastewater	22.72	0.08	<0.01	25.45
Total	**996.31**	**1.49**	**0.00**	**1,034.85**
Proposed Project				
Area	<0.01	<0.01	0.00	<0.01
Energy	123.58	<0.01	<0.01	124.10
Mobile	825.14	0.04	0.00	826.21
Solid waste	24.14	1.43	0.00	59.81

Table 11. Estimated Annual Operational Greenhouse Gas Emissions

Emission Source	CO_2	CH_4	N_2O	CO_2e
	metric tons per year			
Water supply and wastewater	22.08	0.07	<0.01	24.37
Total	**994.94**	**1.54**	**0.00**	**1,034.49**
Amortized 30-Year Construction Emissions				*22.91*
Project Operations + Amortized Construction Total				**1,057.40**
Net Change (Project minus Existing School)				**22.55**

Notes: CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; <0.01 = reported value less than 0.01; negative values are presented in parentheses.
See Appendix A for complete results.
CalEEMod limits various user inputs to specific decimal places (e.g., two decimal places), including the trip rate and land use metric inputs; therefore, there is the potential for rounding to result in slightly different values including a minimal discrepancy in estimated project-generated trips. The Project and the existing school are expected to result in the same amount of vehicle trips; however, due to rounding, the trips and associated emissions are slightly different.

As shown in Table 11, estimated annual Project-generated GHG emissions would be approximately 1,057 MT CO_2e per year as a result of project operations and amortized construction. The existing school is estimated to generate approximately 1,035 MT CO_2e per year; therefore, the Project is estimated to result in a net increase in emissions of approximately 23 MT CO_2e per year. This would be less than the significance threshold of 900 MT CO_2e per year as discussed in Section 3.4.1. Therefore, the Project would have a **less than significant** impact.

3.5.2 Would the proposed Project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Consistency with City of San Marcos CAP

This Section evaluates the Project's impacts to GHG in accordance with the City's 2020 CAP Consistency Review Checklist. Notably, although not applicable to the Project, the analysis discussed herein has been provided for informational purposes, to demonstrate that the Project would not conflict with the objectives identified within the CAP. The first step in this section evaluates a project's GHG emissions consistent with the City's Guidance to Demonstrating Consistency with the City of San Marcos Climate Action Plan: For Discretionary Projects Subject to CEQA (City's Guidance Document; City of San Marcos 2020). New discretionary development projects subject to CEQA review that emit fewer than 500 MT CO_2e annually would not contribute considerably to cumulative climate change impacts as stated in the City's Guidance Document, and therefore, would be considered consistent with the CAP and associated emissions projections.

For projects that are subject to CAP consistency review, the next step in determining consistency is to assess the Project's consistency with the growth projections used in the development of the CAP. This section allows the City to determine a project's consistency with the land use assumptions used in the CAP.

Step 1

Question 1

Step 1 of the CAP Checklist determines land use consistency. Question 1 of Step 1 asks if a project is less than a certain size it is deemed consistent with the City's CAP by emitting fewer than 500 MT CO_2e per year and is less than significant. The Project is larger than the screening size and therefore, would answer Yes to this question and must proceed to Question 2 of Step 1.

Question 2

Question 2 of Step 1 asks if the Project is consistent with the existing General Plan land use designation. The Project includes demolishing the existing elementary school and would redevelop the site with a new 91,477-square-foot elementary school. The General Plan currently designates the site as Public/Institutional. Therefore, the Project site allows the site to be redeveloped with a new elementary school. The Project would be consistent with the General Plan designation for the site and would not require a general plan amendment. Because the Project would be consistent with the City's existing land use designation for the site, the second step of CAP consistency review is to evaluate a project's consistency with the applicable strategies and measures of the CAP.

Step 2

The CAP Consistency Review Checklist includes specific mandatory and voluntary measures, pertaining to land use and CAP measures consistency. The Project would be consistent with most of the applicable mandatory project design feature in the completed CAP Consistency Review Checklist. The Project would not conflict with the City's existing land use designation for the Project site. As previously discussed, the Project site is designated as P-I, which allows the site to be developed with public facilities such as the redeveloped of the site with a new elementary school. Thus, the Project would be consistent with the General Plan land use designation for the site. The Project would also incorporate solar PV panels on school buildings. According to the SMUSD, it was estimated that a total of 202.8 kW of PV panels would be installed to offset a portion of the school's electrical energy consumption. In addition, the PV panel system would be installed with battery storage which would have a rating of 220 kilowatt hours. In regards to indoor water use, the Project would install low-flow bathroom and kitchen faucets and low-flow toilets. Furthermore, the Project would install water-efficient devices and landscaping in accordance with applicable ordinances, including use of drought-tolerant species appropriate to the climate and region.

Accordingly, while the City's CAP would not apply to the Project, for disclosure, the Project would not conflict with the City's CAP.

Consistency with GHG Related Laws and Regulations

The Project's consistency with statewide GHG reduction strategies is summarized in detail in Table 12.

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Building Components/Facility Operations		
Roofs/Ceilings/ Insulation	CALGreen Code (Title 24, Part 11) California Energy Code (Title 24, Part 6)	The Project must comply with efficiency standards regarding roofing, ceilings, and insulation. For example: Roofs/Ceilings: New construction must reduce roof heat island effects per CALGreen Code Section 106.11.2, which requires use of roofing materials having a minimum aged solar reflectance, thermal emittance complying with Section A5.106.11.2.2 and A5.106.11.2.3 or a minimum aged Solar Reflectance Index as specified in Tables A5.106.11.2.2, or A5.106.11.2.3. Roofing materials must also meet solar reflectance and thermal emittance standards contained in Title 20 Standards. Roof/Ceiling Insulation: There are also requirements for the installation of roofing and ceiling insulation. (See Title 24, Part 6 Compliance Manual at Section 3.2.2.)
Flooring	CALGreen Code	The Project must comply with efficiency standards regarding flooring materials. For example, for 80% of floor area receiving "resilient flooring," the flooring must meet applicable installation and material requirements contained in CALGreen Code Section 5.504.4.6.
Window and Doors (Fenestration)	California Energy Code	The Project must comply with fenestration efficiency requirements. For example, the choice of windows, glazed doors, and any skylights for the Project must conform to energy consumption requirements affecting size, orientation, and types of fenestration products used. (See Title 24, Part 6 Compliance Manual, Section 3.3.)
Building Walls/Insulation	CALGreen Code California Energy Code	The Project must comply with efficiency requirements for building walls and insulation. Exterior Walls: Must meet requirements in current edition of California Energy Code, and comply with Sections A5.106.7.1 or A5.106.7.2 of CALGreen Code for wall surfaces, as well as Section 5.407.1, which required weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2. Construction must also meet requirements contained in Title 24, Part 6, which vary by material of the exterior walls. (See Title 24, Part 6 Compliance Manual, Part 3.2.3.) Demising (Interior) Walls: Mandatory insulation requirements for demising walls (which separate conditioned from non-conditions space) differ by the type of wall material used. (*Id*. at 3.2.4.) Door Insulation: There are mandatory requirements for air infiltration rates to improve insulation efficiency; they differ according to the type of door. (*Id*. at 3.2.5.) Flooring Insulation: There are mandatory requirements for insulation that depend on the material and location of the flooring. (*Id*. at 3.2.6.)

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Finish Materials	CALGreen Code	The Project must comply with pollutant control requirements for finish materials. For example, materials including adhesives, sealants, caulks, paints and coatings, carpet systems, and composite wood products must meet requirements in CALGreen Code to ensure pollutant control. (CALGreen Code Section 5.504.4.)
Wet Appliances (Toilets/Faucets/Urinal, Dishwasher/Clothes Washer, Spa and Pool/Water Heater)	CALGreen Code California Energy Code Appliance Efficiency Regulations (Title 20 Standards)	Wet appliances associated with the Project must meet various efficiency requirements. For example: <u>Spa and Pool</u>: Use associated with the Project is subject to appliance efficiency requirements for service water heating systems and equipment, spa and pool heating systems and equipment. (Title 24, Part 6, Sections 110.3, 110.4, 110.5; Title 20 Standards, Sections 1605.1(g), 1605.3(g); see also California Energy Code.) <u>Toilets/Faucets/Urinals</u>: Use associated with the Project is subject to new maximum rates for toilets, urinals, and faucets effective January 1, 2016: • Showerheads maximum flow rate 2.5 gpm at 80 psi • Wash fountains 2.2 x (rim space in inches/20) gpm at 60 psi • Metering faucets 0.25 gallons/cycle • Lavatory faucets and aerators 1.2 gpm at 60 psi • Kitchen faucets and aerators 1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi • Public lavatory faucets 0.5 gpm at 60 psi • Trough-type urinals 16 inches length • Wall mounted urinals 0.125 gallons per flush • Other urinals 0.5 gallons per flush (Title 20 Standards, Sections 1605.1(h),(i) 1065.3(h),(i).) <u>Water Heaters</u>: Use associated with the Project is subject to appliance efficiency requirements for water heaters. (Title 20 Standards, Sections 1605.1(f), 1605.3(f).) <u>Dishwasher/Clothes Washer</u>: Use associated with the Project is subject to appliance efficiency requirements for dishwashers and clothes washers. (Title 20 Standards, Sections 1605.1(o),(p),(q), 1605.3(o),(p),(q).)
Dry Appliances (Refrigerator/Freezer, Heater/Air Conditioner, Clothes Dryer)	Title 20 Standards CALGreen Code	Dry appliances associated with the Project must meet various efficiency requirements. For example: <u>Refrigerator/Freezer</u>: Use associated with the Project is subject to appliance efficiency requirements for refrigerators and freezers. (Title 20 Standards, Sections 1605.1(a), 1605.3(a).) <u>Heater/Air Conditioner</u>: Use associated with the Project is subject to appliance efficiency requirements for heaters and air conditioners. (Title 20 Standards, Sections 1605.1(b),(c),(d),(e), 1605.3(b),(c),(d),(e) as applicable.)

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		Clothes Dryer: Use associated with the Project is subject to appliance efficiency requirements for clothes dryers. (Title 20 Standards, Section 1605.1(q).)
	CALGreen Code	Installations of HVAC, refrigeration and fire suppression equipment must comply with CALGreen Code Sections 5.508.1.1 and 508.1.2, which prohibits CFCs, halons, and certain HCFCs and HFCs.
Lighting	Title 20 Standards	Lighting associated with the Project will be subject to energy efficiency requirements contained in Title 20 Standards. General Lighting: Indoor and outdoor lighting associated with the Project must comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(j),(k),(n), 1605.3(j),(k),(n).) Emergency lighting and self-contained lighting: The Project must also comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(l), 1605.3(l).) Traffic Signal Lighting: For any necessary Project improvements involving traffic lighting, traffic signal modules and traffic signal lamps will need to comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(m), 1605.3(m).)
	California Energy Code	Lighting associated with the Project will also be subject to energy efficiency requirements contained in Title 24, Part 6, which contains energy standards for non-residential indoor lighting and outdoor lighting. (See Title 24 Part 6 Compliance Manual, at Sections 5, 6.) Mandatory lighting controls for indoor lighting include, for example, regulations for automatic shut-off, automatic daytime controls, demand responsive controls, and certificates of installation. (Id. at Section 5.) Regulations for outdoor lighting include, for example, creation of lighting zones, lighting power requirements, a hardscape lighting power allowance, requirements for outdoor incandescent and luminaire lighting, and lighting control functionality. (Id. at Section 6.)
	AB 1109	Lighting associated with the Project will be subject to energy efficiency requirements adopted pursuant to AB 1109. Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general purpose lighting, to reduce electricity consumption 25% for indoor commercial lighting.
Bicycle and Vehicle Parking	CALGreen Code	The Project will be required to provide compliant bicycle parking, fuel-efficient vehicle parking, and electric vehicle charging spaces (CALGreen Code Sections 5.106.4, 5.106.5.1, 5.106.5.3).
	California Energy Code	The Project is also subject to parking requirements contained in Title 24, Party 6. For example, parking capacity is to meet but not exceed minimum local zoning requirements, and the Project should employ approved strategies to reduce parking capacity. (Title 24, Part 6, section 106.6)
Landscaping	CALGreen Code	The CALGreen Code requires and has further voluntary provisions for: • A water budget for landscape irrigation use;

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		• For new water service, separate meters or submeters must be installed for indoor and outdoor potable water use for landscaped areas of 1,000-5,000 square feet; and • Provide water-efficient landscape design that reduces use of potable water beyond initial requirements for plant installation and establishment.
	Model Water Efficient Landscaping Ordinance	The model ordinance promotes efficient landscaping in new developments and establishes an outdoor water budget for new and renovated landscaped areas that are 500 square feet or larger. (CCR, Title 23, Division 2, Chapter 2.7.)
	Cap-and-Trade Program	Transportation fuels used in landscape maintenance equipment (e.g., gasoline) would be subject to the Cap-and-Trade Program. (See "Energy Use," below.)
Refrigerants	CARB Management of High GWP Refrigerants for Stationary Sources	Any refrigerants associated with the Project will be subject to CARB standards. CARB's Regulation for the Management of High GWP Refrigerants for Stationary Sources 1) reduces emissions of high-GWP refrigerants from leaky stationary, non-residential refrigeration equipment; 2) reduces emissions resulting from the installation and servicing of stationary refrigeration and air conditioning appliances using high-GWP refrigerants; and 3) requires verification GHG emission reductions. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5.1, Section 95380 et seq.)
Consumer Products	CARB High GWP GHGs in Consumer Products	All consumer products associated with the Project will be subject to CARB standards. CARB's consumer products regulations set VOC limits for numerous categories of consumer products, and limits the reactivity of the ingredients used in numerous categories of aerosol coating products. (CCR, Title 17, Division 3, Chapter 1, Subchapter 8.5.)
Construction		
Use of Off-Road Diesel Engines, Vehicles, and Equipment	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the Project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulation: 1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; 2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; 3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and 4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The requirements and compliance dates of the Off-Road regulation vary by fleet size, as defined by the regulation.
	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in equipment operation would be subject to the Cap-and-Trade Program. (See "Energy Use," below.)

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Greening New Construction	CALGreen Code	All new construction, including the Project, must comply with CALGreen Code, as discussed in more detail throughout this table. Adoption of the mandatory CALGreen Code standards for construction has been essential for improving the overall environmental performance of new buildings; it also sets voluntary targets for builders to exceed the mandatory requirements.
Construction Waste	CALGreen Code	The Project will be subject to CALGreen Code requirements for construction waste reduction, disposal, and recycling, such as a requirement to recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction waste in accordance with Section 5.408.1.1, 5.408.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
Worker, vendor and truck vehicle trips (on-road vehicles)	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in worker, vendor and truck vehicle trips would be subject to the Cap-and-Trade Program.
Solid Waste		
Solid Waste Management	Landfill Methane Control Measure	Waste associated with the Project will be disposed per state requirements for landfills, material recovery facilities, and transfer stations. Per the statewide GHG emissions inventory, the largest emissions from waste management sectors come from landfills, and are in the form of CH_4. In 2010, CARB adopted a regulation that reduces emissions from methane in landfills, primarily by requiring owners and operators of certain uncontrolled municipal solid waste landfills to install gas collection and control systems, and requires existing and newly installed gas and control systems to operate in an optimal manner. The regulation allows local air districts to voluntarily enter into a memorandum of understanding with CARB to implement and enforce the regulation and to assess fees to cover costs of implementation.
	Mandatory Commercial Recycling (AB 341)	AB 341 will require the Project, if it generates four cubic yards or more of commercial solid waste per week, to arrange for recycling services, using one of the following: self-haul; subscribe to a hauler(s); arranging for pickup of recyclable materials; subscribing to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation. The Project will also be subject to local commercial solid waste recycling program required to be implemented by each jurisdiction under AB 341.
	CALGreen Code	The Project will be subject to CALGreen Code requirement to provide areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling. (CALGreen Code Section 5.410.1)

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Energy Use		
Electricity/Natural Gas Generation	Cap-and-Trade Program	Electricity and natural gas usage associated with the Project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase. Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for suppliers of natural gas, reformulated gasoline blendstock for oxygenate blending (RBOB), distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 metric tons or more of CO_2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Renewable Energy	California RPS (SB X1-2, SB 350, and SB 100)	Energy providers associated with the Project will be required to comply with RPS set by SB X1 2, SB 350, and SB 100. SB X1 2 requires investor-owned utilities, publicly-owned utilities, and electric service providers to increase purchases of renewable energy such that at least 33% of retail sales are procured from renewable energy resources by December 31, 2020. In the interim, each entity was required to procure an average of 20% of renewable energy for the period of January 1, 2011 through December 31, 2013; and will be required to procure an average of 25% by December 31, 2016, and 33% by 2020. SB 350 requires retail sellers and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030. SB 100 increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California by 2045.
	Million Solar Roofs Program (SB 1)	The Project will participate in California's energy market, which is affected by implementation of the Million Solar Roofs Program. As part of Governor Schwarzenegger's Million Solar Roofs Program, California has set a goal to install 3,000 megawatts of new, solar capacity through 2016. The Million Solar Roofs Program is a

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		ratepayer-financed incentive program aimed at transforming the market for rooftop solar systems by driving down costs over time.
	California Solar Initiative- Thermal Program	The Project will participate in California's energy market, which is affected by implementation of the California Solar Initiative -Thermal Program. Multifamily and Commercial properties qualify for rebates of up to $800,000 on solar water heating systems and eligible solar pool heating systems qualify for rebates of up to $500,000. Funding for the California Solar Initiative-Thermal program comes from ratepayers of Pacific Gas & Electric, SCE, Southern California Gas Company, and San Diego Gas & Electric. The rebate program is overseen by the CPUC as part of the California Solar Initiative.
	Waste Heat and Carbon Emissions Reduction Act (AB 1613, AB 2791)	The Project will participate in California's energy market, which is affected by implementation of the Waste Heat and Carbon Emissions Reduction Act. Originally enacted in 2007 and amended in 2008, this act directed the CEC, CPUC, and CARB to implement a program that would encourage the development of new combined heat and power systems in California with a generating capacity of not more than 20 megawatts, to increase combined heat and power use by 30,000 gigawatt-hour. The CPUC publicly owned electric utilities, and CEC duly established policies and procedures for the purchase of electricity from eligible combined heat and power systems. CEC guidelines require combined heat and power systems to be designed to reduce waste energy; have a minimum efficiency of 60%; have NO_x emissions of no more than 0.07 pounds per megawatt-hour; be sized to meet eligible customer generation thermal load; operate continuously in a manner that meets expected thermal load and optimizes efficient use of waste heat; and be cost effective, technologically feasible, and environmentally beneficial.
Vehicular/Mobile Sources		
General	SB 375 and SANDAG RTP/SCS	The Project complies with, and is subject to, the SANDAG Regional Plan, which CARB approved as meeting its regional GHG targets in 2016.
Fuel	Low Carbon Fuel Standard (LCFS)/ EO S-01-07	Auto trips associated with the Project will be subject to LCFS (EO S-01-07), which requires a 10% or greater reduction in the average fuel carbon intensity by 2020 with a 2010 baseline for transportation fuels in California regulated by CARB. The program establishes a strong framework to promote the low carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG goals.
	Cap-and-Trade Program	Use of gasoline associated with the Project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase.

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for suppliers of natural gas, RBOB, distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 MT or more of CO_2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Automotive Refrigerants	CARB Regulation for Small Containers of Automotive Refrigerant	Vehicles associated with the Project will be subject to CARB's Regulation for Small Containers of Automotive Refrigerant. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5, Section 95360 et seq.) The regulation applies to the sale, use, and disposal of small containers of automotive refrigerant with a GWP greater than 150. The regulation achieves emission reductions through implementation of four requirements: 1) use of a self-sealing valve on the container, 2) improved labeling instructions, 3) a deposit and recycling program for small containers, and 4) an education program that emphasizes best practices for vehicle recharging. This regulation went into effect on January 1, 2010 with a one-year sell-through period for containers manufactured before January 1, 2010. The target recycle rate is initially set at 90%, and rises to 95% beginning January 1, 2012.
Light-Duty Vehicles	AB 1493 (or the Pavley Standard)	Cars that drive to and from the Project will be subject to AB 1493, which directed CARB to adopt a regulation requiring the maximum feasible and cost-effective reduction of GHG emissions from new passenger vehicles. Pursuant to AB 1493, CARB adopted regulations that establish a declining fleet average standard for CO_2, CH_4, N_2O, and HFCs (air conditioner refrigerants) in new passenger vehicles and light-duty trucks beginning with the 2009 model year and phased-in through the 2016 model year. These standards are divided into those applicable to lighter and those applicable to heavier portions of the passenger vehicle fleet. The regulations will reduce "upstream" smog-forming emissions from refining, marketing, and distribution of fuel.
	Advanced Clean Car and ZEV Programs	Cars that drive to and from the Project will be subject to the Advanced Clean Car and ZEV Programs. In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars. By 2025, new automobiles will emit 34% fewer global warming gases and 75% fewer smog-forming emissions.

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		The ZEV program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018-2025 model years.
	Tire Inflation Regulation	Cars that drive to and from the Project will be subject to the CARB Tire Inflation Regulation, which took effect on September 1, 2010, and applies to vehicles with a gross vehicle weight rating of 10,000 pounds or less. Under this regulation, automotive service providers must, inter alia, check and inflate each vehicle's tires to the recommended tire pressure rating, with air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service, and to keep a copy of the service invoice for a minimum of three years, and make the vehicle service invoice available to the CARB, or its authorized representative upon request.
	EPA and NHTSA GHG and CAFE standards.	Mobile sources that travel to and from the Project would be subject to EPA and NHTSA GHG and CAFE standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles. (75 FR 25324–25728 and 77 FR 62624–63200.)
Medium- and Heavy-Duty Vehicles	CARB In-Use On-Road Heavy-Duty Diesel Vehicles Regulation (Truck and Bus Regulation)	While the Project is not anticipated to generate heavy-duty truck trips, any heavy-duty trucks associated with the Project will be subject to CARB standards. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds.
	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the Project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulations: 1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; 2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; 3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and 4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits).

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		The requirements and compliance dates of the Off-Road regulation vary by fleet size, as defined by the regulation.
	Heavy-Duty Vehicle GHG Emission Reduction Regulation	Any relevant vehicle or machine use associated with the Project will be subject to CARB standards. The CARB Heavy-Duty Vehicle GHG Emission Reduction Regulation applies to heavy-duty tractors that pull 53-foot or longer box-type trailers. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 1, Section 95300 et seq.) Fuel efficiency is improved through improvements in tractor and trailer aerodynamics and the use of low rolling resistance tires.
	EPA and NHTSA GHG and CAFE standards.	Mobile sources that travel to and from the Project would be subject to EPA and NHTSA GHG and CAFE standards for medium- and heavy-duty vehicles. (76 FR 57106–57513.)
Water Use		
Water Use Efficiency	Emergency State Water Board Regulations	Water use associated with the Project will be subject to emergency regulations. On May 18, 2016, partially in response to EO B-27-16, the State Water Board adopted emergency water use regulations (CCR, title 23, Section 864.5 and amended and re-adopted Sections 863, 864, 865, and 866). The regulation directs the State Water Board, Department of Water Resources, and CPUC to implement rates and pricing structures to incentivize water conservation, and calls upon water suppliers, homeowners' associations, California businesses, landlords and tenants, and wholesale water agencies to take stronger conservation measures.
	EO B-37-16	Water use associated with the Project will be subject to Emergency EO B-37-16, issued May 9, 2016, which directs the State Water Resources Control Board to adjust emergency water conservation regulations through the end of January, 2017 to reflect differing water supply conditions across the state. The Water Board must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The Water Board and Department of Water Resources will develop new, permanent water use targets to which the Project will be subject. The Water Board will permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.
	EO B-40-17	EO B-40-17 lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinds EO B-29-15, but expressly states that EO B-37-16 remains in effect and directs

Table 12. Applicable Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		the State Water Resources Control Board to continue development of permanent prohibitions on wasteful water use to which the Project will be subject.
	SB X7-7	Water provided to the Project will be affected by SB X7-7's requirements for water suppliers. SB X7-7, or the Water Conservation Act of 2009, requires all water suppliers to increase water use efficiency. It also requires, among other things, that the Department of Water Resources, in consultation with other state agencies, develop a single standardized water use reporting form, which would be used by both urban and agricultural water agencies.
	CALGreen Code	The Project is subject to CALGreen Code's water efficiency standards, including a required 20% mandatory reduction in indoor water use. (CALGreen Code, Division 4.3.)
	California Water Code, Division 6, Part 2.10, Sections 10910–10915.	Development and approval of the Project requires the development of a Project-specific Water Supply Assessment.
	Cap-and-Trade Program	Electricity usage associated with water and wastewater supply, treatment and distribution would be subject to the Cap-and-Trade Program.
	California RPS (SB X1-2, SB 350, SB 100)	Electricity usage associated with water and wastewater supply, treatment and distribution associated with the Project will be required to comply with RPS set by SB X1-2, SB 350, and SB 100.

Notes: AB = Assembly Bill; CARB = California Air Resources Board; CEC = California Energy Commission; CFC = chlorofluorocarbon; CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; CPUC = California Public Utilities Commission; EO = Executive Order; EPA = Environmental Protection Agency; GHG = greenhouse gas; GWP = global warming potential; HCFC = hydrochlorofluorocarbon; HFC = hydrofluorocarbon; gpm = gallons per minute; MT = metric tons; N_2O = nitrous oxide; NHTSA = National Highway Traffic Safety Administration; PM = particulate matter; RPS = Renewable Portfolio Standard; RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SANDAG = San Diego Association of Governments; SB = Senate Bill; VOC = volatile organic compound; ZEV = zero emission vehicle

As shown in Table 12, the Project would be consistent with and would not conflict with the applicable GHG-reducing strategies of the state.

Consistency with SANDAG's RTP/SCS

At the regional level, SANDAG's RTP/SCS has been adopted for the purpose of reducing GHG emissions attributable to passenger vehicles in the San Diego region. In October 2015, SANDAG adopted its Regional Plan, which meets CARB's 2020 and 2035 reduction targets for the region. The RTP/SCS does not regulate land use or supersede the exercise of land use authority by SANDAG's member jurisdictions, but it is a relevant regional reference document for purposes of evaluating the intersection of land use and transportation patterns and the corresponding GHG emissions. CARB has recognized that the approved RTP/SCS is consistent with SB 375 (CARB 2015b).

While the RTP/SCS does not regulate land use or supersede the exercise of land use authority by SANDAG's member jurisdictions (i.e., the City), the RTP/SCS is a relevant regional reference document for purposes of evaluating the intersection of land use and transportation patterns and the corresponding GHG emissions. The RTP/SCS is not directly applicable to the Project because the underlying purpose of the RTP/SCS is to provide direction and guidance on future regional growth (i.e., the location of new residential and non-residential land uses) and transportation patterns throughout the City and greater San Diego County, as stipulated under SB 375. CARB has recognized that the approved RTP/SCS is consistent with SB 375 (CARB 2015b). As previously discussed, the Project would be consistent with existing land use designations for the site. In addition, the traffic generated by the Project would not result in a net increase vehicle trips. Thus, the Project would be consistent with SANDAG's Regional Plan.

Scoping Plan Consistency

The Scoping Plan, approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Relatedly, in the Final Statement of Reasons for the Amendments to the CEQA Guidelines, the CNRA observed that "[t]he [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., low-carbon fuel standard), among others. The Project would comply with all applicable regulations adopted in furtherance of the Scoping Plan to the extent required by law.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32 and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. Table 13 highlights measures that have been developed under the Scoping Plan and the Project's consistency with those measures. Table 13 also includes measures proposed in the Draft 2017 Scoping Plan Update. To the extent that these regulations are applicable to the Project, its inhabitants, or uses, the Project would comply with all applicable regulations adopted in furtherance of the Scoping Plan.

Table 13. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Transportation Sector		
Advanced Clean Cars	T-1	*Consistent.* The Project would not result in a net increase in operational vehicle trips.
1.5 million zero-emission and plug-in hybrid light-duty electric vehicles by 2025 (4.2 million Zero-Emissions Vehicles by 2030)	Proposed	*Consistent.* The Project would install conduit for future EV charging stations (6% of parking spaces) in accordance with CALGreen standards.
Low Carbon Fuel Standard	T-2	*Consistent.* Motor vehicles driven by the Project's employees would use compliant fuels.
Low Carbon Fuel Standard (18 percent reduction in carbon intensity by 2030)	Proposed	*Consistent.* Motor vehicles driven by the Project's employees would use compliant fuels.

Table 13. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Regional Transportation-Related GHG Targets	T-3	*Not applicable.* The Project is not related to developing GHG emission reduction targets. The Project would not preclude the implementation of this strategy.
Advanced Clean Transit	Proposed	*Not applicable.* This measure does not apply to the Project. The Project would not inhibit CARB from implementing this Scoping Plan Measure.
Last Mile Delivery	Proposed	*Not applicable.* This measure does not apply to the Project. The Project would not inhibit CARB from implementing this Scoping Plan Measure.
Reduction in Vehicle Miles Traveled	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Vehicle Efficiency Measures 1. Tire Pressure 2. Fuel Efficiency Tire Program 3. Low-Friction Oil 4. Solar-Reflective Automotive Paint and Window Glazing	T-4	*Consistent.* These standards would be applicable to the light-duty vehicles that would access the Project site. Motor vehicles driven by the Project's employees would maintain proper tire pressure when their vehicles are serviced. The Project's employees would replace tires in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase. Motor vehicles driven by the Project's employees would use low-friction oils when their vehicles are serviced. The Project's employees would purchase vehicles in compliance with CARB vehicle standards that are in effect at the time of vehicle purchase. In addition, the Project would not prevent CARB from implementing this measure.
Ship Electrification at Ports (Shore Power)	T-5	*Not applicable.* This measure does not apply to the Project. The Project would not inhibit CARB from implementing this Scoping Plan Measure.
Goods Movement Efficiency Measures 1. Port Drayage Trucks 2. Transport Refrigeration Units Cold Storage Prohibition 3. Cargo Handling Equipment, Anti-Idling, Hybrid, Electrification 4. Goods Movement Systemwide Efficiency Improvements 5. Commercial Harbor Craft Maintenance and Design Efficiency 6. Clean Ships 7. Vessel Speed Reduction	T-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
California Sustainable Freight Action Plan	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.

Table 13. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Heavy-Duty Vehicle GHG Emission Reduction 1. Tractor-Trailer GHG Regulation 2. Heavy-Duty Greenhouse Gas Standards for New Vehicle and Engines (Phase I)	T-7	*Consistent.* The Project would not result in an increase in operational heavy-duty vehicle trips. During construction, heavy-duty truck use would be temporary. In addition, the Project would not prevent CARB from implementing this measure.
Medium- and Heavy-Duty Vehicle Hybridization Voucher Incentive Project	T-8	*Consistent.* The Project would not result in an increase in operational medium- or heavy-duty vehicle trips. In addition, the Project would not prevent CARB from implementing this measure.
Medium and Heavy-Duty GHG Phase 2	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
High-Speed Rail	T-9	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Electricity and Natural Gas Sector		
Energy Efficiency Measures (Electricity)	E-1	*Consistent.* The Project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.
Energy Efficiency (Natural Gas)	CR-1	*Consistent.* The Project will comply with current Title 24, Part 6, of the California Code of Regulations energy efficiency standards for electrical appliances and other devices at the time of building construction.
Solar Water Heating (California Solar Initiative Thermal Program)	CR-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Combined Heat and Power	E-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Renewable Portfolios Standard (33 percent by 2020)	E-3	*Consistent.* The electricity used by the Project would benefit from reduced GHG emissions resulting from increased use of renewable energy sources.
Renewable Portfolios Standard (50 percent by 2050)	Proposed	*Consistent.* The electricity used by the Project would benefit from reduced GHG emissions resulting from increased use of renewable energy sources.
Senate Bill 1 Million Solar Roofs (California Solar Initiative, New Solar Home Partnership, Public Utility Programs) and Earlier Solar Programs	E-4	*Consistent.* The Project would include the installation of 202.8 kW PV solar system.
Water Sector		
Water Use Efficiency	W-1	*Consistent.* The Project would include the installation of low-flow water fixtures. The Project would not prevent CARB from implementing this measure.
Water Recycling	W-2	*Not applicable.* Recycled water is not available to the Project site. The Project would not prevent CARB from implementing this measure.

Table 13. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Water System Energy Efficiency	W-3	*Not applicable.* This is applicable for the transmission and treatment of water, but it is not applicable for the Project.
Reuse Urban Runoff	W-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Renewable Energy Production	W-5	*Not applicable.* Applicable for wastewater treatment systems. Not applicable for the Project.
Green Buildings		
State Green Building Initiative: Leading the Way with State Buildings (Greening New and Existing State Buildings)	GB-1	*Consistent.* The Project would be required to be constructed in compliance with state or local green building standards in effect at the time of building construction.
Green Building Standards Code (Greening New Public Schools, Residential and Commercial Buildings)	GB-2	*Consistent*. The Project's buildings would meet green building standards that are in effect at the time of construction.
Beyond Code: Voluntary Programs at the Local Level (Greening New Public Schools, Residential and Commercial Buildings)	GB-3	*Consistent*. The Project would be required to be constructed in compliance with local green building standards in effect at the time of building construction.
Greening Existing Buildings (Greening Existing Homes and Commercial Buildings)	GB-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Industry Sector		
Energy Efficiency and Co-Benefits Audits for Large Industrial Sources	I-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Oil and Gas Extraction GHG Emission Reduction	I-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Reduce GHG Emissions by 20 percent in Oil Refinery Sector	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
GHG Emissions Reduction from Natural Gas Transmission and Distribution	I-3	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Refinery Flare Recovery Process Improvements	I-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Work with the local air districts to evaluate amendments to their existing leak detection and repair rules for industrial facilities to include methane leaks	I-5	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Recycling and Waste Management Sector		
Landfill Methane Control Measure	RW-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Increasing the Efficiency of Landfill Methane Capture	RW-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.

Table 13. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Mandatory Commercial Recycling	RW-3	*Consistent.* During both construction and operation of the Project, the Project would comply with all state regulations related to solid waste generation, storage, and disposal, including the California Integrated Waste Management Act, as amended. During construction, all wastes would be recycled to the maximum extent possible.
Increase Production and Markets for Compost and Other Organics	RW-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Anaerobic/Aerobic Digestion	RW-5	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Extended Producer Responsibility	RW-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Environmentally Preferable Purchasing	RW-7	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Forests Sector		
Sustainable Forest Target	F-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
High Global Warming Potential Gases Sector		
Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Servicing	H-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.
SF_6 Limits in Non-Utility and Non-Semiconductor Applications	H-2	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Reduction of Perfluorocarbons in Semiconductor Manufacturing	H-3	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Limit High Global Warming Potential Use in Consumer Products	H-4	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	H-5	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Stationary Equipment Refrigerant Management Program – Refrigerant Tracking/Reporting/Repair Program	H-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
Stationary Equipment Refrigerant Management Program – Specifications for Commercial and Industrial Refrigeration	H-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
SF_6 Leak Reduction Gas Insulated Switchgear	H-6	*Not applicable.* The Project would not prevent CARB from implementing this measure.
40 percent reduction in methane and hydrofluorocarbon emissions	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.
50 percent reduction in black carbon emissions	Proposed	*Not applicable.* The Project would not prevent CARB from implementing this measure.

Table 13. Project Consistency with Scoping Plan GHG Emission-Reduction Strategies

Scoping Plan Measure	Measure Number	Project Consistency
Agriculture Sector		
Methane Capture at Large Dairies	A-1	*Not applicable.* The Project would not prevent CARB from implementing this measure.

Source: CARB 2008, 2017.
Notes: GHG = greenhouse gas; Project = Richland Elementary School Reconstruction Project; CARB = California Air Resources Board; EV = electric vehicle; SF_6 = sulfur hexafluoride.

Based on the analysis in Table 13, the Project would be consistent with the applicable strategies and measures in the Scoping Plan.

The Project is consistent with the GHG emission reduction measures in the Scoping Plan and County's General Plan policies, which all promote economic growth while achieving greater energy efficiency. The Project would be consistent with SB 32, and EO S-3-05. The Project would not conflict with any plans adopted with the purpose of reducing GHG emissions; therefore, the Project's impacts on GHG emissions would be **less than significant.**

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Impacts would be less than significant without mitigation.

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5 List of Preparers

Jennifer Reed, Air Quality Services Manager
Ian McIntire, Air Quality Specialist

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Appendix A

CalEEMod Output Files

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/4/2021 8:35 AM

Richland Elementary School Reconstruction

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	91.48	1000sqft	9.27	91,477.00	0
Parking Lot	117.00	Space	1.05	46,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	456.31	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensity factors based on power content label for SDG&E.

Land Use - Project site is approx 10.32 acres Project includes 117 parking spaces and 91,477 sf of facilities.

Construction Phase - CalEEMod default values.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed

Trips and VMT - CalEEMod default values.

On-road Fugitive Dust - CalEEMod default values.

Demolition - Demolition: 87,776 SF of building space

Grading - Phase 1: 45 CY cut/export, Phase 2: 685 CY fill/import.

Architectural Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Vehicle Trips - Updated trip generation based on traffic analysis.

Woodstoves - CalEEMod default values (no woodstoves of fireplaces).

Consumer Products - CalEEMod default values.

Area Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Landscape Equipment - CalEEMod default values.

Energy Use - Adjusted for 2019 Title 24 Standards.

Water And Wastewater - CalEEMod default values.

Solid Waste - CalEEMod default values.

Construction Off-road Equipment Mitigation - Water exposed area: 2 times per day.

Energy Mitigation - System size: 202.8 kW, Production: 22,445 kWh/year

Water Mitigation - Use of low-flow water fixtures.

Operational Off-Road Equipment - CalEEMod default values.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblEnergyUse	T24E	1.52	1.36
tblEnergyUse	T24NG	5.44	5.39
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialImported	0.00	685.00
tblLandUse	LandUseSquareFeet	91,480.00	91,477.00
tblLandUse	LotAcreage	2.10	9.27
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	456.31

tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	HaulingTripNumber	399.00	400.00
tblTripsAndVMT	HaulingTripNumber	91.00	92.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	23.00	24.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblVehicleTrips	WD_TR	15.43	14.87

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2203	2.2287	1.6944	3.5400e-003	0.3027	0.1012	0.4039	0.1207	0.0942	0.2149	0.0000	314.5976	314.5976	0.0724	0.0000	316.4069
2022	0.8703	1.9936	2.0601	4.1700e-003	0.0670	0.0907	0.1576	0.0182	0.0852	0.1034	0.0000	369.0322	369.0322	0.0697	0.0000	370.7756
Maximum	**0.8703**	**2.2287**	**2.0601**	**4.1700e-003**	**0.3027**	**0.1012**	**0.4039**	**0.1207**	**0.0942**	**0.2149**	**0.0000**	**369.0322**	**369.0322**	**0.0724**	**0.0000**	**370.7756**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2203	2.2287	1.6944	3.5400e-003	0.1574	0.1012	0.2586	0.0601	0.0942	0.1542	0.0000	314.5973	314.5973	0.0724	0.0000	316.4066
2022	0.8703	1.9936	2.0601	4.1700e-003	0.0670	0.0907	0.1576	0.0182	0.0852	0.1034	0.0000	369.0319	369.0319	0.0697	0.0000	370.7752
Maximum	**0.8703**	**2.2287**	**2.0601**	**4.1700e-003**	**0.1574**	**0.1012**	**0.2586**	**0.0601**	**0.0942**	**0.1542**	**0.0000**	**369.0319**	**369.0319**	**0.0724**	**0.0000**	**370.7752**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**39.31**	**0.00**	**25.88**	**43.66**	**0.00**	**19.05**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4681	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7300e-003	3.7300e-003	1.0000e-005	0.0000	3.9700e-003
Energy	2.9000e-003	0.0263	0.0221	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	128.2288	128.2288	4.4800e-003	1.4000e-003	128.7573
Mobile	0.2311	0.8995	2.5740	8.9300e-003	0.8072	7.0100e-003	0.8142	0.2161	6.5300e-003	0.2227	0.0000	825.1373	825.1373	0.0428	0.0000	826.2080
Waste						0.0000	0.0000		0.0000	0.0000	24.1397	0.0000	24.1397	1.4266	0.0000	59.8051
Water						0.0000	0.0000		0.0000	0.0000	0.8416	22.8343	23.6759	0.0873	2.2400e-003	26.5272
Total	**0.7021**	**0.9258**	**2.5980**	**9.0900e-003**	**0.8072**	**9.0200e-003**	**0.8162**	**0.2161**	**8.5400e-003**	**0.2247**	**24.9813**	**976.2041**	**1,001.1854**	**1.5613**	**3.6400e-003**	**1,041.3016**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4681	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7300e-003	3.7300e-003	1.0000e-005	0.0000	3.9700e-003
Energy	2.9000e-003	0.0263	0.0221	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	123.5831	123.5831	4.2900e-003	1.3600e-003	124.0950
Mobile	0.2311	0.8995	2.5740	8.9300e-003	0.8072	7.0100e-003	0.8142	0.2161	6.5300e-003	0.2227	0.0000	825.1373	825.1373	0.0428	0.0000	826.2080
Waste						0.0000	0.0000		0.0000	0.0000	24.1397	0.0000	24.1397	1.4266	0.0000	59.8051
Water						0.0000	0.0000		0.0000	0.0000	0.6733	21.4045	22.0778	0.0700	1.8200e-003	24.3701
Total	**0.7021**	**0.9258**	**2.5980**	**9.0900e-003**	**0.8072**	**9.0200e-003**	**0.8162**	**0.2161**	**8.5400e-003**	**0.2247**	**24.8129**	**970.1287**	**994.9416**	**1.5437**	**3.1800e-003**	**1,034.4821**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.62	0.62	1.12	12.64	0.65

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	7/12/2021	5	10	
3	Grading	Grading	7/13/2021	8/23/2021	5	30	
4	Building Construction	Building Construction	8/24/2021	10/17/2022	5	300	
5	Paving	Paving	10/18/2022	11/14/2022	5	20	
6	Architectural Coating	Architectural Coating	11/15/2022	12/12/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 1.05

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,216; Non-Residential Outdoor: 45,739; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	16.00	8.00	400.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	92.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	58.00	24.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0437	0.0000	0.0437	6.6200e-003	0.0000	6.6200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0008	34.0008	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**	**0.0437**	**0.0155**	**0.0593**	**6.6200e-003**	**0.0144**	**0.0210**	**0.0000**	**34.0008**	**34.0008**	**9.5700e-003**	**0.0000**	**34.2400**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5000e-003	0.0522	0.0129	1.5000e-004	3.4200e-003	1.6000e-004	3.5800e-003	9.4000e-004	1.5000e-004	1.0900e-003	0.0000	15.2324	15.2324	1.3700e-003	0.0000	15.2668
Vendor	2.5000e-004	8.2200e-003	2.1900e-003	2.0000e-005	5.3000e-004	2.0000e-005	5.5000e-004	1.5000e-004	2.0000e-005	1.7000e-004	0.0000	2.0915	2.0915	1.6000e-004	0.0000	2.0954
Worker	5.6000e-004	4.0000e-004	4.0000e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.1208	1.1208	3.0000e-005	0.0000	1.1216
Total	**2.3100e-003**	**0.0609**	**0.0191**	**1.8000e-004**	**5.2300e-003**	**1.9000e-004**	**5.4200e-003**	**1.4300e-003**	**1.8000e-004**	**1.6100e-003**	**0.0000**	**18.4448**	**18.4448**	**1.5600e-003**	**0.0000**	**18.4838**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0197	0.0000	0.0197	2.9800e-003	0.0000	2.9800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0007	34.0007	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**	**0.0197**	**0.0155**	**0.0352**	**2.9800e-003**	**0.0144**	**0.0174**	**0.0000**	**34.0007**	**34.0007**	**9.5700e-003**	**0.0000**	**34.2400**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5000e-003	0.0522	0.0129	1.5000e-004	3.4200e-003	1.6000e-004	3.5800e-003	9.4000e-004	1.5000e-004	1.0900e-003	0.0000	15.2324	15.2324	1.3700e-003	0.0000	15.2668
Vendor	2.5000e-004	8.2200e-003	2.1900e-003	2.0000e-005	5.3000e-004	2.0000e-005	5.5000e-004	1.5000e-004	2.0000e-005	1.7000e-004	0.0000	2.0915	2.0915	1.6000e-004	0.0000	2.0954
Worker	5.6000e-004	4.0000e-004	4.0000e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.1208	1.1208	3.0000e-005	0.0000	1.1216
Total	**2.3100e-003**	**0.0609**	**0.0191**	**1.8000e-004**	**5.2300e-003**	**1.9000e-004**	**5.4200e-003**	**1.4300e-003**	**1.8000e-004**	**1.6100e-003**	**0.0000**	**18.4448**	**18.4448**	**1.5600e-003**	**0.0000**	**18.4838**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0903**	**0.0102**	**0.1006**	**0.0497**	**9.4000e-003**	**0.0591**	**0.0000**	**16.7179**	**16.7179**	**5.4100e-003**	**0.0000**	**16.8530**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.2000e-004	2.2500e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6305	0.6305	2.0000e-005	0.0000	0.6309
Total	**3.1000e-004**	**2.2000e-004**	**2.2500e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6305**	**0.6305**	**2.0000e-005**	**0.0000**	**0.6309**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0407**	**0.0102**	**0.0509**	**0.0223**	**9.4000e-003**	**0.0317**	**0.0000**	**16.7178**	**16.7178**	**5.4100e-003**	**0.0000**	**16.8530**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	2.2000e-004	2.2500e-003	1.0000e-005	7.2000e-004	1.0000e-005	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6305	0.6305	2.0000e-005	0.0000	0.6309
Total	**3.1000e-004**	**2.2000e-004**	**2.2500e-003**	**1.0000e-005**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6305**	**0.6305**	**2.0000e-005**	**0.0000**	**0.6309**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1302	0.0000	0.1302	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0629	0.6960	0.4632	9.3000e-004		0.0298	0.0298		0.0274	0.0274	0.0000	81.7425	81.7425	0.0264	0.0000	82.4034
Total	**0.0629**	**0.6960**	**0.4632**	**9.3000e-004**	**0.1302**	**0.0298**	**0.1599**	**0.0540**	**0.0274**	**0.0814**	**0.0000**	**81.7425**	**81.7425**	**0.0264**	**0.0000**	**82.4034**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0120	2.9600e-003	4.0000e-005	7.9000e-004	4.0000e-005	8.2000e-004	2.2000e-004	3.0000e-005	2.5000e-004	0.0000	3.5035	3.5035	3.2000e-004	0.0000	3.5114
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0400e-003	7.4000e-004	7.4900e-003	2.0000e-005	2.4100e-003	2.0000e-005	2.4200e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1016	2.1016	6.0000e-005	0.0000	2.1031
Total	**1.3900e-003**	**0.0128**	**0.0105**	**6.0000e-005**	**3.2000e-003**	**6.0000e-005**	**3.2400e-003**	**8.6000e-004**	**5.0000e-005**	**9.0000e-004**	**0.0000**	**5.6050**	**5.6050**	**3.8000e-004**	**0.0000**	**5.6144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0629	0.6960	0.4632	9.3000e-004		0.0298	0.0298		0.0274	0.0274	0.0000	81.7424	81.7424	0.0264	0.0000	82.4033
Total	**0.0629**	**0.6960**	**0.4632**	**9.3000e-004**	**0.0586**	**0.0298**	**0.0884**	**0.0243**	**0.0274**	**0.0517**	**0.0000**	**81.7424**	**81.7424**	**0.0264**	**0.0000**	**82.4033**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.5000e-004	0.0120	2.9600e-003	4.0000e-005	7.9000e-004	4.0000e-005	8.2000e-004	2.2000e-004	3.0000e-005	2.5000e-004	0.0000	3.5035	3.5035	3.2000e-004	0.0000	3.5114
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0400e-003	7.4000e-004	7.4900e-003	2.0000e-005	2.4100e-003	2.0000e-005	2.4200e-003	6.4000e-004	2.0000e-005	6.5000e-004	0.0000	2.1016	2.1016	6.0000e-005	0.0000	2.1031
Total	**1.3900e-003**	**0.0128**	**0.0105**	**6.0000e-005**	**3.2000e-003**	**6.0000e-005**	**3.2400e-003**	**8.6000e-004**	**5.0000e-005**	**9.0000e-004**	**0.0000**	**5.6050**	**5.6050**	**3.8000e-004**	**0.0000**	**5.6144**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0893	0.8193	0.7790	1.2700e-003		0.0451	0.0451		0.0424	0.0424	0.0000	108.8695	108.8695	0.0263	0.0000	109.5262
Total	**0.0893**	**0.8193**	**0.7790**	**1.2700e-003**		**0.0451**	**0.0451**		**0.0424**	**0.0424**	**0.0000**	**108.8695**	**108.8695**	**0.0263**	**0.0000**	**109.5262**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4900e-003	0.1159	0.0309	3.0000e-004	7.4900e-003	2.5000e-004	7.7300e-003	2.1600e-003	2.3000e-004	2.4000e-003	0.0000	29.4904	29.4904	2.1900e-003	0.0000	29.5452
Worker	9.4800e-003	6.7600e-003	0.0681	2.1000e-004	0.0219	1.5000e-004	0.0220	5.8100e-003	1.4000e-004	5.9500e-003	0.0000	19.0963	19.0963	5.5000e-004	0.0000	19.1099
Total	**0.0130**	**0.1227**	**0.0990**	**5.1000e-004**	**0.0294**	**4.0000e-004**	**0.0297**	**7.9700e-003**	**3.7000e-004**	**8.3500e-003**	**0.0000**	**48.5867**	**48.5867**	**2.7400e-003**	**0.0000**	**48.6551**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0893	0.8193	0.7790	1.2700e-003		0.0451	0.0451		0.0424	0.0424	0.0000	108.8694	108.8694	0.0263	0.0000	109.5260
Total	**0.0893**	**0.8193**	**0.7790**	**1.2700e-003**		**0.0451**	**0.0451**		**0.0424**	**0.0424**	**0.0000**	**108.8694**	**108.8694**	**0.0263**	**0.0000**	**109.5260**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4900e-003	0.1159	0.0309	3.0000e-004	7.4900e-003	2.5000e-004	7.7300e-003	2.1600e-003	2.3000e-004	2.4000e-003	0.0000	29.4904	29.4904	2.1900e-003	0.0000	29.5452
Worker	9.4800e-003	6.7600e-003	0.0681	2.1000e-004	0.0219	1.5000e-004	0.0220	5.8100e-003	1.4000e-004	5.9500e-003	0.0000	19.0963	19.0963	5.5000e-004	0.0000	19.1099
Total	**0.0130**	**0.1227**	**0.0990**	**5.1000e-004**	**0.0294**	**4.0000e-004**	**0.0297**	**7.9700e-003**	**3.7000e-004**	**8.3500e-003**	**0.0000**	**48.5867**	**48.5867**	**2.7400e-003**	**0.0000**	**48.6551**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1757	1.6084	1.6854	2.7700e-003		0.0833	0.0833		0.0784	0.0784	0.0000	238.6770	238.6770	0.0572	0.0000	240.1065
Total	**0.1757**	**1.6084**	**1.6854**	**2.7700e-003**		**0.0833**	**0.0833**		**0.0784**	**0.0784**	**0.0000**	**238.6770**	**238.6770**	**0.0572**	**0.0000**	**240.1065**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.1100e-003	0.2399	0.0641	6.5000e-004	0.0164	4.6000e-004	0.0169	4.7400e-003	4.4000e-004	5.1800e-003	0.0000	64.0160	64.0160	4.6500e-003	0.0000	64.1321
Worker	0.0197	0.0135	0.1386	4.5000e-004	0.0479	3.3000e-004	0.0482	0.0127	3.1000e-004	0.0130	0.0000	40.3151	40.3151	1.1000e-003	0.0000	40.3426
Total	**0.0268**	**0.2534**	**0.2027**	**1.1000e-003**	**0.0643**	**7.9000e-004**	**0.0651**	**0.0175**	**7.5000e-004**	**0.0182**	**0.0000**	**104.3311**	**104.3311**	**5.7500e-003**	**0.0000**	**104.4747**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1757	1.6084	1.6854	2.7700e-003		0.0833	0.0833		0.0784	0.0784	0.0000	238.6767	238.6767	0.0572	0.0000	240.1062
Total	**0.1757**	**1.6084**	**1.6854**	**2.7700e-003**		**0.0833**	**0.0833**		**0.0784**	**0.0784**	**0.0000**	**238.6767**	**238.6767**	**0.0572**	**0.0000**	**240.1062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.1100e-003	0.2399	0.0641	6.5000e-004	0.0164	4.6000e-004	0.0169	4.7400e-003	4.4000e-004	5.1800e-003	0.0000	64.0160	64.0160	4.6500e-003	0.0000	64.1321
Worker	0.0197	0.0135	0.1386	4.5000e-004	0.0479	3.3000e-004	0.0482	0.0127	3.1000e-004	0.0130	0.0000	40.3151	40.3151	1.1000e-003	0.0000	40.3426
Total	**0.0268**	**0.2534**	**0.2027**	**1.1000e-003**	**0.0643**	**7.9000e-004**	**0.0651**	**0.0175**	**7.5000e-004**	**0.0182**	**0.0000**	**104.3311**	**104.3311**	**5.7500e-003**	**0.0000**	**104.4747**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving	1.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0124**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0276**	**20.0276**	**6.4800e-003**	**0.0000**	**20.1895**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.8800e-003	1.0400e-003	1.0000e-005	2.7000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0359	1.0359	8.0000e-005	0.0000	1.0377
Worker	5.3000e-004	3.6000e-004	3.7100e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0798	1.0798	3.0000e-005	0.0000	1.0805
Total	**6.5000e-004**	**4.2400e-003**	**4.7500e-003**	**2.0000e-005**	**1.5500e-003**	**2.0000e-005**	**1.5600e-003**	**4.2000e-004**	**2.0000e-005**	**4.3000e-004**	**0.0000**	**2.1156**	**2.1156**	**1.1000e-004**	**0.0000**	**2.1182**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	1.3800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0124**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0275**	**20.0275**	**6.4800e-003**	**0.0000**	**20.1895**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.8800e-003	1.0400e-003	1.0000e-005	2.7000e-004	1.0000e-005	2.7000e-004	8.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0359	1.0359	8.0000e-005	0.0000	1.0377
Worker	5.3000e-004	3.6000e-004	3.7100e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0798	1.0798	3.0000e-005	0.0000	1.0805
Total	**6.5000e-004**	**4.2400e-003**	**4.7500e-003**	**2.0000e-005**	**1.5500e-003**	**2.0000e-005**	**1.5600e-003**	**4.2000e-004**	**2.0000e-005**	**4.3000e-004**	**0.0000**	**2.1156**	**2.1156**	**1.1000e-004**	**0.0000**	**2.1182**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6523					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.6543**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9400e-003	5.2000e-004	1.0000e-005	1.3000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5179	0.5179	4.0000e-005	0.0000	0.5189
Worker	3.9000e-004	2.7000e-004	2.7800e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8098	0.8098	2.0000e-005	0.0000	0.8104
Total	**4.5000e-004**	**2.2100e-003**	**3.3000e-003**	**2.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1100e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**1.3277**	**1.3277**	**6.0000e-005**	**0.0000**	**1.3292**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6523					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.6543**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	1.9400e-003	5.2000e-004	1.0000e-005	1.3000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.5179	0.5179	4.0000e-005	0.0000	0.5189
Worker	3.9000e-004	2.7000e-004	2.7800e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	1.0000e-005	2.6000e-004	0.0000	0.8098	0.8098	2.0000e-005	0.0000	0.8104
Total	**4.5000e-004**	**2.2100e-003**	**3.3000e-003**	**2.0000e-005**	**1.0900e-003**	**1.0000e-005**	**1.1100e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**1.3277**	**1.3277**	**6.0000e-005**	**0.0000**	**1.3292**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2311	0.8995	2.5740	8.9300e-003	0.8072	7.0100e-003	0.8142	0.2161	6.5300e-003	0.2227	0.0000	825.1373	825.1373	0.0428	0.0000	826.2080
Unmitigated	0.2311	0.8995	2.5740	8.9300e-003	0.8072	7.0100e-003	0.8142	0.2161	6.5300e-003	0.2227	0.0000	825.1373	825.1373	0.0428	0.0000	826.2080

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,360.04	0.00	0.00	2,142,011	2,142,011
Parking Lot	0.00	0.00	0.00		
Total	1,360.04	0.00	0.00	2,142,011	2,142,011

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056
Parking Lot	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	94.9284	94.9284	3.7400e-003	8.3000e-004	95.2699
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	99.5740	99.5740	3.9300e-003	8.7000e-004	99.9323
NaturalGas Mitigated	2.9000e-003	0.0263	0.0221	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	28.6548	28.6548	5.5000e-004	5.3000e-004	28.8250
NaturalGas Unmitigated	2.9000e-003	0.0263	0.0221	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	28.6548	28.6548	5.5000e-004	5.3000e-004	28.8250

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	536970	2.9000e-003	0.0263	0.0221	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	28.6548	28.6548	5.5000e-004	5.3000e-004	28.8250
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.9000e-003**	**0.0263**	**0.0221**	**1.6000e-004**		**2.0000e-003**	**2.0000e-003**		**2.0000e-003**	**2.0000e-003**	**0.0000**	**28.6548**	**28.6548**	**5.5000e-004**	**5.3000e-004**	**28.8250**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	536970	2.9000e-003	0.0263	0.0221	1.6000e-004		2.0000e-003	2.0000e-003		2.0000e-003	2.0000e-003	0.0000	28.6548	28.6548	5.5000e-004	5.3000e-004	28.8250
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.9000e-003**	**0.0263**	**0.0221**	**1.6000e-004**		**2.0000e-003**	**2.0000e-003**		**2.0000e-003**	**2.0000e-003**	**0.0000**	**28.6548**	**28.6548**	**5.5000e-004**	**5.3000e-004**	**28.8250**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	464703	96.1837	3.7900e-003	8.4000e-004	96.5298
Parking Lot	16380	3.3903	1.3000e-004	3.0000e-005	3.4025
Total		**99.5740**	**3.9200e-003**	**8.7000e-004**	**99.9323**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	453481	93.8609	3.7000e-003	8.2000e-004	94.1986
Parking Lot	5157.5	1.0675	4.0000e-005	1.0000e-005	1.0713
Total		**94.9283**	**3.7400e-003**	**8.3000e-004**	**95.2699**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4681	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7300e-003	3.7300e-003	1.0000e-005	0.0000	3.9700e-003
Unmitigated	0.4681	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7300e-003	3.7300e-003	1.0000e-005	0.0000	3.9700e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1076					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3603					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8000e-004	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7300e-003	3.7300e-003	1.0000e-005	0.0000	3.9700e-003
Total	**0.4681**	**2.0000e-005**	**1.9200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.7300e-003**	**3.7300e-003**	**1.0000e-005**	**0.0000**	**3.9700e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1076					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3603					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8000e-004	2.0000e-005	1.9200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.7300e-003	3.7300e-003	1.0000e-005	0.0000	3.9700e-003
Total	**0.4681**	**2.0000e-005**	**1.9200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.7300e-003**	**3.7300e-003**	**1.0000e-005**	**0.0000**	**3.9700e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	22.0778	0.0700	1.8200e-003	24.3701
Unmitigated	23.6759	0.0873	2.2400e-003	26.5272

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	2.65264 / 6.82107	23.6759	0.0873	2.2400e-003	26.5272
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**23.6759**	**0.0873**	**2.2400e-003**	**26.5272**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	2.12211 / 6.82107	22.0778	0.0700	1.8200e-003	24.3701
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**22.0778**	**0.0700**	**1.8200e-003**	**24.3701**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	24.1397	1.4266	0.0000	59.8051
Unmitigated	24.1397	1.4266	0.0000	59.8051

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	118.92	24.1397	1.4266	0.0000	59.8051
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**24.1397**	**1.4266**	**0.0000**	**59.8051**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	118.92	24.1397	1.4266	0.0000	59.8051
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**24.1397**	**1.4266**	**0.0000**	**59.8051**

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/4/2021 8:36 AM

Richland Elementary School Reconstruction
San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	91.48	1000sqft	9.27	91,477.00	0
Parking Lot	117.00	Space	1.05	46,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	456.31	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensity factors based on power content label for SDG&E.

Land Use - Project site is approx 10.32 acres Project includes 117 parking spaces and 91,477 sf of facilities.

Construction Phase - CalEEMod default values.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed

Trips and VMT - CalEEMod default values.

On-road Fugitive Dust - CalEEMod default values.

Demolition - Demolition: 87,776 SF of building space

Grading - Phase 1: 45 CY cut/export, Phase 2: 685 CY fill/import.

Architectural Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Vehicle Trips - Updated trip generation based on traffic analysis.

Woodstoves - CalEEMod default values (no woodstoves of fireplaces).

Consumer Products - CalEEMod default values.

Area Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Landscape Equipment - CalEEMod default values.

Energy Use - Adjusted for 2019 Title 24 Standards.

Water And Wastewater - CalEEMod default values.

Solid Waste - CalEEMod default values.

Construction Off-road Equipment Mitigation - Water exposed area: 2 times per day.

Energy Mitigation - System size: 202.8 kW, Production: 22,445 kWh/year

Water Mitigation - Use of low-flow water fixtures.

Operational Off-Road Equipment - CalEEMod default values.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblEnergyUse	T24E	1.52	1.36
tblEnergyUse	T24NG	5.44	5.39
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialImported	0.00	685.00
tblLandUse	LandUseSquareFeet	91,480.00	91,477.00
tblLandUse	LotAcreage	2.10	9.27
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	456.31
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004

tblTripsAndVMT	HaulingTripNumber	399.00	400.00
tblTripsAndVMT	HaulingTripNumber	91.00	92.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	23.00	24.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblVehicleTrips	WD_TR	15.43	14.87

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2831	47.2309	31.6012	0.0660	18.2141	2.0455	20.2596	9.9699	1.8819	11.8517	0.0000	6,429.2736	6,429.2736	1.9704	0.0000	6,478.5325
2022	65.4760	18.0441	18.3838	0.0379	0.6389	0.8167	1.4556	0.1732	0.7683	0.9415	0.0000	3,702.0513	3,702.0513	0.7255	0.0000	3,718.8697
Maximum	**65.4760**	**47.2309**	**31.6012**	**0.0660**	**18.2141**	**2.0455**	**20.2596**	**9.9699**	**1.8819**	**11.8517**	**0.0000**	**6,429.2736**	**6,429.2736**	**1.9704**	**0.0000**	**6,478.5325**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2831	47.2309	31.6012	0.0660	8.2777	2.0455	10.3232	4.5080	1.8819	6.3899	0.0000	6,429.2736	6,429.2736	1.9704	0.0000	6,478.5325
2022	65.4760	18.0441	18.3838	0.0379	0.6389	0.8167	1.4556	0.1732	0.7683	0.9415	0.0000	3,702.0513	3,702.0513	0.7255	0.0000	3,718.8697
Maximum	**65.4760**	**47.2309**	**31.6012**	**0.0660**	**8.2777**	**2.0455**	**10.3232**	**4.5080**	**1.8819**	**6.3899**	**0.0000**	**6,429.2736**	**6,429.2736**	**1.9704**	**0.0000**	**6,478.5325**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.70**	**0.00**	**45.76**	**53.85**	**0.00**	**42.69**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Energy	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Mobile	1.8882	6.7337	20.2193	0.0717	6.3582	0.0539	6.4121	1.6992	0.0502	1.7494		7,304.3009	7,304.3009	0.3644		7,313.4104
Total	**4.4699**	**6.8781**	**20.3618**	**0.0726**	**6.3582**	**0.0649**	**6.4231**	**1.6992**	**0.0612**	**1.7604**		**7,477.4231**	**7,477.4231**	**0.3678**	**3.1700e-003**	**7,487.5641**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Energy	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Mobile	1.8882	6.7337	20.2193	0.0717	6.3582	0.0539	6.4121	1.6992	0.0502	1.7494		7,304.3009	7,304.3009	0.3644		7,313.4104
Total	**4.4699**	**6.8781**	**20.3618**	**0.0726**	**6.3582**	**0.0649**	**6.4231**	**1.6992**	**0.0612**	**1.7604**		**7,477.4231**	**7,477.4231**	**0.3678**	**3.1700e-003**	**7,487.5641**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	7/12/2021	5	10	
3	Grading	Grading	7/13/2021	8/23/2021	5	30	
4	Building Construction	Building Construction	8/24/2021	10/17/2022	5	300	
5	Paving	Paving	10/18/2022	11/14/2022	5	20	
6	Architectural Coating	Architectural Coating	11/15/2022	12/12/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 1.05

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,216; Non-Residential Outdoor: 45,739; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20

Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	16.00	8.00	400.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	92.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	58.00	24.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.3740	0.0000	4.3740	0.6624	0.0000	0.6624			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**4.3740**	**1.5513**	**5.9254**	**0.6624**	**1.4411**	**2.1035**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1485	5.1267	1.2542	0.0154	0.3495	0.0156	0.3651	0.0958	0.0150	0.1107		1,691.3606	1,691.3606	0.1494		1,695.0957
Vendor	0.0242	0.8146	0.2076	2.1700e-003	0.0542	1.7100e-003	0.0559	0.0156	1.6400e-003	0.0172		233.0816	233.0816	0.0167		233.4979
Worker	0.0553	0.0360	0.4244	1.3100e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		130.3105	130.3105	3.7200e-003		130.4035
Total	**0.2280**	**5.9773**	**1.8862**	**0.0189**	**0.5351**	**0.0183**	**0.5533**	**0.1462**	**0.0175**	**0.1637**		**2,054.7527**	**2,054.7527**	**0.1698**		**2,058.9972**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9683	0.0000	1.9683	0.2981	0.0000	0.2981			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**1.9683**	**1.5513**	**3.5197**	**0.2981**	**1.4411**	**1.7392**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1485	5.1267	1.2542	0.0154	0.3495	0.0156	0.3651	0.0958	0.0150	0.1107		1,691.3606	1,691.3606	0.1494		1,695.0957
Vendor	0.0242	0.8146	0.2076	2.1700e-003	0.0542	1.7100e-003	0.0559	0.0156	1.6400e-003	0.0172		233.0816	233.0816	0.0167		233.4979
Worker	0.0553	0.0360	0.4244	1.3100e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		130.3105	130.3105	3.7200e-003		130.4035
Total	**0.2280**	**5.9773**	**1.8862**	**0.0189**	**0.5351**	**0.0183**	**0.5533**	**0.1462**	**0.0175**	**0.1637**		**2,054.7527**	**2,054.7527**	**0.1698**		**2,058.9972**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0623	0.0405	0.4774	1.4700e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		146.5994	146.5994	4.1800e-003		146.7040
Total	**0.0623**	**0.0405**	**0.4774**	**1.4700e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**146.5994**	**146.5994**	**4.1800e-003**		**146.7040**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**8.1298**	**2.0445**	**10.1743**	**4.4688**	**1.8809**	**6.3497**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0623	0.0405	0.4774	1.4700e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		146.5994	146.5994	4.1800e-003		146.7040
Total	**0.0623**	**0.0405**	**0.4774**	**1.4700e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**146.5994**	**146.5994**	**4.1800e-003**		**146.7040**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6768	0.0000	8.6768	3.5970	0.0000	3.5970			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6768**	**1.9853**	**10.6621**	**3.5970**	**1.8265**	**5.4235**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0228	0.7861	0.1923	2.3600e-003	0.0536	2.4000e-003	0.0560	0.0147	2.2900e-003	0.0170		259.3420	259.3420	0.0229		259.9147
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0692	0.0449	0.5305	1.6300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		162.8882	162.8882	4.6500e-003		163.0044
Total	**0.0919**	**0.8310**	**0.7228**	**3.9900e-003**	**0.2179**	**3.5300e-003**	**0.2214**	**0.0583**	**3.3400e-003**	**0.0616**		**422.2301**	**422.2301**	**0.0276**		**422.9191**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9045	0.0000	3.9045	1.6187	0.0000	1.6187			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.9045**	**1.9853**	**5.8899**	**1.6187**	**1.8265**	**3.4452**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0228	0.7861	0.1923	2.3600e-003	0.0536	2.4000e-003	0.0560	0.0147	2.2900e-003	0.0170		259.3420	259.3420	0.0229		259.9147
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0692	0.0449	0.5305	1.6300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		162.8882	162.8882	4.6500e-003		163.0044
Total	**0.0919**	**0.8310**	**0.7228**	**3.9900e-003**	**0.2179**	**3.5300e-003**	**0.2214**	**0.0583**	**3.3400e-003**	**0.0616**		**422.2301**	**422.2301**	**0.0276**		**422.9191**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0726	2.4439	0.6228	6.5000e-003	0.1625	5.1300e-003	0.1676	0.0468	4.9100e-003	0.0517		699.2447	699.2447	0.0500		700.4938
Worker	0.2006	0.1303	1.5384	4.7400e-003	0.4765	3.2900e-003	0.4798	0.1264	3.0300e-003	0.1294		472.3757	472.3757	0.0135		472.7127
Total	**0.2732**	**2.5743**	**2.1612**	**0.0112**	**0.6389**	**8.4200e-003**	**0.6474**	**0.1732**	**7.9400e-003**	**0.1811**		**1,171.6204**	**1,171.6204**	**0.0634**		**1,173.2065**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0726	2.4439	0.6228	6.5000e-003	0.1625	5.1300e-003	0.1676	0.0468	4.9100e-003	0.0517		699.2447	699.2447	0.0500		700.4938
Worker	0.2006	0.1303	1.5384	4.7400e-003	0.4765	3.2900e-003	0.4798	0.1264	3.0300e-003	0.1294		472.3757	472.3757	0.0135		472.7127
Total	**0.2732**	**2.5743**	**2.1612**	**0.0112**	**0.6389**	**8.4200e-003**	**0.6474**	**0.1732**	**7.9400e-003**	**0.1811**		**1,171.6204**	**1,171.6204**	**0.0634**		**1,173.2065**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0675	2.3096	0.5899	6.4300e-003	0.1625	4.4200e-003	0.1669	0.0468	4.2200e-003	0.0510		692.6731	692.6731	0.0484		693.8839
Worker	0.1897	0.1189	1.4305	4.5700e-003	0.4765	3.2200e-003	0.4797	0.1264	2.9700e-003	0.1293		455.0447	455.0447	0.0124		455.3536
Total	**0.2572**	**2.4284**	**2.0204**	**0.0110**	**0.6389**	**7.6400e-003**	**0.6466**	**0.1732**	**7.1900e-003**	**0.1803**		**1,147.7177**	**1,147.7177**	**0.0608**		**1,149.2375**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0675	2.3096	0.5899	6.4300e-003	0.1625	4.4200e-003	0.1669	0.0468	4.2200e-003	0.0510		692.6731	692.6731	0.0484		693.8839
Worker	0.1897	0.1189	1.4305	4.5700e-003	0.4765	3.2200e-003	0.4797	0.1264	2.9700e-003	0.1293		455.0447	455.0447	0.0124		455.3536
Total	**0.2572**	**2.4284**	**2.0204**	**0.0110**	**0.6389**	**7.6400e-003**	**0.6466**	**0.1732**	**7.1900e-003**	**0.1803**		**1,147.7177**	**1,147.7177**	**0.0608**		**1,149.2375**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.1376					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2404**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0113	0.3849	0.0983	1.0700e-003	0.0271	7.4000e-004	0.0278	7.8000e-003	7.0000e-004	8.5000e-003		115.4455	115.4455	8.0700e-003		115.6473
Worker	0.0523	0.0328	0.3946	1.2600e-003	0.1314	8.9000e-004	0.1323	0.0349	8.2000e-004	0.0357		125.5296	125.5296	3.4100e-003		125.6148
Total	**0.0636**	**0.4177**	**0.4929**	**2.3300e-003**	**0.1585**	**1.6300e-003**	**0.1601**	**0.0427**	**1.5200e-003**	**0.0442**		**240.9751**	**240.9751**	**0.0115**		**241.2621**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.1376					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2404**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0113	0.3849	0.0983	1.0700e-003	0.0271	7.4000e-004	0.0278	7.8000e-003	7.0000e-004	8.5000e-003		115.4455	115.4455	8.0700e-003		115.6473
Worker	0.0523	0.0328	0.3946	1.2600e-003	0.1314	8.9000e-004	0.1323	0.0349	8.2000e-004	0.0357		125.5296	125.5296	3.4100e-003		125.6148
Total	**0.0636**	**0.4177**	**0.4929**	**2.3300e-003**	**0.1585**	**1.6300e-003**	**0.1601**	**0.0427**	**1.5200e-003**	**0.0442**		**240.9751**	**240.9751**	**0.0115**		**241.2621**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	65.2266					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**65.4312**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.6200e-003	0.1925	0.0492	5.4000e-004	0.0135	3.7000e-004	0.0139	3.9000e-003	3.5000e-004	4.2500e-003		57.7228	57.7228	4.0400e-003		57.8237
Worker	0.0392	0.0246	0.2960	9.4000e-004	0.0986	6.7000e-004	0.0992	0.0262	6.1000e-004	0.0268		94.1472	94.1472	2.5600e-003		94.2111
Total	**0.0449**	**0.2171**	**0.3451**	**1.4800e-003**	**0.1121**	**1.0400e-003**	**0.1132**	**0.0301**	**9.6000e-004**	**0.0310**		**151.8699**	**151.8699**	**6.6000e-003**		**152.0348**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	65.2266					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**65.4312**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.6200e-003	0.1925	0.0492	5.4000e-004	0.0135	3.7000e-004	0.0139	3.9000e-003	3.5000e-004	4.2500e-003		57.7228	57.7228	4.0400e-003		57.8237
Worker	0.0392	0.0246	0.2960	9.4000e-004	0.0986	6.7000e-004	0.0992	0.0262	6.1000e-004	0.0268		94.1472	94.1472	2.5600e-003		94.2111
Total	**0.0449**	**0.2171**	**0.3451**	**1.4800e-003**	**0.1121**	**1.0400e-003**	**0.1132**	**0.0301**	**9.6000e-004**	**0.0310**		**151.8699**	**151.8699**	**6.6000e-003**		**152.0348**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8882	6.7337	20.2193	0.0717	6.3582	0.0539	6.4121	1.6992	0.0502	1.7494		7,304.3009	7,304.3009	0.3644		7,313.4104
Unmitigated	1.8882	6.7337	20.2193	0.0717	6.3582	0.0539	6.4121	1.6992	0.0502	1.7494		7,304.3009	7,304.3009	0.3644		7,313.4104

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,360.04	0.00	0.00	2,142,011	2,142,011
Parking Lot	0.00	0.00	0.00		
Total	1,360.04	0.00	0.00	2,142,011	2,142,011

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056
Parking Lot	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
NaturalGas Unmitigated	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1471.15	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0159**	**0.1442**	**0.1212**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**		**173.0766**	**173.0766**	**3.3200e-003**	**3.1700e-003**	**174.1051**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1.47115	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0159**	**0.1442**	**0.1212**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**		**173.0766**	**173.0766**	**3.3200e-003**	**3.1700e-003**	**174.1051**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Unmitigated	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5897					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9742					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9700e-003	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Total	**2.5659**	**1.9000e-004**	**0.0213**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**		**0.0456**	**0.0456**	**1.2000e-004**		**0.0486**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5897					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9742					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9700e-003	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Total	**2.5659**	**1.9000e-004**	**0.0213**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**		**0.0456**	**0.0456**	**1.2000e-004**		**0.0486**

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/4/2021 8:37 AM

Richland Elementary School Reconstruction
San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	91.48	1000sqft	9.27	91,477.00	0
Parking Lot	117.00	Space	1.05	46,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	456.31	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensity factors based on power content label for SDG&E.

Land Use - Project site is approx 10.32 acres Project includes 117 parking spaces and 91,477 sf of facilities.

Construction Phase - CalEEMod default values.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Defualt equipment assumed

Trips and VMT - CalEEMod default values.

On-road Fugitive Dust - CalEEMod default values.

Demolition - Demolition: 87,776 SF of building space

Grading - Phase 1: 45 CY cut/export, Phase 2: 685 CY fill/import.

Architectural Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Vehicle Trips - Updated trip generation based on traffic analysis.

Woodstoves - CalEEMod default values (no woodstoves of fireplaces).

Consumer Products - CalEEMod default values.

Area Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Landscape Equipment - CalEEMod default values.

Energy Use - Adjusted for 2019 Title 24 Standards.

Water And Wastewater - CalEEMod default values.

Solid Waste - CalEEMod default values.

Construction Off-road Equipment Mitigation - Water exposed area: 2 times per day.

Energy Mitigation - System size: 202.8 kW, Production: 22,445 kWh/year

Water Mitigation - Use of low-flow water fixtures.

Operational Off-Road Equipment - CalEEMod default values.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	150.00
tblEnergyUse	T24E	1.52	1.36
tblEnergyUse	T24NG	5.44	5.39
tblGrading	MaterialExported	0.00	45.00
tblGrading	MaterialImported	0.00	685.00
tblLandUse	LandUseSquareFeet	91,480.00	91,477.00
tblLandUse	LotAcreage	2.10	9.27
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	456.31

tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	HaulingTripNumber	399.00	400.00
tblTripsAndVMT	HaulingTripNumber	91.00	92.00
tblTripsAndVMT	VendorTripNumber	0.00	8.00
tblTripsAndVMT	VendorTripNumber	23.00	24.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblTripsAndVMT	WorkerTripNumber	15.00	16.00
tblVehicleTrips	WD_TR	15.43	14.87

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2930	47.2432	31.5815	0.0659	18.2141	2.0455	20.2596	9.9699	1.8819	11.8517	0.0000	6,414.8142	6,414.8142	1.9709	0.0000	6,464.0855
2022	65.4817	18.0508	18.3618	0.0375	0.6389	0.8168	1.4558	0.1732	0.7685	0.9417	0.0000	3,656.1647	3,656.1647	0.7258	0.0000	3,673.0392
Maximum	**65.4817**	**47.2432**	**31.5815**	**0.0659**	**18.2141**	**2.0455**	**20.2596**	**9.9699**	**1.8819**	**11.8517**	**0.0000**	**6,414.8142**	**6,414.8142**	**1.9709**	**0.0000**	**6,464.0855**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	4.2930	47.2432	31.5815	0.0659	8.2777	2.0455	10.3232	4.5080	1.8819	6.3899	0.0000	6,414.8142	6,414.8142	1.9709	0.0000	6,464.0855
2022	65.4817	18.0508	18.3618	0.0375	0.6389	0.8168	1.4558	0.1732	0.7685	0.9417	0.0000	3,656.1647	3,656.1647	0.7258	0.0000	3,673.0392
Maximum	**65.4817**	**47.2432**	**31.5815**	**0.0659**	**8.2777**	**2.0455**	**10.3232**	**4.5080**	**1.8819**	**6.3899**	**0.0000**	**6,414.8142**	**6,414.8142**	**1.9709**	**0.0000**	**6,464.0855**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.70**	**0.00**	**45.76**	**53.85**	**0.00**	**42.69**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Energy	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Mobile	1.8250	6.9001	20.0651	0.0680	6.3582	0.0542	6.4124	1.6992	0.0505	1.7497		6,926.5997	6,926.5997	0.3676		6,935.7893
Total	**4.4067**	**7.0445**	**20.2076**	**0.0689**	**6.3582**	**0.0652**	**6.4235**	**1.6992**	**0.0615**	**1.7607**		**7,099.7219**	**7,099.7219**	**0.3710**	**3.1700e-003**	**7,109.9430**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Energy	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Mobile	1.8250	6.9001	20.0651	0.0680	6.3582	0.0542	6.4124	1.6992	0.0505	1.7497		6,926.5997	6,926.5997	0.3676		6,935.7893
Total	**4.4067**	**7.0445**	**20.2076**	**0.0689**	**6.3582**	**0.0652**	**6.4235**	**1.6992**	**0.0615**	**1.7607**		**7,099.7219**	**7,099.7219**	**0.3710**	**3.1700e-003**	**7,109.9430**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	7/12/2021	5	10	
3	Grading	Grading	7/13/2021	8/23/2021	5	30	
4	Building Construction	Building Construction	8/24/2021	10/17/2022	5	300	
5	Paving	Paving	10/18/2022	11/14/2022	5	20	
6	Architectural Coating	Architectural Coating	11/15/2022	12/12/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 1.05

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,216; Non-Residential Outdoor: 45,739; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20

Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	16.00	8.00	400.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	92.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	58.00	24.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	12.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.3740	0.0000	4.3740	0.6624	0.0000	0.6624			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**4.3740**	**1.5513**	**5.9254**	**0.6624**	**1.4411**	**2.1035**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1526	5.1709	1.3332	0.0152	0.3495	0.0160	0.3655	0.0958	0.0153	0.1111		1,662.1385	1,662.1385	0.1543		1,665.9963
Vendor	0.0255	0.8125	0.2312	2.1100e-003	0.0542	1.7800e-003	0.0559	0.0156	1.7000e-003	0.0173		227.0554	227.0554	0.0177		227.4977
Worker	0.0628	0.0404	0.3989	1.2300e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		122.3276	122.3276	3.5100e-003		122.4155
Total	**0.2408**	**6.0237**	**1.9632**	**0.0185**	**0.5351**	**0.0187**	**0.5537**	**0.1462**	**0.0178**	**0.1641**		**2,011.5215**	**2,011.5215**	**0.1755**		**2,015.9095**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9683	0.0000	1.9683	0.2981	0.0000	0.2981			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**1.9683**	**1.5513**	**3.5197**	**0.2981**	**1.4411**	**1.7392**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1526	5.1709	1.3332	0.0152	0.3495	0.0160	0.3655	0.0958	0.0153	0.1111		1,662.1385	1,662.1385	0.1543		1,665.9963
Vendor	0.0255	0.8125	0.2312	2.1100e-003	0.0542	1.7800e-003	0.0559	0.0156	1.7000e-003	0.0173		227.0554	227.0554	0.0177		227.4977
Worker	0.0628	0.0404	0.3989	1.2300e-003	0.1314	9.1000e-004	0.1323	0.0349	8.4000e-004	0.0357		122.3276	122.3276	3.5100e-003		122.4155
Total	**0.2408**	**6.0237**	**1.9632**	**0.0185**	**0.5351**	**0.0187**	**0.5537**	**0.1462**	**0.0178**	**0.1641**		**2,011.5215**	**2,011.5215**	**0.1755**		**2,015.9095**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**18.0663**	**2.0445**	**20.1107**	**9.9307**	**1.8809**	**11.8116**		**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0706	0.0454	0.4488	1.3800e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		137.6186	137.6186	3.9500e-003		137.7174
Total	**0.0706**	**0.0454**	**0.4488**	**1.3800e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**137.6186**	**137.6186**	**3.9500e-003**		**137.7174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	**3.8882**	**40.4971**	**21.1543**	**0.0380**	**8.1298**	**2.0445**	**10.1743**	**4.4688**	**1.8809**	**6.3497**	**0.0000**	**3,685.6569**	**3,685.6569**	**1.1920**		**3,715.4573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0706	0.0454	0.4488	1.3800e-003	0.1479	1.0200e-003	0.1489	0.0392	9.4000e-004	0.0402		137.6186	137.6186	3.9500e-003		137.7174
Total	**0.0706**	**0.0454**	**0.4488**	**1.3800e-003**	**0.1479**	**1.0200e-003**	**0.1489**	**0.0392**	**9.4000e-004**	**0.0402**		**137.6186**	**137.6186**	**3.9500e-003**		**137.7174**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6768	0.0000	8.6768	3.5970	0.0000	3.5970			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265		6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**8.6768**	**1.9853**	**10.6621**	**3.5970**	**1.8265**	**5.4235**		**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0234	0.7929	0.2044	2.3200e-003	0.0536	2.4500e-003	0.0560	0.0147	2.3400e-003	0.0170		254.8612	254.8612	0.0237		255.4528
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0505	0.4987	1.5300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		152.9095	152.9095	4.3900e-003		153.0193
Total	**0.1018**	**0.8433**	**0.7031**	**3.8500e-003**	**0.2179**	**3.5800e-003**	**0.2215**	**0.0583**	**3.3900e-003**	**0.0617**		**407.7707**	**407.7707**	**0.0281**		**408.4721**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9045	0.0000	3.9045	1.6187	0.0000	1.6187			0.0000			0.0000
Off-Road	4.1912	46.3998	30.8785	0.0620		1.9853	1.9853		1.8265	1.8265	0.0000	6,007.0434	6,007.0434	1.9428		6,055.6134
Total	**4.1912**	**46.3998**	**30.8785**	**0.0620**	**3.9045**	**1.9853**	**5.8899**	**1.6187**	**1.8265**	**3.4452**	**0.0000**	**6,007.0434**	**6,007.0434**	**1.9428**		**6,055.6134**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0234	0.7929	0.2044	2.3200e-003	0.0536	2.4500e-003	0.0560	0.0147	2.3400e-003	0.0170		254.8612	254.8612	0.0237		255.4528
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0505	0.4987	1.5300e-003	0.1643	1.1300e-003	0.1654	0.0436	1.0500e-003	0.0446		152.9095	152.9095	4.3900e-003		153.0193
Total	**0.1018**	**0.8433**	**0.7031**	**3.8500e-003**	**0.2179**	**3.5800e-003**	**0.2215**	**0.0583**	**3.3900e-003**	**0.0617**		**407.7707**	**407.7707**	**0.0281**		**408.4721**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0765	2.4374	0.6935	6.3300e-003	0.1625	5.3400e-003	0.1678	0.0468	5.1100e-003	0.0519		681.1663	681.1663	0.0531		682.4929
Worker	0.2275	0.1463	1.4461	4.4500e-003	0.4765	3.2900e-003	0.4798	0.1264	3.0300e-003	0.1294		443.4376	443.4376	0.0127		443.7561
Total	**0.3040**	**2.5837**	**2.1396**	**0.0108**	**0.6389**	**8.6300e-003**	**0.6476**	**0.1732**	**8.1400e-003**	**0.1813**		**1,124.6039**	**1,124.6039**	**0.0658**		**1,126.2490**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0765	2.4374	0.6935	6.3300e-003	0.1625	5.3400e-003	0.1678	0.0468	5.1100e-003	0.0519		681.1663	681.1663	0.0531		682.4929
Worker	0.2275	0.1463	1.4461	4.4500e-003	0.4765	3.2900e-003	0.4798	0.1264	3.0300e-003	0.1294		443.4376	443.4376	0.0127		443.7561
Total	**0.3040**	**2.5837**	**2.1396**	**0.0108**	**0.6389**	**8.6300e-003**	**0.6476**	**0.1732**	**8.1400e-003**	**0.1813**		**1,124.6039**	**1,124.6039**	**0.0658**		**1,126.2490**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0712	2.3018	0.6566	6.2600e-003	0.1625	4.6000e-003	0.1671	0.0468	4.4000e-003	0.0512		674.6463	674.6463	0.0514		675.9306
Worker	0.2156	0.1334	1.3418	4.2900e-003	0.4765	3.2200e-003	0.4797	0.1264	2.9700e-003	0.1293		427.1848	427.1848	0.0117		427.4764
Total	**0.2868**	**2.4352**	**1.9984**	**0.0106**	**0.6389**	**7.8200e-003**	**0.6468**	**0.1732**	**7.3700e-003**	**0.1805**		**1,101.8311**	**1,101.8311**	**0.0630**		**1,103.4070**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0712	2.3018	0.6566	6.2600e-003	0.1625	4.6000e-003	0.1671	0.0468	4.4000e-003	0.0512		674.6463	674.6463	0.0514		675.9306
Worker	0.2156	0.1334	1.3418	4.2900e-003	0.4765	3.2200e-003	0.4797	0.1264	2.9700e-003	0.1293		427.1848	427.1848	0.0117		427.4764
Total	**0.2868**	**2.4352**	**1.9984**	**0.0106**	**0.6389**	**7.8200e-003**	**0.6468**	**0.1732**	**7.3700e-003**	**0.1805**		**1,101.8311**	**1,101.8311**	**0.0630**		**1,103.4070**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.1376					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2404**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0119	0.3836	0.1094	1.0400e-003	0.0271	7.7000e-004	0.0279	7.8000e-003	7.3000e-004	8.5300e-003		112.4411	112.4411	8.5600e-003		112.6551
Worker	0.0595	0.0368	0.3702	1.1800e-003	0.1314	8.9000e-004	0.1323	0.0349	8.2000e-004	0.0357		117.8441	117.8441	3.2200e-003		117.9245
Total	**0.0713**	**0.4204**	**0.4796**	**2.2200e-003**	**0.1585**	**1.6600e-003**	**0.1602**	**0.0427**	**1.5500e-003**	**0.0442**		**230.2851**	**230.2851**	**0.0118**		**230.5796**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.1376					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2404**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0119	0.3836	0.1094	1.0400e-003	0.0271	7.7000e-004	0.0279	7.8000e-003	7.3000e-004	8.5300e-003		112.4411	112.4411	8.5600e-003		112.6551
Worker	0.0595	0.0368	0.3702	1.1800e-003	0.1314	8.9000e-004	0.1323	0.0349	8.2000e-004	0.0357		117.8441	117.8441	3.2200e-003		117.9245
Total	**0.0713**	**0.4204**	**0.4796**	**2.2200e-003**	**0.1585**	**1.6600e-003**	**0.1602**	**0.0427**	**1.5500e-003**	**0.0442**		**230.2851**	**230.2851**	**0.0118**		**230.5796**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	65.2266					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**65.4312**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.9300e-003	0.1918	0.0547	5.2000e-004	0.0135	3.8000e-004	0.0139	3.9000e-003	3.7000e-004	4.2600e-003		56.2205	56.2205	4.2800e-003		56.3276
Worker	0.0446	0.0276	0.2776	8.9000e-004	0.0986	6.7000e-004	0.0992	0.0262	6.1000e-004	0.0268		88.3831	88.3831	2.4100e-003		88.4434
Total	**0.0505**	**0.2194**	**0.3323**	**1.4100e-003**	**0.1121**	**1.0500e-003**	**0.1132**	**0.0301**	**9.8000e-004**	**0.0310**		**144.6036**	**144.6036**	**6.6900e-003**		**144.7710**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	65.2266					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**65.4312**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.9300e-003	0.1918	0.0547	5.2000e-004	0.0135	3.8000e-004	0.0139	3.9000e-003	3.7000e-004	4.2600e-003		56.2205	56.2205	4.2800e-003		56.3276
Worker	0.0446	0.0276	0.2776	8.9000e-004	0.0986	6.7000e-004	0.0992	0.0262	6.1000e-004	0.0268		88.3831	88.3831	2.4100e-003		88.4434
Total	**0.0505**	**0.2194**	**0.3323**	**1.4100e-003**	**0.1121**	**1.0500e-003**	**0.1132**	**0.0301**	**9.8000e-004**	**0.0310**		**144.6036**	**144.6036**	**6.6900e-003**		**144.7710**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8250	6.9001	20.0651	0.0680	6.3582	0.0542	6.4124	1.6992	0.0505	1.7497		6,926.5997	6,926.5997	0.3676		6,935.7893
Unmitigated	1.8250	6.9001	20.0651	0.0680	6.3582	0.0542	6.4124	1.6992	0.0505	1.7497		6,926.5997	6,926.5997	0.3676		6,935.7893

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,360.04	0.00	0.00	2,142,011	2,142,011
Parking Lot	0.00	0.00	0.00		
Total	1,360.04	0.00	0.00	2,142,011	2,142,011

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056
Parking Lot	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
NaturalGas Unmitigated	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1471.15	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0159**	**0.1442**	**0.1212**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**		**173.0766**	**173.0766**	**3.3200e-003**	**3.1700e-003**	**174.1051**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1.47115	0.0159	0.1442	0.1212	8.7000e-004		0.0110	0.0110		0.0110	0.0110		173.0766	173.0766	3.3200e-003	3.1700e-003	174.1051
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0159**	**0.1442**	**0.1212**	**8.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**		**173.0766**	**173.0766**	**3.3200e-003**	**3.1700e-003**	**174.1051**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Unmitigated	2.5659	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5897					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9742					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9700e-003	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Total	**2.5659**	**1.9000e-004**	**0.0213**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**		**0.0456**	**0.0456**	**1.2000e-004**		**0.0486**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5897					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9742					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9700e-003	1.9000e-004	0.0213	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		0.0456	0.0456	1.2000e-004		0.0486
Total	**2.5659**	**1.9000e-004**	**0.0213**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**		**0.0456**	**0.0456**	**1.2000e-004**		**0.0486**

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Date: 12/22/2020 11:09 AM

Richland Elementary School Reconstruction - Existing

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	87.78	1000sqft	9.59	87,776.00	0
Parking Lot	81.00	Space	0.73	32,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	456.31	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensity factors based on power content label for SDG&E.

Land Use - Project site is approx 10.32 acres existing school includes 87,776 sf of buildings and 81 parking spaces.

Construction Phase - Modeling operations only.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Modeling operations only.

Trips and VMT - Modeling operations only.

On-road Fugitive Dust - Modeling operations only.

Demolition - Modeling operations only.

Grading - Modeling operations only.

Architectural Coating - Modeling operations only.

Vehicle Trips - Updated trip generation based on traffic analysis.

Woodstoves - CalEEMod default values (no woodstoves of fireplaces).

Consumer Products - CalEEMod default values.

Area Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Landscape Equipment - CalEEMod default values.

Energy Use - CalEEMod default values.

Water And Wastewater - CalEEMod default values.

Solid Waste - CalEEMod default values.

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - CalEEMod default values.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	6/28/2021	5/31/2021
tblLandUse	LotAcreage	2.02	9.59
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	456.31
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblVehicleTrips	WD_TR	15.43	15.49

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4479	1.0000e-005	1.5500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.0200e-003	3.0200e-003	1.0000e-005	0.0000	3.2100e-003
Energy	2.8000e-003	0.0255	0.0214	1.5000e-004		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	125.2759	125.2759	4.3800e-003	1.3600e-003	125.7917
Mobile	0.2311	0.8992	2.5733	8.9300e-003	0.8069	7.0100e-003	0.8140	0.2161	6.5300e-003	0.2226	0.0000	824.8980	824.8980	0.0428	0.0000	825.9685
Waste						0.0000	0.0000		0.0000	0.0000	23.1633	0.0000	23.1633	1.3689	0.0000	57.3861
Water						0.0000	0.0000		0.0000	0.0000	0.8075	21.9108	22.7183	0.0838	2.1500e-003	25.4542
Total	**0.6817**	**0.9247**	**2.5962**	**9.0800e-003**	**0.8069**	**8.9600e-003**	**0.8159**	**0.2161**	**8.4800e-003**	**0.2246**	**23.9708**	**972.0877**	**996.0585**	**1.4999**	**3.5100e-003**	**1,034.6037**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4479	1.0000e-005	1.5500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.0200e-003	3.0200e-003	1.0000e-005	0.0000	3.2100e-003
Energy	2.8000e-003	0.0255	0.0214	1.5000e-004		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	125.2759	125.2759	4.3800e-003	1.3600e-003	125.7917
Mobile	0.2311	0.8992	2.5733	8.9300e-003	0.8069	7.0100e-003	0.8140	0.2161	6.5300e-003	0.2226	0.0000	824.8980	824.8980	0.0428	0.0000	825.9685
Waste						0.0000	0.0000		0.0000	0.0000	23.1633	0.0000	23.1633	1.3689	0.0000	57.3861
Water						0.0000	0.0000		0.0000	0.0000	0.8075	21.9108	22.7183	0.0838	2.1500e-003	25.4542
Total	**0.6817**	**0.9247**	**2.5962**	**9.0800e-003**	**0.8069**	**8.9600e-003**	**0.8159**	**0.2161**	**8.4800e-003**	**0.2246**	**23.9708**	**972.0877**	**996.0585**	**1.4999**	**3.5100e-003**	**1,034.6037**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2311	0.8992	2.5733	8.9300e-003	0.8069	7.0100e-003	0.8140	0.2161	6.5300e-003	0.2226	0.0000	824.8980	824.8980	0.0428	0.0000	825.9685
Unmitigated	0.2311	0.8992	2.5733	8.9300e-003	0.8069	7.0100e-003	0.8140	0.2161	6.5300e-003	0.2226	0.0000	824.8980	824.8980	0.0428	0.0000	825.9685

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,359.65	0.00	0.00	2,141,390	2,141,390
Parking Lot	0.00	0.00	0.00		
Total	1,359.65	0.00	0.00	2,141,390	2,141,390

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056
Parking Lot	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.5462	97.5462	3.8500e-003	8.6000e-004	97.8972
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.5462	97.5462	3.8500e-003	8.6000e-004	97.8972
NaturalGas Mitigated	2.8000e-003	0.0255	0.0214	1.5000e-004		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	27.7296	27.7296	5.3000e-004	5.1000e-004	27.8944
NaturalGas Unmitigated	2.8000e-003	0.0255	0.0214	1.5000e-004		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	27.7296	27.7296	5.3000e-004	5.1000e-004	27.8944

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	519634	2.8000e-003	0.0255	0.0214	1.5000e-004		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	27.7296	27.7296	5.3000e-004	5.1000e-004	27.8944
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.8000e-003**	**0.0255**	**0.0214**	**1.5000e-004**		**1.9400e-003**	**1.9400e-003**		**1.9400e-003**	**1.9400e-003**	**0.0000**	**27.7296**	**27.7296**	**5.3000e-004**	**5.1000e-004**	**27.8944**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	519634	2.8000e-003	0.0255	0.0214	1.5000e-004		1.9400e-003	1.9400e-003		1.9400e-003	1.9400e-003	0.0000	27.7296	27.7296	5.3000e-004	5.1000e-004	27.8944
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.8000e-003**	**0.0255**	**0.0214**	**1.5000e-004**		**1.9400e-003**	**1.9400e-003**		**1.9400e-003**	**1.9400e-003**	**0.0000**	**27.7296**	**27.7296**	**5.3000e-004**	**5.1000e-004**	**27.8944**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	459946	95.1991	3.7600e-003	8.3000e-004	95.5417
Parking Lot	11340	2.3471	9.0000e-005	2.0000e-005	2.3556
Total		**97.5462**	**3.8500e-003**	**8.5000e-004**	**97.8972**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	459946	95.1991	3.7600e-003	8.3000e-004	95.5417
Parking Lot	11340	2.3471	9.0000e-005	2.0000e-005	2.3556
Total		**97.5462**	**3.8500e-003**	**8.5000e-004**	**97.8972**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4479	1.0000e-005	1.5500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.0200e-003	3.0200e-003	1.0000e-005	0.0000	3.2100e-003
Unmitigated	0.4479	1.0000e-005	1.5500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.0200e-003	3.0200e-003	1.0000e-005	0.0000	3.2100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1028					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3449					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.0200e-003	3.0200e-003	1.0000e-005	0.0000	3.2100e-003
Total	**0.4479**	**1.0000e-005**	**1.5500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.0200e-003**	**3.0200e-003**	**1.0000e-005**	**0.0000**	**3.2100e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1028					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3449					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.0200e-003	3.0200e-003	1.0000e-005	0.0000	3.2100e-003
Total	**0.4479**	**1.0000e-005**	**1.5500e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.0200e-003**	**3.0200e-003**	**1.0000e-005**	**0.0000**	**3.2100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	22.7183	0.0838	2.1500e-003	25.4542
Unmitigated	22.7183	0.0838	2.1500e-003	25.4542

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	2.54535 / 6.54518	22.7183	0.0838	2.1500e-003	25.4542
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**22.7183**	**0.0838**	**2.1500e-003**	**25.4542**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	2.54535 / 6.54518	22.7183	0.0838	2.1500e-003	25.4542
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**22.7183**	**0.0838**	**2.1500e-003**	**25.4542**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	23.1633	1.3689	0.0000	57.3861
Unmitigated	23.1633	1.3689	0.0000	57.3861

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	114.11	23.1633	1.3689	0.0000	57.3861
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**23.1633**	**1.3689**	**0.0000**	**57.3861**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	114.11	23.1633	1.3689	0.0000	57.3861
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**23.1633**	**1.3689**	**0.0000**	**57.3861**

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/4/2021 8:28 AM

Richland Elementary School Reconstruction - Existing

San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	87.78	1000sqft	9.59	87,776.00	0
Parking Lot	81.00	Space	0.73	32,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	456.31	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensity factors based on power content label for SDG&E.

Land Use - Project site is approx 10.32 acres existing school includes 87,776 sf of buildings and 81 parking spaces.

Construction Phase - Modeling operations only.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Modeling operations only.

Trips and VMT - Modeling operations only.

On-road Fugitive Dust - Modeling operations only.

Demolition - Modeling operations only.

Grading - Modeling operations only.

Architectural Coating - Modeling operations only.

Vehicle Trips - Updated trip generation based on traffic analysis.

Woodstoves - CalEEMod default values (no woodstoves of fireplaces).

Consumer Products - CalEEMod default values.

Area Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Landscape Equipment - CalEEMod default values.

Energy Use - CalEEMod default values.

Water And Wastewater - CalEEMod default values.

Solid Waste - CalEEMod default values.

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - CalEEMod default values.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblLandUse	LandUseSquareFeet	87,780.00	87,776.00
tblLandUse	LotAcreage	2.02	9.59
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	456.31
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblVehicleTrips	WD_TR	15.43	15.49

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Energy	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Mobile	1.8882	6.7337	20.2196	0.0718	6.3583	0.0539	6.4122	1.6992	0.0502	1.7494		7,304.3944	7,304.3944	0.3644		7,313.5040
Total	**4.3585**	**6.8735**	**20.3541**	**0.0726**	**6.3583**	**0.0645**	**6.4228**	**1.6992**	**0.0608**	**1.7600**		**7,471.9201**	**7,471.9201**	**0.3677**	**3.0700e-003**	**7,482.0274**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Energy	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Mobile	1.8882	6.7337	20.2196	0.0718	6.3583	0.0539	6.4122	1.6992	0.0502	1.7494		7,304.3944	7,304.3944	0.3644		7,313.5040
Total	**4.3585**	**6.8735**	**20.3541**	**0.0726**	**6.3583**	**0.0645**	**6.4228**	**1.6992**	**0.0608**	**1.7600**		**7,471.9201**	**7,471.9201**	**0.3677**	**3.0700e-003**	**7,482.0274**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8882	6.7337	20.2196	0.0718	6.3583	0.0539	6.4122	1.6992	0.0502	1.7494		7,304.3944	7,304.3944	0.3644		7,313.5040
Unmitigated	1.8882	6.7337	20.2196	0.0718	6.3583	0.0539	6.4122	1.6992	0.0502	1.7494		7,304.3944	7,304.3944	0.3644		7,313.5040

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,360.06	0.00	0.00	2,142,038	2,142,038
Parking Lot	0.00	0.00	0.00		
Total	1,360.06	0.00	0.00	2,142,038	2,142,038

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056
Parking Lot	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
NaturalGas Unmitigated	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1423.65	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0154**	**0.1396**	**0.1172**	**8.4000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**		**167.4888**	**167.4888**	**3.2100e-003**	**3.0700e-003**	**168.4841**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1.42365	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0154**	**0.1396**	**0.1172**	**8.4000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**		**167.4888**	**167.4888**	**3.2100e-003**	**3.0700e-003**	**168.4841**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Unmitigated	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5635					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8899					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-003	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Total	**2.4550**	**1.6000e-004**	**0.0172**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**		**0.0369**	**0.0369**	**1.0000e-004**		**0.0394**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5635					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8899					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-003	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Total	**2.4550**	**1.6000e-004**	**0.0172**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**		**0.0369**	**0.0369**	**1.0000e-004**		**0.0394**

CalEEMod Version: CalEEMod.2016.3.2

Date: 1/4/2021 8:30 AM

Richland Elementary School Reconstruction - Existing

San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	87.78	1000sqft	9.59	87,776.00	0
Parking Lot	81.00	Space	0.73	32,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2023
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	456.31	**CH4 Intensity (lb/MWhr)**	0.018	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted intensity factors based on power content label for SDG&E.

Land Use - Project site is approx 10.32 acres existing school includes 87,776 sf of buildings and 81 parking spaces.

Construction Phase - Modeling operations only.

Off-road Equipment - Defualt equipment assumed.

Off-road Equipment - Modeling operations only.

Trips and VMT - Modeling operations only.

On-road Fugitive Dust - Modeling operations only.

Demolition - Modeling operations only.

Grading - Modeling operations only.

Architectural Coating - Modeling operations only.

Vehicle Trips - Updated trip generation based on traffic analysis.

Woodstoves - CalEEMod default values (no woodstoves of fireplaces).

Consumer Products - CalEEMod default values.

Area Coating - CalEEMod default values for SF. 150 g/L for nonresidential interior and exterior, and parking, consistent with SDAPCD Rule 67.0.1.

Landscape Equipment - CalEEMod default values.

Energy Use - CalEEMod default values.

Water And Wastewater - CalEEMod default values.

Solid Waste - CalEEMod default values.

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - CalEEMod default values.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	0.00
tblLandUse	LandUseSquareFeet	87,780.00	87,776.00
tblLandUse	LotAcreage	2.02	9.59
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.018
tblProjectCharacteristics	CO2IntensityFactor	720.49	456.31
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.004
tblTripsAndVMT	WorkerTripNumber	13.00	0.00
tblVehicleTrips	WD_TR	15.43	15.49

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Energy	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Mobile	1.8250	6.9002	20.0654	0.0680	6.3583	0.0542	6.4125	1.6992	0.0505	1.7497		6,926.6884	6,926.6884	0.3676		6,935.8780
Total	**4.2953**	**7.0399**	**20.1999**	**0.0689**	**6.3583**	**0.0649**	**6.4232**	**1.6992**	**0.0611**	**1.7604**		**7,094.2141**	**7,094.2141**	**0.3709**	**3.0700e-003**	**7,104.4015**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Energy	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Mobile	1.8250	6.9002	20.0654	0.0680	6.3583	0.0542	6.4125	1.6992	0.0505	1.7497		6,926.6884	6,926.6884	0.3676		6,935.8780
Total	**4.2953**	**7.0399**	**20.1999**	**0.0689**	**6.3583**	**0.0649**	**6.4232**	**1.6992**	**0.0611**	**1.7604**		**7,094.2141**	**7,094.2141**	**0.3709**	**3.0700e-003**	**7,104.4015**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8250	6.9002	20.0654	0.0680	6.3583	0.0542	6.4125	1.6992	0.0505	1.7497		6,926.6884	6,926.6884	0.3676		6,935.8780
Unmitigated	1.8250	6.9002	20.0654	0.0680	6.3583	0.0542	6.4125	1.6992	0.0505	1.7497		6,926.6884	6,926.6884	0.3676		6,935.8780

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,360.06	0.00	0.00	2,142,038	2,142,038
Parking Lot	0.00	0.00	0.00		
Total	1,360.06	0.00	0.00	2,142,038	2,142,038

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056
Parking Lot	0.602700	0.040134	0.179939	0.104242	0.014985	0.005435	0.016642	0.024350	0.001934	0.001888	0.005938	0.000757	0.001056

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
NaturalGas Unmitigated	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1423.65	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0154**	**0.1396**	**0.1172**	**8.4000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**		**167.4888**	**167.4888**	**3.2100e-003**	**3.0700e-003**	**168.4841**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1.42365	0.0154	0.1396	0.1172	8.4000e-004		0.0106	0.0106		0.0106	0.0106		167.4888	167.4888	3.2100e-003	3.0700e-003	168.4841
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0154**	**0.1396**	**0.1172**	**8.4000e-004**		**0.0106**	**0.0106**		**0.0106**	**0.0106**		**167.4888**	**167.4888**	**3.2100e-003**	**3.0700e-003**	**168.4841**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Unmitigated	2.4550	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5635					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8899					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-003	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Total	**2.4550**	**1.6000e-004**	**0.0172**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**		**0.0369**	**0.0369**	**1.0000e-004**		**0.0394**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5635					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.8899					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.6000e-003	1.6000e-004	0.0172	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005		0.0369	0.0369	1.0000e-004		0.0394
Total	**2.4550**	**1.6000e-004**	**0.0172**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**		**0.0369**	**0.0369**	**1.0000e-004**		**0.0394**

Appendix B

Cultural Resources Technical Report

CULTURAL RESOURCES TECHNICAL REPORT FOR RICHLAND ELEMENTARY SCHOOL RECONSTRUCTION PROJECT, SAN MARCOS, CALIFORNIA

Prepared for:

San Marcos Unified School District
255 Pico Avenue, Suite 250
San Marcos, California 92069
Contact: Tova K. Corman, Facilities Planning and Development Department

Prepared by:

Nicole Frank, MSHP, Samantha Murray, MA, Jessica Colston, BA, and Angela Pham, MA, RPA

DUDEK
605 Third Street
Encinitas, California 92024

JANUARY 2021

Printed on 30% post-consumer recycled material.

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APPENDICES

FIGURES

TABLES

Executive Summary

Dudek was retained by the San Marcos Unified School District (District) to complete a Cultural Resources Technical Report for the Richland Elementary School Reconstruction Project (Project) located at 910 Borden Road, San Marcos, CA 92069. This report includes the results of a pedestrian survey of the Project site by a qualified architectural historian; a California Historical Resources Information System (CHRIS) records search; coordination with the Native American Heritage Commission (NAHC) and tribal contacts; building development and archival research, development of an appropriate historic context for the Project site; and recordation and evaluation of Richland Elementary School for historical significance and integrity in consideration of National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) designation criteria and integrity requirements. This report was prepared in conformance with California Environmental Quality Act (CEQA) Guidelines Section 15064.5 for historical resources and all applicable local guidelines and regulations.

Dudek conducted a CHRIS records search at the South Coastal Information Center (SCIC) on November 11, 2020. No cultural resources were identified within the Project site as a result. The records search identified 46 previously conducted cultural resources investigations within the records search area. Of these previous investigations, three of these studies cover 50% or more of the Project site. None of the three studies identified impacts to cultural resources within the vicinity of the Project site. Additionally, the SCIC records indicate that 19 previously recorded cultural resources exist within the surrounding one-mile search radius. The 19 resources consist of nine historic sites, eight prehistoric sites, one prehistoric isolate, and one protohistoric building; none of which intersect or are adjacent to the Project site.

Dudek contacted the California Native American Heritage Commission (NAHC) on December 8, 2020 to request a search of the Sacred Lands File (SLF). The results of the SLF search were received on December 22, 2020 and were negative. Tribal outreach letters to the 27 groups identified are pending responses. Upon receipt, responses will be forwarded to the District. The Project is subject to compliance with Assembly Bill (AB) 52. Native American consultation pursuant to AB 52 between the District and NAHC-listed traditionally geographically affiliated tribal representatives that have requested project notification is on-going.

Richland Elementary School does not appear eligible under any NRHP or CRHR designation criteria due to a lack of significant historical associations and architectural merit. Therefore, the school is not an historical resource for the purposes of CEQA.

As a result of Dudek's extensive archival research, records search, field survey, and property significance evaluations, no historical or archaeological resources were identified within the Project site. Nor were any adjacent resources identified that could be indirectly impacted by proposed Project activities. Therefore, the Project would result in a less than significant impact to historical resources under CEQA. No archaeological monitoring is recommended.

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1 Introduction

Dudek was retained by the San Marcos Unified School District (District) to complete a Cultural Resources Technical Report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. This report includes the results of a pedestrian survey of the Project site by a qualified architectural historian; a records search at the South Coastal Information Center (SCIC); coordination with the California Native American Heritage Commission (NAHC) and tribal contacts; building development and archival research, development of an appropriate historic context for the Project site; and recordation and evaluation of Richland Elementary School for historical significance and integrity in consideration of National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) designation criteria and integrity requirements. Results from the NAHC and coordination will be forwarded to the District and will be included in the final draft of this report. This report was prepared in conformance with California Environmental Quality Act (CEQA) Guidelines Section 15064.5 for historical resources.

1.1 Project Location and Description

Project Location

The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California, 92069 (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The school is bound by residential buildings to the north, Richland Road to the east, Borden Road to the south, Rose Ranch Road to the west.

Adjacent land uses include single-family residential tracts to the north, east, south, and west across Richland Road, Borden Road, and Rose Ranch Road. The Project site is located within the P-I (Public-Institutional) zoning district. The nearest light rail stations are the San Marcos Civic Center Station located at E Mission Road and E San Marcos Boulevard approximately 1.4 miles southwest, and the Cal State San Marcos Station located approximately 2.8 miles to the southwest near California State University San Marcos.

Project Description

The proposed Project involves the demolition of the existing Richland Elementary School, which includes seven permanent buildings and 24 portable classrooms (Figure 2) and the reconstruction of the school including the redevelopment of play fields and playgrounds. The proposed Project includes the construction of five buildings with three single-story and two two-story buildings for a total of 91,477 square feet, including the capacity of 850 students and 44 classrooms. The Project includes three new pick-up and drop-off locations for: 1) Kindergarten, 2) Grades 1-5, and 3) Bus drop-off and food service deliveries and the addition of 36 parking spaces, totaling 117. The Project includes the relocation of the front entry of the school from Borden Road to Richland Road.

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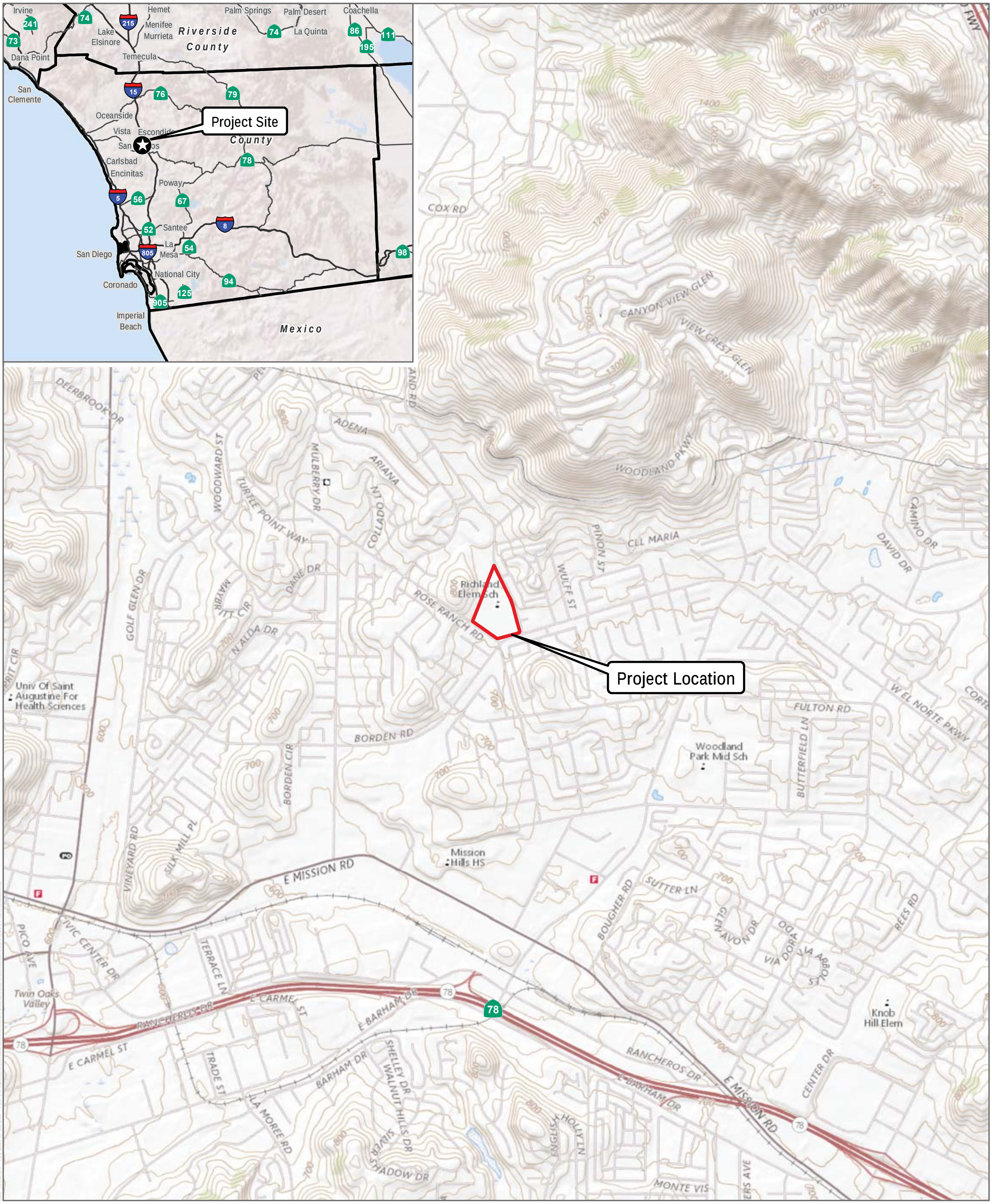

SOURCE: USGS National Map San Marcos Quadrangle
Township 12S / Range 3W / Section 1

0 250 500 Meters
0 1,000 2,000 Feet

FIGURE 1
Project Location

SMUSD Richland Elementary School Reconstruction Project

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SOURCE: SANGIS 2017

DUDEK

0 15 30 Meters

0 65 130 Feet

FIGURE 2

Overview of Buildings within the Project Site

SMUSD Richland Elementary School Reconstruction Project

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1.2 Project Personnel

This report and associated property significance evaluations was prepared by Dudek Architectural Historian Nicole Frank, MSHP. Dudek Archaeologist Jessica Colston, BA, requested a California Historical Resources Information System (CHRIS) records search request at the SCIC; the NAHC Sacred Lands File (SLF) request; and will coordinate Native American outreach. This report was reviewed by for quality assurance/quality control by Dudek Principal Architectural Historian Samantha Murray, MA and Dudek Lead Archaeologist Angela Pham, MA, RPA. Resumes for all key personnel are provided in Appendix D.

1.3 Regulatory Setting

Federal

National Register of Historic Places

While there is no federal nexus for this Project, the subject property was evaluated in consideration of NRHP designation criteria. The NRHP is the United States' official list of districts, sites, buildings, structures, and objects worthy of preservation. Overseen by the National Park Service, under the U.S. Department of the Interior, the NRHP was authorized under the National Historic Preservation Act, as amended. Its listings encompass all National Historic Landmarks, as well as historic areas administered by the National Park Service.

NRHP guidelines for the evaluation of historic significance were developed to be flexible and to recognize the accomplishments of all who have made significant contributions to the nation's history and heritage. Its criteria are designed to guide state and local governments, federal agencies, and others in evaluating potential entries in the NRHP. For a property to be listed in or determined eligible for listing, it must be demonstrated to possess integrity and to meet at least one of the following criteria:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history.

Integrity is defined in NRHP guidance, "How to Apply the National Register Criteria," as "the ability of a property to convey its significance. To be listed in the NRHP, a property must not only be shown to be significant under the NRHP criteria, but it also must have integrity" (NPS 1990). NRHP guidance further asserts that properties be completed at least 50 years ago to be considered for eligibility. Properties completed fewer than 50 years before evaluation must be proven to be "exceptionally important" (criteria consideration to be considered for listing.

State

California Register of Historical Resources

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (California Public Resources Code Section 5020.1(j)). In 1992, the California legislature established the CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (California Public Resources Code Section 5024.1(a)). The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, enumerated below. According to California Public Resources Code Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

(2) Is associated with the lives of persons important in our past.

(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

(4) Has yielded, or may be likely to yield, information important in prehistory or history.

In order to understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see 14 CCR 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Environmental Quality Act

As described further below, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- California Public Resources Code Section 21083.2(g) defines "unique archaeological resource."

- California Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5(a) define "historical resources." In addition, CEQA Guidelines Section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource." It also defines the circumstances when a project would materially impair the significance of an historical resource.
- California Public Resources Code Section 21074(a) defines "tribal cultural resources."
- California Public Resources Code Section 5097.98 and CEQA Guidelines Section 15064.5(e) set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.
- California Public Resources Code Sections 21083.2(b)-(c) and CEQA Guidelines Section 15126.4 provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

More specifically, under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5(b).) If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources or identified as significant in a historical resources survey (meeting the requirements of California Public Resources Code Section 5024.1(q)), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (California Public Resources Code Section 21084.1; CEQA Guidelines Section 15064.5(a)).

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064.5(b)(1); California Public Resources Code Section 5020.1(q)). In turn, CEQA Guidelines Section 15064.5(b)(2) states the significance of an historical resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any "historical resources," then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (California Public Resources Code Section 21083.2[a], [b], and [c]).

California Public Resources Code Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Impacts to non-unique archaeological resources are generally not considered a significant environmental impact (California Public Resources Code section 21083.2(a); CEQA Guidelines Section 15064.5(c)(4)). However, if a non-unique archaeological resource qualifies as tribal cultural resource (California Public Resources Code Section 21074(c), 21083.2(h)), further consideration of significant impacts is required. CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in California Public Resources Code Section 5097.98.

2 Background Research

2.1 CHRIS Records Search

On November 11, 2020, SCIC staff completed a CHRIS records search of the Project site and a one-mile search radius at the South Coastal Information Center (SCIC), located on the campus of San Diego State University. This search included mapped prehistoric, historical, and built-environment resources; Department of Parks and Recreation (DPR) site records; technical reports; archival resources; and ethnographic references. The confidential records search results are also provided in Confidential Appendix A.

Previously Conducted Cultural Resources Studies

Results of the cultural resources records search indicated that 46 previous cultural resource studies have been conducted within one-mile of the Project site between 1975 and 2019. Of the 46 studies, three studies have covered the entire or intersect the Project site, SD-02043, SD-08588, and SD-14140. Table 1, below, summarizes all 46 previous cultural resources studies followed by a brief summary of the three studies that intersect the Project site.

Table 1. Previously Recorded Cultural Reports Within a One Mile Radius of the Project Site

Report Number	Authors	Year	Title
Reports Within Project Site			
SD-02043	Micheal Brandman Associates, Inc.	1989	Draft Environmental Impact Report San Marcos Flood Control Channel San Marcos Creek/Las Posas Reach SCH #88061505
SD-08588	City of Escondido	1980	Draft Environmental Impact Report for Expansion of Wastewater Treatment Facility
SD-14140	Robbins-Wade, Mary	2003	Archaeological Records Search and Literature Review, Vallecitos Water District Master Plan Update, San Diego County, California
Reports Within One Mile Buffer			
SD-00128	Archaeological Associates	1988	Archaeological Survey Report: The Twin Oaks Valley Ranch Project, City of San Marcos, CA.
SD-00225	Carrico, Richard	1976	Archaeological Sensitivity and Potentiality Survey for Richland Neighborhood Study San Marcos, California.
SD-00355	Carrico, Richard	1976	Suggested Mitigation for Archaeological Site SDi-749: Gateway San Marcos Project (SMTM 75-5).
SD-00760	Crull, Scott	1990	The Cultural Resource Study of Ghost Rider II: A Section of Twin Oaks Valley, San Marcos, San Diego County, California
SD-01354	San Diego County Archaeological Society	1975	Archaeological Sensitivity Study of the Twin Oaks Valley, San Diego County, California.
SD-02838	Collet, Russell O. and Dayle M. Cheever	1989	Cultural Resources Survey of the Rose Ranch Property, San Marcos, CALIF.
SD-03534	Kyle, Carolyn E. and Dennis R. Gallegos	1996	Cultural Resources Survey for the San Marcos General Plan Woodland Park Middle School Project, San Marcos, California
SD-03821	Ghabhlain, Sinead Ni, Tracy Stropes, and Dennis R. Gallegos	1999	Cultural Resource Evaluation Report for the Oceanside-Escondido Bikeway Project San Marcos, California
SD-04113	Recon	1978	Draft Environmental Impact Report for Palos Vista

Report Number	Authors	Year	Title
SD-04494	Freeman, Trevor	1988	Archaeological Survey Report: The Twin Oaks Valley Ranch Project, City of San Marcos, CA
SD-04652	Gallegos and Associates	2001	Cultural Resource Test Report for Oceanside-Escondido Rail Project, Oceanside, CA
SD-04744	Bissell, Ronald M.	1986	Archaeological Reconnaissance of the San Marcos Creek Flood Channel Projects, San Marcos, San Diego County, California
SD-05797	San Diego Archaeological Society	1975	Archaeological Sensitivity Study of the Twin Oaks Valley, San Diego County, CA
SD-06249	ERCE	1990	Cultural Resource Survey of the Oceanside to Escondido Rail Project, San Marcos Loop Segment, San Marcos, California
SD-06622	Harris, Nina M. Larry Tift, and Dennis Gallegos	1999	Cultural Resource Survey Report for the Mission Cove Property, San Marcos, California
SD-07768	Tuma, Michael M.	2001	Cultural Resources Survey for the Rose Ranch Project, San Marcos, California
SD-08596	Keller Environmental Associates, Inc.	1992	Appendices-Reclaimed Water Distribution System Project: Draft Environmental Impact Report.
SD-08760	Bull, Charles S.	1976	An Archaeological Survey of Bright Skies Mobile Estates
SD-08931	Gail, Wright	2004	Cultural Resources Survey Report for TM 5337, Log no. 03-08-054-Rogers Estates APN 182-310-44 Negative Findings
SD-09516	Caterino, David	2005	The Cemeteries and Gravestones of San Diego County: An Archaeological Study
SD-09546	Guerrero, Monica, Gallegos, Dennis, Stropes, Tracy, Bouscaren, Steve, Bugbee, Susan, and Cerreto, Richard	2001	Cultural Resource Test Report for Oceanside-Escondido Rail Project Oceanside, California
SD-10034	Bonner, Wayne and Marnie Aislin- Kay	2005	Cultural Resource Records Search Results for Cingular Telecommunications Facility Candidate NS-331-02 (DeJong Residence), 598 Feclicia Lane, San Marcos, San Diego County, California.
SD-10398	Rosen, Martin D.	2006	Historic Property Survey Report (HPSR) State Route 78 Woodland Parkway Interchange Project
SD-10432	Hector, Susan M.	2006	Cultural resources Sensitivity Analysis for the Carryover Storage and San Vicente Dam Raise Project (CSP) Alternatives Analysis
SD-11067	Bonner, Wayne H. and Marnie Aislin-Kay	2006	Cultural Resources Record Search and Site Visit Results for T-Mobile Candidate SD07083 (City of San Marcos Light Standard) Rose Ranch Road, San Marcos, San Diego County, California
SD-11432	Bonner, Wayne H. and Marnie Aislin-Kay	2007	Cultural Resource Records Search and Site Visit Results for T-Mobile Telecommunications Facility Candidate SD07131A (Escondido Highlands), APN-187-720-21 Woodland Heights Glen, Escondido, San Diego, County, California
SD-11712	Shalom, Diane	2008	Cultural Resources Survey Report for: Orchard Hills TM5533, LOG NO. 07-08-001 – Negative Findings
SD-12015	Guerrero, Monica, and Dennis R. Gallegos	2004	Cultural Resource Survey for the Pattison Property San Marcos, California
SD-12039	Guerrero, Monica, and Dennis R. Gallegos	2007	Cultural Resources Monitoring Report for the North County Transit District Sprinter Rail Project, Oceanside to Escondido, California
SD-12655	Robbins-Wade, Mary, Andrew Giletti, and Stephen VanWormer	2009	Historic and Archaeological Resources Survey, Vista Flume Study, Vista, San Marcos, and Escondido, San Diego County, California.
SD-14668	Loftus, Shannon	2012	Cultural Resources Records Search and Site Survey AT&T Site NS0330 LTE Optimal Escondido Highlands 1901 7/8 Woodland Parkway Escondido, San Diego County, California 92026

Report Number	Authors	Year	Title
SD-14702	Comeau, Brad and Micah Hale	2012	Cultural Resources Survey Report for the Palomar Station Project, San Marcos, San Diego County, California
SD-14796	Mclean, Roderic	2012	Cultural Resources Assessment Class III Inventory Verizon Wireless Services Woodland Glen Facility, City of San Marcos, San Diego County, California
SD-15439	Brian F. Smith	2015	Phase I Cultural Resource Survey for the Woodward Street Senior Housing Project, City of San Marcos, California
SD-15671	Brian F. Smith	2015	Phase I Cultural Resource Survey for the Woodward Street Senior Housing Project, City of San Marcos, California
SD-16250	Karolina A. Chmiel	2015	Letter Report: ETS 29761 – Cultural Resources Survey for Removal From Service Pole P812236, San Marcos, San Diego County, California - IO 7074264
SD-16382	Fulton, Phil	2014	Cultural Resource Assessment Class III Inventory Verizon Wireless Services Emerald Heights Facility, City of Escondido, County of San Diego, California
SD-16586	Roland, Jennifer	2016	Phase I Investigation for the Crown Castle, Escondido Highlands Antenna Installation Project, Escondido, San Diego County, California
SD-17030	Smith, Brian F.	2017	Cultural Resources Monitoring Report for the Woodward Street Senior Housing Project, City of San Marcos, California (APN 218-120-31)
SD-17053	Smith, Brian F. and Stropes, Jennifer R. K	2017	Historic Structure Assessment for 1800West Country Club Lane, Escondido, California APNS 244-431-01, -03, and -04
SD-17074	Smith, Brian F. and Stropes, Tracy A.	2017	Cultural Resources Study for the Escondido Country Club Project, City of Escondido, California
SD-17666	Stropes, Tracy A. and Brian F. Smith	2018	A Section 106 (NHPA) Historic Resources Study for the Escondido Country Club Project, SPL-2018-00135-CJA, City of Escondido, California
SD-18178	Pigniolo, Andrew and Carol Serr	2019	Cultural Resources Monitoring Report for the Rock Springs Sewer Replacement Project, Vallecitos Water District, City of San Marcos, California

SD-02043 (1989)

The City of San Marcos contracted with Michael Brandman Associates, Inc. to draft an Environmental Impact Report for the channelization of San Marcos Creek. This report covers 100% of the current Project site. The project area of SD-02043 consisted of approximately 12,700 linear feet of the San Marcos and Las Posas creeks. The majority of the project area along San Marcos Creek was surveyed by Heritage Environmental Services in 1984. The Las Posas tributary was surveyed separately and included as an appendix to this report. The supplemental report was done by RMW Paleo Associates in 1988. It was surmised that the riparian nature of the creeks represented a poor environment for the preservation of archaeological materials. Despite that, two prehistoric sites adjacent to the creeks were identified; W-2970 was identified by RMW Paleo Associates, and a second site located by ASM Associates during an update of W-2970. Monitoring was not recommended, only the installation of fencing along the archaeological sites, and that an archaeologist would be called if archaeological materials were found.

SD-08588 (1980)

The City of Escondido prepared an Environmental Impact Report for the expansion of the wastewater treatment facility located on Hale Avenue, in advance of future needs due to local population expansion. This report covers approximately 45% of the Project along the northern portion. The archaeological record search was performed by the Museum of Man for the project and included the entire Escondido area. A second record search, conducted by the San Diego State University, included the area within one mile of the existing treatment plant. Twelve resources were identified by the San Diego State University and 88 were identified by the Museum of Man. One site was identified within the sewage treatment plant and will be avoided during construction.

This report did not identify specific plans outside of the original treatment plant update as direct impacts. The entire city of Escondido was identified as the area of Secondary Impacts. With no specific plans identified within the Secondary Impacts, the report gave a very general mitigation recommendation to follow State and Regional Historic Preservation regulations to partially mitigate any impacts to specific impacts on a case by case basis. No tribal or NAHC outreach or consultation was performed.

SD-14140 (2003)

Affinis prepared the Archaeological Records Search and Literature review for the Vallecitos Water District in support of the Vallecitos Water District Master Plan Update in 2003. This report covers 100% of the current Project site. The project area included the enitre water district which consists of 28,700 acres (45 sq mi) in the cities of San Marcos, Carlsbad, Escondido, and Vista. The report could not identify any direct impacts to resources because no specific plans were submitted. Similarly, due to the large area of study and no specific impact plans, this report did not include any field work. This update discussed the large scale results of the previous record searches and literature review, to provide a regional context for the implementation of future specific projects. The record search resulted in the identification of 174 archaeological sites, resulting from 122 previous studies. Management recommendations in response to future impacts and archaeological site significance was outlined in compliance with CEQA standards, including tribal outreach.

Previously Recorded Cultural Resources

The records search indicates that no previously recorded resources have been identified within the Project site, however, 19 cultural resources have been recorded within one-mile of the Project site. The 19 resources consist of nine historic sites, eight prehistoric sites, one prehistoric isolate, and one protohistoric building. Table 2, below, provides details of these previously recorded resources.

Table 2. Previously Recorded Cultural Resources Within a One Mile Radius of the Project Site

Primary (P-37-)	Trinomial (CA-SDI-)	Resource Age and Type	Resource Description	NRHP Eligibility	Recording Events	Proximity to Project Site
000749	000749	Prehistoric: Site	AP02 (Lithic scatter); AP03 (Ceramic scatter); AP16 (Other) - shell scatter	7R: Not evaluated	1959 (True)	Outside
005355	005355	Prehistoric: Site	AP02 (Lithic Scatter)	7R: Not evaluated	1977 (Gina VanCamp, Recon)	Outside
005364	005364	Historic: Site	HP46 (Stone fence)	7R: Not evaluated	1977 (R. H. Norwood, Recon)	Outside
005366	005366	Historic: Site	AH16 (Other- Rock ring enclosures)	7R: Not evaluated	1977 (R. H. Norwood, Recon)	Outside
005367	005367	Prehistoric: Site	AP16 (Other)- Shell scatter	7R: Not evaluated	1977 (R. H. Norwood, Recon)	Outside
005368	005368	Historic: Structure	HP19 (Bridge)	7R: Not evaluated	1977 (R. H. Norwood, Recon)	Outside
011066	011066	Prehistoric: Site	AP04 (Bedrock milling feature)	7R: Not evaluated	1988 (Laurie White, Archaeological Associates, LTD)	Outside

Table 2. Previously Recorded Cultural Resources Within a One Mile Radius of the Project Site

Primary (P-37-)	Trinomial (CA-SDI-)	Resource Age and Type	Resource Description	NRHP Eligibility	Recording Events	Proximity to Project Site
012533	012533	Prehistoric: Site	AP04 (Bedrock milling feature)	7R: Not evaluated	1991 (Del James, Steven Briggs, Scott Campbell, ERC Environmental Services Company)	Outside
012534	012534	Prehistoric: Site	AP04 (Bedrock milling feature)	7R: Not evaluated	1991 (Del James, Steven Briggs, Scott Campbell, ERC Environmental Services Company)	Outside
012535	012535	Historic: Site	AH06 (Water conveyance system)	7R: Not evaluated	1991 (Del James, Scott Campbell, ERC Environmental Services Company)	Outside
013742	-	Prehistoric: Site	AP02 (Lithic scatter)	6Z: Determined ineligible for the CR, not evaluated for NR or Local	1994 (Linda Roth, Roth and Associates)	Outside
013743	-	Protohistoric: Building	HP02 (Single family property); HP33 (Farm/ranch); HP39 (Other) - dairy	7R: Not evaluated	1994 (Linda Roth, Roth and Associates)	Outside
013744	-	Historic: Building	HP02 (Single family property)	7R: Not evaluated	1994 (Linda Roth, Roth and Associates)	Outside
013745	-	Historic: Building, Site	AH04 (Privies/dumps/trash scatters); AH16 (Other); HP02 (Single family property)	7R: Not evaluated	1994 (Linda Roth, Roth and Associates)	Outside
013746	-	Historic: Building, Structure	HP02 (Single family property)	3S: Appears eligible for NR through survey evaluation	1990 (Linda Roth, Judy Berryman); 1994	Outside
015102	-	Prehistoric: Isolate	AP16 (Other-Hammerstone)	7R: Not evaluated	1991 (Del James, Scott Campbell, ERC Environmental Services Company)	Outside
015595	014340	Prehistoric: Site	AP02 (Lithic scatter); AP04 (Bedrock milling feature); AP15 (Habitation debris)	6Z: Determined ineligible for the CR, not evaluated for NR or Local	1996 (Delman James, Rich Bark, Brian Glenn, Jerry Sabio, Ted Cooley, Ogden Environmental Services, Inc.); 2007 (D. Gallegos, M. Guerrero, Gallegos & Associates)	Outside
030889	-	Historic: Site	HP11 (Engineering structure); HP20 (Canal/aqueduct)	3S: Appears eligible for NR through survey evaluation	2009 (Stephen Van Wormer, Affinis); 2015 (Lucas Piek, Matthew DeCarlo, ASM Affiliates, Inc.)	Outside

Table 2. Previously Recorded Cultural Resources Within a One Mile Radius of the Project Site

Primary (P-37-)	Trinomial (CA-SDI-)	Resource Age and Type	Resource Description	NRHP Eligibility	Recording Events	Proximity to Project Site
033557	-	Historic: Object, Site	AH07 (Roads/trails/railroad grades); HP37 (Highway/trail)	3S: Appears eligible for NR through survey evaluation	2013 (Larry Tift, ASM Affiliates, Inc.); 2015 (Kent Manchen, Matt DeCarlo, ASM Affiliates, Inc.); 2017 (Haley Chateene, PanGIS); 2017 (A. Foglia, K. Keckeisen, PanGIS, Inc.); 2018 (Sarah Stringer-Bowsher, ASM Affiliates, Inc.)	Outside

2.2 Native American Coordination

NAHC Sacred Lands File (SLF) Search

Dudek contacted the NAHC requested a review of the SLF (Appendix C) on December 8, 2020. The NAHC results were received on December 22, 2020. The results of the SLF search were negative. Tribal outreach letters were mailed on December 23, 2020. One response form Rincon Band of Luiseño Indians was received via email on December 31, 2020. In summary, the response indicated that known resources are within a half-mile of the project and requests a Cultural Resources Study be completed and submitted to the Rincon Band for review and comment. No resources were indicated to be known within the project boundaries. They further request to consult directly with the lead agency on this project. No additional responses have been received. Upon receipt of any future responses, they will be forwarded the District. No additional tribal outreach was conducted by Dudek; however, in compliance with AB 52, the District will contact all NAHC-listed traditionally geographically affiliated tribal representatives that have requested project notification. AB 52 consultation efforts conducted by the District are discussed in the following paragraph.

Assembly Bill 52 Consultation

The Project is subject to compliance with AB 52 (PRC 21074), which requires consideration of impacts to TCRs as part of the CEQA process, and that the lead agency notify California Native American Tribal representatives (that have requested notification) who are traditionally or culturally affiliated with the geographic area of the proposed Project. All NAHC-listed California Native American Tribal representatives that have requested project notification pursuant to AB 52 will be sent letters by the District. The letters will contain a Project description, outline of AB 52 timing, request for consultation, and contact information for the appropriate lead agency representative. Documents related to AB 52 consultation will be held by the lead agency.

2.3 Building Development and Archival Research

Building development and archival research were conducted for the Project site in an effort to establish a thorough and accurate historic context for the significance evaluation, and to confirm the building development history of the Project site and associated parcels.

San Marcos Unified School District

On November 16, 2020, Dudek received plan sets for the original construction and subsequent alterations of Richland Elementary School from the San Marcos Unified School District in order to identify additions, alterations, and modernizations to the school since its initial construction.

San Marcos Historical Society

On December 2, 2020, Dudek contacted the San Marcos Historical Society via email for information pertaining to the history of San Marcos, education in the area, and the Project site. Dudek has yet to receive a response referring to this request.

Historical Newspaper Search

Dudek reviewed historical newspapers covering the City of San Marcos and overall County of San Diego in an effort to understand the development of the Project site. All information obtained from the historical newspaper search was incorporated into the historic context.

Historical Aerial Photographs

Historic aerial photographs of the Project site were available from Nationwide Environmental Title Research LLC (NETR) maps for the years 1938, 1947, 1953, 1964, 1967, 1980, 1989, 1991, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2002, 2003, 2005, 2009, 2010, 2012, 2014, and 2016 and from the University of California, Santa Barbara (UCSB), FrameFinder Maps for the years 1947, 1953, 1963, 1975, 1990, and 2001 (NETR 2020; UCSB 2020). A summary of the historic aerial photograph review by year is provided below in Table 3.

Table 3. Historical Aerial Photograph Review of Project Footprint

Photograph Year	*Observations and Findings*
1938	The Project site is at the corner of Rose Ranch Road, Borden Road, and Richland Road. The earliest aerial photograph dates from 1938 and displays the Project site as an agricultural lot surrounded by agricultural land and small homesteads with the City of San Marcos to the southwest.
1947-1953	The 1947 and 1953 aerials display no noticeable changes to the Project site. The surrounding lots show a slight increase in development with an increase to the number of homesteads to the south.
1963-1964	The 1963 and 1964 aerials display the first large-scale change to the Subject property with the construction of the Richland Elementary School. The school presents as an open lot with five buildings in the southeast corner running northwest to southeast separated by a pedestrian walkway. Open grass lawns separate the buildings with additional lawns to the southeast. The surrounding land displays the replacement of farms with residences.

Table 3. Historical Aerial Photograph Review of Project Footprint

1967	The 1967 image shows the formalization of the school with landscaping and lawns and the construction of two additional school buildings to the north and east of the original buildings. Surrounding the property is an increase of residences primarily to the east.
1975	The 1975 aerial displays a continued increase of development on the school property with the addition of two temporary buildings to the west of the original buildings. Surrounding the property is a large-scale increase in residential development with the construction of multiple tracts to the south and east.
1980	The 1980 image displays the removal of the western temporary buildings and the construction of a temporary building to the north. The surrounding land shows an increase in residential tract development to the southeast.
1989	The 1989 aerial displays continued development on the school with the construction of two temporary buildings to the west of the original buildings and little noticeable changes to the surrounding area.
1991	The 1991 aerial displays the construction of a temporary classroom at the northern end of the school property.
1993-1995	No discernable changes.
1996-1997	The 1996 image shows the construction of an additional temporary classroom which by the 1997 image was removed and the construction of a temporary classroom at the northern end of the property just south of the classroom installed in 1991
1998	The 1998 image displays an increase in development on the school property with the construction of six additional buildings to the west and southwest of the original buildings. Surrounding the property is an increase in residential tract developments.
1999-2003	No discernable changes.
2005	By 2005, the majority of the surrounding land has been filled in with residential tract development. Two additional temporary classrooms were installed at the south end of the school property and a temporary restroom to the west of the 1998 buildings.
2009	The 2009 aerial displays an increase in development with the construction of five additional temporary buildings and restrooms to the west and southwest of the 1998 buildings.
2010-2016	No discernable changes.

3 Cultural Setting

3.1 Prehistoric Overview

Evidence for continuous human occupation in Southern California spans the last 10,000 years. Various attempts to parse out variability in archaeological assemblages over this broad period have led to the development of several cultural chronologies; some of these are based on geologic time, most are based on temporal trends in archaeological assemblages, and others are interpretive reconstructions. To be more inclusive, this research employs a common set of generalized terms used to describe chronological trends in assemblage composition: Paleoindian (pre-5500 BC), Archaic (8000 BC–AD 500), Late Prehistoric (AD 500–1769), and Ethnohistoric (post-AD 1769).

Paleoindian Period (pre-5500 BC)

Evidence for Paleoindian occupation in the region is tenuous. Our knowledge of associated cultural pattern(s) is informed by a relatively sparse body of data that has been collected from within an area extending from coastal San Diego, through the Mojave Desert, and beyond. One of the earliest dated archaeological assemblages in the region is located in coastal Southern California (though contemporaneous sites are present in the Channel Islands) derives from SDI-4669/W-12 in La Jolla. A human burial from SDI-4669 was radiocarbon dated to 9,590–9,920 years before present (95.4% probability) (Hector 2006). The burial is part of a larger site complex that contained more than 29 human burials associated with an assemblage that fits the Archaic profile (i.e., large amounts of ground stone, battered cobbles, and expedient flake tools). In contrast, typical Paleoindian assemblages include large stemmed projectile points, high proportions of formal lithic tools, bifacial lithic reduction strategies, and relatively small proportions of ground stone tools. Prime examples of this pattern are sites that were studied by Emma Lou Davis (1978) on Naval Air Weapons Station China Lake near Ridgecrest, California. These sites contained fluted and unfluted stemmed points and large numbers of formal flake tools (e.g., shaped scrapers, blades). Other typical Paleoindian sites include the Komodo site (MNO-679)—a multi-component fluted point site, and MNO-680—a single component Great Basined Stemmed point site (see Basgall et al. 2002). At MNO-679 and -680, ground stone tools were rare while finely made projectile points were common.

Warren et al. (2004) claimed that a biface manufacturing tradition present at the Harris site complex (SDI-149) is representative of typical Paleoindian occupation in the region that possibly dates between 10,365 and 8,200 BC (Warren et al. 2004). Termed San Dieguito (see also Rogers 1945), assemblages at the Harris site are qualitatively distinct from most others in region because the site has large numbers of finely made bifaces (including projectile points), formal flake tools, a biface reduction trajectory, and relatively small amounts of processing tools (see also Warren 1968). Despite the unique assemblage composition, the definition of San Dieguito as a separate cultural tradition is hotly debated. Gallegos (1987) suggested that the San Dieguito pattern is simply an inland manifestation of a broader economic pattern. Gallegos's interpretation of San Dieguito has been widely accepted in recent years, in part because of the difficulty in distinguishing San Dieguito components from other assemblage constituents. In other words, it is easier to ignore San Dieguito as a distinct socioeconomic pattern than it is to draw it out of mixed assemblages.

The large number of finished bifaces (i.e., projectile points and non-projectile blades), along with large numbers of formal flake tools at the Harris site complex, is very different than nearly all other assemblages throughout the region, regardless of age. Warren et al. (2004) made this point, tabulating basic assemblage constituents for key early Holocene sites. Producing finely made bifaces and formal flake tools implies that relatively large amounts of time were spent for tool manufacture. Such a strategy contrasts with the expedient flake-based tools and cobble-core reduction strategy that typifies non-San Dieguito Archaic sites. It can be inferred from the uniquely high degree of San Dieguito assemblage formality that the Harris site complex represents a distinct economic strategy from non-San Dieguito assemblages.

San Dieguito sites are rare in the inland valleys, with one possible candidate, RIV-2798/H, located on the shore of Lake Elsinore. Excavations at Locus B at RIV-2798/H produced a toolkit consisting predominately of flaked stone tools, including crescents, points, and bifaces, and lesser amounts of groundstone tools, among other items (Grenda 1997). A calibrated and reservoir-corrected radiocarbon date from a shell produced a date of 6630 BC. Grenda (1997) suggested this site represents seasonal exploitation of lacustrine resources and small game and resembles coastal San Dieguito assemblages and spatial patterning.

If San Dieguito truly represents a distinct socioeconomic strategy from the non-San Dieguito Archaic processing regime, its rarity implies that it was not only short-lived, but that it was not as economically successful as the Archaic strategy. Such a conclusion would fit with other trends in Southern California deserts, where hunting-related tools were replaced by processing tools during the early Holocene (see Basgall and Hall 1990).

Archaic Period (8000 BC – AD 500)

The more than 2,500-year overlap between the presumed age of Paleoindian occupations and the Archaic period highlights the difficulty in defining a cultural chronology in Southern California. If San Dieguito is the only recognized Paleoindian component in the coastal Southern California, then the dominance of hunting tools implies that it derives from Great Basin adaptive strategies and is not necessarily a local adaptation. Warren et al. (2004) admitted as much, citing strong desert connections with San Dieguito. Thus, the Archaic pattern is the earliest local socioeconomic adaptation in the region (see Hale 2001, 2009).

The Archaic pattern, which has also been termed the Millingstone Horizon (among others), is relatively easy to define with assemblages that consist primarily of processing tools, such as millingstones, handstones, battered cobbles, heavy crude scrapers, incipient flake-based tools, and cobble-core reduction. These assemblages occur in all environments across the region with little variability in tool composition. Low assemblage variability over time and space among Archaic sites has been equated with cultural conservatism (see Basgall and Hall 1990; Byrd and Reddy 2002; Warren 1968; Warren et al. 2004). Despite enormous amounts of archaeological work at Archaic sites, little change in assemblage composition occurred until the bow and arrow was adopted around AD 500, as well as ceramics at approximately the same time (Griset 1996; Hale 2009). Even then, assemblage formality remained low. After the bow was adopted, small arrow points appear in large quantities and already low amounts of formal flake tools are replaced by increasing amounts of expedient flake tools. Similarly, shaped millingstones and handstones decreased in proportion relative to expedient, unshaped ground stone tools (Hale 2009). Thus, the terminus of the Archaic period is equally as hard to define as its beginning because basic assemblage constituents and patterns of manufacturing investment remain stable, complemented only by the addition of the bow and ceramics.

Late Prehistoric Period (AD 500-1769)

The period of time following the Archaic and before Ethnohistoric times (AD 1769) is commonly referred to as the Late Prehistoric (Rogers 1945; Wallace 1955; Warren et al. 2004); however, several other subdivisions continue to be used to describe various shifts in assemblage composition. In general, this period is defined by the addition of arrow points and ceramics, as well as the widespread use of bedrock mortars. The fundamental Late Prehistoric assemblage is very similar to the Archaic pattern but includes arrow points and large quantities of fine debitage from producing arrow points, ceramics, and cremations. The appearance of mortars and pestles is difficult to place in time because most mortars are on bedrock surfaces. Some argue that the Ethnohistoric intensive acorn economy extends as far back as AD 500 (Bean and Shipek 1978). However, there is no substantial evidence that reliance on acorns, and the accompanying use of mortars and pestles, occurred before AD 1400. Millingstones and handstones persisted in higher frequencies than mortars and pestles until the last 500 years (Basgall and Hall 1990); even then, weighing the economic significance of millingstone-handstone versus mortar-pestle technology is tenuous due to incomplete information on archaeological assemblages.

3.2 Ethnographic Overview

The history of the Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the San Diego region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief and generally peripheral accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the San Diego region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early Twentieth Century (Boscana 1846; Fages 1937; Geiger and Meighan 1976; Harrington 1934; Laylander 2000). The principal intent of these researchers was to record the precontact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as "salvage ethnography," was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his "memory culture" approach (Lightfoot 2005: 32) by recording languages and oral histories within the San Diego region. Kroeber's 1925 assessment of the impacts of Spanish missionization on local Native American populations supported Kumeyaay traditional cultural continuity (Kroeber 1925: 711):

Mission Basilica San Diego de Alcalá was the first mission founded in upper California; but the geographical limits of its influence were the narrowest of any, and its effects on the natives comparatively light. There seem to be two reasons for this: first, the stubbornly resisting temper of the natives; and second, a failure of the rigorous concentration policy enforced elsewhere.

In some ways this interpretation led to the belief that many California Native American groups simply escaped the harmful effects of contact and colonization all together. This, of course, is untrue. Ethnographic research by Dubois, Kroeber, Harrington, Spier, and others during the early Twentieth Century seemed to indicate that traditional cultural practices and beliefs survived among local Native American communities. These accounts supported, and were supported by, previous governmental decisions which made San Diego County the location of more federally recognized tribes than anywhere else in the United States: 18 tribes on 18 reservations that cover more than 116,000 acres (CSP 2009).

The traditional cultural boundaries between the Luiseño and Kumeyaay Native American tribal groups have been well defined by anthropologist Florence C. Shipek (1993; summarized by the San Diego County Board of Supervisors 2007:6]:

In 1769, the Kumeyaay national territory started at the coast about 100 miles south of the Mexican border (below Santo Tomas), thence north to the coast at the drainage divide south of the San Luis Rey River including its tributaries. Using the U.S. Geological Survey topographic maps, the boundary with the Luiseño then follows that divide inland. The boundary continues on the divide separating Valley Center from Escondido and then up along Bear Ridge to the 2240 contour line and then north across the divide between Valley Center and Woods Valley up to the 1880-foot peak, then curving around east along the divide above Woods Valley.

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006: 34). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007: 71). Based on the Project location, the Native American inhabitants of the region would have likely spoken both the Ipai or Tipai language subgroup of the Yuman language group. Ipai and Tipai, spoken respectively by the northern and southern Kumeyaay communities, are mutually intelligible. For this reason, these two are often treated as dialects of a larger Kumeyaay tribal group rather than as distinctive languages, though this has been debated (Laylander 2010; Luomala 1978).

Victor Golla has contended that one can interpret the amount of variability within specific language groups as being associated with the relative “time depth” of the speaking populations (Golla 2007: 80) A large amount of variation within the language of a group represents a greater time depth then a group’s language with less internal diversity. One method that he has employed is by drawing comparisons with historically documented changes in Germanic and Romantic language groups. Golla has observed that the “absolute chronology of the internal diversification within a language family” can be correlated with archaeological dates (2007: 71). This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

Golla suggested that there are two language families associated with Native American groups who traditionally lived throughout the San Diego County region. The northern San Diego tribes have traditionally spoken Takic languages that may be assigned to the larger Uto–Aztecan family (Golla 2007: 74). These groups include the Luiseño, Cupeño, and Cahuilla. Golla has interpreted the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 2,000 years. Other researchers have contended that Takic may have diverged from Uto–Aztecan ca. 2600 BC–AD 1, which was later followed by the diversification within the Takic speaking San Diego tribes, occurring approximately 1500 BC–AD 1000 (Laylander 2010). The majority of Native American tribal groups in southern San Diego region have traditionally spoken Yuman languages, a subgroup of the Hokan Phylum. Golla has suggested that the time depth of Hokan is approximately 8,000 years (Golla 2007: 74). The Kumeyaay tribal communities share a common language group with the Cocopa, Quechan, Maricopa, Mojave, and others to east, and the Kiliwa to the south. The time depth for both the Ipai (north of the San Diego River, from Escondido to Lake Henshaw) and the Tipai (south of the San Diego River, the Laguna Mountains through Ensenada) is approximated to be 2,000 years at the most. Laylander has contended that previous research indicates a divergence between Ipai and Tipai to have occurred approximately AD 600–1200 (Laylander 1985). Despite the distinct linguistic differences between the Takic-speaking tribes to the north, the Ipai-speaking communities in central San Diego, and the Tipai southern Kumeyaay, attempts to illustrate the distinctions between these groups based solely on cultural material alone have had only limited success (Pigniolo 2004; True 1966).

The Kumeyaay generally lived in smaller family subgroups that would inhabit two or more locations over the course of the year. While less common, there is sufficient evidence that there were also permanently occupied villages, and that some members may have remained at these locations throughout the year (Owen 1965; Shipek 1982, 1985; Spier 1923). Each autonomous triblet was internally socially stratified, commonly including higher status individuals such as a tribal head (Kwaaypay), shaman (Kuseyaay), and general members with various responsibilities and skills (Shipek 1982). Higher-status individuals tended to have greater rights to land resources, and owned more goods, such as shell money and beads, decorative items, and clothing. To some degree, titles were passed along family lines; however, tangible goods were generally ceremonially burned or destroyed following the deaths of their owners (Luomala 1978). Remains were cremated over a pyre and then relocated to a cremation ceramic vessel that was placed in a removed or hidden location. A broken metate was commonly placed at the location of the cremated remains, with the intent of providing aid and further use after death. At maturity, tribal members often left to other bands in order to find a partner. The families formed networks of communication and exchange around such partnerships.

Areas or regions, identified by known physical landmarks, could be recognized as band-specific territories that might be violently defended against use by other members of the Kumeyaay. Other areas or resources, such as water sources and other locations that were rich in natural resources, were generally understood as communal land to be shared amongst all the Kumeyaay (Loumala 1978). The coastal Kumeyaay exchanged a number of local goods, such as seafood, coastal plants, and various types of shell for items including acorns, agave, mesquite beans, gourds, and other more interior plants of use (Luomala 1978). Shellfish would have been procured from three primary environments, including the sandy open coast, bay and lagoon, and rocky open coast. The availability of these marine resources changed with the rising sea levels, siltation of lagoon and bay environments, changing climatic conditions, and intensity of use by humans and animals (Gallegos and Kyle 1988; Pigniolo 2005; Warren 1964). Shellfish from sandy environments included Donax, Saxidomas, Tivela, and others. Rocky coast shellfish dietary contributions consisted of Pseudochama, Megastraea, Saxidomus, Protothaca, Megathura, Mytolis and others. Lastly, the bay environment would have provided Argopecten, Chione, Ostrea, Neverita, Macoma, Tagelus, and others. While marine resources were obviously consumed, terrestrial animals and other resources likely provided a large portion of sustenance. Game animals consisted of rabbits, hares (Leporidae), birds, ground squirrels, woodrats (Neotoma), deer, bears, mountain lions (*Puma concolor*), bobcats (*Lynx rufus*), coyotes (*Canus latrans*), and others. In lesser numbers, reptiles and amphibians may have been consumed.

A number of local plants were used for food and medicine. These were exploited seasonally and were both traded between regional groups and gathered as a single triblet moved between habitation areas. Some of the more common of these that might have been procured locally or as higher elevation varieties would have included buckwheat (*Eriogonum fasciculatum*), Agave, Yucca, lemonade berry (*Rhus integrifolia*), sugar brush (*Rhus ovata*), sage scrub (*Artemisia californica*), yerba santa (Eriodictyon), sage (Salvia), Ephedra, prickly pear (Opuntia), mulefat (*Baccharis salicifolia*), chamise (*Adenostoma fasciculatum*), elderberry (*Sambucus nigra*), oak (Quercus), willow (Salix), and Juncus grass among many others (Wilken 2012).

3.3 Historical Overview of San Diego

Post-Contact history for the State of California is generally divided into three periods: the Spanish Period (1769–1821), Mexican Period (1821–1846), and American Period (1846–present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between 1769 and 1823. Independence from Spain in 1821 marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican–American War, signals the beginning of the American Period when California became a territory of the United States.

Spanish Period (1769–1821)

The Spanish colonization of Alta California began in 1769 with the founding of Mission Basilica San Diego de Alcalá by Father Junípero Serra. Concerns over Russian and English interests in California motivated the Spanish government to send an expedition of soldiers, settlers, and missionaries to occupy and secure the northwestern borderlands of New Spain through the establishment of a Presidio, Mission, and Pueblo. The Spanish explorers first camped on the shore of the Bay in the area that is now downtown San Diego. Lack of water at this location, however, led to moving the camp on May 14, 1769, to a small hill closer to the San Diego River and near the Kumeyaay village of Cosoy. Father Junípero Serra arrived in July of the same year and found the Presidio serving mostly as a hospital. The Spanish built a primitive mission and presidio structure on the hill near the river.

Bad feelings soon developed between the native Kumeyaay and the soldiers, resulting in construction of a stockade that, by 1772, included barracks for the soldiers; a storehouse for supplies; a house for the missionaries; and a chapel, which had been improved. The log and brush huts were gradually replaced with buildings made of adobe bricks. Flat earthen roofs were eventually replaced by pitched roofs with rounded roof tiles. Clay floors were eventually lined with fired brick.

In August 1774, the Spanish missionaries moved the Mission Basilica San Diego de Alcalá to its present location 6 miles up the San Diego River valley (modern Mission Valley) near the Kumeyaay village of Nipaguay. Begun as a thatched chapel and compound built of willow poles, logs, and tules, the new mission was sacked and burned in the Kumeyaay uprising of November 5, 1775. The first adobe chapel was completed in October 1776, and the present church was begun the following year. A succession of building programs through 1813 resulted in the final plan that included the church, bell tower, sacristy, courtyard, residential complex, workshops, corrals, gardens, and cemetery. Orchards, reservoirs, and other agricultural installations were built to the south on the lower San Diego River alluvial terrace and were irrigated by a dam and aqueduct system. The initial Spanish occupation and mission system brought about profound changes in the lives of the Kumeyaay people. Substantial numbers of the coastal Kumeyaay were forcibly brought into the mission or died from introduced diseases.

As early as 1791, presidio commandants in California were given the authority to grant small house lots and garden plots to soldiers and their families, and sometime after 1800, soldiers and their families began to move down the hill near the San Diego River. Historian William Smythe noted that Don Blas Aguilar, who was born in 1811, remembered at least 15 such grants below Presidio Hill by 1821, of which only five that were within the boundaries of what would become Old Town had houses in 1821. These were the retired commandant Francisco Ruiz's adobe (now known as the Carrillo Adobe), another building later owned by Henry Fitch on Calhoun Street, the Ybanes and

Serrano houses on Juan Street near Washington Street, and a small adobe house on the main plaza owned by Juan Jose Maria Marron.

Mexican Period (1821–1846)

In 1822, the political situation changed as Mexico won its independence from Spain, and San Diego became part of the Mexican Republic. The Mexican government opened California to foreign trade, began issuing private land grants in the early 1820s, created the rancho system of large agricultural estates, secularized the Spanish missions in 1833, and oversaw the rise of the civilian pueblo. By 1827, as many as 30 homes existed around the central plaza, and in 1835, Mexico granted San Diego official pueblo (town) status. At this time, the town had a population of nearly 500 residents, later reaching a peak of roughly 600. By 1835 the presidio, once the center of life in Spanish San Diego, had been abandoned and lay in ruins. Mission Basilica San Diego de Alcalá fared little better. The town and the ship landing area at La Playa were now the centers of activity in Mexican San Diego. However, the new Pueblo of San Diego did not prosper, as some other California towns did during the Mexican Period.

Secularization in what is now San Diego County triggered increased Native American hostilities against the Californios during the late 1830s. The attacks on outlying ranchos, along with unstable political and economic factors, lead to San Diego's population decline to approximately 150 permanent residents by 1840. San Diego's official Pueblo status was removed by 1838, and it was made a subprefecture of the Los Angeles Pueblo. When the Americans took over after 1846, the situation had stabilized somewhat, and the population had increased to roughly 350 non-Native American residents. The Native American population continued to decline, as Mexican occupation brought about continued displacement and acculturation of Native American populations.

American Period (1846–Present)

The American Period began in 1846 when United States military forces occupied San Diego; this period continues today. When United States military forces occupied San Diego in July 1846, the town's residents split on their course of action. Many of the town's leaders sided with the Americans, but other prominent families opposed the United States' invasion. In December 1846, a group of Californios under Andres Pico engaged United States Army forces under General Stephen Kearney at the Battle of San Pasqual and inflicted many casualties. However, the Californio resistance was defeated in two small battles near Los Angeles, and effectively ended the resistance by January 1847. The Americans assumed formal control with the Treaty of Guadalupe-Hidalgo in 1848, and introduced Anglo culture and society, American political institutions, and American commerce. In 1850, the Americanization of San Diego began to develop rapidly.

On February 18, 1850, the California State Legislature formally organized San Diego County. The first elections were held at San Diego and La Playa on April 1, 1850, for county officers. San Diego grew slowly during the next decade. San Diegans attempted to develop the town's interests through a transcontinental railroad plan and development of a new town closer to the Bay. The failure of these plans, added to a severe drought that crippled ranching and the onset of the Civil War, left San Diego as a remote frontier town. These issues led to a drop in the town's population from 650 in 1850 to 539 in 1860. Not until land speculator and developer Alonzo Horton arrived in 1867 did San Diego begin to develop fully into an active American town.

Alonzo Horton's development of a New San Diego (modern downtown) in 1867 began to swing the community's focus away from Old Town and began the urbanization of San Diego. Expansion of trade brought an increase in the availability of building materials. Wood buildings gradually replaced adobe structures. Some of the earliest buildings to be erected in the American Period were "pre-fab" houses that were built on the east coast of the United States and shipped in sections around Cape Horn and reassembled in San Diego. Development spread from downtown due to a variety of factors, including the availability of potable water and transportation corridors. Factors such as views and access to public facilities affected land values, which in turn affected the character of neighborhoods that developed. During the Victorian Era of the late 1800s and early 1900s, the areas of Golden Hill, Uptown, Banker's Hill, and Sherman Heights were developed. Examples of the Victorian Era architectural styles remain in these communities, and in Little Italy, which developed at the same time. At the time downtown was being built, there began to be summer cottage/retreat development in what are now the beach communities and La Jolla area. The early structures in these areas were not of substantial construction since they were primarily built for temporary vacation housing.

Development also spread to the greater North Park and Mission Hills areas during the early 1900s. The neighborhoods were built as small lots, a single lot at a time; there was not large tract housing development of these neighborhoods. This provided affordable housing away from the downtown area, and development expanded as transportation improved. Barrio Logan began as a residential area, but because of proximity to rail freight and shipping freight docks, the area became more mixed, with conversion to industrial uses. This area was more suitable to industrial uses because land values were not as high. Topographically, the area is more level, and it does not have views like the areas north of downtown. Various ethnic groups settled in the area because of the affordability of land ownership.

San Ysidro began to be developed around the turn of the 20th century. The early settlers were followers of the Littlelanders colonies movement. There, the pattern of development was designed to accommodate small plots of land for each homeowner to farm as part of a farming/residential cooperative community. Nearby Otay Mesa-Nestor began to be developed by farmers of Germanic and Swiss background. Some of the prime citrus groves in California were in the Otay Mesa-Nestor area. In addition, there were grape growers of Italian heritage who settled in the Otay River Valley and tributary canyons who produced wine for commercial purposes.

San Diego State University was established in the 1920s, and development of the State College area began, including development of the Navajo community as outgrowth from the college area and from the west. There was farming and ranching in Mission Valley until the middle portion of the 20th century when the uses were converted to commercial and residential. There were dairy farms and chicken ranches adjacent to the San Diego River where now there are motels, restaurants, office complexes, and regional shopping malls. There was little development north of the San Diego River until Linda Vista was developed as military housing in the 1940s, when the federal government improved public facilities and extended water and sewer pipelines to the area. From Linda Vista, development spread north of Mission Valley to the Clairemont Mesa and Kearny Mesa areas. Development in these communities was mixed-use and residential on moderate-sized lots.

Tierrasanta, previously owned by the U.S. Navy, was developed in the 1970s. It was one of the first planned developments in the area with segregation of uses. Tierrasanta and many of the communities that have developed since, such as Rancho Penasquitos and Rancho Bernardo, represent the typical development pattern in San Diego in the last 25 to 30 years: uses are well segregated, with commercial uses located along the main thoroughfares and residential uses located beyond that. Industrial uses are located in planned industrial parks.

3.4 Historical Overview of San Marcos (1840-Present)

The majority of the City of San Marcos was originally part of Rancho Los Vallecitos de San Marcos, an 8,877-acre Mexican land grant given in 1840 by Governor Juan Bautista Alvarado to Don José María Alverado. Prior to the secularization of the missions, the land was used for cattle-grazing. Don José married María Lugarda Osuna, the daughter of Don Juan María Osuna who owned San Dieguito Rancho. In 1846, after the Battle of San Pasqual, Don José and ten other rancheros were captured by a band of Indians and taken to an Indian ranchería at Agua Caliente and killed. After Don José's death, Lugarda married Luis Machado, the owner of Rancho Buena Vista. Following their marriage, it is unclear who owned Rancho Los Vallecitos de San Marcos, but in 1883 the U.S. Land Commission granted the Rancho patent to Lorenzo Soto. Soto fought against the Americans at the Battle of San Pasqual. The Rancho later came into the possession of Cave J. Couts, a former Army officer and owner of the adjacent Rancho Guajome and Buena Vista. Couts ran the property as a cattle ranch and did not build any substantial structures on the land (ASM 2012; Moyer 1968).

In November 1885, the transcontinental railroad came to San Diego resulting in a real estate boom for the City. In the mid-1880s, the City's population soared from 5,000 in 1885 to 40,000 in 1889. Speculators formed land companies and began to subdivide townsites throughout the county, which stimulated the demand for agricultural land. Between 1880 and 1890, the number of farms increased from 696 to 2,747. The real estate boom occurring in San Diego brought homesteaders to the San Marcos area. These settlements were typical of the small agricultural communities, characterized by widely spread out settlements united by a common school district, post office, church, and general store. The first permanent settlement in the San Marcos area was made by Major Gustavus French Merriam from Topeka, Kansas. The homestead consisted of 160 acres in the northern section of Twin Oaks Valley and began the production of wine and honey. In the early 1880s, Dutch and German immigrants began moving into the area. In 1883, John H. Barham founded the first town in the area, Barham, and by 1884 there was a post office, blacksmith, feed store, and a weekly newspaper. An adjacent small settlement named Buena developed 4 miles northwest of Barham and had a school. In 1916, the Vista Unified School District was formed from the former Vista, Buena, and Delpy school districts (ASM 2012; Stone 1966).

In 1887, Couts' widow sold San Marcos Ranch to O.S. Hubbell who then sold the land to the San Marcos Land Company headed by Jacob Gruendike for $233,000. The San Marcos Land Company was formed with the intention of developing a town site near the intersection of Grand Avenue and Rancho Santa Fe Road with 5- and 10-acre plots (Figure 3). Residences, a hotel, a post office, and several stores were quickly built and by 1897, there were 87 registered voters. The Santa Fe Railroad announced in the late 1880s that they were going to lay tracks 1 mile away from the center of the developing town. As a result, the town was abandoned in 1901 and many of the buildings were moved to the intersection of Mission Road and Pico Avenue. By 1905, the town had many conveniences and the first school in Barham was moved in 1889 to San Marcos (ASM 2012; CSM 2012).

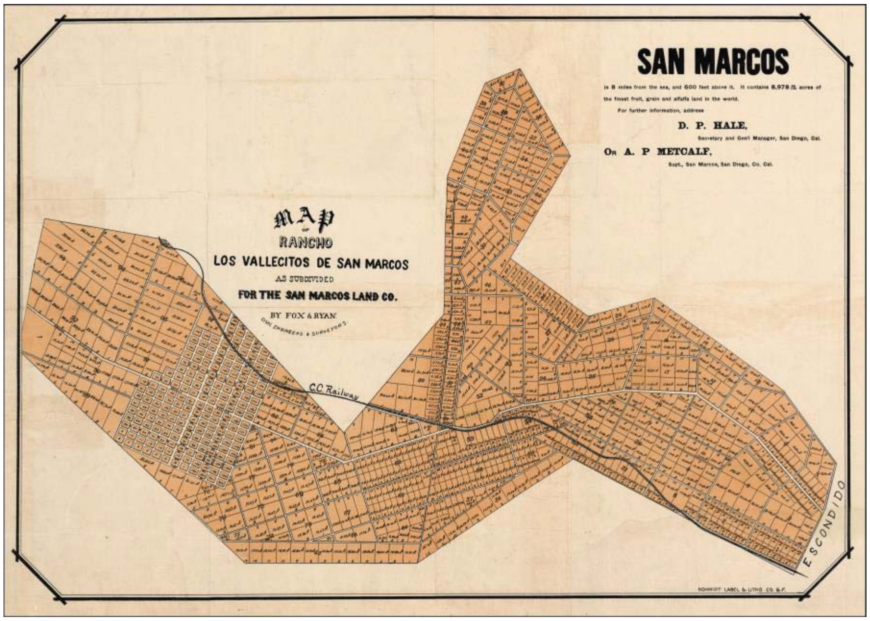


Figure 3. Map of Rancho Los Vallecitos De San Marcos as Subdivided for The San Marcos Land Co. By Fox & Ryan. Civil Engineers & Surveyors (San Francisco 1887)

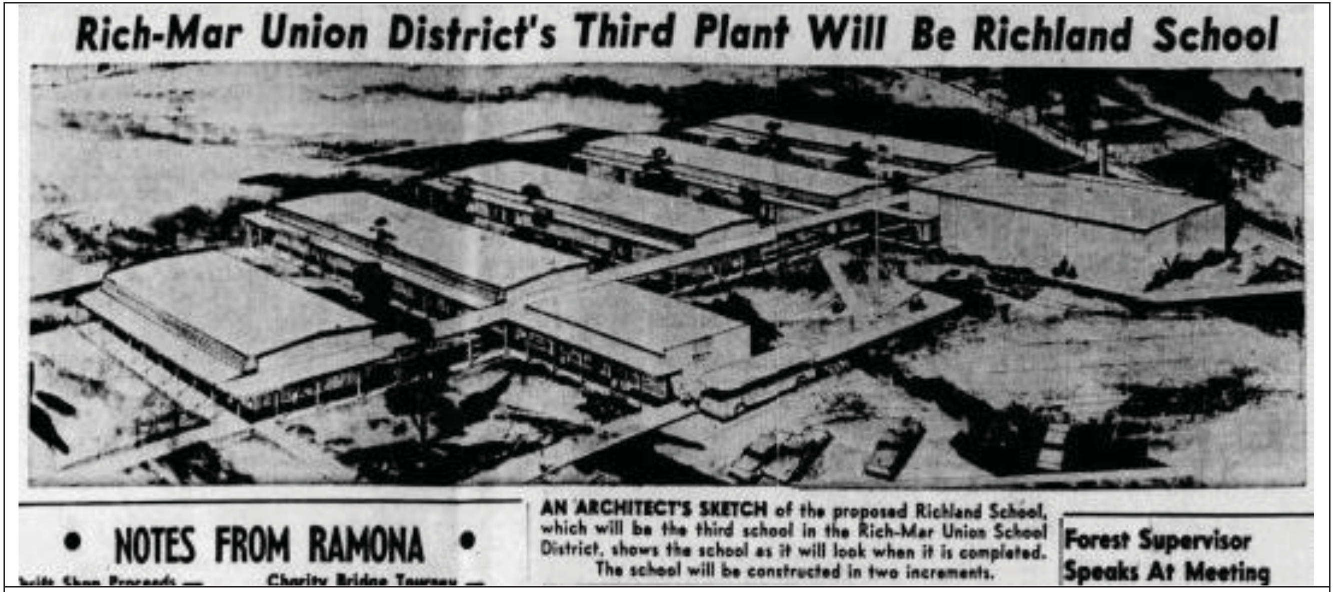
For the first half of the twentieth-century, San Marcos remained a quiet and rural town on the outskirts of San Diego. Agriculture remained the dominant enterprise in the late 1800s and early 1900s, until the mid-1900s when dairies and poultry production became popular in the area. In 1946, San Marcos was chosen as the site of the future Palomar College with permanent buildings being constructed in 1956. Similar to the majority of inland San Diego County, the small population of San Marcos hinged on the lack of water. In 1956, the arrival of Colorado River water in the City supplementing existing local water allowed for a population increase and a boom in development. In May 1955, the San Marcos County Water District was formed to distribute the Colorado River water through a $998,000 water distribution system serving the 10,000-acre district. A county survey predicted that by 1975 there would be a population of 75,000. This population growth was gauged through a variety of ways including the increase in school enrollment. At this time the community's elementary school, Rich-Mar Union School had an enrollment of 468 compared with 143 just ten years earlier. At this time, San Marcos was the fastest growing community for its size in northern San Diego County (Kenney 1956; ASM 2012).

On January 28, 1963, San Marcos became incorporated with a population of 3,200 residents. Construction in the community surged with the San Marcos area showing a building total in 1964 of $1,905,400 including 81 dwellings valued at $1,448,000, more than double the pace of any other area in San Diego (Smith 1964). By 1966, the growth of the San Marcos Valley was attributed to two industries including eggs and digital computer production. These two industries allowed the area to remain partially agricultural, while including more industry and manufacturing. This period has been called a time of "transition" for San Marcos (Stone 1966). Throughout the 1960s the City grew by a couple thousand, while in the 1970s it became the third-fastest growing city in the state with a population of 17,479 in 1980. Growth continued to boom in San Marcos with the population increasing to 83,781 by 2010. Currently the City is the location of five separate colleges and universities including California College San Diego, Palomar College, Cal State San Marcos, University of St. Augustine, and Saint Katherine College. Some of the community's largest employers are education-related such as San Marcos Unified School District and Cal State San Marcos, medically related such as Kaiser Permanente, or general manufacturing such as Hunter

Industries which manufactures irrigation sprinkler systems. In 2018, San Marcos had a population of 94,700 and by 2020, the population of San Marcos is estimated to surpass 100,000 (Nelson 2017).

3.5 Development of Richland Elementary School

Richland Elementary School was originally part of the Rich-Mar Union Elementary School District also known as the Rich-Mar Union School District, which was formed in 1947 with the unionization of the San Marcos and Richland School Districts (WTA 1947). The District's first two elementary schools were Alvin Dunn (now La Mirada Academy) and San Marcos. In January 1959, preliminary plans for the proposed Richland School, which would be the third elementary school in the Rich-Mar School District, were approved by District trustees. The new school was designed by the architectural firm of Paderewski, Mitchell, Dean, and Associates. The school was to cost an estimated $600,000 with a projected 16 classrooms, two kindergartens, and an administrative unit on a 12-acre site at the intersection of Rose Road, Borden Road, and Richland Road. From the initial planning stages the school was to be constructed in two increments as district enrollment increased (Figure 4). The first increment included eight classrooms and a kindergarten. An application for state aid to finance construction of the first increment was prepared and filed in January 1959 (TA 1959a). By April 1959, the school district amended an application with the state Department of Education for funds to construct the proposed Richland Elementary School, east of San Marcos. The original application requested funds for the construction of four classrooms and one kindergarten, which was amended to include eight classrooms, two kindergartens, and an administration unit. The state Department of Finance was responsible for determining the amount of money the state would loan the district for the school's construction (TA 1959c).



Rich-Mar Union District's Third Plant Will Be Richland School

AN ARCHITECT'S SKETCH of the proposed Richland School, which will be the third school in the Rich-Mar Union School District, shows the school as it will look when it is completed. The school will be constructed in two increments.

• NOTES FROM RAMONA •

Shop Proceeds — Charity Bridge Tourney —

Forest Supervisor Speaks At Meeting

Figure 4. Architects sketch of the proposed Richland School, 1959 (Times Advocate 1959)

While Richland Elementary School was in the planning stage, the Rich-Mar School District was seeking two other school sites, one for the district's fourth elementary school and the other for a central junior high school. In March 1959, the District trustees authorized the county counsel's office to initiate the condemnation process to enable the District to obtain two sites totaling 29-acres (TA 1959b). In late 1959, the District received a state loan for $381,000 to finance the construction of Richland Elementary School. The school's first increment was 12 classrooms, two kindergartens, and an administration unit. Soon after receiving the loan, trustees opened bids for the construction of the first portion of the school (TA 1959d). Construction began in February 1960 and was expected to open in September of 1960 with an estimated 300-400 students (TA 1960). The school opened on September 12, 1960, for the Fall 1960 term with a total of 301 students. That day, eight area school districts opened with a total enrollment of 11,142, an increase of 1,971 from the 1959 school year. Leading in enrollment numbers was the Escondido Union Elementary School District where 4,472 students attended five schools, an increase of 755 over opening day the year before. In the Rich-Mar Elementary District, enrollment in 1960 for the three schools was 981 as compared with 912 the year before (TA 1961b).

In April 1961, the architectural firm of Paderewski, Mitchell, Dean, and Associates gave a bronze plaque to then president of the board of trustees Merritt Townsend, which was later installed on the school's administration building. Before the school officially opened for classes parents were invited to visit their children's rooms and to be present at the dedication of the school (TA 1961a). By 1964, bids were advertised for the Richland School addition and awarded in February 1965. The expansion included the addition of a classroom building and an auditorium/cafeteria building to the original building's north and east. Although they were designed by the architectural firm Clyde Mufbauer Architect Inc. of San Diego, the two buildings were included in the school's original 1959 plans (Figure 5) (TA 1964).

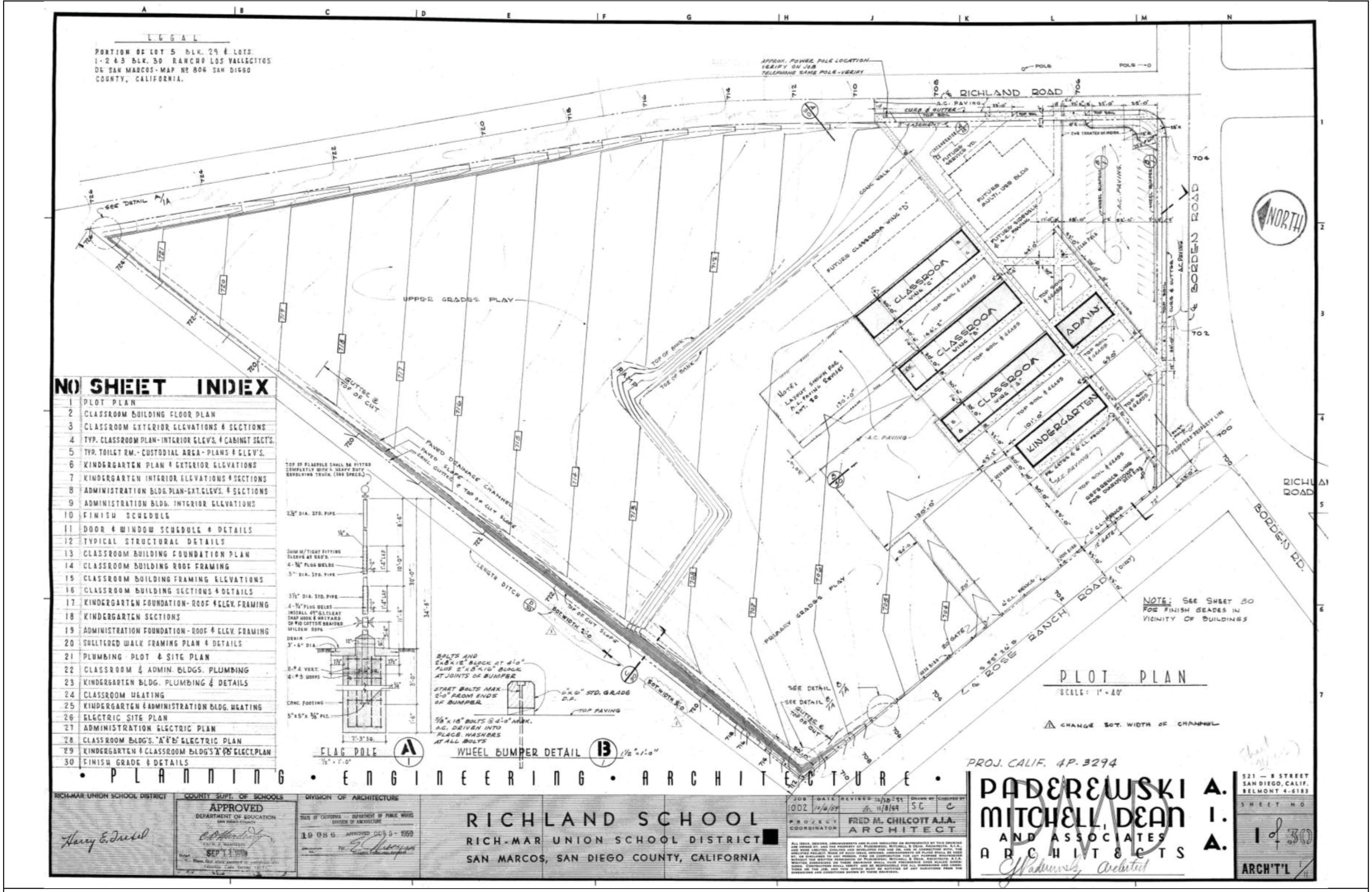


Figure 5. Original architectural drawings for Richland Elementary School, 1959 (Courtesy San Marcos Unified School District)

In 1974, talks began on formation of the San Marcos Unified School District. This would be accomplished through merging San Marcos High School with the then four elementary schools of the Rich-Mar Union School District. There was already community sentiment for unifying the school districts due to the rise in local population. The State Department of Education had a policy that a unified school district must have a minimum average daily attendance of 10,000 students. In 1974, the Rich-Mar district had 2,591 students and San Marcos High School had 1,100. The 10,000 student minimum had halted unification in the past, but by the 1970s, county school officials felt “the potential (for pupil growth) is here, considering the amount of residential building construction going on in San Marcos” (Gruendyke 1974). In 1975, the San Marcos Unified School District was officially formed under a plan approved by the districts, the State Department of Education, the County Board of Education, and San Marcos voters. Ownership of San Marcos High School was passed from the Escondido district to the new San Marcos district.

Throughout the 1970s, the population of San Marcos continued to increase with a population of 17,479 by 1980, sparking the last phase of expansion on Richland Elementary School campus. Like many other schools in the county, the school began to install temporary classrooms on site as early as the mid-1970s and continued to do so throughout the 1980s, 1990s, and 2000s. The school also improved its site during this time with the installation of two play areas, shade structures, temporary restroom buildings, and by increasing the size of the asphalt multi-purpose area to the northwest of the classrooms (NETR 2020; UCSB 2020). In 1987, school officials predicted the districtwide enrollment to be 6,550, but 6,863 students turned up for the first day of Fall semester. To meet the unexpected growth, 17 new portable classrooms had to be moved to the school campuses with 6 more on order, resulting in 88 portable classrooms in the San Marcos Unified School District. All schools showed an increase in students, with the biggest jump seen at San Marcos Elementary School (Fonstein 1987). San Marcos Unified School District continued to add portable classrooms to existing elementary schools as well as construct new schools including La Costa Meadows Elementary, Carrillo Elementary School, Paloma Elementary School, Twin Oaks Elementary School, Discovery Elementary School, Joli Ann Leichtag Elementary School, San Elijo Elementary School, and Knob Hill Elementary School (SMUSD 2020). As of the 2019 school year, Richland Elementary School had 848 students with over 100 teachers, paraprofessionals, and staff in seven permanent buildings and twenty-four portable classrooms. The San Marcos Unified School District currently includes 20 schools (RES 2020; SMUSD 2020).

3.6 Project Site Architectural Style and Design

Architectural Style: Mid-Century Modern (Post-1945)

Mid-century Modern style is reflective of International and Bauhaus styles popular in Europe in the early 20th century. This style and its living designers (e.g., Mies Van der Rohe and Gropius) were disrupted by WWII and moved to the United States. During WWII, the United States established itself as a burgeoning manufacturing and industrial leader, with incredible demand for modern buildings to reflect modern products in the mid-20th century. As a result, many industrial buildings are often “decorated boxes”—plain buildings with applied ornament to suit the era and appear more modern without detracting from the importance of the activity inside the building. Following WWII, the United States had a focus on forward thinking, which sparked architectural movements like Mid-Century Modern. Practitioners of the style were focused on the most cutting-edge materials and techniques. Architects throughout Southern California implemented the design aesthetics made famous by early Modernists like Richard Neutra and Frank Lloyd Wright, who created a variety of modern architectural forms. Like other buildings of this era, Mid-century Modern buildings had to be quickly assembled and use modern materials that could be mass-produced with an honest expression of structure and function. Post-and-beam construction allowed for open floor plans, ease of expansion, and the integration of indoor-outdoor spaces through large-expanses of windows. Schools of this style focused on simple, geometric forms with wide eaves and cantilevered canopies. Exterior materials often included wood, stucco, brick, stone, or steel-framing and glass (McAlester 2013; Morgan 2004; HRG 2007; Sapphos 2014).

Characteristics of the Mid-Century Modern style:

- One- to two-stories in height
- Low, boxy, horizontal proportions
- Simple geometric forms with a lack of exterior decoration
- Commonly asymmetrical
- Flat roofed without coping at roof line; flat roofs hidden behind parapets or cantilevered canopies
- Expressed post-and-beam construction in wood or steel
- Exterior wall materials include stucco, brick, or concrete
- Mass-produced materials
- Simple windows (metal or wood) flush-mounted and clerestory
- Industrially plain doors
- Large window groupings
- Extensive use of sheltered exterior corridors, with flat or slightly sloped roofs supported by posts, piers, or pipe columns

School Design: Finger-Plan (1940-1959)

By the 1950s, design ideas for schools that had been considered experimental in the 1930s had come to full maturity and became the national standard, including the finger-plan and the cluster-plan. Similar to the way in which architectural styles go in and out of popularity as do building plans and designs. Post-World War II, school's exhibiting a unified campus design, buildings that accompanied a high degree of indoor and outdoor integration, ample outdoor spaces, and sheltered corridors became characteristics of the functionalist typology. Educational buildings were given a more domestic scale as opposed to the formality and monumentality that characterized earlier eras of school design. Elementary schools remained one-story in height, while middle and high schools went up to two-stories. Finger-plan schools are decentralized and pavilion-like, with "finger-like" wings, arranged on an axis. The plan was frequently utilized because it allowed for more students to fit on a smaller lot and allowed for easy expansion. During the 1940s and 1950s the flinger-plan and the cluster-plan were the most popular school campus designs in the United States (SE 2014).

Characteristics of the Finger-plan design:

- Building plans and site design clearly express their function
- Classrooms "finger-like" wings arranged on an axis
- Buildings that accompanied a high degree of indoor and outdoor integration

- Large outdoor spaces
- Sheltered corridors
- Generous expanses of windows
- Flat roof or broken pediment roof used for lighting and acoustics
- One-story massing for elementary schools; up to two-stories for junior/high schools

3.7 Project Site Architects

Architects: Paderewski, Mitchell, Dean & Associates, AIA (1948-1961)

The architectural firm Paderewski, Mitchell, Dean & Associates, AIA consisted of Clarence J. Paderewski (1908-2007), Delmar Stuart Mitchell (1916-2002), and Louis Abbott Dean (1912-2002) based in San Diego. The firm was formed in 1948 and became a prominent San Diego architecture firm designing a variety of modernist buildings including schools, banks, restaurants, and municipal buildings as well as custom ranch style tract developments.

Clarence J. Paderewski also known as C.J. Paderewski was born in Cleveland, Ohio in 1908. After attending one year of college at the University of California, Los Angeles he then transferred to UC Berkley where he earned a degree in architecture in 1932. In 1935, Paderewski moved to San Diego and began teaching drafting, architecture, and related subjects for San Diego Unified School District. He has been described as a contributor to San Diego's education system through teaching at Evening High School (1939-1944), the War Training Program (1943-1944), and UC Extension (1944-1957) classes. Paderewski claimed responsibility for many "firsts" in architecture. These include Paderewski being "the first architect to advocate the use of colors in elementary schools," seen first in the design of the John J. Montgomery School in Otay (1946) and designing the first school to utilize radiant heat (via hot water in the floor) in 1947 in San Marcos. In 1956, Paderewski received multiple accolades for his design of the first exterior all-glass elevator on the El Cortez Hotel in San Diego and a geodesic dome on the Palomar College campus (CSD 2007; MSD 2020a).

Mitchell was born in Des Moines, Iowa on August 6, 1916. Between 1934 and 1939 Mitchell attended the University of Washington for architecture. In 1946, he worked as a draftsman for Frank Hope and joined the San Diego Chapter of the AIA in 1948 (MSD 2020c). Dean was born in Winnetka, Illinois on April 12, 1912. After attending high school in Illinois, Dean attended Yale University for architecture. In 1940, Dean and his wife Bette Comstock moved to Coronado where he became an architect for shore establishments with The Eleventh Naval District working in the building at the foot of Broadway in San Diego during World War II. Dean was an active principal in the firm Paderewski, Mitchell, Dean & Associates, AIA for 33 years, retiring in 1981 as chairman of the board. Professionally, Dean served as president of the San Diego Chapter of the American Institute of Architects in 1952, treasurer of the California Council of the AIA, San Diego president of the American Society of Military Engineers, and was a member of the Coronado Planning Commission (CEJ 2002).

Following the end of World War II, Paderewski, Mitchell, and Dean formed a partnership in 1948 and worked under the firm name Paderewski, Mitchell, Dean & Associates, AIA. The firm's first office was in the California Theater building, at 1122 Fourth Ave, San Diego. In 1948, the firm established the first prefabricated plywood wall and roof panel system used in their designs for several schools to meet the demand for rapid school construction. As a result of several commissions, the firm's design specialties became educational and residential housing tracts in San Diego County (Moore et al. 2010). In 1960, the firm incorporated their architectural firm and engineering firm with offices located at 1017 First Avenue, San Diego. In 1961, Mitchell retired, and the firm evolved into Paderewski-Dean & Associates. The firm would later become Paderewski, Dean, Albrecht, and Stevenson, with the addition of partners Richard Albrecht and Frank Stevenson in the mid-1960s (MSD 2020a; CSD 2020).

A sample of Paderewski, Mitchell, Dean & Associates' known work is included below:

- 11th Naval District, Charactron Lab, San Diego, CA (1952)
- Wherry Navy Housing, San Diego, CA (1953)
- State Division of Highways Building, Old Town, CA (1953)
- Cabrillo Terrace Shopping Center Supermarket, Kearny Mesa, CA (1954)
- Central Elementary School, Imperial Beach, CA (1954)
- Palomar College, San Marcos, CA (1956)
- Fletcher Hills Building, San Diego, CA (1957)
- San Diego Blood Bank, Hillcrest, CA (1957)
- San Diego County Medical Society, Bankers Hill, CA (1957)
- Pomerado Union Elementary School, Poway, CA (1958)
- Alvin M. Dunn Elementary School, San Marcos, CA (1959)
- Anthony's Fish Grotto, La Jolla, CA (1960)
- Paderewski Residence #2, Kalmia Place, South Park, CA (1960)
- City Park, Second Street and Imperial Avenue, Imperial Beach, CA (1960)
- Bayside Elementary School, Imperial Beach, CA (1960)
- Oneonta Elementary School, Imperial Beach, CA (1960)
- Dabkovich Building, Fifth Avenue and Spruce Street, San Diego, CA (1961)
- UC San Diego Health, San Diego, CA (1961)
- Mary Fay Pendleton Elementary (1964)

Architect: Clyde Hufbauer (1911-1993)

Clyde Hufbauer was born in 1911 in Los Angeles. Hufbauer and his family moved to San Diego in 1921 and attended San Diego High School and San Diego State College. He then attended University of California, Berkley and received his undergraduate, masters, and Doctorates degree in Architecture, becoming the first in the school's history to receive a doctorate in the subject. After marrying fellow architecture student Arabelle McKee, the couple moved to Mission Beach in San Diego and had three children. Hufbauer soon began his architecture career, designing his family's home, which was noted "as being one of the first 'ultra-modern' houses especially in the late 1930's" (Feeley et al. 2011). His specialty was the design of San Diego schools during the rapid period of city growth that were both functional and economical and worked as chief architect for the San Diego Unified School District. During his career Hufbauer designed 16 middle, junior, and high schools, 63 elementary schools as well as buildings for Poway, Grossmont, Miramar, and Southwestern community colleges typically in the International style. From 1955 to 1965, Hufbauer worked with structural engineer Ted Paulson who was responsible for the 'artisan features' in his buildings. Character-defining features of Hufbauer's schools were being one story in height with interconnecting flat or low sloping roofs, a modular steel structural system with pipe column supports for canopies over the outdoor corridors, banded low walls, horizontal steel window systems facing intervening walkways, and lawns on one side with high transom windows on the opposite side. Hufbauer was known for creating budget conscious schools for state agencies and school districts with little money that were built on time and within budget. He is also credited with creating portable "bungalows" to serve as temporary classrooms post-World War II. Hufbauer died in 1993 while living with his second wife Virginia in Del Mar. In 2008, Hufbauer was established as a San Diego Master Architect with the designation of the Clyde & Arabelle M. Hufbauer Residence #2.

Hufbauer's surviving works for the San Diego Unified School District include the Education Center in University Heights (1953), Alice Birney Elementary School (1953), Crown Point Elementary School (1949) in Pacific Beach, and Mission Bay High School (1953) (MSD 2020b; Feeley et al. 2011; ICF 2014).

A sample of Clyde Hufbauer known work is included below:

- Clyde & Arabelle M. Hufbauer Residence #1, 833 Capistrano Place, Mission Beach, CA (1939)
- Crown Point Elementary School, Pacific Beach, CA (1949)
- Alice Birney Elementary School, 4345 Campus Ave, San Diego, CA (1951-52)
- Clyde & Arabelle M. Residence Hufbauer #2, 1821 Torrey Pines Rd, La Jolla, CA (1952) (Designated SD Historical Resource)
- San Diego Unified School District Board of Education's Eugene Brucker Education Center, 4100 Normal St, San Diego, CA (1953)
- Russell Residence Raitt, 2424 Ellentown, La Jolla, CA (1954)
- Mission Bay High School, 2475 Grand Avenue, Pacific Beach, CA (1954)
- Johnson Avenue Elementary School, El Cajon, CA (1954)
- Gompers Junior High School, 1005 47th St, San Diego, CA (1955)
- Will C. Crawford High School, San Diego, CA (1956)
- Wilson Middle School (1963)
- Miramar (Mesa) Community College, San Diego, CA (1967)

4 Field Survey

4.1 Methods

Dudek Architectural Historian Nicole Frank, MSHP, conducted a pedestrian survey of the Project site for historic built environment resources on December 7, 2020. The survey entailed walking the exteriors of all buildings within the Project site, documenting each building with notes and photographs, specifically noting character-defining features, spatial relationships, observed alterations, and examining any historic landscape features on the property. Dudek documented the fieldwork using field notes, digital photography, close-scale field maps, and aerial photographs. Photographs of the subject property were taken with a digital camera. All field notes, photographs, and records related to the current study are on file at Dudek's Encinitas, California, office.

The Project site is entirely developed and contains no exposed sediment, therefore, an archaeological survey was not completed.

4.2 Results

During the course of the pedestrian survey, Dudek identified one educational property over 45 years old requiring recordation and evaluation for historical significance: Richland Elementary School. Section 5 (Significance Evaluations) provides a detailed physical description of the property and the associated significance evaluation under all applicable national and state designation criteria and integrity requirements.

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5 Significance Evaluations

In order to determine if the proposed Project will impact historical resources under CEQA, the one previously unevaluated property within the Project site was evaluated for historical significance and integrity in consideration of NRHP and CRHR designation criteria and integrity requirements. A detailed physical description of the property is also provided.

5.1 Richland Elementary School

Property Description

The Project site is located at the northern intersection of Rose Ranch Road, Borden Road, and Richland Road on 10.2-acres and comprises one parcel (APN 218-101-05). The Project site presently contains one educational property (Richland Elementary School) constructed in two phases in 1960 and 1965, with multiple temporary classrooms added to the site between circa 1980 and into the 2000s. The property includes seven permanent single-story buildings (Buildings 1-7), 13 portable buildings containing 24 portable classrooms (Buildings 8-20), two storage containers (Buildings 21 and 24), one storage shed (Building 23), and one temporary restroom (Building 22). Surrounding the property are chain link, combination chain link and CMU block, and metal fences. To the east and south of the buildings are two asphalt parking lots. An asphalt play area and playground are located to the west and northwest of the buildings with an additional playground, asphalt play area, and shade structure located to the south of the buildings. In the late 1990s, individual clay tiles were installed as a decorative wall installation on Buildings 5 and 6. Landscaping surrounding the buildings include lawn areas, rows of shrubs, and mature trees with grass lawns separating the buildings accessed by concrete walkways. Figure 2 (Project Location Map), identifies the location of the buildings and structures within the project site and their functions.

Buildings 1, 2, 3, 4, and 5 (1960)

Buildings 1, 2, 3, 4, and 5 were constructed in 1960 and repeat similar character-defining features including their rectangular plan, stucco exterior cladding, flat roof sheathed in rolled composition, eave overhang with simple metal posts, angled metal roof paneling, lack of exterior decoration, one-story in height, and large expanses of windows. The buildings are connected by a flat roof open air pedestrian walkway held up by simple metal posts and a wooden ceiling along the southeast elevations.

Building 1 is rectangular in plan and accessed by a concrete pedestrian walkway and functions as a classroom. The main (southwest) elevation displays metal multi-lite over multi-lite windows, metal entry doors, and fixed multi-lite windows (Figure 6). Fenestration on the southeast, northwest, and northeast elevations include fixed multi-lite windows, awning windows, and multi-lite over multi-lite windows.

Building 2, is rectangular in plan and is accessed from the southern asphalt parking lot and functions as an administrative office. The main (southwest) elevation displays metal horizontal sliding windows and metal entry doors (Figure 7). Fenestration on the southeast, northwest, and northeast elevations include metal horizontal sliding windows and metal entry doors.

Buildings 3, 4, and 5, repeat the same design and all function as classrooms. The three buildings are rectangular in plan and accessed from the southeast by a pedestrian walkway leading to concrete pedestrian pathways along the southwest elevations. The building's main (southwest) elevation's fenestration includes metal entry doors and fixed multi-lite transom windows. Fenestration on the southeast, northwest, and northeast elevations include metal entry doors, metal awning, fixed, and multi-lite over multi-lite windows (Figure 8).

Figure 6. Building 1, Southwest elevation, View to northwest, DSC01343

Figure 7. Building 2, Southeast and northeast elevations, view to west, DSC01618

Figure 8. Building 2, Northeast elevation, View to south, DSC01425

Buildings 6 and 7 (1965)

Buildings 6 and 7 were constructed in 1965 and repeat similar character defining features including stucco exterior cladding, eave overhangs, and lack of exterior decoration. The buildings are connected by a flat roof open air pedestrian walkway held up by simple metal posts and a wooden ceiling along the southeast and northwest elevations.

Building 6, is irregular in plan and one-story in height with a low-pitched front gable roof sheathed in rolled composition roofing and functions as an auditorium and cafeteria. The exterior walls are clad in stucco. Delineating the first and second stories is a flat roof overhang. The main (south) elevation is accessed by pedestrian walkways from the southern asphalt parking lot. Fenestration includes metal entry doors on the south, east, north, and west elevations (Figure 9).

Building 7, is rectangular in plan and one-story in height with a flat roof sheathed in rolled composition with exterior walls clad in stucco and functions as a classroom. The main (southwest) elevation is accessed by a concrete pedestrian walkway and displays a series of metal entry doors. Fenestration on the southeast, northeast, and northwest elevations include metal entry doors and fixed and awning metal windows (Figure 10).

Figure 9. Building 6, West and South elevations, View to northeast, DSC01616

Figure 10. Building 7, Northeast elevation, View to west, DSC01548

Buildings 8-24 (Circa 1980-2000s)

Buildings 8 through 24 are all portable buildings constructed on the property between circa 1980 and the 2000s. The seventeen temporary buildings display as three typologies. Buildings 8, 9, 11, 12, and 13, display as the same temporary classroom type with features including being one-story in height, rectangular in plan, vertical composition siding, flat roof sheathed in rolled composition roofing, and a flat overhang over the main elevations (Figure 11). Fenestration includes metal entry doors and horizontal sliding metal windows. Building 10, the second temporary classroom type with features including being one-story in height, rectangular in plan, vertical composition siding, a low-pitched front pitched roof sheathed in rolled composition roofing, and an overhang over the main entry (Figure 12). Fenestration includes metal entry doors and horizontal sliding metal windows. Buildings 14, 15, 16, 17, 18, 19, and 20, display as the third temporary classroom type with one-story in height, small and rectangular in plan, vertical composition siding, flat roof sheathed in rolled composition roofing, and a flat overhang over the main elevations (Figure 13). Fenestration includes metal entry doors and horizontal sliding metal windows.

Buildings 21 and 24 are metal clad rectangular in plan storage containers with roller doors. Building 22 is a temporary restroom constructed on the property in 2009. It displays similar features as the temporary classroom buildings including being one-story in height, rectangular in plan, vertical composition siding, flat roof, and flat roof overhangs (Figure 14). Fenestration includes four metal entry doors accessed by a ramp. Building 23 is a rectangular in plan storage shed with a front gable roof sheathed in rolled composition roofing and exterior walls are clad in vertical composition siding. Fenestration includes one entry door on the northeast elevation.

Figure 11. Building 13, Southwest elevation, View to north, DSC01454

Figure 12. Building 10, Southeast and northeast elevations, View to west, DSC01604

Figure 13. Buildings 14, 15, 16, 17, 18, and 19, Northeast and northwest elevations, View to south, DSC01451

Figure 14. Building 22, Northwest elevation, View to southeast, DSC01447

Identified Alterations to Richland Elementary School

The following alterations (dates unknown) were identified during the course of the survey and archival research:

- 1965: Addition of Building 6, Auditorium/Cafeteria and Building 7, Classroom to the northeast of the original buildings.
- Between 1980 and early 2000s: Addition of 17 temporary buildings on the site.
- Dates Unknown: Window and door replacements.

NRHP/CRHR Statement of Significance

Criterion A/1: That are associated with events that have made a significant contribution to the broad patterns of our history.

Archival research failed to indicate that the construction of Richland Elementary School was important to the history of elementary school development in the United States, California, or San Marcos. There is no indication that the construction of the school marked an important moment in history or that it is associated with a pattern of events.

San Marcos' population throughout the 1960s grew by a couple thousand, while in the 1970s it became the third-fastest growing city in the state with a population of 17,479 in 1980. Richland Elementary School was originally part of the Rich-Mar Union Elementary School District also known as the Rich-Mar Union School District, which was formed in 1947 with the unionization of the San Marcos and Richland School Districts*.* The district's first two elementary schools were Alvin Dunn (now La Mirada Academy) and San Marcos. In January 1959, the preliminary plans for the proposed Richland School, which was the third elementary school in the Rich-Mar Union School District, were approved by District Trustees. While Richland Elementary School was in the planning stage, the Rich-Mar School District was seeking two other school sites, one for the district's fourth elementary school, and the other for a central junior high school. In March 1959, the District Trustees authorized the County Counsel's Office to initiate the condemnation process to enable the district to obtain two sites totaling 29-acres. After the final construction phase of Richland in 1965, San Marcos Unified School District (previously Rich-Mar) continued to construct new elementary schools including La Costa Meadows Elementary, Carrillo Elementary School, Paloma Elementary School, Twin Oaks Elementary School, Discovery Elementary School, Joli Ann Leichtag Elementary School, San Elijo Elementary School, and Knob Hill Elementary School. San Marcos Unified School District currently includes twenty-two schools.

Richland Elementary School's construction came out of the rising population of San Marcos and the community's need to construct more schools, including elementary schools, within a short period of time. Richland's planning began in January 1959, and by March, two other schools including an elementary school were in the planning process. The construction of Richland Elementary School was merely part of the continuous development of the area in the 1950s and 1960s leading to a population boom in the 1970s. Richland was the third elementary school in the Rich-Mar School district and was neither the first nor the last to be constructed. Furthermore, there is no indication that the establishment of Richland Elementary School served as the focus of the City of San Marcos. The school's establishment did not represent an important event in history, rather it followed a pattern of development that continued through the 1980s in San Marcos.

In summation, Richland Elementary School cannot be associated with events that made a significant contribution to the broad patterns of our history. The school's construction in 1960 and 1965 did not make a significant contribution to the development of San Marcos, rather it followed a continuous pattern of school expansion from the 1950s on. Therefore, the property does not appear eligible under Criterion A of the NRHP or Criterion 1 of the CRHR.

Criterion B/2: That are associated with the lives of persons significant in our past.

To be found eligible under B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research failed to indicate any such direct association with Richland Elementary School and individuals that are known to be historic figures at the national, state, or local level. As such, the school is not known to have any historical associations with people important to the nation's or state's past. Due to a lack of identified significant associations with important persons in history, the Richland Elementary School does not appear eligible under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

Richland Elementary School does not embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, and it does not possess high artistic values. Richland was constructed in two phases by two architectural firms. The first in 1960 by the firm Paderewski, Mitchell, Dean & Associates, AIA and the second in 1965 by Clyde Hufbauer. The school was designed in the Mid-Century Modern architectural style in a finger-plan, which is a very common combination of style and design for schools constructed in the 1950s and early-1960s.

The school displays multiple characteristics of the Mid-Century Modern architectural style and the finger-plan design layout. The Mid-Century Modern characteristics include one-story in height, low, boxy, horizontal proportions, simple geometric forms with a lack of exterior decoration, asymmetrical, flat roofed without coping at roof line, stucco exterior, mass-produced materials, simple metal windows, industrially plain doors, large window groupings, and extensive use of sheltered exterior corridors, with flat roofs supported by pipe columns. The finger-plan design characteristics include classrooms with “finger-like” wings arranged on an axis, sheltered corridors, generous expanses of windows, flat roof, and one-story massing. Despite the property retaining a high-level of architectural and design characteristics, there is no indication that Richland Elementary embodies distinctive characteristics rather it reflects a very common combination of style and design in school architecture from its period of construction. During the 1950s, the flinger-plan was one of the most popular school campus designs in the United States. Archival research failed to indicate that Richland was unique or distinctive within Mid-Century Modern finger-plan elementary schools, rather its design is ubiquitous within schools built in the 1950s. Therefore, it does not embody the distinctive characteristics of a type, period, or method of construction.

Additionally, despite Richland Elementary School’s two phases of construction being designed by two prominent San Diego architectural firms, Paderewski, Mitchell, Dean & Associates, AIA, and Clyde Hufbauer, there is no evidence to suggest that the school rises to the level to be considered a representative and notable work of either firm. The architectural firm Paderewski, Mitchell, Dean & Associates, AIA was formed in 1948 and became a prominent San Diego architecture firm designing a variety of modernist buildings including schools, banks, restaurants, and municipal buildings as well as custom ranch style tract developments. The firm established in 1948 the first prefabricated plywood wall and roof panel system used in their designs for several schools to meet the demand for rapid school construction. Paderewski claimed responsibility for many “firsts” in architecture. These include Paderewski being "the first architect to advocate the use of colors in elementary schools," seen first in the design of the John J. Montgomery School in Otay in 1946 and designing the first school to utilize radiant heat (via hot water in the floor) in 1947 in San Marcos. Within the firm’s body of work, Richland Elementary School does not rise to the level of workmanship of the other property’s designed by the firm. Additionally, it does not reflect any of the firm’s innovative design concepts, such as having a prefabricated plywood wall and roof panel system, being the first school to utilize colors, or being the first school to utilize radiant heat.

The school’s second period of expansion in 1965 was designed by established San Diego Master Architect Clyde Hufbauer. Hufbauer’s specialty was the design of San Diego schools during the rapid period of city growth that were both functional and economical and worked as chief architect for the San Diego Unified School District. During his career Hufbauer designed 16 middle, junior, and high schools, 63 elementary schools as well as buildings for Poway, Grossmont, Miramar, and Southwestern community colleges typically in the International style. Character-defining features of Hufbauer’s schools are being one story in height with interconnecting flat or low sloping roofs, a modular steel structural system with pipe column supports for canopies over the outdoor corridors, banded low walls, horizontal steel window systems facing intervening walkways, and lawns on one side with high transom windows on the opposite side. Despite Richland Elementary School retaining multiple character-defining features of Hufbauer’s typical school design, there is no indication that Richland expresses a particular phase in the development of his work rather it is a common example of his school designs. In comparison to his other surviving works such as Education Center in University Heights (1953) and Alice Birney Elementary School (1953), Richland does not rise to the level of being considered notable. Additionally, Hufbauer was responsible for the design of only two of the seven permanent buildings on the site and as such Richland cannot be considered representative of his work. Therefore, Richland Elementary School does not appear eligible under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: That have yielded, or may be likely to yield, information important in prehistory or history.

There is no evidence to indicate that Richland Elementary School is likely to yield any additional information important to prehistory or history beyond what is already known. The school is also not associated with an archaeological site or a known subsurface cultural component. Therefore, Richland Elementary School does not appear eligible under NRHP Criterion D or CRHR Criterion 4.

Integrity Discussion

In addition to meeting one or more of the above criteria, an eligible resource must retain integrity, which is expressed in seven aspects: location, design, setting, materials, workmanship, feeling, and association. All properties change over the course of time. Consequently, it is not necessary for a property to retain all of its historic physical features or characteristics. The property must retain, however, the essential physical features that enable it to convey its historic identity. In order to retain historic integrity "a property will always possess several, and usually most, of the aspects" (Andrus and Shrimpton 2002). The following sections discuss the integrity of Richland Elementary School.

Location: The school retains integrity of location. The location of the building never shifted nor was it relocated; it maintains the physical location where the historic property was constructed in 1960 and 1965.

Design: The subject property retains integrity of design. Despite the school undergoing two phases of construction in 1960 and 1965, this phased construction was always intended in the school's original planning. The essential elements of space, proportion, scale, technology, ornamentation, and materials have remained largely intact over time. Despite the replacement of several windows and doors there have been no large-scale alterations to the original buildings. Additionally, despite the introduction of multiple temporary classrooms on the site since the 1980s, these buildings are largely removeable and as such can be eliminated from the property at any time.

Setting: The subject property does not retain integrity of setting. Upon its completion in 1960 and 1965, the surrounding neighborhood displayed a moderate number of homes with most of the surrounding land being used for agriculture. Within the following 30 years, the number of residential buildings increased with the development of housing tracts replacing agricultural land. By the early-2000s, the surrounding agricultural land had been replaced entirely with housing tracts.

Materials: The subject property retains integrity of materials. Since the school's construction in 1960 and 1965, the physical elements dating from that period of development have been retained with little replacement. The key exterior materials dating from the construction are existent and replacements of windows and doors has not significantly affected its integrity of materials.

Workmanship: Similar to integrity of materials, the subject property retains integrity of workmanship. The physical evidence of skill required to construct the 1960s school has been retained due to the lack of large-scale alterations to the property since its construction in 1960 and 1965.

Feeling: The subject property retains integrity of feeling. The property is still able to express itself as an elementary school constructed in the early 1960s. The physical features, when taken together, convey the property's historic character, despite the installation of multiple temporary classrooms to the property beginning in the 1980s. These temporary classrooms do not significantly affect the property's ability to present as a 1960s school.

Association: Finally, the subject property does not retain integrity of association due to the lack of links between an important historic event or person and the property.

In summary, Richland Elementary School retains integrity of location, design, materials, workmanship, and feeling. The subject property lacks integrity of setting and association.

Summary of Evaluation Findings

The evaluation finds that Richland Elementary School is not eligible under any NRHP or CRHR designation criteria at the individual level due to lack of important historical associations and architectural merit.

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6 Findings and Conclusions

6.1 Summary of Findings

No cultural resources were identified within the Project site as a result of the CHRIS records search, extensive archival research, SLF search, field survey, and property significance evaluation. The property at 910 Borden Road, Richland Elementary School, does not appear eligible for NRHP or CRHR designation due to a lack of significant historical associations and architectural merit. Therefore, the property is not considered a historical resource for the purposes of CEQA. Further, no potential indirect impacts to historical resources were identified.

While no surface or recorded evidence of cultural resources was identified as a result of this study, it is possible that subsurface resources could be encountered/impacted by ground disturbing activities associated with the Project. The District, through ongoing Native American consultation, may determine that monitoring for archaeological and Native American resources is required. Recommendations to reduce impacts to undiscovered, subsurface cultural resources are provided below.

6.2 Recommendations

In consideration of the cultural resources investigation, impacts to cultural resources would be less-than-significant. No previous or new cultural resources were identified within the Project site as a result of the current study; therefore, no further management recommendations, including monitoring, are necessary beyond standard protection measures to address unanticipated discoveries of cultural resources and human remains (listed below).

Unanticipated Discovery of Cultural Resources

In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed Project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether or not additional study is warranted. Depending upon the significance of the find, the archaeologist may simply record the find and allow work to continue. If the discovery proves significant under CEQA or Section 106 of the NHPA, additional work such as preparation of an archaeological treatment plan, testing, or data recovery may be warranted.

Unanticipated Discovery of Human Remains

In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the remains are determined to be Native American, the Coroner shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the MLD from the deceased Native American. The MLD shall complete their inspection within 48 hours of being granted access to the site. The MLD would then determine, in consultation with the property owner, the disposition of the human remains.

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Appendix A

Confidential Records Search Results

Appendix B

DPR Form

State of California ♁ The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code 6Z

Other Listings
Review Code Reviewer Date

Page 1 **of** 29 ***Resource Name or #:** (Assigned by recorder) Richland Elementary School
P1. Other Identifier: 910 Borden Road

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted**
***a. County** San Diego **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** San Marcos, CA **Date** 1996 (2000 ed.) **T** 12S; **R** 3W; S1 ■ **of Sec** ; San Bernardino **B.M.**
c. Address 910 Borden Road City San Marcos Zip 92069
d. UTM: (Give more than one for large and/or linear resources) Zone 11S , 486846 mE/ 3668510 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)
Latitude: 33°09'19.0"N, Longitude: 117°08'27.8"W; APN: 218-101-05-00

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Project site is located at the northern intersection of Rose Ranch Road, Borden Road, and Richland Road on 10.2-acres and comprises one parcel (APN 218-101-05). The Project site presently contains one educational property (Richland Elementary School) constructed in two phases in 1960 and 1965, with multiple temporary classrooms added to the site between circa 1980 and into the 2000s. **See Continuation Sheet.**

***P3b. Resource Attributes:** (List attributes and codes) HP.15 Educational Building
***P4.Resources Present:** ■ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)

P5b. Description of Photo: (view, date, accession #) Southwest elevation, view to north, DSC01628

***P6. Date Constructed/Age and Source:** ■ Historic ☐ Prehistoric ☐ Both
1960 and 1965 (Historic Newspapers)

***P7. Owner and Address:**
San Marcos Unified School District, 255 Pico Ave, STE 250, San Marcos, CA 92069

***P8. Recorded by:** (Name, affiliation, and address) Nicole Frank, Dudek, 605 Third St., Encinitas, CA 92024

***P9. Date Recorded:** 12/7/2020

***P10. Survey Type:** (Describe)
Pedestrian

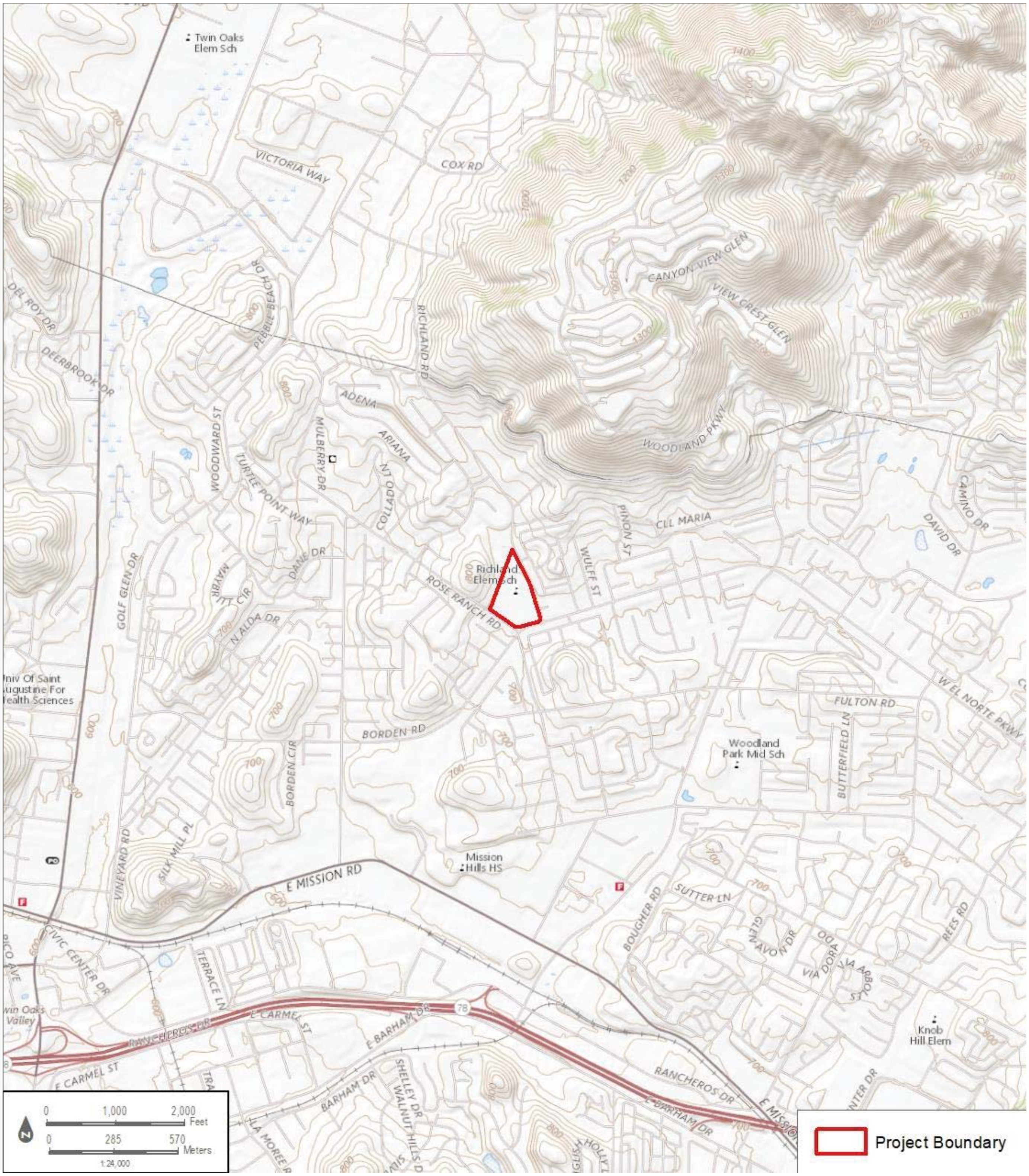
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Cultural Resources Technical Report for Richland Elementary School Reconstruction Project, San Marcos, California. 2020. Dudek.

***Attachments:** ☐NONE ■Location Map ■Continuation Sheet ■Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

Page 2 **of** 29 ***Resource Name or #** (Assigned by recorder) Richland Elementary School
***Map Name:** San Marcos, CA ***Scale:** 1:24,000 ***Date of map:** 1996 (2000 ed.)



***Required information**

State of California ♁ The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#

BUILDING, STRUCTURE, AND OBJECT RECORD

***Resource Name or #** (Assigned by recorder) Richland Elementary School ***NRHP Status Code** 6Z
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B1. Historic Name: Richland School
B2. Common Name: Richland Elementary School
B3. Original Use: Elementary school B4. Present Use: Elementary school
***B5. Architectural Style:** Mid-Century Modern
***B6. Construction History:** (Construction date, alterations, and date of alterations)

Constructed in 1960 and expanded in 1965. Between 1980 and early 2000s: Addition of 13 temporary buildings on the site. Dates Unknown: Window and door replacements.

***B7. Moved?** ☒**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Paderewski, Mitchell, Dean & Associates, AIA (1960) and Clyde Hufbauer (1965) b. Builder: unknown
***B10. Significance: Theme** N/A **Area** N/A

Period of Significance N/A **Property Type** N/A **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Historical Overview of San Diego

Post-Contact history for the State of California is generally divided into three periods: the Spanish Period (1769–1821), Mexican Period (1821–1846), and American Period (1846–present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between 1769 and 1823. **See Continuation Sheet.**

B11. Additional Resource Attributes: (List attributes and codes)
***B12. References:**

See Continuation Sheet.

B13. Remarks:

***B14. Evaluator:** Nicole Frank, MSHP
***Date of Evaluation:** 12/16/2020

(This space reserved for official comments.)

***P3a. Description (continued):**

The property includes seven permanent single-story buildings (Buildings 1-7), 13 portable buildings containing 24 portable classrooms (Buildings 8-20), two storage containers (Buildings 21 and 24), one storage shed (Building 23), and one temporary restroom (Building 22). Surrounding the property are chain link, combination chain link and CMU block, and metal fences. To the east and south of the buildings are two asphalt parking lots. An asphalt play area and playground are located to the west and northwest of the buildings with an additional playground, asphalt play area, and shade structure located to the south of the buildings. In the late 1990s, individual clay tiles were installed as a decorative wall installation on Buildings 5 and 6. Landscaping surrounding the buildings include lawn areas, rows of shrubs, and mature trees with grass lawns separating the buildings accessed by concrete walkways.

Buildings 1, 2, 3, 4, and 5 (1960)

Buildings 1, 2, 3, 4, and 5 were constructed in 1960 and repeat similar character-defining features including their rectangular plan, stucco exterior cladding, flat roof sheathed in rolled composition, eave overhang with simple metal posts, angled metal roof paneling, lack of exterior decoration, one-story in height, and large expanses of windows. The buildings are connected by a flat roof open air pedestrian walkway held up by simple metal posts and a wooden ceiling along the southeast elevations.

Building 1 is rectangular in plan and accessed by a concrete pedestrian walkway and functions as a classroom. The main (southwest) elevation displays metal multi-lite over multi-lite windows, metal entry doors, and fixed multi-lite windows (Figure 1). Fenestration on the southeast, northwest, and northeast elevations include fixed multi-lite windows, awning windows, and multi-lite over multi-lite windows.

Building 2, is rectangular in plan and is accessed from the southern asphalt parking lot and functions as an administrative office. The main (southwest) elevation displays metal horizontal sliding windows and metal entry doors (Figure 2). Fenestration on the southeast, northwest, and northeast elevations include metal horizontal sliding windows and metal entry doors.

Buildings 3, 4, and 5, repeat the same design and all function as classrooms. The three buildings are rectangular in plan and accessed from the southeast by a pedestrian walkway leading to concrete pedestrian pathways along the southwest elevations. The building’s main (southwest) elevation’s fenestration includes metal entry doors and fixed multi-lite transom windows. Fenestration on the southeast, northwest, and northeast elevations include metal entry doors, metal awning, fixed, and multi-lite over multi-lite windows (Figure 3).

Buildings 6 and 7 (1965)

Buildings 6 and 7 were constructed in 1965 and repeat similar character defining features including stucco exterior cladding, eave overhangs, and lack of exterior decoration. The buildings are connected by a flat roof open air pedestrian walkway held up by simple metal posts and a wooden ceiling along the southeast and northwest elevations.

Building 6, is irregular in plan and a combination one-story in height with a low-pitched front gable roof sheathed in rolled composition roofing and functions as an auditorium and cafeteria. The exterior walls are clad in stucco. Delineating the first and second stories is a flat roof overhang. The main (south) elevation is accessed by pedestrian

CONTINUATION SHEET

Property Name: Richland Elementary School
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walkways from the southern asphalt parking lot. Fenestration includes metal entry doors on the south, east, north, and west elevations (Figure 4).

Building 7, is rectangular in plan and one-story in height with a flat roof sheathed in rolled composition with exterior walls clad in stucco and functions as a classroom. The main (southwest) elevation is accessed by a concrete pedestrian walkway and displays a series of metal entry doors. Fenestration on the southeast, northeast, and northwest elevations include metal entry doors and fixed and awning metal windows (Figure 5).

Buildings 8-24 (Circa 1980-2000s)

Buildings 8 through 24 are all portable buildings constructed on the property between circa 1980 and the 2000s. The seventeen temporary buildings display as three typologies. Buildings 8, 9, 11, 12, and 13, display as the same temporary classroom type with features including being one-story in height, rectangular in plan, vertical composition siding, flat roof sheathed in rolled composition roofing, and a flat overhang over the main elevations (Figure 6). Fenestration includes metal entry doors and horizontal sliding metal windows. Building 10, the second temporary classroom type with features including being one-story in height, rectangular in plan, vertical composition siding, a low-pitched front pitched roof sheathed in rolled composition roofing, and an overhang over the main entry (Figure 7). Fenestration includes metal entry doors and horizontal sliding metal windows. Buildings 14, 15, 16, 17, 18, 19, and 20, display as the third temporary classroom type with one-story in height, small and rectangular in plan, vertical composition siding, flat roof sheathed in rolled composition roofing, and a flat overhang over the main elevations (Figure 8). Fenestration includes metal entry doors and horizontal sliding metal windows.

Buildings 21 and 24 are metal clad rectangular in plan storage containers with roller doors. Building 22 is a temporary restroom constructed on the property in 2009. It displays similar features as the temporary classroom buildings including being one-story in height, rectangular in plan, vertical composition siding, flat roof, and flat roof overhangs (Figure 9). Fenestration includes four metal entry doors accessed by a ramp. Building 23 is a rectangular in plan storage shed with a front gable roof sheathed in rolled composition roofing and exterior walls are clad in vertical composition siding. Fenestration includes one entry door on the northeast elevation.

***B10. Significance (continued):**

Independence from Spain in 1821 marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican–American War, signals the beginning of the American Period when California became a territory of the United States.

Spanish Period (1769–1821)

The Spanish colonization of Alta California began in 1769 with the founding of Mission Basilica San Diego de Alcalá by Father Junípero Serra. Concerns over Russian and English interests in California motivated the Spanish government to send an expedition of soldiers, settlers, and missionaries to occupy and secure the northwestern borderlands of New Spain through the establishment of a Presidio, Mission, and Pueblo. The Spanish explorers first camped on the shore of the Bay in the area that is now downtown San Diego. Lack of water at this location, however, led to moving the camp on May 14, 1769, to a small hill closer to the San Diego River and near the Kumeyaay village of Cosoy. Father Junípero Serra arrived in July of the same year and found the Presidio serving mostly as a hospital. The

Spanish built a primitive mission and presidio structure on the hill near the river.

Bad feelings soon developed between the native Kumeyaay and the soldiers, resulting in construction of a stockade that, by 1772, included barracks for the soldiers; a storehouse for supplies; a house for the missionaries; and a chapel, which had been improved. The log and brush huts were gradually replaced with buildings made of adobe bricks. Flat earthen roofs were eventually replaced by pitched roofs with rounded roof tiles. Clay floors were eventually lined with fired brick.

In August 1774, the Spanish missionaries moved the Mission Basilica San Diego de Alcalá to its present location 6 miles up the San Diego River valley (modern Mission Valley) near the Kumeyaay village of Nipaguay. Begun as a thatched chapel and compound built of willow poles, logs, and tules, the new mission was sacked and burned in the Kumeyaay uprising of November 5, 1775. The first adobe chapel was completed in October 1776, and the present church was begun the following year. A succession of building programs through 1813 resulted in the final plan that included the church, bell tower, sacristy, courtyard, residential complex, workshops, corrals, gardens, and cemetery. Orchards, reservoirs, and other agricultural installations were built to the south on the lower San Diego River alluvial terrace and were irrigated by a dam and aqueduct system. The initial Spanish occupation and mission system brought about profound changes in the lives of the Kumeyaay people. Substantial numbers of the coastal Kumeyaay were forcibly brought into the mission or died from introduced diseases.

As early as 1791, presidio commandants in California were given the authority to grant small house lots and garden plots to soldiers and their families, and sometime after 1800, soldiers and their families began to move down the hill near the San Diego River. Historian William Smythe noted that Don Blas Aguilar, who was born in 1811, remembered at least 15 such grants below Presidio Hill by 1821, of which only five that were within the boundaries of what would become Old Town had houses in 1821. These were the retired commandant Francisco Ruiz's adobe (now known as the Carrillo Adobe), another building later owned by Henry Fitch on Calhoun Street, the Ybanes and Serrano houses on Juan Street near Washington Street, and a small adobe house on the main plaza owned by Juan Jose Maria Marron.

Mexican Period (1821–1846)

In 1822, the political situation changed as Mexico won its independence from Spain, and San Diego became part of the Mexican Republic. The Mexican government opened California to foreign trade, began issuing private land grants in the early 1820s, created the rancho system of large agricultural estates, secularized the Spanish missions in 1833, and oversaw the rise of the civilian pueblo. By 1827, as many as 30 homes existed around the central plaza, and in 1835, Mexico granted San Diego official pueblo (town) status. At this time, the town had a population of nearly 500 residents, later reaching a peak of roughly 600. By 1835 the presidio, once the center of life in Spanish San Diego, had been abandoned and lay in ruins. Mission Basilica San Diego de Alcalá fared little better. The town and the ship landing area at La Playa were now the centers of activity in Mexican San Diego. However, the new Pueblo of San Diego did not prosper, as some other California towns did during the Mexican Period.

Secularization in what is now San Diego County triggered increased Native American hostilities against the Californios during the late 1830s. The attacks on outlying ranchos, along with unstable political and economic factors, lead to San Diego's population decline to approximately 150 permanent residents by 1840. San Diego's official Pueblo status was removed by 1838, and it was made a subprefecture of the Los Angeles Pueblo. When the Americans took over after 1846, the situation had stabilized somewhat, and the population had increased to roughly 350 non-Native American residents. The Native American population continued to decline, as Mexican occupation brought about continued displacement and acculturation of Native American populations.

American Period (1846–Present)

The American Period began in 1846 when United States military forces occupied San Diego; this period continues today. When United States military forces occupied San Diego in July 1846, the town's residents split on their course of action. Many of the town's leaders sided with the Americans, but other prominent families opposed the United States' invasion. In December 1846, a group of Californios under Andres Pico engaged United States Army forces under General Stephen Kearney at the Battle of San Pasqual and inflicted many casualties. However, the Californio resistance was defeated in two small battles near Los Angeles, and effectively ended the resistance by January 1847. The Americans assumed formal control with the Treaty of Guadalupe-Hidalgo in 1848, and introduced Anglo culture and society, American political institutions, and American commerce. In 1850, the Americanization of San Diego began to develop rapidly.

On February 18, 1850, the California State Legislature formally organized San Diego County. The first elections were held at San Diego and La Playa on April 1, 1850, for county officers. San Diego grew slowly during the next decade. San Diegans attempted to develop the town's interests through a transcontinental railroad plan and development of a new town closer to the Bay. The failure of these plans, added to a severe drought that crippled ranching and the onset of the Civil War, left San Diego as a remote frontier town. These issues led to a drop in the town's population from 650 in 1850 to 539 in 1860. Not until land speculator and developer Alonzo Horton arrived in 1867 did San Diego begin to develop fully into an active American town.

Alonzo Horton's development of a New San Diego (modern downtown) in 1867 began to swing the community's focus away from Old Town and began the urbanization of San Diego. Expansion of trade brought an increase in the availability of building materials. Wood buildings gradually replaced adobe structures. Some of the earliest buildings to be erected in the American Period were "pre-fab" houses that were built on the east coast of the United States and shipped in sections around Cape Horn and reassembled in San Diego. Development spread from downtown due to a variety of factors, including the availability of potable water and transportation corridors. Factors such as views and access to public facilities affected land values, which in turn affected the character of neighborhoods that developed. During the Victorian Era of the late 1800s and early 1900s, the areas of Golden Hill, Uptown, Banker's Hill, and Sherman Heights were developed. Examples of the Victorian Era architectural styles remain in these communities, and in Little Italy, which developed at the same time. At the time downtown was being built, there began to be summer cottage/retreat development in what are now the beach communities and La Jolla area. The early structures in these areas were not of substantial construction since they were primarily built for temporary vacation housing.

Development also spread to the greater North Park and Mission Hills areas during the early 1900s. The neighborhoods were built as small lots, a single lot at a time; there was not large tract housing development of these neighborhoods. This provided affordable housing away from the downtown area, and development expanded as transportation improved. Barrio Logan began as a residential area, but because of proximity to rail freight and shipping freight docks, the area became more mixed, with conversion to industrial uses. This area was more suitable to industrial uses because land values were not as high. Topographically, the area is more level, and it does not have views like the areas north of downtown. Various ethnic groups settled in the area because of the affordability of land ownership.

San Ysidro began to be developed around the turn of the 20th century. The early settlers were followers of the Littlelanders colonies movement. There, the pattern of development was designed to accommodate small plots of land for each homeowner to farm as part of a farming/residential cooperative community. Nearby Otay Mesa-Nestor began to be developed by farmers of Germanic and Swiss background. Some of the prime citrus groves in California were in the Otay Mesa-Nestor area. In addition, there were grape growers of Italian heritage who settled in the Otay River Valley and tributary canyons who produced wine for commercial purposes.

San Diego State University was established in the 1920s, and development of the State College area began, including development of the Navajo community as outgrowth from the college area and from the west. There was farming and ranching in Mission Valley until the middle portion of the 20th century when the uses were converted to commercial and residential. There were dairy farms and chicken ranches adjacent to the San Diego River where now there are motels, restaurants, office complexes, and regional shopping malls. There was little development north of the San Diego River until Linda Vista was developed as military housing in the 1940s, when the federal government improved public facilities and extended water and sewer pipelines to the area. From Linda Vista, development spread north of Mission Valley to the Clairemont Mesa and Kearny Mesa areas. Development in these communities was mixed-use and residential on moderate-sized lots.

Tierrasanta, previously owned by the U.S. Navy, was developed in the 1970s. It was one of the first planned developments in the area with segregation of uses. Tierrasanta and many of the communities that have developed since, such as Rancho Penasquitos and Rancho Bernardo, represent the typical development pattern in San Diego in the last 25 to 30 years: uses are well segregated, with commercial uses located along the main thoroughfares and residential uses located beyond that. Industrial uses are located in planned industrial parks.

Historical Overview of San Marcos (1840-Present)

The majority of the City of San Marcos was originally part of Rancho Los Vallecitos de San Marcos, an 8,877-acre Mexican land grant given in 1840 by Governor Juan Bautista Alvarado to Don José María Alverado. Prior to the secularization of the missions, the land was used for cattle-grazing. Don José married María Lugarda Osuna, the daughter of Don Juan María Osuna who owned San Dieguito Rancho. In 1846, after the Battle of San Pasqual, Don José and ten other rancheros were captured by a band of Indians and taken to an Indian ranchería at Agua Caliente and killed. After Don José's death, Lugarda married Luis Machado, the owner of Rancho Buena Vista. Following their marriage, it is unclear who owned Rancho Los Vallecitos de San Marcos, but in 1883 the U.S. Land Commission granted the Rancho patent to Lorenzo Soto. Soto fought against the Americans at the Battle of San Pasqual. The Rancho later came into the possession of Cave J. Couts, a former Army officer and owner of the adjacent Rancho Guajome and Buena Vista. Couts ran the property as a cattle ranch and did not build any substantial structures on the land (ASM 2012; Moyer 1968).

In November 1885, the transcontinental railroad came to San Diego resulting in a real estate boom for the City. In the mid-1880s, the City's population soared from 5,000 in 1885 to 40,000 in 1889. Speculators formed land companies and began to subdivide townsites throughout the county, which stimulated the demand for agricultural land. Between 1880 and 1890, the number of farms increased from 696 to 2,747. The real estate boom occurring in San Diego brought homesteaders to the San Marcos area. These settlements were typical of the small agricultural communities, characterized by widely spread out settlements united by a common school district, post office, church, and general store. The first permanent settlement in the San Marcos area was made by Major Gustavus French Merriam from Topeka, Kansas. The homestead consisted of 160 acres in the northern section of Twin Oaks Valley and began the production of wine and honey. In the early 1880s, Dutch and German immigrants began moving into the area. In 1883, John H. Barham founded the first town in the area, Barham, and by 1884 there was a post office, blacksmith, feed store, and a weekly newspaper. An adjacent small settlement named Buena developed 4 miles northwest of Barham and had a school. In 1916, the Vista Unified School District was formed from the former Vista, Buena, and Delpy school districts (ASM 2012; Stone 1966).

In 1887, Couts' widow sold San Marcos Ranch to O.S. Hubbell who then sold the land to the San Marcos Land Company headed by Jacob Gruendike for $233,000. The San Marcos Land Company was formed with the intention of developing a town site near the intersection of Grand Avenue and Rancho Santa Fe Road with 5- and 10-acre plots (Figure 3). Residences, a hotel, a post office, and several stores were quickly built and by 1897, there were 87 registered voters. The Santa Fe Railroad announced in the late 1880s that they were going to lay tracks 1 mile away from the center of the developing town. As a result, the town was abandoned in 1901 and many of the buildings were moved to the intersection of Mission Road and Pico Avenue. By 1905, the town had many conveniences and the first school in Barham was moved in 1889 to San Marcos (ASM 2012; CSM 2012).

For the first half of the twentieth-century, San Marcos remained a quiet and rural town on the outskirts of San Diego. Agriculture remained the dominant enterprise in the late 1800s and early 1900s, until the mid-1900s when dairies and poultry production became popular in the area. In 1946, San Marcos was chosen as the site of the future Palomar College with permanent buildings being constructed in 1956. Similar to the majority of inland San Diego County, the small population of San Marcos hinged on the lack of water. In 1956, the arrival of Colorado River water in the City supplementing existing local water allowed for a population increase and a boom in development. In May 1955, the San Marcos County Water District was formed to distribute the Colorado River water through a $998,000 water distribution system serving the 10,000-acre district. A county survey predicted that by 1975 there would be a population of 75,000. This population growth was gauged through a variety of ways including the increase in school enrollment. At this time the community's elementary school, Rich-Mar Union School had an enrollment of 468 compared with 143 just ten years earlier. At this time, San Marcos was the fastest growing community for its size in northern San Diego County (Kenney 1956; ASM 2012).

On January 28, 1963, San Marcos became incorporated with a population of 3,200 residents. Construction in the community surged with the San Marcos area showing a building total in 1964 of $1,905,400 including 81 dwellings valued at $1,448,000, more than double the pace of any other area in San Diego (Smith 1964). By 1966, the growth of the San Marcos Valley was attributed to two industries including eggs and digital computer production. These two industries allowed the area to remain partially agricultural, while including more industry and manufacturing. This period has been called a time of "transition" for San Marcos (Stone 1966). Throughout the 1960s the City grew by a couple thousand, while in the 1970s it became the third-fastest growing city in the state with a population of 17,479 in 1980. Growth continued to boom in San Marcos with the population increasing to 83,781 by 2010. Currently the City is the location of five separate colleges and universities including California College San Diego, Palomar College, Cal State San Marcos, University of St. Augustine, and Saint Katherine College. Some of the community's largest employers are education-related such as San Marcos Unified School District and Cal State San Marcos, medically related such as Kaiser Permanente, or general manufacturing such as Hunter Industries which manufactures irrigation sprinkler systems. In 2018, San Marcos had a population of 94,700 and by 2020, the population of San Marcos is estimated to surpass 100,000 (Nelson 2017).

Development of Richland Elementary School

Richland Elementary School was originally part of the Rich-Mar Union Elementary School District also known as the Rich-Mar Union School District, which was formed in 1947 with the unionization of the San Marcos and Richland School Districts (WTA 1947). The District's first two elementary schools were Alvin Dunn (now La Mirada Academy) and San Marcos. In January 1959, preliminary plans for the proposed Richland School, which would be the third elementary school in the Rich-Mar School District, were approved by District trustees. The new school was designed by the architectural firm of Paderewski, Mitchell, Dean, and Associates. The school was to cost an estimated $600,000 with a projected 16 classrooms, two kindergartens, and an administrative unit on a 12-acre site at the intersection of Rose Road, Borden Road, and Richland Road. From the initial planning stages the school was to be constructed in two increments as district enrollment increased (Figure 4). The first increment included eight classrooms and a kindergarten. An application for state aid to finance construction of the first increment was prepared and filed in January 1959 (TA 1959a). By April 1959, the school district amended an application with the state Department of Education for funds to construct the proposed Richland Elementary School, east of San Marcos. The original application requested funds for the construction of four classrooms and one kindergarten, which was amended to include eight classrooms, two kindergartens, and an administration unit. The state Department of Finance was responsible for determining the amount of money the state would loan the district for the school's construction (TA 1959c).

While Richland Elementary School was in the planning stage, the Rich-Mar School District was seeking two other school sites, one for the district's fourth elementary school and the other for a central junior high school. In March 1959, the District trustees authorized the county counsel's office to initiate the condemnation process to enable the District to obtain two sites totaling 29-acres (TA 1959b). In late 1959, the District received a state loan for $381,000 to finance the construction of Richland Elementary School. The school's first increment was 12 classrooms, two kindergartens, and an administration unit. Soon after receiving the loan, trustees opened bids for the construction of the first portion of the school (TA 1959d). Construction began in February 1960 and was expected to open in September of 1960 with an estimated 300-400 students (TA 1960). The school opened on September 12, 1960, for the Fall 1960 term with a total of 301 students. That day, eight area school districts opened with a total enrollment of 11,142, an increase of 1,971 from the 1959 school year. Leading in enrollment numbers was the Escondido Union Elementary School District where 4,472 students attended five schools, an increase of 755 over opening day the year before. In the Rich-Mar Elementary District, enrollment in 1960 for the three schools was 981 as compared with 912 the year before (TA 1961b).

In April 1961, the architectural firm of Paderewski, Mitchell, Dean, and Associates gave a bronze plaque to then president of the board of trustees Merritt Townsend, which was later installed on the school's administration building. Before the school officially opened for classes parents were invited to visit their children's rooms and to be present at the dedication of the school (TA 1961a). By 1964, bids were advertised for the Richland School addition and awarded in February 1965. The expansion included the addition of a classroom building and an auditorium/cafeteria building to the original building's north and east. Although they were designed by the architectural firm Clyde Mufbauer Architect Inc. of San Diego, the two buildings were included in the school's original 1959 plans (Figure 12) (TA 1964).

In 1974, talks began on formation of the San Marcos Unified School District. This would

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be accomplished through merging San Marcos High School with the then four elementary schools of the Rich-Mar Union School District. There was already community sentiment for unifying the school districts due to the rise in local population. The State Department of Education had a policy that a unified school district must have a minimum average daily attendance of 10,000 students. In 1974, the Rich-Mar district had 2,591 students and San Marcos High School had 1,100. The 10,000 student minimum had halted unification in the past, but by the 1970s, county school officials felt “the potential (for pupil growth) is here, considering the amount of residential building construction going on in San Marcos” (Gruendyke 1974). In 1975, the San Marcos Unified School District was officially formed under a plan approved by the districts, the State Department of Education, the County Board of Education, and San Marcos voters. Ownership of San Marcos High School was passed from the Escondido district to the new San Marcos district.

Throughout the 1970s, the population of San Marcos continued to increase with a population of 17,479 by 1980, sparking the last phase of expansion on Richland Elementary School campus. Like many other schools in the county, the school began to install temporary classrooms on site as early as the mid-1970s and continued to do so throughout the 1980s, 1990s, and 2000s. The school also improved its site during this time with the installation of two play areas, shade structures, temporary restroom buildings, and by increasing the size of the asphalt multi-purpose area to the northwest of the classrooms (NETR 2020; UCSB 2020). In 1987, school officials predicted the districtwide enrollment to be 6,550, but 6,863 students turned up for the first day of Fall semester. To meet the unexpected growth, 17 new portable classrooms had to be moved to the school campuses with 6 more on order, resulting in 88 portable classrooms in the San Marcos Unified School District. All schools showed an increase in students, with the biggest jump seen at San Marcos Elementary School (Fonstein 1987). San Marcos Unified School District continued to add portable classrooms to existing elementary schools as well as construct new schools including La Costa Meadows Elementary, Carrillo Elementary School, Paloma Elementary School, Twin Oaks Elementary School, Discovery Elementary School, Joli Ann Leichtag Elementary School, San Elijo Elementary School, and Knob Hill Elementary School (SMUSD 2020). As of the 2019 school year, Richland Elementary School had 848 students with over 100 teachers, paraprofessionals, and staff in seven permanent buildings and twenty-four portable classrooms. The San Marcos Unified School District currently includes 20 schools (RES 2020; SMUSD 2020).

Project Site Architectural Style and Design

Architectural Style: Mid-Century Modern (Post-1945)

Mid-century Modern style is reflective of International and Bauhaus styles popular in Europe in the early 20th century. This style and its living designers (e.g., Mies Van der Rohe and Gropius) were disrupted by WWII and moved to the United States. During WWII, the United States established itself as a burgeoning manufacturing and industrial leader, with incredible demand for modern buildings to reflect modern products in the mid-20th century. As a result, many industrial buildings are often “decorated boxes”—plain buildings with applied ornament to suit the era and appear more modern without detracting from the importance of the activity inside the building. Following WWII, the United States had a focus on forward thinking, which sparked architectural movements like Mid-Century Modern. Practitioners of the style were focused on the most cutting-edge materials and techniques. Architects throughout Southern California implemented the design aesthetics made famous by early Modernists like Richard Neutra and Frank Lloyd Wright, who created a variety of modern architectural forms. Like other buildings of this era, Mid-century Modern buildings had to be quickly assembled and use modern materials that could be mass-produced with an honest expression of structure and function. Post-and-beam construction allowed for open floor plans, ease of expansion, and the integration of indoor-outdoor spaces through large-expanses of windows. Schools of this style focused on simple, geometric forms with wide eaves and cantilevered canopies. Exterior materials often included wood, stucco, brick, stone, or steel-framing and glass (McAlester 2013; Morgan 2004; HRG 2007; Sapphos 2014).

Characteristics of the Mid-Century Modern style:

- One- to two-stories in height
- Low, boxy, horizontal proportions
- Simple geometric forms with a lack of exterior decoration
- Commonly asymmetrical
- Flat roofed without coping at roof line; flat roofs hidden behind parapets or cantilevered canopies
- Expressed post-and-beam construction in wood or steel
- Exterior wall materials include stucco, brick, or concrete
- Mass-produced materials
- Simple windows (metal or wood) flush-mounted and clerestory
- Industrially plain doors
- Large window groupings
- Extensive use of sheltered exterior corridors, with flat or slightly sloped roofs supported by posts, piers, or pipe columns

School Design: Finger-Plan (1940-1959)

By the 1950s, design ideas for schools that had been considered experimental in the 1930s had come to full maturity and became the national standard, including the finger-plan and the cluster-plan. Similar to the way in which architectural styles go in and out of popularity as do building plans and designs. Post-World War II, school’s exhibiting a unified campus design, buildings that accompanied a high degree of indoor and outdoor integration, ample outdoor spaces, and sheltered corridors became characteristics of the functionalist typology. Educational buildings were given a more domestic scale as opposed to the formality and monumentality that characterized earlier eras of school design. Elementary schools remained one-story in height, while middle and high schools went up to two-stories. Finger-plan schools are decentralized and pavilion-like, with “finger-like” wings, arranged on an axis. The plan was frequently utilized because it allowed for more students to fit on a smaller lot and allowed for easy expansion. During the 1940s and 1950s the flinger-plan and the cluster-plan were the most popular school campus designs in the United States (SE 2014).

Characteristics of the Finger-plan design:

- Building plans and site design clearly express their function
- Classrooms “finger-like” wings arranged on an axis
- Buildings that accompanied a high degree of indoor and outdoor integration
- Large outdoor spaces
- Sheltered corridors
- Generous expanses of windows
- Flat roof or broken pediment roof used for lighting and acoustics
- One-story massing for elementary schools; up to two-stories for junior/high schools

Project Site Architects

Architects: Paderewski, Mitchell, Dean & Associates, AIA (1948-1961)

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The architectural firm Paderewski, Mitchell, Dean & Associates, AIA consisted of Clarence J. Paderewski (1908-2007), Delmar Stuart Mitchell (1916-2002), and Louis Abbott Dean (1912-2002) based in San Diego. The firm was formed in 1948 and became a prominent San Diego architecture firm designing a variety of modernist buildings including schools, banks, restaurants, and municipal buildings as well as custom ranch style tract developments.

Clarence J. Paderewski also known as C.J. Paderewski was born in Cleveland, Ohio in 1908. After attending one year of college at the University of California, Los Angeles he then transferred to UC Berkley where he earned a degree in architecture in 1932. In 1935, Paderewski moved to San Diego and began teaching drafting, architecture, and related subjects for San Diego Unified School District. He has been described as a contributor to San Diego’s education system through teaching at Evening High School (1939-1944), the War Training Program (1943-1944), and UC Extension (1944-1957) classes. Paderewski claimed responsibility for many “firsts” in architecture. These include Paderewski being "the first architect to advocate the use of colors in elementary schools," seen first in the design of the John J. Montgomery School in Otay (1946) and designing the first school to utilize radiant heat (via hot water in the floor) in 1947 in San Marcos. In 1956, Paderewski received multiple accolades for his design of the first exterior all-glass elevator on the El Cortez Hotel in San Diego and a geodesic dome on the Palomar College campus (CSD 2007; MSD 2020a).

Mitchell was born in Des Moines, Iowa on August 6, 1916. Between 1934 and 1939 Mitchell attended the University of Washington for architecture. In 1946, he worked as a draftsman for Frank Hope and joined the San Diego Chapter of the AIA in 1948 (MSD 2020c). Dean was born in Winnetka, Illinois on April 12, 1912. After attending high school in Illinois, Dean attended Yale University for architecture. In 1940, Dean and his wife Bette Comstock moved to Coronado where he became an architect for shore establishments with The Eleventh Naval District working in the building at the foot of Broadway in San Diego during World War II. Dean was an active principal in the firm Paderewski, Mitchell, Dean & Associates, AIA for 33 years, retiring in 1981 as chairman of the board. Professionally, Dean served as president of the San Diego Chapter of the American Institute of Architects in 1952, treasurer of the California Council of the AIA, San Diego president of the American Society of Military Engineers, and was a member of the Coronado Planning Commission (CEJ 2002).

Following the end of World War II, Paderewski, Mitchell, and Dean formed a partnership in 1948 and worked under the firm name Paderewski, Mitchell, Dean & Associates, AIA. The firm’s first office was in the California Theater building, at 1122 Fourth Ave, San Diego. In 1948, the firm established the first prefabricated plywood wall and roof panel system used in their designs for several schools to meet the demand for rapid school construction. As a result of several commissions, the firm’s design specialties became educational and residential housing tracts in San Diego County (Moore et al. 2010). In 1960, the firm incorporated their architectural firm and engineering firm with offices located at 1017 First Avenue, San Diego. In 1961, Mitchell retired, and the firm evolved into Paderewski-Dean & Associates. The firm would later become Paderewski, Dean, Albrecht, and Stevenson, with the addition of partners Richard Albrecht and Frank Stevenson in the mid-1960s (MSD 2020a; CSD 2020).

A sample of Paderewski, Mitchell, Dean & Associates’ known work is included below:

- 11th Naval District, Charactron Lab, San Diego, CA (1952)
- Wherry Navy Housing, San Diego, CA (1953)
- State Division of Highways Building, Old Town, CA (1953)

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Property Name: Richland Elementary School
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- Cabrillo Terrace Shopping Center Supermarket, Kearny Mesa, CA (1954)
- Central Elementary School, Imperial Beach, CA (1954)
- Palomar College, San Marcos, CA (1956)
- Fletcher Hills Building, San Diego, CA (1957)
- San Diego Blood Bank, Hillcrest, CA (1957)
- San Diego County Medical Society, Bankers Hill, CA (1957)
- Pomerado Union Elementary School, Poway, CA (1958)
- Alvin M. Dunn Elementary School, San Marcos, CA (1959)
- Anthony’s Fish Grotto, La Jolla, CA (1960)
- Paderewski Residence #2, Kalmia Place, South Park, CA (1960)
- City Park, Second Street and Imperial Avenue, Imperial Beach, CA (1960)
- Bayside Elementary School, Imperial Beach, CA (1960)
- Oneonta Elementary School, Imperial Beach, CA (1960)
- Dabkovich Building, Fifth Avenue and Spruce Street, San Diego, CA (1961)
- UC San Diego Health, San Diego, CA (1961)
- Mary Fay Pendleton Elementary (1964)

Architect: Clyde Hufbauer (1911-1993)

Clyde Hufbauer was born in 1911 in Los Angeles. Hufbauer and his family moved to San Diego in 1921 and attended San Diego High School and San Diego State College. He then attended University of California, Berkley and received his undergraduate, masters, and Doctorates degree in Architecture, becoming the first in the school’s history to receive a doctorate in the subject. After marrying fellow architecture student Arabelle McKee, the couple moved to Mission Beach in San Diego and had three children. Hufbauer soon began his architecture career, designing his family’s home, which was noted “as being one of the first ‘ultra-modern’ houses especially in the late 1930’s” (Feeley et al. 2011). His specialty was the design of San Diego schools during the rapid period of city growth that were both functional and economical and worked as chief architect for the San Diego Unified School District. During his career Hufbauer designed 16 middle, junior, and high schools, 63 elementary schools as well as buildings for Poway, Grossmont, Miramar, and Southwestern community colleges typically in the International style. From 1955 to 1965, Hufbauer worked with structural engineer Ted Paulson who was responsible for the ‘artisan features’ in his buildings. Character-defining features of Hufbauer’s schools were being one story in height with interconnecting flat or low sloping roofs, a modular steel structural system with pipe column supports for canopies over the outdoor corridors, banded low walls, horizontal steel window systems facing intervening walkways, and lawns on one side with high transom windows on the opposite side. Hufbauer was known for creating budget conscious schools for state agencies and school districts with little money that were built on time and within budget. He is also credited with creating portable “bungalows” to serve as temporary classrooms post-World War II. Hufbauer died in 1993 while living with his second wife Virginia in Del Mar. In 2008, Hufbauer was established as a San Diego Master Architect with the designation of the Clyde & Arabelle M. Hufbauer Residence #2.

Hufbauer’s surviving works for the San Diego Unified School District include the Education Center in University Heights (1953), Alice Birney Elementary School (1953), Crown Point Elementary School (1949) in Pacific Beach, and Mission Bay High School (1953) (MSD 2020b; Feeley et al. 2011; ICF 2014).

A sample of Clyde Hufbauer known work is included below:

- Clyde & Arabelle M. Hufbauer Residence #1, 833 Capistrano Place, Mission Beach, CA (1939)
- Crown Point Elementary School, Pacific Beach, CA (1949)

- Alice Birney Elementary School, 4345 Campus Ave, San Diego, CA (1951-52)
- Clyde & Arabelle M. Residence Hufbauer #2, 1821 Torrey Pines Rd, La Jolla, CA (1952) (Designated SD Historical Resource)
- San Diego Unified School District Board of Education's Eugene Brucker Education Center, 4100 Normal St, San Diego, CA (1953)
- Russell Residence Raitt, 2424 Ellentown, La Jolla, CA (1954)
- Mission Bay High School, 2475 Grand Avenue, Pacific Beach, CA (1954)
- Johnson Avenue Elementary School, El Cajon, CA (1954)
- Gompers Junior High School, 1005 47th St, San Diego, CA (1955)
- Will C. Crawford High School, San Diego, CA (1956)
- Wilson Middle School (1963)
- Miramar (Mesa) Community College, San Diego, CA (1967)

Identified Alterations to Richland Elementary School

The following alterations (dates unknown) were identified during the course of the survey and archival research:

- 1965: Addition of Building 6, Auditorium/Cafeteria and Building 7, Classroom to the northeast of the original buildings.
- Between 1980 and early 2000s: Addition of 17 temporary buildings on the site.
- Dates Unknown: Window and door replacements.

NRHP/CRHR Statement of Significance

Criterion A/1: That are associated with events that have made a significant contribution to the broad patterns of our history.

Archival research failed to indicate that the construction of Richland Elementary School was important to the history of elementary school development in the United States, California, or San Marcos. There is no indication that the construction of the school marked an important moment in history or that it is associated with a pattern of events.

San Marcos' population throughout the 1960s grew by a couple thousand, while in the 1970s it became the third-fastest growing city in the state with a population of 17,479 in 1980. Richland Elementary School was originally part of the Rich-Mar Union Elementary School District also known as the Rich-Mar Union School District, which was formed in 1947 with the unionization of the San Marcos and Richland School Districts. The district's first two elementary schools were Alvin Dunn (now La Mirada Academy) and San Marcos. In January 1959, the preliminary plans for the proposed Richland School, which was the third elementary school in the Rich-Mar Union School District, were approved by District Trustees. While Richland Elementary School was in the planning stage, the Rich-Mar School District was seeking two other school sites, one for the district's fourth elementary school, and the other for a central junior high school. In March 1959, the District Trustees authorized the County Counsel's Office to initiate the condemnation process to enable the district to obtain two sites totaling 29-acres. After the final construction phase of Richland in 1965, San Marcos Unified School District (previously Rich-Mar) continued to construct new elementary schools including La Costa Meadows Elementary, Carrillo Elementary School, Paloma Elementary School, Twin Oaks Elementary School, Discovery Elementary School, Joli Ann Leichtag Elementary School, San Elijo Elementary School, and Knob Hill Elementary School. San Marcos Unified School District currently includes twenty-two schools.

Richland Elementary School's construction came out of the rising population of San Marcos

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and the community’s need to construct more schools, including elementary schools, within a short period of time. Richland’s planning began in January 1959, and by March, two other schools including an elementary school were in the planning process. The construction of Richland Elementary School was merely part of the continuous development of the area in the 1950s and 1960s leading to a population boom in the 1970s. Richland was the third elementary school in the Rich-Mar School district and was neither the first nor the last to be constructed. Furthermore, there is no indication that the establishment of Richland Elementary School served as the focus of the City of San Marcos. The school’s establishment did not represent an important event in history, rather it followed a pattern of development that continued through the 1980s in San Marcos.

In summation, Richland Elementary School cannot be associated with events that made a significant contribution to the broad patterns of our history. The school’s construction in 1960 and 1965 did not make a significant contribution to the development of San Marcos, rather it followed a continuous pattern of school expansion from the 1950s on. Therefore, the property does not appear eligible under Criterion A of the NRHP or Criterion 1 of the CRHR.

Criterion B/2: That are associated with the lives of persons significant in our past.

To be found eligible under B/2 the property has to be directly tied to an important person and the place where that individual conducted or produced the work for which he or she is known. Archival research failed to indicate any such direct association with Richland Elementary School and individuals that are known to be historic figures at the national, state, or local level. As such, the school is not known to have any historical associations with people important to the nation’s or state’s past. Due to a lack of identified significant associations with important persons in history, the Richland Elementary School does not appear eligible under NRHP Criterion B or CRHR Criterion 2.

Criterion C/3: That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

Richland Elementary School does not embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, and it does not possess high artistic values. Richland was constructed in two phases by two architectural firms. The first in 1960 by the firm Paderewski, Mitchell, Dean & Associates, AIA and the second in 1965 by Clyde Hufbauer. The school was designed in the Mid-Century Modern architectural style in a finger-plan, which is a very common combination of style and design for schools constructed in the 1950s and early-1960s.

The school displays multiple characteristics of the Mid-Century Modern architectural style and the finger-plan design layout. The Mid-Century Modern characteristics include one-story in height, low, boxy, horizontal proportions, simple geometric forms with a lack of exterior decoration, asymmetrical, flat roofed without coping at roof line, stucco exterior, mass-produced materials, simple metal windows, industrially plain doors, large window groupings, and extensive use of sheltered exterior corridors, with flat roofs supported by pipe columns. The finger-plan design characteristics include classrooms with “finger-like” wings arranged on an axis, sheltered corridors, generous expanses of windows, flat roof, and one-story massing. Despite the property retaining a high-level of architectural and design characteristics, there is no indication that Richland Elementary embodies distinctive characteristics rather it reflects a very common combination of style and design in school architecture from its period of construction. During the 1950s, the flinger-plan was one of the most popular school campus designs in the United States. Archival research failed to indicate that Richland was unique or distinctive within Mid-Century Modern finger-plan elementary schools, rather its design is ubiquitous within schools built in the 1950s. Therefore, it does not embody the distinctive characteristics of a type, period, or method of construction.

Additionally, despite Richland Elementary School's two phases of construction being designed by two prominent San Diego architectural firms, Paderewski, Mitchell, Dean & Associates, AIA, and Clyde Hufbauer, there is no evidence to suggest that the school rises to the level to be considered a representative and notable work of either firm. The architectural firm Paderewski, Mitchell, Dean & Associates, AIA was formed in 1948 and became a prominent San Diego architecture firm designing a variety of modernist buildings including schools, banks, restaurants, and municipal buildings as well as custom ranch style tract developments. The firm established in 1948 the first prefabricated plywood wall and roof panel system used in their designs for several schools to meet the demand for rapid school construction. Paderewski claimed responsibility for many "firsts" in architecture. These include Paderewski being "the first architect to advocate the use of colors in elementary schools," seen first in the design of the John J. Montgomery School in Otay in 1946 and designing the first school to utilize radiant heat (via hot water in the floor) in 1947 in San Marcos. Within the firm's body of work, Richland Elementary School does not rise to the level of workmanship of the other property's designed by the firm. Additionally, it does not reflect any of the firm's innovative design concepts, such as having a prefabricated plywood wall and roof panel system, being the first school to utilize colors, or being the first school to utilize radiant heat.

The school's second period of expansion in 1965 was designed by established San Diego Master Architect Clyde Hufbauer. Hufbauer's specialty was the design of San Diego schools during the rapid period of city growth that were both functional and economical and worked as chief architect for the San Diego Unified School District. During his career Hufbauer designed 16 middle, junior, and high schools, 63 elementary schools as well as buildings for Poway, Grossmont, Miramar, and Southwestern community colleges typically in the International style. Character-defining features of Hufbauer's schools are being one story in height with interconnecting flat or low sloping roofs, a modular steel structural system with pipe column supports for canopies over the outdoor corridors, banded low walls, horizontal steel window systems facing intervening walkways, and lawns on one side with high transom windows on the opposite side. Despite Richland Elementary School retaining multiple character-defining features of Hufbauer's typical school design, there is no indication that Richland expresses a particular phase in the development of his work rather it is a common example of his school designs. In comparison to his other surviving works such as Education Center in University Heights (1953) and Alice Birney Elementary School (1953), Richland does not rise to the level of being considered notable. Additionally, Hufbauer was responsible for the design of only two of the seven permanent buildings on the site and as such Richland cannot be considered representative of his work. Therefore, Richland Elementary School does not appear eligible under NRHP Criterion C or CRHR Criterion 3.

Criterion D/4: That have yielded, or may be likely to yield, information important in prehistory or history.

There is no evidence to indicate that Richland Elementary School is likely to yield any additional information important to prehistory or history beyond what is already known. The school is also not associated with an archaeological site or a known subsurface cultural component. Therefore, Richland Elementary School does not appear eligible under NRHP Criterion D or CRHR Criterion 4.

Integrity Discussion

In addition to meeting one or more of the above criteria, an eligible resource must retain integrity, which is expressed in seven aspects: location, design, setting, materials, workmanship, feeling, and association. All properties change over the course of time. Consequently, it is not necessary for a property to retain all of its historic physical features or characteristics. The property must retain, however, the essential physical features that enable it to convey its historic identity. In order to retain historic integrity "a property will always possess several, and usually most, of the aspects" (Andrus and Shrimpton 2002). The following sections discuss the integrity of Richland Elementary School.

Location: The school retains integrity of location. The location of the building never shifted nor was it relocated; it maintains the physical location where the historic property was constructed in 1960 and 1965.

Design: The subject property retains integrity of design. Despite the school undergoing two phases of construction in 1960 and 1965, this phased construction was always intended in the school's original planning. The essential elements of space, proportion, scale, technology, ornamentation, and materials have remained largely intact over time. Despite the replacement of several windows and doors there have been no large-scale alterations to the original buildings. Additionally, despite the introduction of multiple temporary classrooms on the site since the 1980s, these buildings are largely removeable and as such can be eliminated from the property at any time.

Setting: The subject property does not retain integrity of setting. Upon its completion in 1960 and 1965, the surrounding neighborhood displayed a moderate number of homes with most of the surrounding land being used for agriculture. Within the following 30 years, the number of residential buildings increased with the development of housing tracts replacing agricultural land. By the early-2000s, the surrounding agricultural land had been replaced entirely with housing tracts.

Materials: The subject property retains integrity of materials. Since the school's construction in 1960 and 1965, the physical elements dating from that period of development have been retained with little replacement. The key exterior materials dating from the construction are existent and replacements of windows and doors has not significantly affected its integrity of materials.

Workmanship: Similar to integrity of materials, the subject property retains integrity of workmanship. The physical evidence of skill required to construct the 1960s school has been retained due to the lack of large-scale alterations to the property since its construction in 1960 and 1965.

Feeling: The subject property retains integrity of feeling. The property is still able to express itself as an elementary school constructed in the early 1960s. The physical features, when taken together, convey the property's historic character, despite the installation of multiple temporary classrooms to the property beginning in the 1980s. These temporary classrooms do not significantly affect the property's ability to present as a 1960s school.

Association: Finally, the subject property does not retain integrity of association due to the lack of links between an important historic event or person and the property.
In summary, Richland Elementary School retains integrity of location, design, materials,

workmanship, and feeling. The subject property lacks integrity of setting and association.
Summary of Evaluation Findings

The evaluation finds that Richland Elementary School is not eligible under any NRHP or CRHR designation criteria at the individual level due to lack of important historical associations and architectural merit.

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CONTINUATION SHEET

Property Name: Richland Elementary School

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Witt, Ted. 1980b. “SM School Lose 3-Year-Old Suit Against EUHS.” Newspapers.com: *Times-Advocate* (Escondido, California). December 19, 1980. Pg. A-1.

CONTINUATION SHEET

Property Name: Richland Elementary School

Figure 1. Building 1, Southwest elevation, View to northwest, DSC01343

Figure 2. Building 2, Southeast and northeast elevations, view to west, DSC01618

CONTINUATION SHEET

Property Name: Richland Elementary School

Figure 3. Building 2, Northeast elevation, View to south, DSC01425

Figure 4. Building 6, West and South elevations, View to northeast, DSC01616

CONTINUATION SHEET

Property Name: Richland Elementary School

Figure 5. Building 7, Northeast elevation, View to west, DSC01548

Figure 6. Building 13, Southwest elevation, View to north, DSC01454

Figure 7. Building 10, Southeast and northeast elevations, View to west, DSC01604

Figure 8. Buildings 14, 15, 16, 17, 18, and 19, Northeast and northwest elevations, View to south, DSC01451

Figure 9. Building 22, Northwest elevation, View to southeast, DSC01447

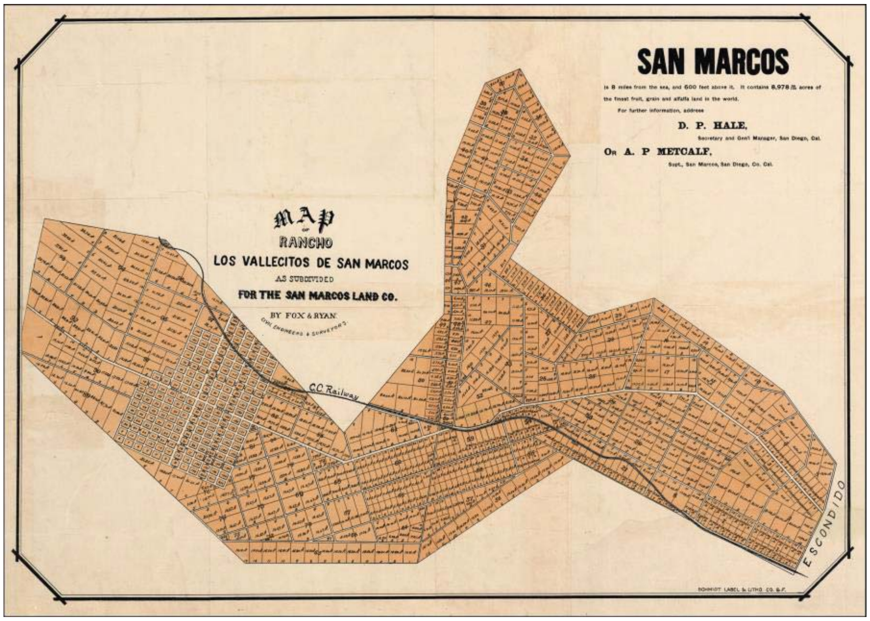
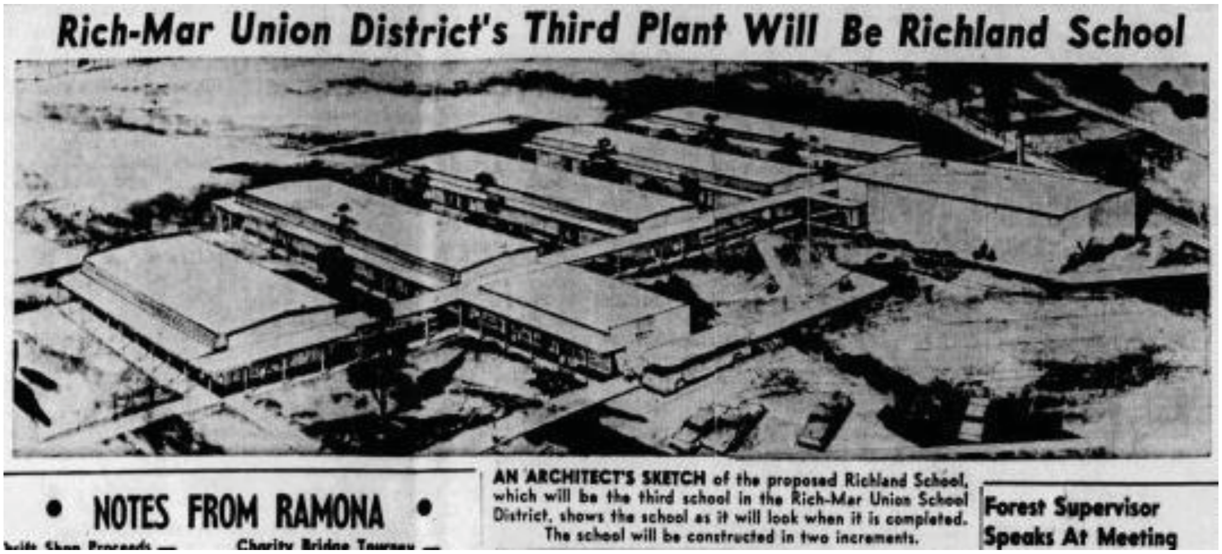


Figure 10. Map of Rancho Los Vallecitos De San Marcos as Subdivided for The San Marcos Land Co. By Fox & Ryan. Civil Engineers & Surveyors (San Francisco 1887)



Rich-Mar Union District's Third Plant Will Be Richland School

AN ARCHITECT'S SKETCH of the proposed Richland School, which will be the third school in the Rich-Mar Union School District, shows the school as it will look when it is completed. The school will be constructed in two increments.

• NOTES FROM RAMONA •

Forest Supervisor Speaks At Meeting

Figure 11. Architects sketch of the proposed Richland School, 1959 (Times Advocate 1959)

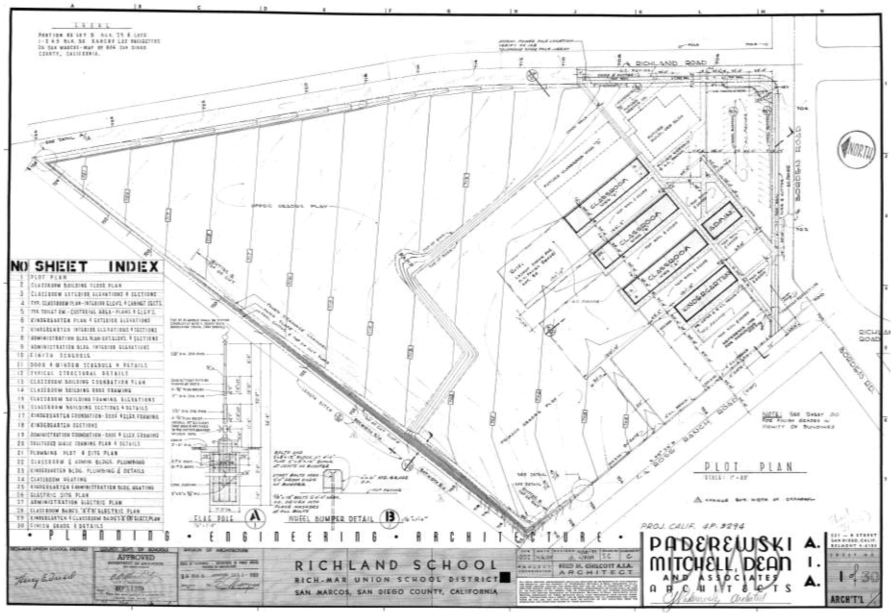


Figure 12. Original architectural drawings for Richland Elementary School, 1959 (Courtesy San Marcos Unified School District)

Appendix C

Native American Communication

Jessica Colston

From:	NAHC@NAHC <NAHC@nahc.ca.gov>
Sent:	Monday, December 21, 2020 11:55 AM
To:	Jessica Colston
Subject:	RE: SLF search request for PN#13115 SMUSD Richland Elementary School Reconstruction

Hello Jessica,

Thank you for your message. This request is still being processed. Please let us know if you need anything else.

Kind regards,

Native American Heritage Commission
1550 Harbor Blvd. Suite 100
West Sacramento, CA 95691
(916) 373-3710

From: Jessica Colston <jcolston@dudek.com>
Sent: Monday, December 21, 2020 10:03 AM
To: NAHC@NAHC <NAHC@nahc.ca.gov>
Subject: RE: SLF search request for PN#13115 SMUSD Richland Elementary School Reconstruction

Hi NAHC Staff,
I just wanted to check in on this request, as I have not heard a response as of yet.

From: Jessica Colston
Sent: Tuesday, December 8, 2020 10:04 AM
To: nahc@nahc.ca.gov
Subject: SLF search request for PN#13115 SMUSD Richland Elementary School Reconstruction

Hello NAHC Staff,
Please see attached Sacred lands File Search request for the SMUSD Richland Elementary School Reconstruction Project.

Jessica Colston
Archaeologist
605 Third Street / Encinitas, CA 92024
Mobile: 760.815.6642
www.dudek.com

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: SMUSD Richland Elementary School Reconstruction Project - Dudek No. 13115
County: San Diego

USGS Quadrangle
Name: San Marcos and Valley Centeri
Township: 12S Range: 3W Section(s): 01, 06, 07, 12

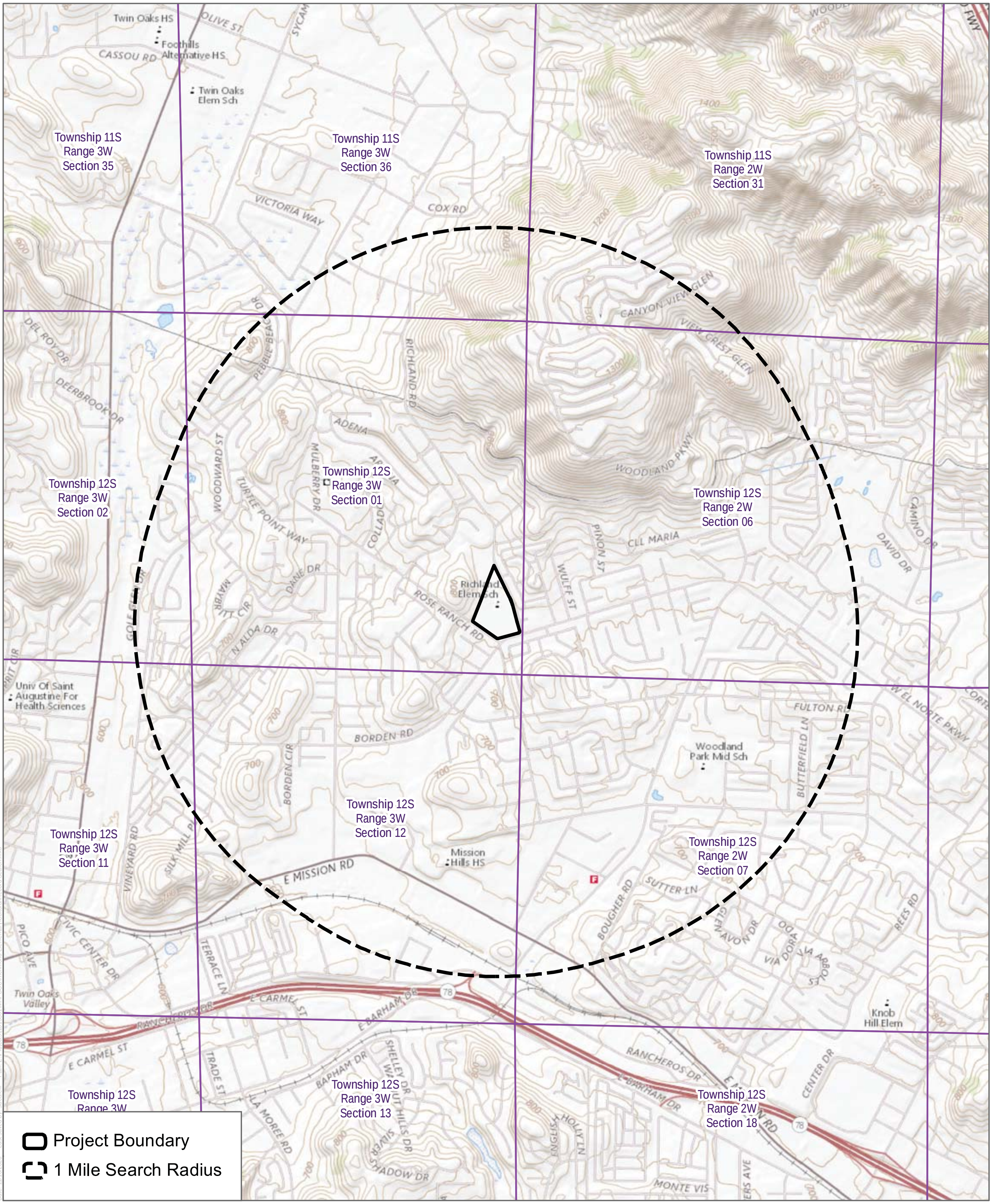
Company/Firm/Agency:
Dudek

Contact Person: Jessica Colston
Street Address: 605 Third Street
City: Encinitas Zip: 92024
Phone: 760.815.6642 Extension:
Fax:
Email: jcolston@dudek.com

Project Description:

Richland Elementary School Reconstruction Project (Project) is located at 910 Borden Road, San Marcos, CA 92069. This Project will include the like for like reconstruction, including the redevelopment of play fields and playgrounds. The Project includes the relocation of the front entry of the school from Borden Road to Richland Road.

☑ Project Location Map is attached



SOURCE: USGS National Map 2020
San Marcos and Valley Centeri Quadrangles

DUDEK

0 1,000 2,000 Feet
0 285 570 Meters
1:24,000

FIGURE 1

Records Search

SMUSD Richland Elementary School Reconstruction Project

STATE OF CALIFORNIA **Gavin Newsom, *Governor***

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

December 22, 2020

Jessica Colston
Dudek

Via Email to: jcolston@dudek.com

Re: SMUSD Richland Elementary School Reconstruction Project, San Diego County

Dear Ms. Colston:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Diego County
12/22/2020

Barona Group of the Capitan Grande
Edwin Romero, Chairperson
1095 Barona Road
Lakeside, CA, 92040
Phone: (619) 443 - 6612
Fax: (619) 443-0681
cloyd@barona-nsn.gov
Diegueno

Campo Band of Diegueno Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1
Campo, CA, 91906
Phone: (619) 478 - 9046
Fax: (619) 478-5818
rgoff@campo-nsn.gov
Diegueno

Ewiiaapaayp Band of Kumeyaay Indians
Robert Pinto, Chairperson
4054 Willows Road
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
wmicklin@leaningrock.net
Diegueno

Ewiiaapaayp Band of Kumeyaay Indians
Michael Garcia, Vice Chairperson
4054 Willows Road
Alpine, CA, 91901
Phone: (619) 445 - 6315
Fax: (619) 445-9126
michaelg@leaningrock.net
Diegueno

Iipay Nation of Santa Ysabel
Clint Linton, Director of Cultural Resources
P.O. Box 507
Santa Ysabel, CA, 92070
Phone: (760) 803 - 5694
cjlinton73@aol.com
Diegueno

Iipay Nation of Santa Ysabel
Virgil Perez, Chairperson
P.O. Box 130
Santa Ysabel, CA, 92070
Phone: (760) 765 - 0845
Fax: (760) 765-0320
Diegueno

Inaja-Cosmit Band of Indians
Rebecca Osuna, Chairperson
2005 S. Escondido Blvd.
Escondido, CA, 92025
Phone: (760) 737 - 7628
Fax: (760) 747-8568
Diegueno

Jamul Indian Village
Lisa Cumper, Tribal Historic Preservation Officer
P.O. Box 612
Jamul, CA, 91935
Phone: (619) 669 - 4855
lcumper@jiv-nsn.gov
Diegueno

Jamul Indian Village
Erica Pinto, Chairperson
P.O. Box 612
Jamul, CA, 91935
Phone: (619) 669 - 4785
Fax: (619) 669-4817
epinto@jiv-nsn.gov
Diegueno

Kwaaymii Laguna Band of Mission Indians
Carmen Lucas,
P.O. Box 775
Pine Valley, CA, 91962
Phone: (619) 709 - 4207
Kwaaymii
Diegueno

La Posta Band of Diegueno Mission Indians
Gwendolyn Parada, Chairperson
8 Crestwood Road
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
LP13boots@aol.com
Diegueno

La Posta Band of Diegueno Mission Indians
Javaughn Miller, Tribal Administrator
8 Crestwood Road
Boulevard, CA, 91905
Phone: (619) 478 - 2113
Fax: (619) 478-2125
jmiller@LPtribe.net
Diegueno

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed SMUSD Richland Elementary School Reconstruction Project, San Diego County.

Native American Heritage Commission
Native American Contact List
San Diego County
12/22/2020

Manzanita Band of Kumeyaay Nation
Angela Elliott Santos, Chairperson
P.O. Box 1302
Diegueno
Boulevard, CA, 91905
Phone: (619) 766 - 4930
Fax: (619) 766-4957

Mesa Grande Band of Diegueno Mission Indians
Michael Linton, Chairperson
P.O Box 270
Diegueno
Santa Ysabel, CA, 92070
Phone: (760) 782 - 3818
Fax: (760) 782-9092
mesagrandeband@msn.com

Pala Band of Mission Indians
Shasta Gaughen, Tribal Historic Preservation Officer
PMB 50, 35008 Pala Temecula Rd.
Cupeno
Luiseno
Pala, CA, 92059
Phone: (760) 891 - 3515
Fax: (760) 742-3189
sgaughen@palatribe.com

Pechanga Band of Luiseno Indians
Mark Macarro, Chairperson
P.O. Box 1477
Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6000
Fax: (951) 695-1778
epreston@pechanga-nsn.gov

Pechanga Band of Luiseno Indians
Paul Macarro, Cultural Resources Coordinator
P.O. Box 1477
Luiseno
Temecula, CA, 92593
Phone: (951) 770 - 6306
Fax: (951) 506-9491
pmacarro@pechanga-nsn.gov

Rincon Band of Luiseno Indians
Bo Mazzetti, Chairperson
One Government Center Lane
Luiseno
Valley Center, CA, 92082
Phone: (760) 749 - 1051
Fax: (760) 749-5144
bomazzetti@aol.com

Rincon Band of Luiseno Indians
Cheryl Madrigal, Tribal Historic Preservation Officer
One Government Center Lane
Luiseno
Valley Center, CA, 92082
Phone: (760) 297 - 2635
crd@rincon-nsn.gov

San Pasqual Band of Diegueno Mission Indians
John Flores, Environmental Coordinator
P. O. Box 365
Diegueno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
johnf@sanpasqualtribe.org

San Pasqual Band of Diegueno Mission Indians
Allen Lawson, Chairperson
P.O. Box 365
Diegueno
Valley Center, CA, 92082
Phone: (760) 749 - 3200
Fax: (760) 749-3876
allenl@sanpasqualtribe.org

Soboba Band of Luiseno Indians
Scott Cozart, Chairperson
P. O. Box 487
Cahuilla
San Jacinto, CA, 92583
Luiseno
Phone: (951) 654 - 2765
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov

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Native American Heritage Commission
Native American Contact List
San Diego County
12/22/2020

Soboba Band of Luiseno Indians
Joseph Ontiveros, Cultural Resource Department
P.O. BOX 487
San Jacinto, CA, 92581
Phone: (951) 663 - 5279
Fax: (951) 654-4198
jontiveros@soboba-nsn.gov
Cahuilla
Luiseno

Sycuan Band of the Kumeyaay Nation
Cody Martinez, Chairperson
1 Kwaaypaay Court
El Cajon, CA, 92019
Phone: (619) 445 - 2613
Fax: (619) 445-1927
ssilva@sycuan-nsn.gov
Kumeyaay

Sycuan Band of the Kumeyaay Nation
Kristie Orosco, Kumeyaay Resource Specialist
1 Kwaaypaay Court
El Cajon, CA, 92019
Phone: (619) 445 - 6917
Kumeyaay

Viejas Band of Kumeyaay Indians
John Christman, Chairperson
1 Viejas Grade Road
Alpine, CA, 91901
Phone: (619) 445 - 3810
Fax: (619) 445-5337
Diegueno

Viejas Band of Kumeyaay Indians
Ernest Pingleton, Tribal Historic Officer, Resource Management
1 Viejas Grade Road
Alpine, CA, 91901
Phone: (619) 659 - 2314
epingleton@viejas-nsn.gov
Diegueno

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

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DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. John Christman, Chairperson
Viejas Band of Kumeyaay Indians
1 Viejas Grade Rd.
Alpine, CA 91901

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Christman,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one- mile distance of the proposed project area. I am writing as part of the consultation process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project.

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

Jessica Colston

Jessica Colston, B.A.
Archaeologist
Phone: (760) 815-6642
Email: jcolston@dudek.com

Attachments:

Figure 1. Project location map.

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. Scott Cozart, Chairperson
Soboba Band of Luiseno Indians
P.O. Box 487
San Jacinto, CA 92583

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Cozart,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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ENCINITAS, CALIFORNIA 92024
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December 22, 2020

Ms. Lisa Cumper, THPO
Jamul Indian Village
P.O. Box 612
Jamul, CA 91935

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Cumper,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. John Flores, Environmental Coordinator
San Pasqual Band of Diegueno Mission Indians
P.O. Box 365
Valley Center, CA 92082

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Flores,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. Michael Garcia, Vice Chairperson
Ewiiaapaayp Tribe
4054 Willows Road
Alpine, CA 91901

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Garcia,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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Email: jcolston@dudek.com

Attachments:

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DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Ms. Shasta Gaughen, Tribal Historic Preservation Officer
Pala Band of Mission Indians
35008 Pala Temecula Rd.
Pala, CA 92059

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Gaughen,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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Respectfully,

Jessica Colston

Jessica Colston, B.A.
Archaeologist
Phone: (760) 815-6642
Email: jcolston@dudek.com

Attachments:

Figure 1. Project location map.

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. Ralph Goff, Chairperson
Campo Band of Diegueno Mission Indians
36190 Church Road, Suite 1
Campo, CA 91906

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Goff,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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Figure 1. Project location map.

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. Allen E. Lawson, Chairperson
San Pasqual Band of Dieguenо Mission Indians
P.O. Box 365
Valley Center, CA 92082

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Lawson,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one- mile distance of the proposed project area. I am writing as part of the consultation process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project.

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

Jessica Colston

Jessica Colston, B.A.
Archaeologist
Phone: (760) 815-6642
Email: jcolston@dudek.com

Attachments:

Figure 1. Project location map.

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. Clint Linton, Director of Cultural Resources
Ipay Nation of Santa Ysabel
P.O. Box 507
Santa Ysabel, CA 92070

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Linton,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. Michael Linton, Chairperson
Mesa Grande Band of Dieguneo Mission Indians
P.O. Box 270
Santa Ysabel, CA 92070

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Linton,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Ms. Carmen Lucas,
Kwaaymii Laguna Band of Mission Indians
P.O. Box 775
Pine Valley, CA 91962

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Lucas,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. Paul Macarro, Cultural Resources Manager
Pechanga Band of Mission Indians
P.O. Box 1477
Temecula, CA 92593

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Macarro,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. Mark Macarro, Chairperson
Pechanga Band of Mission Indians
P.O. Box 1477
Temecula, CA 92593

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

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December 22, 2020

Ms. Cheryl Madrigal, Tribal Historic Preservation Officer
Rincon Band of Mission Indians
One Governement Center Lane
Valley Center, CA 92082

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Madrigal,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. Cody Martinez, Chairperson
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: ***Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California***

Dear Mr. Martinez,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. Bo Mazzetti, Tribal Chairman
Rincon Band of Mission Indians
1 W. Tribal Road
Valley Center, CA 92082

Subject: ***Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California***

Dear Mr. Mazzetti,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Ms. Javaughn Miller, Tribal Administrator
La Posta Band of Diegueno Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Miller,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. Joseph Ontiveros, Cultural Resource Department
Soboba Band of Luiseno Indians
P.O. Box 487
San Jacinto, CA 92581

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Ontiveros,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Ms. Kristie Orosco, Resource Specialist
Sycuan Band of the Kumeyaay Nation
1 Kwaaypaay Court
El Cajon, CA 92019

Subject: ***Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California***

Dear Ms. Orosco,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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605 THIRD STREET
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T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Ms. Rebecca Osuna, Chairperson
Inaja-Cosmit Band of Indians
2005 S. Escondido Blvd.
Escondido, CA 92025

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Osuna,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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605 THIRD STREET
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December 22, 2020

Ms. Gwendolyn Parada, Chairperson
La Posta Band of Diegueno Mission Indians
8 Crestwood Rd.
Boulevard, CA 91905

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Parada,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Mr. Virgil Perez, Chairperson
Iipay Nation of Santa Ysabel
P.O. Box 130
Santa Ysabel, CA 92070

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Perez,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
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December 22, 2020

Mr. Ernest Pingleton, Tribal Historic Officer
Viejas Band of Kumeyaay Indians
1 Viejas Grade Rd.
Alpine, CA 91901

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Pingleton,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. Robert Pinto, Chairperson
Ewiaapaayp Tribe
4054 Willow Rd.
Alpine, CA 91901

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Pinto,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Ms. Erica Pinto, Chairperson
Jamul Indian Village
P.O. Box 612
Jamul, CA 91935

Subject: ***Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California***

Dear Ms. Pinto,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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December 22, 2020

Mr. Edwin (Thorpe) Romero, Chairperson
Barona Group of the Capitan Grande
1095 Barona Road
Lakeside, CA 92040

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Mr. Romero,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

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MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

December 22, 2020

Ms. Angela Elliott Santos, Chairperson
Manzanita Band of Kumeyaay Nation
P.O. Box 1302
Boulevard, CA 91905

Subject: Information Request for the San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, California

Dear Ms. Santos,

Dudek was retained by the San Marcos Unified School District (District) to complete a cultural resources technical report for the Richland Elementary School Reconstruction Project (Project), City of San Marcos, California. The Project site comprises the Richland Elementary School located at 910 Borden Road, San Marcos, San Diego County, California (APN: 218-101-05). The Project is located on the San Marcos 7.5-minute Quadrangle (2015), Township 12 South, Range 3 West, Section 1 (Figure 1). The proposed Project consists of reconstruction of the existing Richland Elementary School.

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within a one- mile distance of the proposed project area. I am writing as part of the consultation process in order to find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project.

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,

Jessica Colston

Jessica Colston, B.A.
Archaeologist
Phone: (760) 815-6642
Email: jcolston@dudek.com

Attachments:

Figure 1. Project location map.

Jessica Colston

From: Jessica Colston
Sent: Thursday, December 31, 2020 12:03 PM
To: Cheryl Madrigal
Cc: Deneen Pelton
Subject: RE: Richland Elementary School Reconstruction

Thank you very much for the response!

From: Cheryl Madrigal <CMadrigal@rincon-nsn.gov>
Sent: Thursday, December 31, 2020 11:03 AM
To: Jessica Colston <jcolston@dudek.com>
Cc: Deneen Pelton <DPelton@rincon-nsn.gov>
Subject: Richland Elementary School Reconstruction

Jessica,

Please see attached response letter to above mentioned project. If you have any questions or comments, please contact us.

Thank you for the opportunity to protect our cultural assets.

Cheryl

Cheryl Madrigal
Cultural Resources Manager
Tribal Historic Preservation Officer
Cultural Resources Department
Rincon Band of Luiseño Indians
1 West Tribal Road | Valley Center, CA 92082
Office:760-297-2635 ext. 323|Cell: 760-648-3000
Fax: 760-749-8901
Email: cmadrigal@rincon-nsn.gov

Rincon Band of Luiseño Indians

CULTURAL RESOURCES DEPARTMENT

One Government Center Lane | Valley Center | CA 92082
(760) 749-1051 | Fax: (760) 749-8901 | rincon-nsn.gov

December 31, 2020

Sent via email: jcolston@dudek.com
DUDEK
Jessica Colston
605 Third Street
Encinitas, CA 92024

Re: San Marcos Unified School District Richland Elementary School Reconstruction Project, San Marcos, San Diego County, California

Dear Ms. Colston,

This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Band"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The location identified in the transmitted project documents is situated within the Traditional Use Area (TUA) of the Luiseño people and within the Band's specific Area of Historic Interest (AHI). As such, Rincon is traditionally and culturally affiliated to the project area.

After review of the provided documents and our internal information, the Band has specific concerns that that the project has the potential to impact tangible Tribal Cultural Resources (TCRs), Traditional Cultural Landscapes (TCLs), and potential Traditional Cultural Properties (TCPs). Embedded in these resources and within the AHI are Rincon's history, culture, and continuing traditional identity. The Band has knowledge of a gathering area within half a mile to the proposed project site. The Band recommends an archaeological/cultural resources study be conducted by a Secretary of the Interior qualified archaeologist for this project, to include an archeological record search and complete intensive survey of the property. Please provide a final copy of the study to the Rincon Band for our review and comment.

The Rincon Band further requests to consult directly with the lead agency regarding project impacts to cultural resources. While it is not the responsibility of the consultant to facilitate State-mandated consultation, the request is included in this letter so the lead agency is aware of the Band's request to learn more about the project. If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 297-2635 or via electronic mail at cmadrigal@rincon-nsn.gov. We look forward to working together to protect and preserve our cultural assets.

Sincerely,

Cheryl Madrigal
Tribal Historic Preservation Officer
Cultural Resources Manager

Appendix D

Preparer's Qualifications

Nicole Frank, MSHP

Architectural Historian

Nicole Frank is an architectural historian with 3 years' professional experience as an architectural historian conducting historic research, writing landmark designations, performing conditions assessments and working hands-on in building restoration projects throughout the United States. Ms. Frank also has governmental experience with the City of San Francisco's Planning Department and the City of Chicago's Landmark Designations Department. She meets the Secretary of the Interior's Professional Qualification Standards for Architectural History.

Education

The School of the Art Institute of Chicago, MS
Historic Preservation, 2018

The College of Charleston, BA, Historic Preservation and Art History, 2016

Dudek Project Experience

Historical Resources Evaluation Report for the 740-790 East Green Street Mixed-Use Project, Pasadena, California (In Progress).
Dudek was retained by the City of Pasadena to complete a historical significance evaluation report for five commercial buildings located in the City of Pasadena, California (AINs 5734-025-014, 024, 026, 029, 027). The study included a pedestrian survey of the proposed project area, building development and archival research, development of an appropriate historic context for the property, and recordation and evaluation of the property for historical significance and integrity in consideration of National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), and local eligibility requirements. Ms. Frank acting as architectural historian updated the Pasadena historic context, conducted archival research, and wrote the significance evaluations for the five buildings over 45 years old.

Cultural Resources Technical Report for 8850 Sunset Boulevard Project, West Hollywood, California (In Progress).
Dudek was retained by the City of West Hollywood (City) to complete a Cultural Resources Technical Report for the 8850 Sunset Boulevard Project (Project). The proposed project consists of the demolition of existing buildings and the construction and operation of a new mixed-use hotel and residential building on a property along the south side of Sunset Boulevard, extending the full city block between Larrabee Street and San Vicente Boulevard, in the City of West Hollywood (project site). Acting as architectural historian Ms. Frank assisted in the completion of the technical report as the primary writer.

As Needed Historic Research Consulting Services, City of Coronado, Coronado, California (In Progress).
Acting as architectural historian, Ms. Frank was the primary writer of the historical resource evaluation reports for 936 J Avenue, 310 2nd Street, 718 B Avenue, 1027-1029 Orange Avenue, 735 Margarita Avenue, 519 Ocean Boulevard, and 1901 Monterey Avenue. Each evaluation involved creation of an occupancy timeline, supplemental research on occupants, architect/builder, and property, building development research, a pedestrian survey of the project area, a description of the surveyed resource, and completion of a historical significance evaluation report in consideration of designation criteria and integrity requirements.

City of San Diego Public Utility Department, Historical Context Report for the Dulzura Conduit, Upper Otay Dam, Murray Dam, Sutherland Dam, and Miramar Dam. City of San Diego, San Diego County, California (In Progress).

Ms. Frank served as architectural historian and author of the cultural resources report for the City of San Diego Public Utility Department. Preparation of the historical context statement involved archival research, historic context development, engineering feature development descriptions, and historical significance evaluations. Ms. Frank evaluated five resources including the Dulzura Conduit, Upper Otay Dam, Murray Dam, Sutherland Dam, and Miramar Dam.

Cultural Resources Report for the Palmetto Avenue Warehouse Project, City of Rialto, San Bernardino County, California, 2019. Dudek was retained by Patriot Development Partners to conduct a cultural resources inventory in support of the proposed Palmetto Avenue Warehouse Project (proposed Project). The Project proposes to demolish buildings on six (6) parcels in the City of Rialto, and construct an industrial/warehouse building on an approximately 4.24-acre property located at the northeast corner of Palmetto Avenue and Baseline Road. Ms. Frank acted as evaluator for three of the six properties, which were 45 years or older for historical significance.

Historical Resources Impact Assessment for Maintenance on the Morena Dam Spillway, City of San Diego, California, 2019. Ms. Frank acted as the primary author for an impacts assessment of proposed project activities including maintenance to the Morena Dam, which is considered an historical resource under CEQA and an historic property under Section 106 of the NHPA.

Historical Resources Evaluation Report for 14545 Lanark Street Project, Panorama City, California, 2019. Dudek was retained by Clifford Beers Housing, Inc. to complete a historical significance evaluation report for a property located at 14545 Lanark Street in the City of Los Angeles, California (APN: 2210-011-900). Ms. Frank served as architectural historian and authored the historical resources evaluation report for the subject property, a Public Social Services Department building constructed in 1967.

Historical Resources Technical Report for Jacumba Valley Ranch Solar Energy Park, Jacumba, California. 2019. Dudek was retained by BayWa to complete a historical resources technical report for a project that proposes to develop a solar energy project consisting of up to 90 megawatts (MW) of alternating current (ac) and a 20 MW energy storage facility that can supply electricity to indirectly reduce the need to emit greenhouse gases (GHGs). Acting as architectural historian, Ms. Frank authored a cultural resources technical report evaluating a complex of twenty dairy buildings, the Mountain Meadow Dairy and Creamery's Sunshine Ranch Complex for historical significance.

Vista E Reservoir Replacement and Pump Station Project, Vista Irrigation District, Vista, California. 2019. Dudek was retained by the Vista Irrigation District (VID) to complete a cultural resources study for a project that proposes to replace the existing oval shaped E Reservoir with a new reservoir and construct a new pump station on the existing E Reservoir site located on Edgehill Road in the County of San Diego. Acting as architectural historian, Ms. Frank authored a cultural resources technical report evaluating a 1929 reservoir in Vista, California for replacement. Ms. Frank also conducted a site survey of the property to be used in her technical report.

California State University, San Francisco Master Plan Update EIR, San Francisco, California. 2019. Acting as architectural historian, Ms. Frank participated in a survey of CSU San Francisco's Phycology and Ethnic Studies Building and conducted archival research in order to prepare an appropriate historic context for San Francisco, CSU San Francisco and the Phycology and Ethnic Studies Building. Ms. Frank conducted research on 18 buildings located on the SFSU campus, and wrote historic contexts, descriptions and lists of alterations for each.

Pacific Grand Project, Honolulu, Hawai'i County, Hawai'i, 2019. Ms. Frank acted as architectural historian, co-authoring of the reconnaissance level survey form for the Pacific Grand in Honolulu, constructed in 1968. Ms. Frank's report included building development descriptions and historical significance evaluations. The project proposed to modify an existing telecommunication equipment tower atop one of the condominium building.

City of Gilroy Historic Resource Inventory Update. Gilroy, California (In Progress). Ms. Frank participated in a City-wide architectural survey of over 3,400 buildings in Gilroy, California. Acting as surveyor, Ms. Frank utilized Dudek's architectural survey application on an iPad and recorded the features, alterations and photographs of historic-era buildings throughout the city.

1605 Industrial Avenue Warehouse Project. Cultural Resources Technical Report. San José, California. 2018. Acting as architectural historian, Ms. Frank co-authored the cultural resources technical report for the 1605 Industrial Avenue Warehouse project for the construction of an approximately 186,000-square foot industrial/warehouse building on an approximately 10.96-gross-acre property located in the northern part of the City. Preparation of the historical context statement involved archival research, building descriptions, historic context development, and historical significance evaluations.

Caltrans, Keller Road/I-215 Interchange Project, Murrieta and Menifee California, 2018. Ms. Frank acted as architectural historian, co-authoring historic resource report for the Keller Road/I-215 Interchange project for Caltrans. Preparation of the historic resource report included a site visit, archival research, historic context development of Murrieta and Menifee, building feature descriptions of six historic-era resources, and historical significance evaluations. The project proposed to construct a new full interchange and auxiliary lanes at I-215 and Keller Road in Riverside County, California.

Historic Resource Assessment for 955 Hancock Avenue, West Hollywood, CA. 2018. Ms. Frank acted as architectural historian and sole author of the historic resource report for the City of West Hollywood. Preparation of the historic resources report involved archival research, historic context development, building feature descriptions, and historical significance evaluation for a single-family craftsman residence.

California State University, Fresno, New Student Union, Fresno, California. 2018. As architectural historian, Ms. Frank authored the description of the Amphitheatre on the CSU Fresno campus for the historic resource evaluation report. Ms. Frank also prepared DPRs for the two buildings.

330 Chinquapin Avenue Project, Carlsbad, CA. 2018. Ms. Frank served as architectural historian and co-author of the cultural resources report for the 330 Chinquapin Avenue Project. Ms. Frank contributed a building development description, archival research, historical context development, and a historical significance evaluation for the residence.

California State University, Chico, Cultural Resources Report for the College Park Demolition Project, Chico, CA, 2018. As architectural historian, Ms. Frank co-authored cultural resources report for the California State University, Chico, writing ten building feature descriptions. The project proposed to demolish ten-detached single-family residences on land owned by the University.

Jefferson La Mesa Project, La Mesa, CA. 2018. Ms. Frank served as architectural historian and co-author of the historical resources evaluation report for the Jefferson La Mesa Project. Ms. Frank contributed archival research and historical context development for three automotive buildings. The project proposed to demolish three industrial automotive buildings in order to redevelop the property.

Relevant Previous Experience

Edwardian Flats Historic Context Statement, San Francisco Planning Department, San Francisco, California During the summer of 2018 was the sole writer and researcher to complete the Edwardian Flat typology context statement for the City of San Francisco.

- 80 page context statement to aid with citywide survey efforts

Cornice Restoration Project, Restoric LLC, Chicago. Illinois Served as field technician in residential cornice restoration, project approximately 6 weeks long.

- Est. date of building construction 1920

Draft National Register Nomination, The School of the Art Institute of Chicago, Chicago, Illinois Acted as sole researcher and writer for draft NRHP nomination of the Jacques Building on Michigan Ave in Chicago, IL.

Recent Past Cook County Survey Data Clean Up, Landmarks Illinois, Chicago, IL Served as architectural historian. Conducted archival research, documented demolished buildings within survey, and generated a list of missing survey information.

- 3,756 properties in 98 municipalities individually reviewed
- 131 buildings identified as demolished since their survey date
- 25 missing architects and builders added to database

Paint and Finishes Analysis, Frances Willard House Museum and Archive, Evanston, Illinois Served as conservator. Worked with a team to determine original paint colors and finishes that correlate with room's period of significance and co-authored report of findings.

Historic American Building Survey, The School of the Art Institute of Chicago, Illinois Served as teachers assistant and illustrator of measured drawings for several sites including All Saints Episcopal Church, the Havlicek Monument, the Fountain of the Great Lakes, and the Chicago Loop Synagogue.

Publications

Frank, Nicole. 2018. "Mid-Century Glass Block: The Colored Patterned and Textured Era." Graduate Thesis. September 2018.

Presentations

"Mid-Century Glass Block: The Colored Patterned and Textured Era." 2018. Presented at the Association for Preservation Technology (APT) Annual Conference. Buffalo, New York

"Mid-Century Glass Block." 2018. Presented at the APT Western Great Lakes Chapter and DOCOMOMO US/Chicago 2018 Symposium: Preservation Challenges of Modernist Structures. Chicago, Illinois

Samantha Murray, MA

Historic Built Environment Lead / Senior Architectural Historian

Samantha Murray is a senior architectural historian with 13 years' professional experience in in all elements of cultural resources management, including project management, intensive-level field investigations, architectural history studies, and historical significance evaluations in consideration of the California Register of Historical Resources (CRHR), the National Register of Historic Places (NRHP), and local-level evaluation criteria. Ms. Murray has conducted hundreds of historical resource evaluations and developed detailed historic context statements for a multitude of property types and architectural styles, including private residential, commercial, industrial, educational, medical, ranching, mining, airport, and cemetery properties, as well as a variety of engineering structures and objects. She has also provided expertise on numerous projects requiring conformance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Education

California State University, Los Angeles
MA, Anthropology, 2013

California State University, Northridge
BA, Anthropology, 2003

Professional Affiliations

California Preservation Foundation

Society of Architectural Historians

National Trust for Historic Preservation

Registered Professional Archaeologist

Ms. Murray meets the Secretary of the Interior's Professional Qualification Standards for both Architectural History and Archaeology. She is experienced managing multidisciplinary projects in the lines of transportation, transmission and generation, federal land management, land development, state and local government, and the private sector. She has experience preparing environmental compliance documentation in support of projects that fall under the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA), and Sections 106 and 110 of the National Historic Preservation Act (NHPA). She has also prepared numerous Historical Resource Technical Reports (HRTRs) for review and approval by the City of San Diego's Historical Resources Board (HRB).

San Diego Project Experience (2014-2019)

City of San Diego PUD Citywide Historic Context Statement and Evaluation of Dam Infrastructure (in progress). Dudek is currently in the process of preparing a citywide historic context statement and significance evaluation of all dam and reservoir infrastructure owned/operated by the City's Public Utilities Department. Dudek is also preparing detailed impacts assessments for proposed modification to dams, as required by DSOD. The project involves evaluation of 10 dams and a flume for historical significance in consideration of NRHP, CRHR, and City designation criteria and integrity requirements, and requires extensive archival research and pedestrian survey. Upon completion of the project, the City will have a streamlined document for the management of their historic dam and reservoir infrastructure. To date, Dudek has completed a draft historic context statement and nearly all of the dam historical significance evaluations. As part of this contract, Dudek has also prepared impacts assessments for maintenance projects in accordance with CEQA and Section 106 of the NHPA, in consideration of adverse effects to historic properties. Dudek is also working on developing a public brochure that provides an overview of the City's source water history with a timeline and photographs.

City of Coronado Citywide Historic Context Statement and Historic Resources Inventory Update (in progress). Dudek is currently in the process of preparing an updated historic context statement and historic resources inventory (HRI) survey for all properties at least 50 years or older within city limits. Following current professional methodology standards and procedures developed by the California Office of Historic Preservation and the National Park Service (NPS), Dudek will: (1) develop a detailed historic context statement for the City that identifies and discusses the important themes, patterns of development, property types, and architectural styles prevalent throughout the city; and (2) conduct a reconnaissance-level survey of all properties within city limits that are at least 50 years old to identify individual properties and groupings of properties (i.e., historic districts) with potential for historical significance under City Criterion C (properties that possess distinctive characteristics of an architectural style; are valuable for the study of a type, period, or method of construction; and have not been substantially altered). Ms. Murray is serving as the Project Manager.

Imperial Avenue Bikeway Project, City and County of San Diego, California (2019). The San Diego Association of Governments' (SANDAG) Imperial Avenue Bikeway Project (proposed project) was overseen by the California Department of Transportation (Caltrans) District 11 and required compliance with the National Environmental Policy Act (NEPA) and Section 106 of the NHPA. Dudek prepared a Finding of No Adverse Effect (FNAE) document and Historic Property Survey Report (HPSR) in accordance with Caltrans' most recent edition of Standard Environmental Reference, Volume 2, Cultural Resources. The study included the results of a California Historical Resources Information System (CHRIS) records search, as well as an intensive-level historical resources survey, and completion of Caltrans documentation. Ms. Murray served as the Principal Architectural Historian on the project and oversaw all final deliverables.

Department of General Services Historical Resource Evaluation for the Normal Street Department of Motor Vehicles Site at 3960 Normal Street, San Diego, California (2017). Dudek was retained by the State of California Department of General Services to complete a Historical Resources Technical Report for a project that proposes demolition and replacement of the Department of Motor Vehicles (DMV) building located at 3960 Normal Street in the City of San Diego. To comply with Public Resources Code Section 5024(b), DGS must submit to the State Historic Preservation Officer (SHPO) an inventory of all structures over 50 years of age under DGS's jurisdiction that are listed in or that may be eligible for inclusion in the National Register of Historic Places (NRHP), or that may be eligible for registration as a California Historical Landmark (CHL). The DMV was found not eligible. Ms. Murray provided QA/QC of the historical resource technical report.

MiraCosta Community College District Oceanside Campus, San Diego County, California (2017). Dudek was retained by the MiraCosta Community College District (MCCCD) to conduct a cultural resources study for the proposed Oceanside Campus Facilities Master Plan. Of the original 11 buildings constructed in the early 1960s, nine are still extant and required evaluation for historical significance. The campus was ultimately found ineligible for designation due to a lack of important historical associations and integrity issues. Ms. Murray provided QA/QC of the final cultural report.

SDSU Tula Pavilion and Tenochca Hall Renewal/Refresh, San Diego, California (2017). Dudek was retained by the San Diego State University (SDSU) to evaluate potential impacts to historical resources associated with the proposed Tula Pavilion and Tenochca Hall Renewal/Refresh project located in San Diego, California. The historic resources technical memorandum provides the results of that evaluation. Ms. Murray provided quality assurance/quality control of the final work product and provided input on impacts to historical resources.

City of San Diego PUD Morena Reservoir Outlet Tower Replacement Project, City of San Diego, California (2016). Ms. Murray evaluated the 1912 Morena Dam and Outlet Tower for NRHP, CRHR, and local level eligibility and integrity requirements. The project entailed conducting extensive archival research and development research at

City archives, libraries, and historical societies, and preparation of a detailed historic context statement on the history of water development in San Diego County.

City of San Diego 69th and Mohawk Pump Station Project, City of San Diego, California (2015). Ms. Murray served as architectural historian and lead author of the Historical Resource Technical Report for the pump station building on 69th and Mohawk Street. Preparation of the report involves conducting extensive building development and archival research on the pump station building, development of a historic context, and a historical significance evaluation in consideration of local, state, and national designation criteria and integrity requirements.

City of San Diego Pump Station No. 2 Power Reliability and Surge Protection Project, City of San Diego, California (2015). Ms. Murray served as architectural historian and prepared an addendum to the existing cultural resources report in order to evaluate the Pump Station No. 2 property for NRHP, CRHR, and local level eligibility and integrity requirements. This entailed conducting additional background research, building development research, a supplemental survey, and preparation of a historic context statement.

San Diego State University (SDSU) Open Air Theater Renovation Project, SDSU and Gatzke Dillon & Balance, LLP, San Diego, California (2015). Ms. Murray served as architectural historian and prepared a technical memorandum that analyzed the project's potential to impact the OAT theater (a contributing property to the San Diego State College NRHP Historic District). This included conducting a site visit, reviewing proposed site and design plans, and preparing a memorandum analyzing the project's conformance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.

San Diego State University (SDSU) Engineering and Sciences Facilities Project, SDSU and Gatzke Dillon & Balance, LLP, San Diego, California (2014). Ms. Murray served architectural historian, archaeologist, and lead author of the Cultural Resources Technical Report for the SDSU Engineering and Interdisciplinary Sciences Building Project. The project required evaluation of 5 historic-age buildings in consideration of NRHP, CRHR, and local designation criteria and integrity requirements, an intensive level survey, Native American coordination, and a records search. The project proposes to demolish four buildings and alter a fifth as part of the university's plan to update its engineering and science facilities.

City of San Diego Normal Street Project, City of San Diego, San Diego County, California (2014). Ms. Murray served as architectural historian and co-author of the Historical Resources Technical Report for properties located at 3921-3923; 3925-3927; 3935 Normal Street for the City of San Diego's Development Services Department Ms. Murray assisted with the final round of comments from the City and wrote the historical significance evaluations for all properties included in the project.

The Cove: 5th Avenue Chula Vista Project, E2 ManageTech Inc., City of Chula Vista, San Diego County, California (2014). Ms. Murray served as architectural historian and co-author of the CEQA report. The project involved recordation and evaluation of several properties functioning as part of the Sweetwater Union High School District administration facility, proposed for redevelopment, as well as an archaeological survey of the project area.

J-135I Electrical Distribution and Substation Improvements and J-600 San Dieguito Pump Station Replacement Project, Santa Fe Irrigation, San Diego County, California (2014). Ms. Murray served as architectural historian and prepared the Department of Parks and Recreation (DPR) forms and associated memo concerning replacement of the original 1964 San Dieguito Pump Station. Ms. Murray recorded and evaluated the pump house for state and local significance and integrity considerations. As part of this effort she conducted background research, prepared a brief historic context, and a significance evaluation.

San Carlos Library Historical Resource Technical Report, City of San Diego, California (2014). Ms. Murray served as architectural historian and author of the Historical Resource Technical Report for the San Carlos Library. Preparation of the report involved conducting extensive building development and archival research on the library building, development of a historic context, and a historical significance evaluation in consideration of local, state, and national designation criteria and integrity requirements. The project proposes to build a new, larger library building.

Otay River Estuary Restoration Project (ORERP), Poseidon Resources, South San Diego Bay, California (2014). Ms. Murray served as architectural historian for the documentation of Pond 15 and its associated levees. The project proposes to create new estuarine, salt marsh, and upland transition habitat from the existing salt ponds currently being used by the South Bay Salt Works salt mining facility. Because the facility was determined eligible for listing in the NRHP, the potential impacts caused by breeching the levees, a contributing feature of the property, had to be assessed.

LOSSAN San Luis Rey River and Second Track Project, Oceanside, San Diego County, California (2011). Ms. Murray served as primary author for the technical report and conducted the intensive-level cultural resources field survey. The project proposes to construct a new 0.6-mile section of double-track to connect two existing passing tracks, and replace the existing San Luis Rey River Bridge. She prepared the cultural resources technical report and evaluated the bridge for NRHP, CRHR, and local level criteria and integrity requirements. Client: HNTB Corporation.

LOSSAN Control Point San Onofre to Control Point Pulgas Double Track Project, San Diego County, California (2011). Ms. Murray served as field director for the archaeological and architectural history survey and co-authored the technical report. She conducted a survey and evaluation of cultural resources in support of the Los Angeles to San Diego, California (LOSSAN) Control Point (CP) San Onofre to CP Pulgas Double Track Upgrade Project. The project is located within the boundaries of the Marine Corps Base (MCB) Camp Pendleton in Northern San Diego County, on federal land that is part of a long-term lease to the rail operator. Client: HNTB Corporation.

Presentations

***Historical Resources and CEQA: An Overview of Identification, Evaluation, Impacts Assessment, and Mitigation*. Prepared for the Gilroy Historic Heritage Committee. Presented by Samantha Murray, Dudek. May 15, 2019.** Ms. Murray delivered a 1.5-hour PowerPoint presentation to the City of Gilroy's Historic Heritage Committee during one of their monthly public hearings. The presentation provided an overview of the CEQA process, how historical resources are treated under CEQA, as well as the process for identification, evaluation, impacts assessment, and options to consider for mitigation. The presentation also included examples from CEQA Case Law and included an extensive question and answer session with the audience.

***Historical Resources under CEQA*. Prepared for the Orange County Historic Preservation Planner Working Group. Presented by Samantha Murray, Dudek. December 1, 2016.** Ms. Murray delivered a one-hour PowerPoint presentation to the Orange County Historic Preservation Planner Working Group, which included planners from different municipalities in Orange County, regarding the treatment of historical resources under CEQA. Topics of discussion included identification of historical resources, assessing impacts, avoiding or mitigating impacts, overcoming the challenges associated with impacts to historical resources, and developing effective preservation alternatives.

***Knowing What You're Asking For: Evaluation of Historic Resources*. Prepared for Lorman Education Services. Presented by Samantha Murray and Stephanie Standerfer, Dudek. September 19, 2014.** Ms. Murray and Ms. Standerfer delivered a one-hour PowerPoint presentation to paying workshop attendees from various cities and counties in Southern California. The workshop focused on outlining the basics of historical resources under CEQA, and delved into issues/challenges frequently encountered on preservation projects.

Relevant Training

- CEQA and Historic Preservation: A 360 Degree View, CPF, 2015
- Historic Designation and Documentation Workshop, CPF, 2012
- Historic Context Writing Workshop, CPF, 2011
- Section 106 Compliance Training, SWCA, 2010
- CEQA Basics Workshop, SWCA, 2009
- NEPA Basics Workshop, SWCA, 2008
- CEQA, NEPA, and Other Legislative Mandates Workshop, UCLA, 2008

Jessica Colston

Associate Archaeologist, Paleontological Technician

Jessica Colston is an archaeological and paleontological field monitor and technician with 13 years' experience. Ms. Colston has extensive field experience including identification and comparative analysis of faunal assemblages, both past and present. Ms. Colston's research interests include zooarchaeology of Pacific coast hunter-gatherers, including examination of trauma and pathology, bone tool production, utilization of faunal materials beyond subsistence, morphometric analysis, taphonomic processes in coastal environments, and human impacts on local fauna.

Project Experience

Development

Lone Oak Monitoring, CWC Lone Oak 24 LLC, San Diego, California. Coordinated daily archaeological and Native American monitoring for a residential development in an archaeologically sensitive area adjacent to jurisdictional waterways. Authored the Negative Monitoring report at the conclusion of the mass grading component of the project.

Hotel del Coronado North Parking Garage, Hdc South Beach Development LLC, Coronado, California. Responsible for monitoring into paleontological sensitive soils, and responsible for the recovery of any fossiliferous materials.

Education

California State University,
Los Angeles

MA, Anthropology (Archaeology emphasis), 2021 (expected)
University of California, Santa Cruz
BA, Anthropology (Archaeology emphasis), 2009

Certifications

CPR/First Aid

24-Hour HAZWOPER
Archeological Technician Certificate

Technician-Level Amateur Radio License, Call Sign K16NTC
Driver's License, Class M1

Professional Affiliations

Lambda Alpha National Honors Society

Society for American Archaeology

Society for Biological Anthropology

Society for California Archaeology

Costco Project, La Mesa, California. Drafted the Negative Survey Letter for the development of an adjacent commercial lot for Costco Gas station installation.

Sanborn Archaeological Significant Evaluation, Terra-Gen Development Company LLC, San Diego, California. Served as archaeological technician and report writer for evaluation excavations on previously recorded sites within the project's APE. Responsibilities included identification and documentation of archaeological features, artifacts and cultural soils. Report writing included the interpretation of the excavation results, both in terms of the artefactual assemblage and the sediments observed throughout the project area.

16970 Sunset Boulevard Cultural, Crest Real Estate, Los Angeles, California. Identified and documented archaeological and historical features on historic property.

235 North La Luna, Thomas and Kelly Adams, Ojai, California. Serving as archaeological technician. Responsible for excavation, documentation and collection of archaeological materials during phase II shovel testing.

Newland Sierra Project, Newland Sierra LLC, San Diego, California. Catalogued and performed data entry for collection previously housed with Palomar College.

Del Mar Beach Resort, Del Mar Beach Resort Investors LLC, San Diego County, California. Excavated, identified, and recorded archaeological materials recovered during phase II testing on site. Vertebrate and invertebrate analysis was performed in lab.

Highland Mesa Development II, Highland Mesa Development II Corp., Escondido, California. Served as archaeological technician. Monitored cultural resources during construction development for residential use.

The Yokohl Ranch Company Environmental Impact Report, Tulare County, California. Catalogued and sorted records of artifacts and features collected by project for analysis.

Villa Storia Affordable Housing Project, Villa Storia CIC LP, City of Oceanside, California. Served as archaeological technician. Identified and recorded cultural resources in the project area, which included on-site coordination with Native American monitors and subconsultants.

Energy

Edwards Additional 2019 Botanical Surveys, Terra-Gen Development Company LLC, San Diego, California. Responsible for co-authorship of the work plan and impact assessment plan for the Edwards AFB Solar Project. Preparation of these documents included the supplemental creation of an archaeological district, under SHPO guidelines. Faunal osteological identification/assessments contributed the work plan by proactively 'clearing' archaeological sites where any osteological material was previously recorded that was not clearly identified as non-human.

Task Order 23 EAFB 2019 Botanical, Terra-Gen Development Company LLC, San Diego, California. Co-authored work plan and impact assessment plan for the Edwards AFB Solar Project. Preparation of these documents included the supplemental creation of an archaeological district, under SHPO guidelines. Faunal osteological identification/assessments contributed the work plan by proactively 'clearing' archaeological sites where any osteological material was previously recorded that was not clearly identified as non-human.

Task Order 24 Cultural HPTP and MOA, Terra-Gen Development Company LLC, San Diego, California. Co-authored work plan and impact assessment plan for the Edwards AFB Solar Project. Preparation of these documents included the supplemental creation of an archaeological district, under SHPO guidelines. Faunal osteological identification/assessments contributed the work plan by proactively 'clearing' archaeological sites where any osteological material was previously recorded that was not clearly identified as non-human.

Centennial Flats Solar Project, Eolus North America Inc., Tonopah, Arizona. Responsible for leading an 11-person crew on a 5,000-acre Phase I survey in 10 survey days. Project area was previously un-surveyed and contained over 100 isolates and 10 newly recorded sites, including both prehistoric and historic habitations and infrastructure. Due to the time constraints of the survey, live coordination between two survey teams, project management, GIS and report writing was required. This was a methodological pilot project that yielded time saving innovations that will be implemented in other projects.

LNTP PreCon Activities, Tule Wind LLC, San Diego County, California. Co-lead on-site archaeologist. Responsible for coordination of monitors for full and appropriate coverage of ground-disturbing activities. Also responsible for identification, documentation, and collection of at-risk cultural resources present within the limits of the LNTP provided for the fence line.

California Flats Fairy Shrimp Project, First Solar Electric (CA) Inc., San Luis Obispo County, California. Responsible for mapping perimeter of vernal pool habitat for fairy shrimp. Occasional on-site inspection to reaffirm perimeter is in good condition.

Infrastructure Mapping on San Bernardino National Forest, Los Angeles Department of Water and Power, California. Performed LADWP field survey as an archaeological technician. Responsible for identification and documentation of cultural resources, both archaeological and historical.

Drew Solar Project, Drew Solar LLC, Imperial County, California. Performed phase I survey of proposed area for solar development. Documented and recorded historic canals and associated resources.

PP1&2 Transmission Line Conversion, Los Angeles Department of Water and Power, California. Responsible for field survey and record search associated with new transmission line work.

Tule Wind Compliance Monitoring, U.S. Bureau of Land Management (BLM), San Diego County, California. Responsible for monitoring and verifying the implementation of permit conditions in relation to cultural resources. This included detail oriented mapping, communication with on-site archaeological and cultural monitors, and documentation of incidents qualifying as violations of the established permit conditions or written agreements.

Blythe Unite 4, NextEra Energy Resources, Riverside County, California. Responsible for ensuring multiple on-site ground-disturbing activities had appropriate archaeological and paleontological monitoring coverage, as well as scheduling and recording of archaeological and paleontological materials discovered in the course of monitoring. This also involved the orchestration and coordination with multiple subconsultants, Native American monitors, archaeological field techs, and paleo monitors. Responsible for final identification and assessment of archaeological resources.

Jacumba Solar Archeological Project, BayWa Renewable Energy, San Diego County, California. As an archaeological monitor, responsibilities included identification, documentation, and collection of culturally significant artifacts and features. Monitoring was conducted in summer weather and required consistent movement to provide coverage for the ground disturbing activities.

McCoy Solar LLC Environmental Services, City of Blythe, California. Responsible for ensuring multiple on-site ground disturbing activities had appropriate archaeological and paleontological monitoring coverage as well as scheduling and recording of archaeological and paleontological materials discovered in the course of monitoring. This also involved the orchestration and coordination with multiple subconsultants, Native American monitors, archaeological field techs and paleo monitors. Responsible for final identification and assessment of archaeological as well as paleontological resources.

California Flats Project, First Solar Electric (CA) Inc., San Luis Obispo County, California. Responsible for ensuring multiple on-site ground-disturbing activities had appropriate archaeological and paleontological monitoring coverage, as well as scheduling and recording of archaeological and paleontological materials discovered in the course of monitoring. This also involved the orchestration and coordination with multiple subconsultants, Native American monitors, archaeological field techs, and paleo monitors. Responsible for final identification and assessment of archaeological and paleontological resources.

Military

Camp Wilson Infrastructure Upgrades, RQ Berg JV, City of Twentynine Palms, California. Responsible for coordinating archaeological monitoring with multiple subconsultants on an active military base. Unexploded ordnance training was a key element, as well as historic artifact identification.

Municipal

As-Needed Environmental Services, City of San Diego, California. Served as archaeological technician for historic site visits to nine of the dams within the San Diego Municipal water district's purview. Site visits included the recording of original and altered features of the historical structures and associated buildings. Responsible for the resultant resource descriptions for the present state of the historical resources. Dams visited included: San Vicente, El Capitan, Hodges, Miramar, Murray, Barrett, Upper Otay, Lower Otay and Sutherland.

City of Yucaipa On-Call Contract, California. Responsible for field survey of proposed impact areas for watershed projects. Recorded newly discovered cultural resources and the updating of existing records.

Resource Management

Double D Mine Project, Mitchell Chadwick, Blythe, California. Performed phase I Field survey around talc mine. Identification of historic and prehistoric resources was required, as well as recording and notifications.

Transportation

High Speed Rail Geotechnical, Dragados-Flatiron Joint Venture, Fresno, California. Performed excavation and identification of human osteological remains. Responsible for appropriate treatment and recording practices with sensitive remains.

Mid-Coast Corridor Projects, PGH Wong Engineering Inc., San Diego County, California. Approved as both an archaeological and paleontological monitor. Responsibilities focused on the identification, collection, and documentation of multiple ground disturbing activities during the course of the day. Railway training and strict adherence to safety protocols was vital. Prioritization of activities was required to provide appropriate coverage to various activities. Detailed documentation for both disciplines was required. Communication with multiple companies was required not only for technical documentation but also efficient use of time in the work day. Finds covered the spectrum from historic features and isolates to paleontological features.

Orange County Transportation Authority Additional Parking at Golden West Transportation Center, City of **Huntington Beach, California.** As archaeological technician, monitored construction and earth-moving operations for disturbances to archaeological/paleontological resources. Recorded any disturbed materials found. Workdays included working closely and safely around large construction equipment, which required good visual and verbal communication skills with construction personnel.

Water/Wastewater

Emergency Technical Support, Montecito Water District, Santa Barbara County, California. Responsible for field survey for assessment of impacts to archaeological resources during emergency efforts following the Montecito mudslides for FEMA compliance. Coordinated with emergency services for appropriate access and safety.

Hanson El Monte Pond Cultural Monitoring, Sierra Pacific West Inc., San Diego County, California. Responsible for preparation of the negative monitoring letter.

Inland Empire Brineline Reach V Rehabilitation, Santa Ana Watershed Project Authority, City of **San Bernardino, California.** Served as archaeological technician. Responsible for the monitoring of ground disturbing activities for archaeological resources.

North Broadway Pipeline Cultural Monitoring, Rincon del Diablo Municipal Water District, San Diego County, California. Responsible for the writing/preparation of the Negative Monitoring Report.

Relevant Previous Experience

Development

Bilstein Southwest Rally Cup Series, City of Yuma, Arizona. As an archaeological liaison, advised on proposals for the expansion of current rally series routes through state, federal and privately owned lands in California and

Arizona. Conducted research and performed permitting for the rally series via the appropriate owners in compliance with Section 106. (2010–Present)

Catalina Island Metropole Project, Catalina Island, California. Screened back dirt from previous excavations with emphasis on identification of grave goods and the distinction between human and faunal remains. Participated in data analysis and entry into the Microsoft Access database. This data entry involved preliminary identification quality checks as well as metadata quality assurance within the database.

Sunshine Canyon Landfill Project, City of Simi Valley, California. Served as paleontological/archaeological monitor and primarily monitored for paleontological resources in canyon excavation. Daily field identification, recording, and preparation of fossiliferous or archaeological materials were required.

Various Monitoring Projects, Riverside and San Bernardino Counties, California. Served as paleontological/archaeological monitor on multiple projects in Riverside and San Bernardino counties during excavation activities such as grading and trenching, for items of any historical, archaeological, or paleontological significance. Identified and prepared paleontological samples in plaster in the field for transit to lab facilities.

Education

California State University, Los Angeles (CSULA) Coastal California Archaeological Lab Comparative Faunal Collection, City of Los Angeles, California. As founder and manager, established maceration lab compliant with Occupational Safety and Health Administration (OSHA) regulations. The lab specializes in providing students and professionals with an osteological comparative collection for species endemic and introduced along the California coast. This lab is also designed as a teaching lab where students can gain experience in maceration techniques and comparative anatomy.

ANTH 424 Archaeological Research Techniques, CSULA, Point Mugu Field School, Ventura County, California. As graduate assistant/field co-coordinator, taught field school survey, mapping, and excavation techniques as well as monitored the excavation of test units.

ANTH 310 Evolutionary Perspectives on Sex and Gender, CSULA, City of Los Angeles, California. As graduate assistant, assisted the course professor in the form of data entry, grading of papers, proctoring of exams, and chaperoned on the class field trip to the Los Angeles Zoo for primate observations.

Field School, CSULA, Point Mugu State Park, California. As field school crew leader/compass skills instructor, taught undergraduates mapping and orienteering techniques using topographic maps, compass, pace measurement and GPS skills. As a crew leader Ms. Colston facilitated the excavation of a test unit and the accompanying analysis of excavated materials.

ANTH 300 Evolutionary Perspectives on Emotion, CSULA, City of Los Angeles, California. Served as graduate assistant and aided the course professor in the form of data entry, grading papers, and the proctoring of exams.

Anthropology Department Assistant, University of California, City of Santa Cruz, California. As anthropology laboratories assistant, processed modern faunal specimens for maceration to museum/archival level quality. Preformed/supervised and taught the speciation of common osteological animal remains. Received extensive experience in the curation and cataloguing of incoming material from varying locations, contexts and categories. Made catalogues in both hard copy as well as digitally, with specific experience in FileMaker software. Skills in the use of scalpel blade maceration as well as dermestid beetles were extensively utilized. This position promoted a strong understanding of preservation techniques for different materials if they are to be used as an academic comparative.

Field School Cataloguing System, Cabrillo Community College, City of Aptos, California. Served as student collections analyst. During this final month of the field school learned how to utilize a cataloguing system whose input method was DOS, but also to create new cataloguing systems that were appropriate and commensurate with the scale of the project at hand. Also introduced to basic skills of field identification for historic items, appropriate references, and methods of classifying bone, stone and shell artifacts.

Energy

NRG Power Plant Project, City of El Segundo, California. Served as paleontological/archaeological monitor and monitored for archaeological and paleontological materials in a coastal environment with excavations exceeding 20 feet below sea level. OSHA compliance and other environmental compliance regulations were emphasized.

Federal

U.S. Forest Service Field Survey, Modoc National Forest, California. Served as an archaeological technician. The majority of the job was field survey, recording new sites, monitoring known sites, and completing a federal monitoring form when visiting sites that had not been updating in 10 years or more. Responsible for detailed and accurate completion of federal site forms, positive artifact identification, material identification of artifacts (mostly lithics), ability to hike a minimum of 5 miles in extremely rocky terrain while carrying a 40 pound field pack.

U.S. Forest Service Crew Chief, Modoc National Forest, California. As crew chief, supervised and trained a crew of 3–4 people while conducting Section 110 compliance site recordation of both prehistoric and historic sites. Crew included 2–3 unpaid volunteers and at least one GS-03. This position required the independent completion of federal Environmental Impact Report forms. Detailed proofreading of technical reports for government use was required. The team used GPS navigation, topographic maps in latitude/longitude and Universal Transverse Mercators coordinates, in addition to compass navigation for archaeological site recognition and mapping. This position also included helping train, lead and supervise a Passport in Time (PIT) project, which introduced over 20 volunteers to the archaeological resources of Modoc National Forest. The PIT project had two sessions, which were each one week in duration.

Military

CA-SNI-40 Excavation Project, San Nicolas Island Naval Base, California. As archaeological field and lab assistant, assisted with excavation of CA-SNI-40, a coastal indigenous archaeological site on San Nicolas Island, off the southern coast of California. Analysis of excavated cultural material including bone from sea mammals and birds, shell, and lithics.

Phase 2 Survey Project, Center for Environmental Management of Military Lands, Fort Greely, Alaska. Served as archaeological technician. The team was completing Phase 2 surveys of probable sites while using shovel test pitting techniques to investigate subsurface deposits. Experience in using many tools for excavation depending on soil solidity, including: mattock, pickaxe, shovel, trowel, and ice pick, etc. Due to remote location of survey area, as well as working on military lands, multiple training certifications were received, including bear training, unexploded ordinance training, ARGO amphibious vehicle driving, and excavation through glacial till.

Resource Management

Sunshine Canyon Landfill Monitoring, City of Granada Hills, California. Served as air quality monitor and patrolled a neighborhood downwind of the landfill for offensive odors and recorded the findings. This job required that monitors also be on the lookout for anything unusual in the neighborhood, thus patrollers would act as unofficial members of the neighborhood watch.

Angela Pham, RPA

Archaeologist

Angela Pham is a field archaeologist with 9 years' experience, specializing in a variety of technical skills, including surveying, excavation techniques, testing, data recovery, monitoring, artifact identification, cataloging, and preservation and curation. Ms. Pham is highly knowledgeable about the California Environmental Quality Act and National Historic Preservation Act Section 106 and Section 110. She works closely with Native American tribal members and manages and supervises field crews and lab technicians, and directs, plans, and organizes field projects. Ms. Pham authors site inventory reports, cultural technical reports, and Department of Parks and Recreation (DPR) site records. She conducts record searches and research using the National Archaeological Database and the California Historic Resources Information System at the South Coastal Information Center.

Education

San Diego State University
MA, Applied Anthropology, 2011
BA, Anthropology, 2008

Certifications

Registered Professional Archaeologist (RPA)

Professional Affiliations

San Diego Archaeological Society

Society for American Archaeology

Society for California Archaeology

Project Experience

Development

City of San Diego on-call cultural monitoring for Undergrounding Utility District Project (Tasks 1-7; H176952), San Diego, California. 2018-Present. Archaeological PI. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of sub-consultants or other contractors participating in archaeological field investigations Records search. Author Archaeological monitoring exhibit and technical report per Task Order.

City of San Diego on-call cultural monitoring for Undergrounding Utility District Project (Tasks 1-12), San Diego, California. 2015-Present. Archaeological PI. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of sub-consultants or other contractors participating in archaeological field investigations Records search. Author Archaeological monitoring exhibit and technical report per Task Order.

Kaiser San Marcos, City of San Marcos, California. 2019-2020. As Project Archaeologist; conducted field survey, records search, NAHC outreach and authored technical report

Via Aprilia Residential Project, Via Aprilia LLC., City of San Diego, California. 2020. As Project Archaeologist; conducted field survey, records search, NAHC outreach and authored technical report

Hotel Del Coronado North Garage Project, City if Coronado, California. 2018-2019. As project archaeologist, conducted compliance monitoring on Bureau of Land Management (BLM) land. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of sub-consultants or other contractors participating in archaeological field investigations. Co-authored technical report.

Casa Del Zorro, San Diego County, California. 2019. As Project archaeologist, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources. Conducted evaluation of known resources. Authored technical report

Double D Mine Project, County of Riverside, California. 2018. As Project archaeologist, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources. Conducted evaluation of known resources. Authored technical report

Archaeological Survey for the Canyon Spring Healthcare Center, City of Riverside Community and Economic Development Department, Riverside, California. 2015. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Survey for Lake Mission Viejo Project, Lake Mission Viejo Association, Orange County, California. 2014. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Testing and Monitoring for the Hamilton Hospital Project, Marin County, California. 2015-2016. As field director, conducted extended Phase I testing and monitored auguring activities for the future construction and improvement of the Hamilton Hospital. Dug shovel test units, used GPS , and documented excavation.

Archaeological Survey and Testing for the Proctor Valley Village 14 and Preserve, Jackson Pendo Development, San Diego County, California. 2015-2018. Served as archaeologist. Conducted intensive pedestrian survey and field testing for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Site Visit for the 888 North Sepulveda Boulevard Hotel Project, OTO Development, Los Angeles County, California. 2015. As archaeologist, conducted a pre-construction archaeological site visit with clients and construction foreman. Discussed standard archaeological field protocols.

Archaeological Monitoring for the Corona Brine Line Project, Santa Ana Watershed Project Authority, Riverside County, California. 2014-2015. As archaeologist, coordinated with Charles King Company (construction company) project managers and construction foreman, conducted archaeological monitoring for the installment of the brine line.

Archaeological Survey for the Torrey Highlands Office Project, The Preserve at Torrey Highlands LLC, San Diego County, California. 2014. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources. The project involves development of a 450,000-square-foot office project in the Torrey Highlands community of San Diego, located south of State Route 56 along the future extension of Camino del Sur. The area of potential effects, consisting of the 11.1-acre project site, is bounded on three sides by undeveloped land within the City's Multi-Habitat Preservation Area.

Education

Archaeological Testing for the Mission Beach Elementary School Project, San Diego County, California. 2014. As field director, conducted Phase II of testing for future construction at the Mission Beach Elementary School. Dug shovel test units, used GPS, and documented excavation.

Energy

Campo Wind Project, Bureau of Indian Affairs, San Diego County, California. 2017-2019. As lead archaeologist, conducted pedestrian survey and data recovery testing of cultural resources that would be impacted by the project. Used Global Positioning System (GPS), and documented excavation. Co-authored technical report.

Torrey Wind Project, County of San Diego, California. 2017-2019. As lead archaeologist, conducted pedestrian survey and data recovery testing of cultural resources that would be impacted by the project. Used Global Positioning System (GPS), and documented excavation. Co-authored technical report.

Calcite Solar Project, County of San Bernardino, California. 2019-2020. As Project archaeologist, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources. Conducted evaluation of known resources. Authored technical report

Tule Wind, County of San Diego, California. 2017-2018. As lead archaeologist, conducted compliance monitoring on Bureau of Land Management (BLM) land. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of sub-consultants or other contractors participating in archaeological field investigations

Devers-Colorado River No. 1 Transmission Project, County of Riverside, California. 2018-Presnt. Project archaeologist, coordinated field visits with BLM and CDWFC; implement long term archaeological management plan. Review field discoveries and evaluations.

Imperial Solar Energy West, Imperial County, BLM, California. 2015-Present. As Project archaeologist; implemented Long Term Archaeological management project for ISEC west; author technical reports; conducted yearly site visits and evaluations.

Blythe Solar Power Project, NextEra, Riverside County, California. 2014-2017. As lead archaeologist, conducted compliance monitoring on Bureau of Land Management (BLM) land. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of sub-consultants or other contractors participating in archaeological field investigations. Co-authored technical report.

McCoy Solar Energy Project, Riverside County, NextEra, California. 2014-2016. As lead archaeological monitor, conducted and coordinated archaeological compliance monitoring, archaeological surveys, and Section 106 testing on BLM land for construction of access roads, substation, restoration activities, and a 230-kilovolt generation tie-line for the McCoy Solar Project. Responsible for on-site implementation of the archaeological monitoring program, including daily safety briefings. Oversaw field monitors. Coordinated the work of subconsultants or other contractors participating in archaeological field investigations.

Archaeological Monitoring for the Block 4N North Encanto Underground Utility Project, City of San Diego, San Diego County, California. 2014. Served as archaeologist. Coordinated with San Diego Gas & Electric (SDG&E) project managers and construction foreman. Conducted archaeological monitoring for underground utilities trenching.

Cultural Resources On-Call Contract, SDG&E, San Diego, Riverside, Imperial, and Orange Counties, California. 2011-2014. As field director. Organized and led archaeological surveys of project areas on an as-needed basis. Identified, recorded, and mapped sites within the project areas. Provided management recommendations, pole placement recommendations, and cultural resources monitoring. Wrote DPR forms and technical reports regarding project findings.

Transportation

Archaeological Monitoring for the City of San Juan Capistrano Highway 74 Project, Caltrans, Orange County, California. 2013-2014. As archaeologist, coordinated with project managers and construction foreman, and conducted archaeological monitoring for Highway 74 improvements.

Water/Wastewater

Recycled Water Pipeline and Facility Upgrades Project, San Elijo Joint Powers Authority, San Diego County, California. 2016. As Project archaeologist, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources. Conducted evaluation of known resources. Authored technical report

Archaeological Testing for the Hidden Ridge Recycled Water Pipeline Project, Santa Margarita Water District, Orange County, California. 2016. As archaeologist, conducted extended phase I testing for the installment of a recycled water line to serve the Hidden Ridge community within the Santa Margarita Water District service area.

Archaeological Monitoring for the Line B, Project, Riverside County Flood Control and Water Conservation District, Riverside County, California. 2015. As archaeologist, coordinated with WINCO project managers and construction foreman, conducted archaeological and paleontological monitoring for all trenching activities for the pipeline.

Archaeological Survey for Lake Morena Dam and Outlet Project, San Diego County, California. 2014-2015. As field director, directed field crew and conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Survey for Lake Morena Reservoir Project, City of San Diego Public Utilities Department, San Diego County, California. 2015. As field director, conducted intensive pedestrian survey for proposed project area. Identified all potential impacts to existing and newly recorded cultural resources.

Relevant Previous Experience

County of San Diego Fuel Reduction Parcel Preparation Program in Julian, Whispering Pines, and Along State Route 78/79, Environmental Resource Solutions Inc., San Diego County, California, 2013. As associate archaeologist, performed a cultural resources survey of the project area. Created avoidance measures in consultation with ERS and the County of San Diego and prepared a technical report.

Cultural and Historical Resources Report and Impact Analysis for the Elvira to Morena Double Track Project, HDR Engineering Inc., San Diego, California 2013. As associate archeologist, performed a cultural resources survey of the double track project area, including a visual impact of buildings within the indirect area of potential effect, and an evaluation of the railroad and associated railroad bridges and features.

Archaeological Testing for the Sorrento to Miramar Double Track Project, BRG Consulting for San Diego Association of Governments (SANDAG), San Diego County, California, 2013. As field director, conducted on-site water screening and lab processing with archaeological crew.

Archaeological Survey for the Padre Trail Inn Project, Helix Environmental Planning, San Diego County, California, 2013. As field director, conducted intensive pedestrian survey for project area. Identified all potential impacts to existing and newly recorded cultural resources.

Stabilization and Rehabilitation of the San Diego Mission de Alcala Archaeological Collections, Mission Basilica San Diego, San Diego County, California, 2013. Served as laboratory director. Conducted the stabilization and rehabilitation of archaeological collections currently residing at the San Diego mission. Brought the collections up to present federal curation standards. Recommended options for proper long-term curation of collections.

Archaeological Survey for the Greater Julian Tree Removal Project, Julian, County of San Diego, California, 2013. As field director, conducted intensive pedestrian surveys for all areas that are part of the San Diego County fuels reduction program. Identified all potential impacts to existing and newly recorded cultural resources.

Archaeological Survey for the Gateway Road Project, Helix Environmental Planning, Calexico, Imperial County, California, 2013. As field director, conducted intensive pedestrian survey for 0.5-acre property. Recorded potential impacts to cultural resources.

Archaeological Monitoring for the Tule Wind Project, Iberdrola Renewables Inc., San Diego County, California, 2013. As supervisor archaeologist, conducted monitoring for geotechnical work in compliance with BLM requirements for Section 106 of the National Historic Preservation Act (NHPA). Surveyed and recorded existing and new sites located near geotechnical testing locations.

Archaeological Monitoring for the Black Mountain MET Tower Project, BLM, Imperial County, California, 2013. As supervisor archaeologist, conducted pedestrian survey prior to construction and created an access route to MET Towers. Monitored all construction activity.

Archaeological Survey for the Rosemary's Mountain Quarry Expansion Project, Granite Construction, San Diego County, California, 2013. As archaeologist, conducted an intensive pedestrian survey in order to determine if any previous or new cultural resources could be encountered during construction expansion.

Archaeological Survey for the Otay Mesa Cactus Road Project, U.S. Army Corps of Engineers, San Diego County, California, 2013. Served as field director. Conducted an intensive pedestrian survey in compliance with both NHPA and CEQA guidelines. Determined the presence and absence of any additional cultural resources within the project area.

Archaeological Testing and Monitoring for the 10th Avenue and Urbana Apartments Project, H.G. Fenton Company, San Diego County, California, 2012–2013. As supervisor archaeologist, conducted testing and trench excavation prior to construction of project area. Monitored all ground disturbance activities. Collected and recorded any cultural resources.

Archaeological Testing and Monitoring for the 15th and Market Apartments Project, 15th and Market Investors LLC, San Diego County, California, 2012–2013. As field director, conducted pre-construction subsoil testing and construction grading and demolition monitoring. Determined if any significant cultural resources were either present or absent. Recorded and documented any significant structures or features during construction.

Archaeological Testing for the Sorrento to Miramar Double Track Project, SANDAG, San Diego County, California, 2012. As field director, conducted on-site water screening and lab processing with archaeological crew.

Archaeological Survey for the Woodward Project, Helix Environmental Planning, San Diego County, California, 2012. As field director, conducted Phase I cultural resources survey for future development.

Archaeological Testing and Monitoring for the North Country Transit District, Sorrento to Miramar Project, ABC Construction, San Diego County, California, 2012. As field director, conducted test excavation in order to determine if cultural resources were located in construction area. Also conducted construction monitoring.

Archaeological Testing for the Padre Dam Eastern Service Area Secondary Connection-Alternative Site Location Project, Helix Environmental Planning, San Diego, California, 2012. As field director, conducted Phase II testing for future installment of reservoir, tanks, and water pumps. Dug shovel test units, used GPS, documented excavation, and supervised field crew.

Archaeological Evaluation for the Marine Corps Base Camp Pendleton Conjunctive Use Project, MCB Camp Pendleton, San Diego County, California, 2012. As associate archaeologist, conducted pedestrian survey in order to identify any cultural resources located on Camp Pendleton and Fallbrook boundaries of the area of potential effect.

Archaeological Monitoring for the Lusardi Creek Restoration Project, Dudek, San Diego County, California, 2012. As field director, conducted monitoring for the removal of invasive species adjacent to Lusardi Creek. Identified any cultural resources that were uncovered during the removal of invasive plants.

Archaeological Data Recovery and Monitoring for the Palomar College Mitigation Project, Palomar College District, San Diego County, California, 2012. As associate archaeologist, conducted controlled excavation units, water screened excavated soil, and lab processed all cultural material found on site.

Archaeological Data Recovery for the North Country Transit District, Sorrento to Miramar Project, ABC Construction, San Diego County, California, 2012. As associate archaeologist, conducted controlled unit excavations, water screened soil, and conducted lab processing both in the field and the lab. Client Reference: ABC Construction Co. Inc., 619.239.3428.

Archaeological Survey and Monitoring for California Department of Transportation (Caltrans) State Route 76 project, Caltrans District 11, San Diego County, California, 2011. As field director, conducted survey and monitored trenching for proposed State Route 76 road expansion.

Archaeological Survey for the De Luz Pole Replacement Project, SDG&E, San Diego County, California, 2011. As field director, supervised and conducted cultural surveys for future power pole replacements.

Archaeological Survey for the LNL UG Gateway, SDG&E, Laguna Nigel, Orange County, California, 2011. As field director, supervised and conducted surveys for future power pole replacements.

Archaeological Survey of SDG&E Power Poles, SDG&E, Palomar Mountain, San Diego County, California, 2011. As field director, conducted preconstruction survey of 19 power poles on Palomar Mountain.

Archaeological Survey and Monitoring for the Devers Palo Verde 2 Project, Southern California Edison, Riverside County, California, 2011. Served as field director. Supervised and conducted survey and monitoring for proposed substation location. Coordinated work with Southern California Edison. Marked off areas containing culturally sensitive materials.

Wood-to-Steel Preconstruction Archaeological Surveys for Tie Line Alternative Pole Replacements, SDG&E, San Diego County, California, 2011. As archaeological field technician, conducted preconstruction survey for future power pole replacements.

Publications

Pham, A. 2011. "Historical and Archaeological Patterns of Water Use in San Diego County: A Case Study of the Whaley House Cistern/Well." Master's thesis; San Diego State University.

Appendix C

Geotechnical Investigation

Geotechnical Engineering
Construction Inspection
Materials Testing
Environmental

OFFICE LOCATIONS

ORANGE COUNTY
CORPORATE BRANCH
2992 E. La Palma Avenue
Suite A
Anaheim, CA 92806
Tel: 714.632.2999
Fax: 714.632.2974

SAN DIEGO
IMPERIAL COUNTY
6295 Ferris Square
Suite C
San Diego, CA 92121
Tel: 858.537.3999
Fax: 858.537.3990

INLAND EMPIRE
14467 Meridian Parkway
Building 2A
Riverside, CA 92518
Tel: 951.653.4999
Fax: 951.653.4666

OC/LA/INLAND EMPIRE
DISPATCH
800.491.2990

SAN DIEGO DISPATCH
888.844.5060

www.mtglinc.com

GEOTECHNICAL INVESTIGATION

Richland Elementary School Rebuild
910 Borden Road
San Marcos, California

Prepared For:
San Marcos Unified School District
255 Pico Avenue – Suite 250
San Marcos, California 92069

Prepared By:
MTGL, Inc.
6295 Ferris Square, Suite C
San Diego, California 92121

November 16, 2020

MTGL Project No. 5016A74
MTGL Log No. 20-2329

MTGL

Geotechnical Engineering
Construction Inspection
Materials Testing
Environmental

OFFICE LOCATIONS

ORANGE COUNTY
CORPORATE BRANCH
2992 E. La Palma Avenue
Suite A
Anaheim, CA 92806
Tel: 714.632.2999
Fax: 714.632.2974

SAN DIEGO
IMPERIAL COUNTY
6295 Ferris Square
Suite C
San Diego, CA 92121
Tel: 858.537.3999
Fax: 858.537.3990

INLAND EMPIRE
14467 Meridian Parkway
Building 2A
Riverside, CA 92518
Tel: 951.653.4999
Fax: 951.653.4666

INDIO
44917 Golf Center Pkwy
Suite 1
Indio, CA 92201
Tel: 760.342.4677
Fax: 760.342.4525

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November 16, 2020

San Marcos Unified School District
255 Pico Avenue, Suite 100 MTGL
San Marcos, California 92069

Project No. 5016A48
MTGL Log No. 20-2329

Attention: Ms. Tova Corman

Subject: **GEOTECHNICAL INVESTIGATION**
Richland Elementary School Rebuild
910 Borden Road
San Marcos, California

Dear Ms. Corman:

In accordance with your request and authorization, we have completed a geotechnical investigation for the subject site. We are pleased to present the following report which addresses both engineering geologic and geotechnical conditions, including a description of the site conditions, results of our field exploration and laboratory testing, and our conclusions and recommendations.

We understand that the rebuild project will consist of constructing five new buildings, new parking area, a playground, hard courts and a bioretention basin. The site is developed with classroom buildings, play and garden areas, and parking lots. The western portion of the campus is a grass-covered field, where the new structures will be located. The existing structures will be removed to construct a play field, the bioretention basin and the hard courts.

Based on our findings, in our opinion that the site will be suitable for construction, provided the recommendations presented herein are incorporated into the plans and specifications.

The geologic hazard evaluation performed for this project is presented as Appendix A, prepared by our engineering geologic consultant, Anderson Geology. Our recommendations for site preparation, foundation and pavement design, and construction considerations are presented in the following sections of this report.

We appreciate this opportunity to be of continued service and look forward to providing additional consulting services during the planning and construction of the project. Should you have any questions regarding this report, please do not hesitate to contact us at your convenience.

Respectfully submitted,

MTGL, Inc.

Steph J. Coover

Stephen J. Coover, RCE, GE
Vice President | Chief Engineer

STEPHEN J. COOVER
GE 2057
Exp. 9/30/21

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ATTACHMENTS:

1.00 INTRODUCTION

In accordance with your request and authorization, MTGL, Inc. has completed a geotechnical investigation for the subject site. The following report presents a summary of our findings, conclusions and recommendations based on our investigation, laboratory testing, geologic and engineering analyses.

1.01 Planned Construction

We understand that five new classroom buildings are to be constructed at Richland Elementary School. The school is located at 910 Borden Road in San Marcos, California. The geologic hazard study presented in Appendix A incorporates a site location map showing the subject site plotted on the USGS quadrangle map. Figure 1 shows the layout of the proposed classroom buildings.

Three of the buildings, Buildings A, B, and E will be one-story. Buildings C and D will be two-story buildings. The buildings will be Type II-B, steel moment frame structures, with metal stud framing, and metal decks with concrete fill. The exteriors will be plaster and cement lab siding and composite wood siding. The foundations will be shallow spread and continuous footings, designed for an allowable bearing capacity of 2,000 psf (pounds per square foot).

All five buildings will have a finished floor elevation of 714.85 feet. The adjacent building pad grades will be at approximately elevation 714.60 feet.

With the exception of new Building E, the new buildings will be located on the undeveloped western portion of the campus. Building E's location is occupied by two existing buildings, with a planting and landscaped area present in the approximate middle of the Building E footprint.

Most of the building pad preparation will be performed with cuts and fills to achieve the building pad grade. Retaining walls near the southeast side of Building D will be required to support the fill comprising the building pad at that location. The retaining wall heights will be an approximate maximum of five to six feet. Subsurface profiles presented in Figures 3 and 4 depict the proposed grading in the building pad areas. The profiles indicate that minor cuts and fills will be performed within the building pad area. Accordingly, the building footprints span cut/fill transitions in most places.

No significant slopes will be constructed within or near the building pad.

1.02 Scope of Work

The scope of our geotechnical services included the following:

- Review of geologic, seismic, ground water and geotechnical literature (Appendix A).
- Logging, sampling and backfilling of 22 exploratory borings drilled with a 6-inch diameter, hollow-stem auger drill rig. Although we attempted to extend at least one boring per building to a depth of fifty (50) feet, the drill rig encountered practical refusal or very high blow counts in formational materials (see Appendix B).
- Performing two percolation tests in the approximate location of the proposed bioretention basin.
- Laboratory testing of representative samples (see Appendix C).
- Geotechnical engineering review of data and engineering recommendations.
- Preparation of this report summarizing our findings and presenting our conclusions and recommendations for the proposed construction.

1.03 Site Description

Refer to the Limited Engineering Geologic Hazard Evaluation of Property by Anderson Geology, Appendix A, for a description of site topography and conditions.

1.04 Field Investigation

Prior to the field investigation, a site reconnaissance was performed by an engineer from our office to mark the boring locations, as shown on the Site Plan, Figure 1, and to evaluate the boring locations with respect to identifiable subsurface structures and access for the drilling rig. Underground Service Alert was then notified of the marked locations for utility clearance.

Our subsurface investigation consisted of twenty-two (22) exploratory borings advanced to a maximum depth of 45.8 feet below existing grade. The borings were drilled using 6-inch diameter hollow-stem auger drill rigs, one a truck-mounted rig and the other a limited access drill rig. Approximate drilled locations of all the borings are shown on the Site Plan, Figure 1. In addition to the twenty-two borings in the proposed development areas, two borings, P-1 and P-2, were advanced as close as possible to the proposed bioswale location (the electric power feed into the campus occupies much of the proposed bioswale location). These borings were drilled to a depth of eight feet below the ground surface for performance of percolation tests.

Borings were logged and sampled using modified California ring and Standard Penetration Test (SPT) samplers at selected depth intervals. Samplers were driven into the bottom of the boring with successive drops of a 140-pound weight falling 30 inches. Blows required driving the last 12 inches of the 18-inch Ring and SPT samplers are shown on the boring logs in the "blows/foot" column (Appendix B). SPT was performed in the borings in general accordance with the American Standard Testing Method (ASTM) D1586 Standard Test Method. Representative bulk soil samples were also obtained from our borings.

Each soil sample collected was inspected and described in general conformance with the Unified Soil Classification System (USCS). The soil descriptions were entered on the boring logs. All samples were sealed and packaged for transportation to our laboratory. After completion of drilling, borings were backfilled in accordance with State of California and County of San Diego Standards which included bentonite chips and compacted soil. Borings in paved areas were patched with black Portland cement concrete.

1.05 Laboratory Testing

Laboratory tests were performed on representative samples to verify the field classification of the recovered samples and to determine the geotechnical properties of the subsurface materials. All laboratory tests were performed in general conformance with ASTM or State of California Standard Methods. The results of our laboratory tests are presented in Appendix C of this report. The laboratory results indicate a generally Low expansion potential; one test indicated a Medium potential.

2.00 FINDINGS

As observed during this investigation, the site is underlain by a thin layer of undocumented fill materials over Metasedimentary and Metavolcanic Rocks Undivided (Mvu). Logs of the subsurface conditions encountered in our borings are provided in Appendix B. Cross sections of the site are depicted on Figures 2 through 4.

Artificial fill soils were encountered in all of the twenty-four borings drilled for this investigation. Fill soils can be characterized as reddish-brown, stiff to very stiff, fine to medium grained sandy clay

(CL) and low to medium plasticity sandy clay (CL). As encountered in our borings, the thickness of the fill ranged from one to four feet below existing grade, with a general thickness of one to two feet. The fill soils are considered not suitable for support of the structures or other improvements in their current condition and will need removal and recompaction as structural fill.

The formational bedrock which underlies the fill soils at the site consists of Jurassic-age Metasedimentary and Metavolcanic Rocks Undivided (Mvu). As weathered bedrock, the metasedimentary and metavolcanic rocks consisted of reddish-brown, fine grained sandy claystone with fine gravel. As encountered, this material was generally hard to very hard, as defined by drive sampler blow count resistance. Practical drill rig refusal was encountered in several borings. No ground water was encountered in the borings.

Based on the relative density of the formational materials at the site there is a high potential for perched groundwater to appear along the contact between the fills and the formational materials. Additional groundwater seepage may be encountered in the future due to rainfall, irrigation or broken ppes. Since the prediction of the locations of such conditions is difficult, they are typically mitigated, if and when they occur.

The direct shear tests indicate the on-site soils will be suitable for support of shallow spread and continuous footings. Recommendations for preparing the building floor slab and footing subgrades, based on the expansion potential testing, are presented in the following sections of this report.

2.01 FLOODING POTENTIAL

Refer to the geologic hazard study, Appendix A.

3.00 CONCLUSIONS

3.01 GENERAL CONCLUSIONS

Given the findings of the investigation, it appears that the site conditions are suitable for the proposed construction. Based on the investigation, in our opinion the proposed development is safe against landslides, slippage, and significant settlement provided the recommendations presented in our report are incorporated into the design and construction of the project. Grading and construction of the proposed project will not adversely affect the geologic stability of adjacent properties. The nature and extent of the investigation conducted for the purposes of this declaration are, in our opinion, in conformance with generally accepted practice in this area. Therefore, the proposed project appears to be feasible from a geotechnical standpoint. There appears to be no significant geologic constraint onsite that cannot be mitigated by proper planning, design, and sound construction practices. Specific conclusions pertaining to geologic conditions are summarized below:

- Due to proximity of the site to regional active and potentially active faults, the site could experience moderate to high levels of ground shaking from regional seismic events within the projected life of the building. A design performed in accordance with the current California Building Code and the seismic design parameters of the Structural Engineers Association of California is expected to satisfactorily mitigate the effects of future ground shaking.
- The potential for active (on-site) faulting or landslides is considered low.
- A potential for liquefaction during strong ground motion is very low.
- The presence of generally Low expansion index potential soils at the floor slab and footing subgrade elevations will require mitigation to reduce the potential for soil volumetric-related distress.

3.02 EARTHQUAKE ACCELERATIONS \ CBC SEISMIC PARAMETERS

Refer to the geologic hazard evaluation, Appendix A.

3.03 ON-SITE STORM WATER INFILTRATION POTENTIAL

We performed percolation tests on two borings drilled in the general vicinity of the proposed bioswale; access for the drill rig was limited at one location by the presence of a structure and the underground electric power feed to the campus. The percolation tests, performed using the Porchet method indicate low infiltration values of 0.10 and 1.50 inches per hour. Accordingly, in our opinion the site's poor soil infiltration properties render a storm water infiltration system unfeasible.

4.00 RECOMMENDATIONS

Our recommendations are considered minimum and may be superseded by more conservative requirements of the architect, structural engineer, building code, or governing agencies. The foundation recommendations are based on the expansion index and shear strength of the onsite soils. Import soils, if necessary should be a very low expansion potential (Expansion Index less than 20) and should be approved by the geotechnical engineer prior to importing to the site. In addition to the recommendations in this section, additional general earthwork and grading specifications are included in Appendix D.

Based on our findings during the course of our investigation, we recommend that conventional spread footings and continuous wall footings be used to support the proposed structures. Continuous footings are recommended for retaining walls.

4.01 EXCAVATION CHARACTERISTICS/SHRINKAGE

Our exploratory borings were advanced within the formational materials with some difficulty, but no oversize materials were encountered in these materials. Our exploratory borings were terminated upon refusal of harder formational materials. Accordingly, we expect that the upper earth materials will be rippable with conventional heavy-duty grading equipment; although not encountered in the borings, some oversized materials may be encountered during grading.

When encountered, the formational materials may be difficult to excavate with conventional earthmoving equipment and may require the use of heavy ripping equipment, blasting, rock splitting or other specialty construction techniques. Excavations within the unweathered formational materials may result in oversized materials that are considered unsuitable for use in the structural fills at the site. Unsuitable materials should be hauled to an appropriate offsite disposal site.

We expect the most difficult excavation conditions to be encountered at depths exceeding twenty-five feet below the existing ground surface. Such conditions might be of concern for drilling of dry wells or elevator rams. Considering the proposed maximum building height of two stories, we expect that elevator ram borings will not likely exceed twenty feet, based on our understanding of elevator installations.

Shrinkage is the decrease in volume of soil upon removal and recompaction expressed as a percentage of the original in-place volume, which will account for changes in earth volumes that will occur during grading. Bulking is the increase of volume of soils upon excavation of formational materials. Our estimates for shrinkage of the onsite fill and bulking of the formational soils are expected to range from 5 to 15 percent.

4.02 SETTLEMENT CONSIDERATIONS

Based on the known subsurface conditions and site geology, we anticipate that properly designed and constructed foundations that are supported on compacted fill materials will experience a total and differential settlement on the order of 1.0 inch and ½ inch, respectively. As a minimum, structures supported by shallow conventional foundations should be designed to accommodate a total settlement/expansion of at least 1.0 inch with differential movements of ½ inch over a horizontal distance of 50 feet.

4.03 SITE CLEARING RECOMMENDATIONS

All surface vegetation, trash, debris, asphalt concrete, Portland cement concrete, underground pipes, and old foundations should be cleared and removed from the proposed construction site. Depressions resulting from the removal of foundations of existing buildings, underground tanks and pipes, buried obstructions and tree roots should be backfilled with properly compacted material.

4.04 SITE GRADING RECOMMENDATIONS

All fill materials beneath the building footprint, including the five feet beyond footprint remedial grading envelope, should be properly moisture-conditioned to at least optimum moisture content and compacted to at least 90 percent of maximum dry density as determined by ASTM Test Method D1557. Fill materials outside the building footprint envelope and not underlying flatwork or pavement should be compacted to at least 85 percent of maximum dry density as determined by ASTM D 1557. Fill materials should be placed in loose lifts, no greater than 8 inches prior to applying compactive effort. All engineered fill materials should be moisture-conditioned and processed as necessary to achieve a uniform moisture content that is at least optimum moisture content and within moisture limits required to achieve adequate bonding between lifts. Soil moisture and compaction should be confirmed by testing.

4.04.1 Remedial Grading For Building Pads

Building plans, grading plans and foundation elevations were not available at the time of our investigation. Therefore, once formal plans are prepared and available for review, this office should review these plans from a geotechnical viewpoint, comment on any changes, and revise the recommendations of this report as necessary.

All organics, debris, trash and topsoil should be removed from the grading area and hauled offsite. We recommend that all existing fill materials beneath the building pads be removed and re-compacted as an engineered fill. In addition, to provide a uniform fill mat beneath the proposed building, we recommend that the entire building pad be excavated to a depth of at least two feet below footing subgrades or two feet below floor slab subgrade, whichever is lower. To reduce the potential for cracking of floor slabs and disturbance of shallow spread footings by expansive soil volumetric changes, we recommend that the lower one foot of the two feet of soil removed beneath slabs and footings be moisture-conditioned to at least four percent (4%) above optimum moisture content (ASTM D1557 method) and compacted to a minimum of 90 percent of the maximum dry density, per the ASTM D1557 test method. The upper foot of the two feet of removed material should be replaced with twelve (12) inches of crushed aggregate base material (not recycled base), compacted also to a minimum of 95 percent of the maximum dry density per ASTM D1557.

The horizontal limits of the removal and re-compaction should extend at least five feet beyond the building footprint. Compaction and soil moisture content should be confirmed by testing.

4.04.2 REMEDIAL GRADING FOR HARDSCAPE AND PAVEMENT AREAS

Hardscape and pavement areas should have the upper 2 feet of undocumented fill materials removed and re-compacted as engineered fill. If dense formational materials are encountered prior to reaching two feet then the over-excavation may be terminated at the dense formational materials. Prior to the re-compaction process, the bottom of the excavation to receive fill should be scarified to a depth of 6 to 8 inches, moisture conditioned to at least optimum moisture content and re-compacted. Processing for hardscape and pavement areas should extend a minimum of 2 feet outside the hardscape/pavement limits. Compaction and soil moisture content should be confirmed by testing.

4.05 FILL MATERIALS

Imported materials should be free from vegetable matter and other deleterious substances, should have an expansion index less than 20, should not contain rocks or lumps of a greater dimension than 4 inches, and should be approved by the geotechnical consultant prior to importing. In addition, the contractor must ensure that all imported materials conform to the requirements of DTSC/DSA Clean Fill Imported Fill Materials for School Sites by providing proper documentation for the imported materials.

4.06 FOUNDATIONS

The recommendations and design criteria in this report are "minimum" in keeping with the current standard-of-practice. They do not preclude more restrictive criteria by the governing agency or structural considerations. The project structural engineer should evaluate the foundation configurations and reinforcement requirements for actual structural loadings. The foundation design parameters assumes that remedial grading is conducted as recommended in this report, and that all the buildings are underlain by a relatively uniform depth of compacted fill with a low expansion potential. Note that expansion index testing should be conducted on the individual building pads during finish grading in order to confirm this assumption.

Conventional shallow foundations are considered suitable for support of the proposed structures provided that remedial grading to remove undocumented fill materials is performed as recommended in this report.

4.06.1 SHALLOW FOUNDATIONS BEARING ON COMPACTED FILL

Allowable Soil Bearing:	3,000 lbs/ft^2 (allow a one-third increase for short-term wind or seismic loads). The allowable soil bearing may be increased 500 lbs/ft^2 for every 12-inch increase in depth above the minimum footing depth and 250 lbs/ft^2 for every 12-inch increase in width above the minimum footing width. The bearing value may not exceed 4,500 lbs/ft^2
Minimum Footing Width:	24 inches
Minimum Footing Depth:	24 inches below lowest adjacent soil grade
Coefficient of Friction:	0.35
Passive Pressure:	350 psf per foot of depth (neglect the upper one foot unless it's confined by pavement or a slab). Passive pressure and the friction of resistance can be combined without reduction

The minimum reinforcement for footings should consist of two No. 5 bars placed within 3 inches of the top of footings and two No. 5 bars placed within 3 inches of the bottom of footings is recommended. However, the structural engineer may require heavier reinforcement.

4.07 CONCRETE SLABS ON GRADE

Concrete floors with a minimum thickness of 5.0 inches are recommended for slabs on grade considering normal floor loading conditions. However, if heavy concentrated or moving loads are anticipated, slabs should be designed using a modulus of subgrade reaction (k) of 150 psi/in when soils are prepared in conformance with the grading recommendations contained within the report. Nominal reinforcement of slabs should consist of No. 4 bars placed 18 inches on center, each direction at the mid-height of the slab. Due to the expansion potential of the site soils, all concrete slabs on grade for buildings and miscellaneous flatwork should be supported by a minimum of four inches (4") of gravel or washed concrete sand.

Floor slabs should be separated from footings, structural walls and utilities, and provisions made to allow for settlement or swelling movements at these interfaces. If this is not possible from a structural or architectural design standpoint, we recommend that the slab connection to footings be reinforced such that there will be resistance to potential differential movement.

Control joints should be constructed on all slabs on grade to create squares or rectangles with a maximum spacing of twelve (12) feet on large slab areas. Where flatwork is adjacent to curbs, reinforcing bars should be spaced between the flatwork and the curbs. Expansion joint material should be used between flatwork and curbs, and flatwork and buildings.

Vehicular concrete pavers should be designed with one (1) inch sand over eight (8) inches of Caltrans Class II aggregate base over a minimum of twenty-four (24) inches of subgrade compacted to at least 95 percent of maximum dry density. Compaction should be verified by testing.

Concrete slabs constructed on soil ultimately cause the moisture content to rise in the underlying soil. This results from continued capillary rise and the termination of normal evapotranspiration. Because normal concrete is permeable, the moisture will eventually penetrate the slab. Excessive moisture may cause mildewed carpets, lifting or discoloration of floor tiles, or similar problems. To decrease the likelihood of problems related to damp slabs, suitable moisture protection measures should be used where moisture sensitive floor coverings, moisture sensitive equipment, or other factors warrant.

A commonly used moisture protection in southern California consists of about 2 inches of clean sand covered by at least 15 mil plastic sheeting. In addition, 2 inches of clean sand are placed over the plastic to decrease concrete curing problems associated with placing concrete directly on an impermeable membrane. However, it has been our experience that such systems will transmit from approximately 6 to 12 pounds of moisture per 1,000 square feet per day. This may be excessive for some applications, particularly for sheet vinyl, wood flooring, vinyl tiles, or carpeting with impermeable backing that use water soluble adhesives. Also, the 15-mil sheeting is susceptible to puncture.

If additional moisture protection is needed, then a Stego Wrap moisture barrier, or equivalent, may be used. The Stego Wrap should be installed per the manufacturers' recommendations.

4.08 MISCELLANEOUS FLATWORK

Miscellaneous concrete flatwork and walkways may be designed with a minimum thickness of 4.0 inches. All flatwork should be reinforced with No. 4 bars, 18 inches on center, each direction at the mid-height of the slab or 6x6, W2.9/W2.9 welded wire fabric. A minimum of four inches (4") of aggregate base material or sand should be placed below all slabs. The structural engineer may require heavier reinforcement. Control joints should be constructed to create squares or rectangles with a maximum spacing of 5 feet for sidewalks and 10 feet, each way for slab areas. Differential movement between buildings and exterior slabs, or between sidewalks and curbs may be decreased by doweling the slab into the foundation or curb.

4.9 PREWETTING RECOMMENDATION

Prior to placing concrete slabs and flatwork, the underlying soils should be brought to at least two (2) percent above optimum moisture content for a depth of 18 inches prior to the placement of concrete. The geotechnical consultant should perform insitu moisture tests to verify that the appropriate moisture content has been achieved a maximum of 24 hours prior to the placement of concrete or moisture barriers.

Once the slab subgrade soil has been pre-wetted and compacted, the soil should not be allowed to dry before concrete placement. If the subgrade soil is dry, the moisture content of the soil should be restored before placement of concrete and re-tested.

Proper moisture conditioning and compaction of subgrade soils prior to placement of concrete is very important. Even with proper site preparation, some soil moisture changes of the subgrade soils supporting the concrete flatwork due to edge effects (shrink/swell) may occur. Drying and wetting of subgrade soils adjacent to landscaped areas or open fields may increase the potential of shrink/swell effects beneath concrete flatwork areas. To help reduce edge effects, lateral cutoffs, such as inverted curbs are recommended. Control joints should be used to reduce the potential for flatwork panel cracks resulting from minor soil shrink/swell.

4.10 Corrosivity

Soluble sulfate tests indicate that concrete at the subject site will have a negligible exposure to water soluble sulfate in the soil. Type II/V cement may be used for concrete in direct contact with onsite soils. Based on the soluble chloride levels the on-site soils have a moderate degree of corrosivity to metals.

Corrositivity testing consisting of soils reactivity (pH) and resistivity (ohms-cm) were also tested on representative soils. The test results indicate that the soils have a soil reactivity ranging from 7.1 to 7.2 and a resistivity of 2,300 to 3,800 ohms-cm. A neutral or non-corrosive soil has a reactivity value ranging from 5.5 to 8.4. Generally, soils that could be considered corrosive to metal have resistivities less than 3,000 ohms. Those soils with resistivity values of less than 1000 ohms-cm can be considered extremely corrosive.

Based on our test results, it is our opinion that the underlying soils at the site have a moderate corrosion potential to buried metal. The actual corrosive potential is determined by many factors in addition to those presented herein. MTGL, Inc. does not practice corrosion engineering. Protection of buried metal pipes with sand bedding and protective coating may be used to further reduce the corrosion potential. We recommend that a corrosion engineer be consulted.

4.11 RETAINING WALLS

Embedded structural walls should be designed for lateral earth pressures exerted on the walls. The magnitude of these earth pressures will depend on the amount of deformation that the wall can yield under the load. If the wall can yield sufficiently to mobilize the full shear strength of the soils, it may be designed for the active condition. If the wall cannot yield under the applied load, then the shear strength of the soil cannot be mobilized and the earth pressures will be higher. These walls such as basement walls should be designed for the at rest condition. If a structure moves towards the retained soils, the resulting resistance developed by the soil will be the passive resistance.

For design purposes, the recommended equivalent fluid pressure for each case for walls constructed above the static groundwater table and backfilled with non-expansive soils is provided below. Retaining wall backfill should be compacted to at least 90% relative compaction based on the maximum density defined by ASTM D1557. Retaining structures may be designed to resist the following lateral earth pressures.

- Allowable Bearing Pressure – 3,000 psf (on compacted fill)
  – 5,000 psf (on undisturbed formation)
- Passive Earth Pressure - equivalent fluid weight of 350 pcf (neglect upper foot unless confined by pavement or slab).
- At rest lateral earth pressure - 60 pcf
- Active Earth Pressures – equivalent fluid weights:

Slope of Retained Material	Equivalent Fluid Weight (pcf)
Level	40
2:1 (H:V)	65

We recommend that all retaining wall footings be embedded at least 24 inches below the lowest adjacent finish grade. In addition, the wall footings should be designed and reinforced as required for structural considerations. Remedial grading (overexcavation) beneath the walls should be performed as recommended in this report.

Lateral resistance parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer. If any super-imposed loads are anticipated, this office should be notified so that appropriate recommendations for earth pressures may be provided.

Retaining structures should be drained to prevent the accumulation of subsurface water behind the walls. Back drains should be installed behind all retaining walls exceeding 3.0 feet in height. A typical detail for retaining wall back drains is presented as Figure 5. All back drains should be connected to suitable drainage devices. Walls and portions thereof that retain soil and enclose interior spaces and floors below grade should be waterproofed and dampproofed in accordance with the 2019 California Building Code.

4.12 SEISMICALLY INDUCED LATERAL EARTH PRESSURES

For retaining walls exceeding 6 feet in height we recommend that a seismic retaining wall design be conducted by the structural engineer. For seismic design we used a site acceleration of 0.26g calculated as 2/3 the peak ground acceleration (2% in 50 years) calculated on the OSHPD website. For an active retained wall condition, we recommend a seismic load of 13H be used for design. The seismic load is dependent of the retained wall height where H is the height of the wall, in feet, and the calculated loads result in pounds per square foot (psf) exerted at the top of the wall and zero at the base of the wall (inverted triangle).

4.13 PAVEMENT RECOMMENDATIONS

Recommended pavement structural sections are based on the procedures outlined in "Design Procedures for Flexible Pavements" of the Highway Design Manual, California Transportation Department. This procedure uses the principle that the pavement structural section must be of adequate thickness to distribute the load from the design traffic (TI) to the subgrade soils in such a manner that the stresses from the applied loads do not exceed the strength of the soil (R value).

Pavement sections were designed based on an assumed Traffic Index of 4 for parking areas, 6 for truck driveways and 7 for dedicated school bus lanes/firelanes. Laboratory R-Value testing indicates that the soils on-site have an R-Value of 13. R-Value testing should be done on the finished pavement grade and pavement design should be based on the actual conditions. The preliminary recommended structural sections are as follows:

ASPHALT PAVEMENT STRUCTURAL SECTION

Pavement Area	Traffic Index	AC Thickness (in)	Base Thickness (in)
Parking Areas	4	3.0	5.0
Truck Access Driveways	6	3.0 4.0	12.0 10.0
Dedicated School Bus Lanes	7	5.0 6.0	12.0 10.0

Portland cement concrete (PCC) pavements for areas which are subject to traffic loads may be designed with a minimum thickness of 6 inches of Portland cement concrete on 4.0 inches of crushed aggregate base.

Immediately prior to constructing pavement sections, the upper 12 inches of pavement subgrade should be scarified, brought to at least optimum moisture content, and compacted to at least 95 percent of the maximum dry density as determined by ASTM D 1557. Aggregate base should also be compacted to at least 95 percent relative compaction. Aggregate base should conform to Caltrans Class II or Standard Specifications for Public Works Constructions (SSPWC), Section 200 for crushed aggregate base. Asphalt concrete should be compacted to at least 95 percent of the Hveem unit weight. Asphalt concrete should conform to SSPWC Section 400-4. Compaction and soil moisture content should be confirmed by testing.

4.14 CONSTRUCTION CONSIDERATIONS

4.14.1 MOISTURE SENSITIVE SOILS/WEATHER RELATED CONCERNS

The upper soils encountered at this site may be sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and its support capabilities. In addition, soils that become excessively wet may be slow to dry and thus significantly delay the progress of the grading operations. Therefore, it will be advantageous to perform earthwork and foundation construction activities during the dry season. Much of the on-site soils may be susceptible to erosion during periods of inclement weather. As a result, the project civil engineer/architect and grading contractor should take appropriate precautions to reduce the potential for erosion during and after construction.

4.14.2 DRAINAGE AND GROUNDWATER CONSIDERATIONS

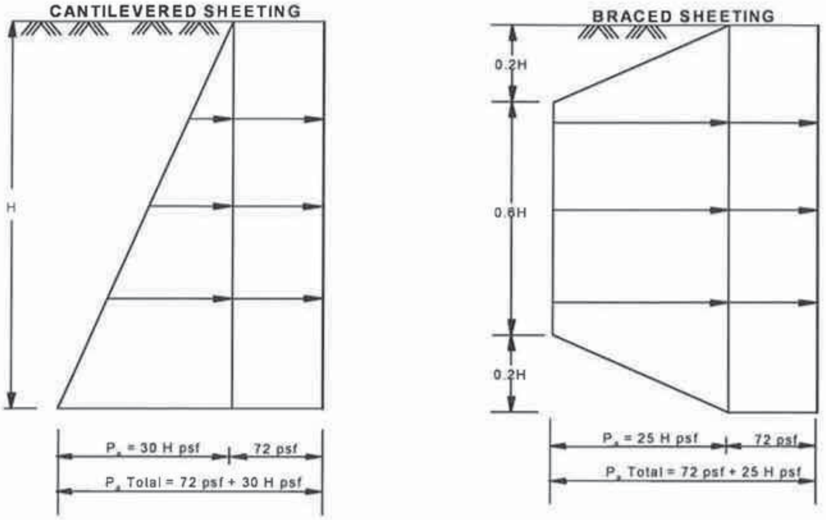
Based on the relative density of the formational materials at the site there is a high potential for perched groundwater to appear along the contact between fill and formational materials. In addition, groundwater seepage may be encountered in the future due to rainfall, irrigation or broken pipes. Therefore, we recommend that a representative of MTGL, Inc. be present during grading operations to evaluate areas of seepage. Drainage devices for reduction of water accumulation can be recommended should these conditions occur.

Water should not be allowed to collect in the foundation excavation, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. Unpaved areas should slope no less than 2% away from structures. Paved areas should slope no less than 1% away from structures. Surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

The on-site soils have a generally "Low" expansion index potential. Irrigation should be limited to the amount necessary to maintain plant vigor.

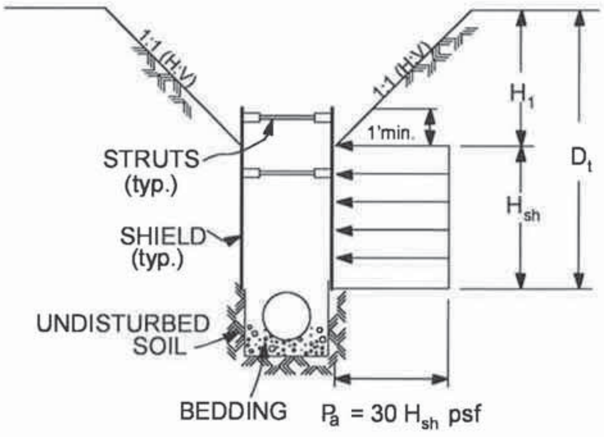
4.14.3 TEMPORARY EXCAVATIONS AND SHORING

Short term temporary excavations in existing soils may be safely made at an inclination of 1:1 (horizontal to vertical) or flatter. If vertical sidewalls are required in excavations greater than 3 feet in depth, the use of cantilevered or braced shoring is recommended. Excavations less than 3 feet in depth may be constructed with vertical sidewalls without shoring or shielding. Our recommendations for lateral earth pressures to be used in the design of cantilevered and/or braced shoring are presented below. These values incorporate a uniform lateral pressure of 72 psf to provide for the normal construction loads imposed by vehicles, equipment, materials, and workmen on the surface adjacent to the trench excavation. However, if vehicles, equipment, materials, etc. are kept a minimum distance equal to the height of the excavation away from the edge of the excavation, this surcharge load need not be applied.



SHORING DESIGN: LATERAL SHORING PRESSURES

Design of the shield struts should be based on a value of 0.65 times the indicated pressure, Pa, for the approximate trench depth. The wales and sheeting can be designed for a value of 2/3 the design strut value.



HEIGHT OF SHIELD, H_{sh} = DEPTH OF TRENCH, D_t , MINUS DEPTH OF SLOPE, H_1

TYPICAL SHORING
DETAIL

Placement of the shield may be made after the excavation is completed or driven down as the material is excavated from inside of the shield. If placed after the excavation, some overexcavation may be required to allow for the shield width and advancement of the shield. The shield may be placed at either the top or the bottom of the pipe zone. Due to the anticipated thinness of the shield walls, removal of the shield after construction should have negligible effects on the load factor of pipes. Shields may be successively placed with conventional trenching equipment.

Vehicles, equipment, materials, etc. should be set back away from the edge of temporary excavations a minimum distance of 15 feet from the top edge of the excavation. Surface waters should be diverted away from temporary excavations and prevented from draining over the top of the excavation and down the slope face. During periods of heavy rain, the slope face should be protected with sandbags to prevent drainage over the edge of the slope, and a visqueen liner placed on the slope face to prevent erosion of the slope face.

Periodic observations of the excavations should be made by the geotechnical consultant to verify that the soil conditions have not varied from those anticipated and to monitor the overall condition of the temporary excavations over time. If at any time during construction conditions are encountered which differ from those anticipated, the geotechnical consultant should be contacted and allowed to analyze the field conditions prior to commencing work within the excavation. All Cal/OSHA construction safety orders should be observed during all underground work.

4.14.4 UTILITY TRENCHES

All utility trench backfill within street right of way, utility easements, under or adjacent to sidewalks, driveways, or building pads should be observed and tested by the geotechnical consultant to verify proper compaction. Trenches excavated adjacent to foundations should not extend within the footing influence zone defined as the area within a line projected at a 1:1 (horizontal to vertical) drawn from the bottom edge of the footing. Trenches crossing perpendicular to foundations should be excavated and backfilled prior to the construction of the foundations. The excavations should be backfilled in the presence of the geotechnical engineer and tested to verify adequate compaction beneath the proposed footing.

Utilities should be bedded and backfilled with clean sand or approved granular soil to a depth of at least 1-foot over the pipe. The bedding materials shall consist of sand, gravel, crushed aggregate, or native, free draining soils with a sand equivalence of not less than 30. The bedding should be uniformly watered and compacted to a firm condition for pipe support.

The remainder of the backfill shall be typical on-site soil or imported soil which should be placed in lifts not exceeding 8 inches in thickness, watered or aerated to near optimum moisture content, and mechanically compacted to at least 90 percent of maximum dry density (based on ASTM D1557). All Cal/OSHA construction safety orders should be observed during all underground work.

4.56 GEOTECHNICAL OBSERVATION/TESTING OF EARTHWORK OPERATIONS

The recommendations provided in this report are based on preliminary design information and subsurface conditions as interpreted from the investigation. Our preliminary conclusion and recommendations should be reviewed and verified during site grading, and revised accordingly if exposed geotechnical conditions vary from our preliminary findings and interpretations. The geotechnical consultant should perform geotechnical observation and testing during the following phases of grading and construction:

- During site grading and overexcavation.
- During foundation excavations and placement.
- Upon completion of retaining wall footing excavation prior to placing concrete.
- During excavation and backfilling of all utility trenches.
- During processing and compaction of the subgrade for the access and parking areas and prior to construction of pavement sections.
- When any unusual or unexpected geotechnical conditions are encountered during any phase of construction.

5.00 LIMITATIONS

The findings, conclusions, and recommendations contained in this report are based on the site conditions as they existed at the time of our investigation, and further assume that the subsurface conditions encountered during our investigation are representative of conditions throughout the site. Should subsurface conditions be encountered during construction that are different from those described in this report, this office should be notified immediately so that our recommendations may be re-evaluated.

This report was prepared for the exclusive use and benefit of the owner, architect, and engineer for evaluating the design of the facilities as it relates to geotechnical aspects. It should be made available to prospective contractors for information on factual data only, and not as a warranty of subsurface conditions included in this report.

Our investigation was performed using the standard of care and level of skill ordinarily exercised under similar circumstances by reputable soil engineers and geologists currently practicing in this or similar localities. No warranty, express or implied, is made as to the conclusions and professional advice included in this report.

This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for their actions. The contractor will be solely and completely responsible for working conditions on the job site, including the safety of all persons and property during performance of the work. This responsibility will apply continuously and will not be limited to our normal hours of operation.

The findings of this report are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether they are due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge.

Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

FIGURES

LEGEND:

⊕ B-22 BORING LOCATION

⊕ P-2 PERCOLATION TEST LOCATION

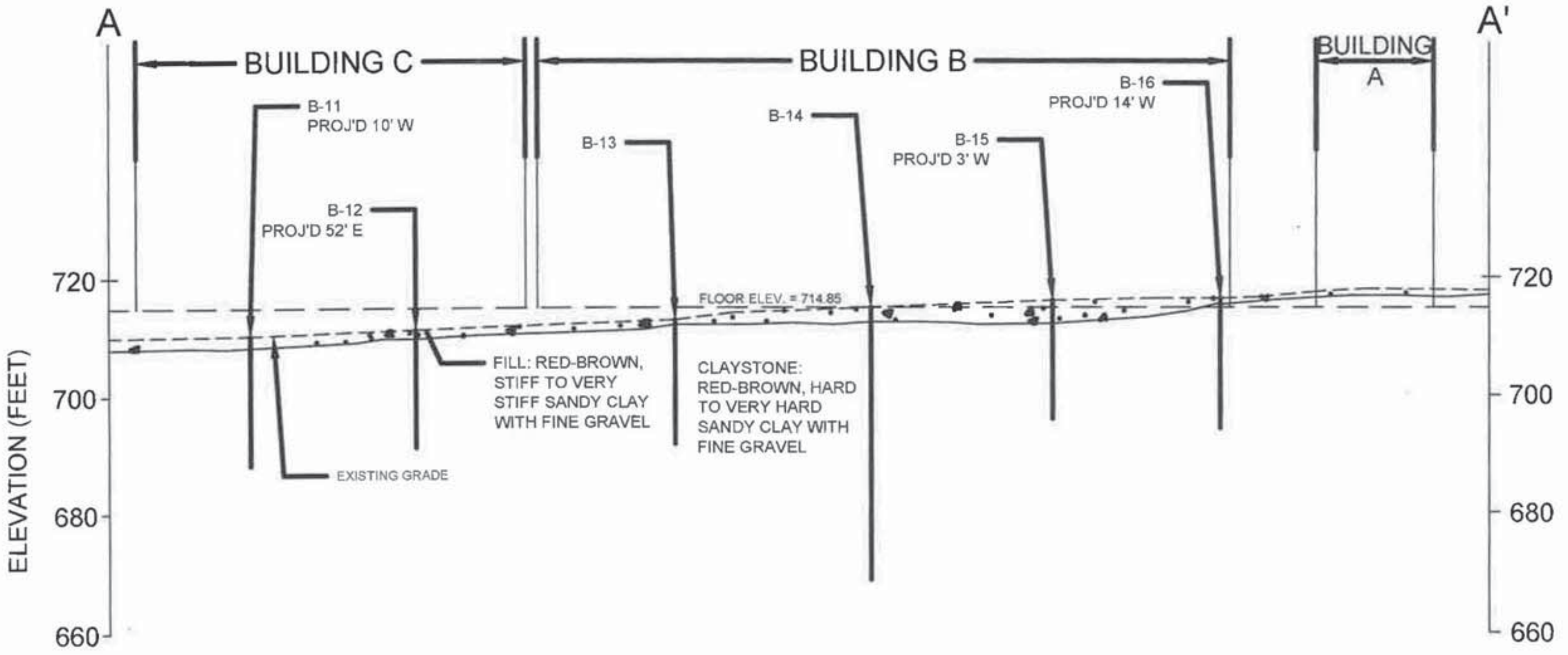
NO.	REVISION DESCRIPTION	AUTHOR	DATE

REVISIONS

DRAWN ON:	NOVEMBER 16, 2020
CHECKED BY:	S. COOVER
CLIENT:	

PROJECT:	RICHLAND ELEMENTARY SCHOOL MODERNIZATION	NO.	5016A74
DRAWING:	SITE BORING LOCATION PLAN		
FIGURE:	1	910 BORDEN ROAD, SAN MARCOS, CA 92069	
SCALE:	NTS		

MTGL



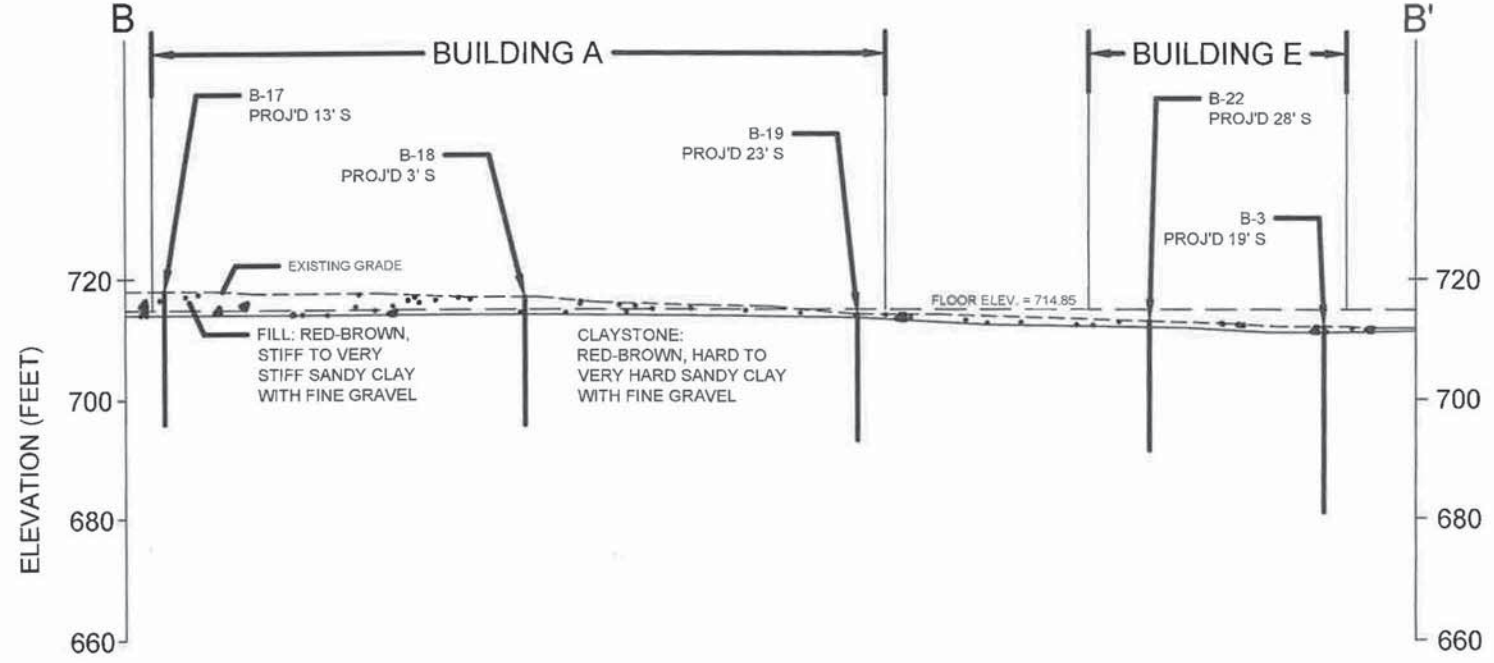
NO.	REVISION DESCRIPTION	AUTHOR	DATE

REVISIONS

DRAWN ON:	November 16, 2020
CHECKED BY:	----
CLIENT:	

PROJECT:	RICHLAND ELEMENTARY SCHOOL	NO.	5016A74
DRAWING:	SUBSURFACE PROFILE A-A'		
FIGURE:	2		
SCALE:	H: 1" = 40' V: 1" = 20'		

MTGi



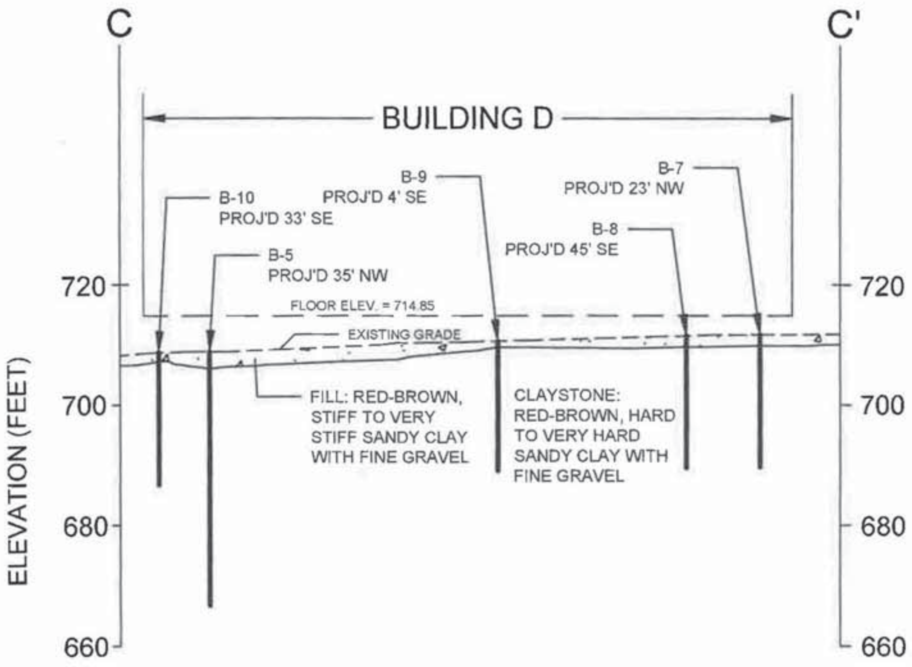
NO.	REVISION DESCRIPTION	AUTHOR	DATE

REVISIONS

DRAWN ON: November 16, 2020
CHECKED BY: ----
CLIENT:

PROJECT:	RICHLAND ELEMENTARY SCHOOL	NO.	5016A74
DRAWING:	SUBSURFACE PROFILE B-B'		
FIGURE:	3		
SCALE:	H: 1" = 40' V: 1" = 20'		

MTG



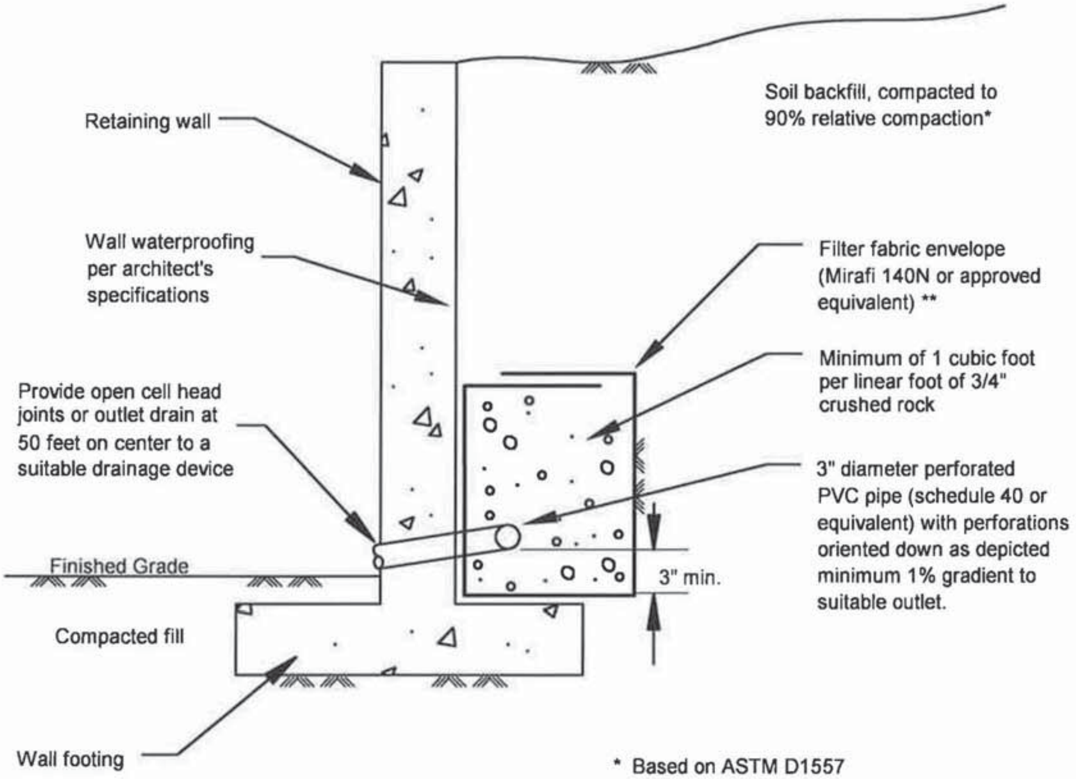
NO.	REVISION DESCRIPTION	AUTHOR	DATE

REVISIONS

DRAWN ON: November 16, 2020
CHECKED BY: ----
CLIENT:

PROJECT:	RICHLAND ELEMENTARY SCHOOL	NO.	5016A74
DRAWING:	SUBSURFACE PROFILE C-C'		
FIGURE:	4		
SCALE:	H: 1" = 40' V: 1" = 20'		

MTG



* Based on ASTM D1557

** If class 2 permeable material (See gradation to left) is used in place of 3/4" - 1 1/2" gravel. Filter fabric may be deleted. Class 2 permeable material compacted to 90% relative compaction. *

SPECIFICATIONS FOR CLASS 2 PERMEABLE MATERIAL (CAL TRANS SPECIFICATIONS)

Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	40-100
No.4	25-40
No.8	18-33
No.30	5-15
No.50	0-7
No.200	0-3

RETAINING WALL DRAINAGE DETAIL

Figure 5

APPENDIX A

LIMITED ENGINEERING GEOLOGIC HAZARD EVALUATION

Anderson Geology

November 4, 2020

Project No. 20076-01

To: MTGL Inc.
6295 Ferris Square, Suite C
San Diego, CA 92121

Attention: Mr. Steve Coover, MTGL Inc.

Subject: Limited Engineering Geologic Hazard Evaluation of Property
Proposed New School Structures and Associated Improvements
Richland Elementary School- San Marcos Unified School District
910 Borden Road, City of San Marcos, California

Introduction

At your request, ANDERSON GEOLOGY CONSULTING, LLC. (AG) has prepared a limited engineering geologic hazard evaluation for the proposed new school structures and associated improvements, 910 Borden Road, City of San Marcos, California. (Figure 1). It is our understanding that the proposed improvements will include five new structures as well as playground, parking and associated hardscape and landscape improvements. The purpose of this evaluation was to characterize site geologic and geotechnical conditions, to assess potential geologic and seismic hazards, and to provide generalized conclusions and recommendations with respect to the impact of the identified hazards to the proposed onsite development. Environmental hazards were not addressed as part of the current scope of work. This hazard evaluation has been prepared in general conformance with the *Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings (CGS Note 48, 2013).*

Scope of Services

- Review of the referenced geologic maps and reports for the subject site and surrounding area.
- Review of site specific geotechnical data provided by MTGL;
- Seismic and geologic hazard analysis for the site and surrounding area; and
- Preparation of this report and its illustrations.

This report presents our findings, conclusions and recommendations of a limited engineering geologic hazard evaluation for the subject site. It should be noted that this hazard evaluation did not include subsurface exploration and it is understood that in-depth investigation of soil, geologic and foundation conditions, are outside the scope of services requested. This work does not warrant the future performance of the property or proposed improvements in any respect, nor does the work constitute an approval or certification of prior or future work by other geotechnical consultants. The scope of work does not include laboratory testing of soil samples, nor specific recommendations for design and construction of the proposed improvements. AG's expertise and scope of services do not include assessment of potential subsurface environmental contaminants or environmental health hazards.

1000 North Coast Highway, Suite 10 • Laguna Beach, California 92651 • (949) 371-3690 • panderson@andersongeology.com

List of Illustrations

Site Location and History

The subject site is located at 910 Borden Road, City of San Marcos, California (Figure 1) within the Richland Elementary School campus. The site is bounded to the south by the intersection of Rose Ranch Road and Borden Road, northeast by Richland Road and northwest by a concrete drainage culvert followed by open space. Residential communities are located along the periphery of the subject property.

The proposed improvements are primarily situated along the west portion of the Richland Elementary School campus. The subject area currently consists of turf, playground areas, asphalt paving and concrete walkways. The campus is located at an approximate elevation of 703 to 728 feet above mean sea level (GoogleEarth, 2020) and the proposed improvements are anticipated to be constructed at or near elevation 714. The site is gently sloping to the southwest with maximum grade changes of approximately 20-25 feet across the site. Grade changes across the site are accommodated through gently sloping ground and low height planter and landscape retaining walls throughout. No significant retaining structures and or slopes were identified during our limited site review.

The site is currently developed as the Richland Elementary School (San Marcos Unified School District) and consist of classrooms, office and administrative space, athletic facilities, associated structures, asphalt paved parking and utility infrastructure.

No information regarding past site grading or development was reviewed for the subject site and surrounding area. Past grading is anticipated to have occurred during construction of the building pads and associated structures, parking areas and hardscape improvements, as well as during construction of the adjacent streets and utility infrastructure.

Geologic Setting

The subject site is regionally located within the foothills between the San Diego Coastal Plain to the west and the Laguna Mountains to the east, within the Peninsular Ranges Geomorphic Province of Southern California. The Peninsular Ranges province is distinguished by its northwest trending mountain ranges lying west of the San Andreas Fault and south of the Transverse Ranges. The foothill region is located within the western Peninsular Ranges Batholith, which is predominantly comprised of metasedimentary and metavolcanic rocks consisting of tonalite, granodiorite and gabbros. The rocks tend to variably weather to disintegrated boulders at significant depth. Where unweathered, the bedrock material is very hard to dense and crystalline bedrock may be encountered. The soils derived from these rocks are moderately deep to very shallow and contain numerous rock fragments and bounders. Alluvium within the surrounding area is derived predominately from granitic rocks and consists of gravelly sandy loam to fine sandy loam and is generally well sorted. The alluvium occurs in broad basins, on alluvial fans and in narrow drainages. Regional geologic mapping of the site and surrounding area (USGS, 2005) indicate the site is underlain at shallow depth by Mesozoic aged metasedimentary and matavolcanic rocks consisting of volcaniclastic breccia and meta-andesitic flows, tuffs and tuffacious breccia.

Earth Materials

Exploratory borings performed by MTGL (2020) indicate that the site is underlain to a maximum-drilled depth of 46.5-feet by medium dense to very dense weathered metasedimentary and matavolcanic rocks. The underlying material consist predominantly of reddish brown sandy claystone with scattered gravel/rock fragments. The bedrock material is anticipated to be variably weathered with thin layers of residual soil, artificial fill and alluvium overlying the bedrock. Groundwater was not encountered to a maximum-drilled depth of 46.5-feet bgs.

GEOLOGIC HAZARDS

Structure

The underlying bedrock materials encountered at the subject site are generally massive, variably weathered metasedimentary and matavolcanic rock with no significant geologic structure. The bedrock is anticipated to be overlain by thin layers of residual soil, artificial fill and alluvium. As such, there is no known adverse geologic bedding structure that is likely to affect stability at the site.

Slope Stability

Our findings indicate that the site is underlain at shallow depth by medium dense to very dense weathered metasedimentary and matavolcanic rocks with no significant geologic structure. No evidence of deep-seated gross instability was noted at the site during our literature and map review, or during MTGL's site-specific investigation. Based upon the past performance of the site and nearby slopes, the site appears to have performed well since the site was originally constructed.

Slope creep is not expected to be significant design consideration due to the relatively flat nature of the site. Other slope effects such as erosion should not adversely affect proposed improvements providing appropriate foundation setbacks are utilized, runoff is controlled and slopes and drainage features are properly implemented and maintained.

To our understanding, no significant slopes are planned as part of the proposed construction. Planned structures are expected to obtain bearing at depths and setbacks outside of the influence of the existing slopes and or adjacent retaining walls (if any). Any planned building structures that are constructed along the top of slopes should be constructed with deepened foundation elements as necessary to maintain setbacks from the bottom of the footings at least equal to a horizontal distance of H/3 to the slope surface. Perimeter footings should not be allowed to surcharge existing retaining walls on adjoining properties. In general, these conditions are not expected to affect foundation construction based on current conceptual plans.

Groundwater

Groundwater was not encountered during MTGL's site exploration to a maximum-drilled depth of 46.5-feet bgs. Based on well data for the surrounding area obtained from the California State Water Resources Control Board website (GeoTracker), historical high groundwater is highly variable and ranges from >5 to greater than 20-feet below existing grades. Groundwater levels are anticipated to fluctuate on an annual and seasonal basis and perched water may be periodically encountered following periods of high precipitation and runoff. In general, groundwater is anticipated to remain at depths greater than 5-feet and is not anticipated to be a significant design or construction constraint, provided proper surface drainage and subdrainage systems (if necessary) are incorporated into the project.

Water Infiltration

Introduction of subsurface water could adversely impact the subject site and/or neighboring properties. In general, surface and subsurface drainage should be directed toward approved offsite outlets. If onsite infiltration is proposed, additional site-specific percolation/infiltration testing should be performed for the subject site by the geotechnical consultant.

Surficial Runoff

Proposed development should incorporate engineering and landscape drainage improvements designed to transmit surface flow to the street and/or storm drain system via non-erosive pathways. Care should be taken to not allow water to pond or infiltrate soil adjacent to foundation elements. Design of drainage improvements are the purview of the civil engineer and should be reviewed by the geotechnical consultant prior to site development.

Faulting / Seismic Considerations

The major concern relating to geologic faults is ground shaking that affects many properties over a wide area. Direct hazards from faulting are essentially due to surface rupture along fault lines that could occur during an earthquake. Therefore, geologists have mapped fault locations and established criteria for determining the risks of potential surface rupture based on the likelihood of renewed movement on faults that could be located under a site.

Based on criteria established by the California Division of Mines and Geology (CDMG), now referred to as the California Geological Survey (CGS), faults are generally categorized as active, potentially active or inactive (Jennings, 1994). The basic principle of faulting concern is that existing faults could move again, and that faults which have moved more recently are the most likely faults to move again and affect us. As such, faults have been divided into categories based on their age of last movement. Although the likelihood of an earthquake or movement to occur on a given fault significantly decreases with inactivity over geologic time, the potential for such events to occur on any fault cannot be eliminated within the current level of understanding.

By definition, faults with no evidence of surface displacement within the last 1.6 million years are considered inactive and generally pose no concern for earthquakes due to renewed movement. Potentially-active faults are those with the surface displacement within the last 1.6 million years. Further refinement of potentially active faults are sometimes described based on the age of the last known movement such as late Quaternary (last 700,000 years) implying a greater potential for renewed movement. In fact, most potentially active faults have little likelihood of moving within the time frame of construction life, but the degree of understanding of fault age and activity is sometimes not well understood due to absence of geologic data or surface information, so geologists have acknowledged this doubt by using the term "potentially active." A few faults that were once thought to be potentially active, have later been found to be active based on new findings and mapping. Active faults are those with a surface displacement within the last 11,000 years and therefore most likely to move again. The State of California has, additionally, mapped known areas of active faulting as designated Alquist-Priolo (A-P) "Special Studies Zones," which requires special investigations for fault rupture to limit construction over active faults.

The site is not located within a fault-rupture hazard zone as defined by the Alquist-Priolo Special Studies Zones Act (CDMG, 1974) and no evidence of active faulting has been reported onsite (Figure 4). Also, based on mapping by the State (CGS, 2010 and Jennings, 1994), there are no active faults mapped at the site. The site is however bounded to the north-northeast by the Elsinore Fault Zone and to the south-southwest by the Newport-Inglewood-Rose Canyon Fault Zone. These faults are considered seismically active and capable of producing significant ground shaking during a seismic event.

The closest major active faults to the site are the Elsinore Fault located approximately 24 km northeast of the site and the Newport-Inglewood (Rose Canyon) Fault located approximately 22.8 km to the southwest of the site (Figures 4).

CBC Seismic Ground Motion Analysis

The following table summarizes the seismic design criteria for the subject site. The seismic design parameters are developed in accordance with ASCE 7-16 and 2019 CBC. The seismic response coefficient, Cs, should be determined per the parameters provided below and using equation 12.8-2 of ASCE 7-16.

Selected Seismic Design Parameters from 2019 CBC/ASCE 7-16	***Seismic Design Values***	***Reference***
Latitude	34.1556 North	
Longitude	-117.1414 West	
Nearest Seismic Source	Rose Canyon Fault	USGS 2014
Distance to Nearest Seismic Source	22.8km	USGS 2014
Site Class per Table 20.3-1 of ASCE 7-16	C	OSHPD, 2020
Spectral Acceleration for Short Periods (Ss)	0.909 g	OSHPD, 2020
Spectral Accelerations for 1-Second Periods (S_1)	0.333 g	OSHPD, 2020
Site Coefficient F_a, Table 11.4-1 of ASCE 7-16	1.2	OSHPD, 2020
Site Coefficient F_v, Table 11.4-2 of ASCE 7-16	1.5	
Design Spectral Response Acceleration at Short Periods (S_{DS}) from Equation 11.4-4 of ASCE 7-16	0.727 g	OSHPD, 2020
Design Spectral Response Acceleration at 1-Second Period (S_{D1}) from Equation 11.4-4 of ASCE 7-16	0.333g	
T_S, S_{D1} /S_{DS} 11.4.6 of ASCE 7-16	0.458 sec	
T_L, Long-Period Transition Period	8 Sec	OSHPD, 2020
Peak Ground Acceleration Corrected for Site Class Effects (PGA_M) from Equation 11.8-1 of ASCE 7-16	0.471 g	OSHPD, 2020
Seismic Design Category, Section 11.6 of ASCE 7-16	D	

Please note that, considering the proposed structure(s) and anticipated structural periods, site-specific ground-motion hazard analysis may be required for the site. If required, site-specific ground-motion hazard analysis will be provided by others.

Historical Seismicity

A search of recorded historical seismic events within a 50km radius of the subject site was performed using the USGS earthquake catalog website. A total of one (1) seismic event with a magnitude of 4.5 or greater has occurred within a 50km radius since 1920. The seismic event was a magnitude 4.5 earthquake that occurred on August 8, 1925, approximately 26 miles northeast of the site (N33.500, W-117.000). No earthquakes are reported to have occurred below the subject site, however, the site and surrounding area will be subject to significant shaking during seismic events on local and regional faults and future earthquakes should be anticipated.

Secondary Seismic Hazards

Review of the City of San Marcos General Plan–Safety Element (2012) indicates the site is located within a zone of "Low" susceptibility for geologic hazards- soil slippage susceptibility (landslides/liquefaction) (figure 1). These findings are in keeping with the results of our study.

Other secondary seismic hazards to the site include deep rupture, shallow ground cracking, lurching with lateral movement and settlement. With the absence of active faulting onsite, the potential for deep fault rupture is not present. The potential for shallow ground cracking to occur during an earthquake is a possibility at any site, and may occur during significant seismic events on nearby faults. The potential for seismically induced lurching is considered low due to the gently sloping nature of the site and surrounding area. The potential for seismically induced settlement is considered low due to the presence of weathered bedrock at shallow depth. The potential for minor settlement should be addressed during design and construction of the proposed improvements. The potential for tsunami inundation at the site elevation is nil.

The subject site is not located within a 100 or 500-year flood hazard area as identified by FEMA flood hazard maps and the City of San Marcos General Plan–Safety Element (2012) (figure 4).

CONCLUSION AND RECOMMENDATIONS

Based on our limited engineering geologic hazard evaluation of the subject site and our understanding of the proposed improvements, construction of the administrative structure and associated hardscape and landscape improvements appears feasible from an geologic hazard standpoint, providing our recommendations are considered during design, grading and construction of the proposed improvements.

Conclusions

The geologic hazards at the site are primarily from shaking due to movement of nearby or distant faults during earthquake events. The site consists of a relatively level building pad located on gently sloping terrain. There is no adverse geologic structure, active faulting beneath the site, known shallow groundwater or other indications of geologic hazards that would affect the site as previously discussed.

- The subject site is anticipated to be underlain at shallow depth by variably weathered metasedimentary and matavolcanic rock with no significant geologic structure. The bedrock is anticipated to be overlain by thin layers of residual soil, artificial fill and alluvium. As such, there is no known adverse geologic bedding structure that is likely to affect stability at the site.
- No active faults are known to transect the site and therefore the site is not expected to be adversely affected by surface rupturing. It will, however, be affected by ground motions from earthquakes during the design life of the site.
- The potential for seismically induced settlement is considered low due to the presence of variably weathered bedrock materials underlying the site and the potential for strong seismic shaking in the event of an earthquake on nearby active faults.

- Groundwater is not expected to be a concern during construction. Suitable drainage elements need to be installed at surface grades and behind retaining walls in order to mitigate possible transient seepage.
- The potential for land sliding affecting the site is considered to be very low given the gently sloping nature of the site and the massive nature of the bedrock material underlying the site.
- The potential for seismically induced liquefaction affecting the site is considered low based on the presence of bedrock underlying the site and groundwater greater than 46.5-feet below the site. Liquefaction potential should be addressed by the geotechnical consultant prior to onsite development.

Recommendations

Proposed improvements to the subject site should be designed and built in conformance with current California Building Code standards (CBC, 2019) and ASCE standards (ASCE, 2016) as well as the requirements of the City of San Marcos and San Diego County. The recommendations provided by MTGL should also be implemented during design, grading and construction of the proposed improvements.

Limitations

This report has been prepared for the exclusive use of our client, MTGL Inc, within the scope of services requested by our client for the specific property located at 910 Borden Road, City of San Marcos described herein. This report or its contents should not be used or relied upon for other projects or purposes, or by other parties without the acknowledgement of AG and the consultation of a geotechnical professional. The means and methods used by AG for this study are based on local geotechnical standards of practice, care, and requirements of governing agencies. No warranty or guarantee, expressed or implied, is given.

Our findings, conclusions, and recommendations are professional opinions based on a review of available existing geologic/seismic data as well as site specific subsurface data collected at a given time by outside consultants. By nature, geologic conditions can vary from point to point, can be very different in-between exploration points, and can also change over time. Our conclusions and recommendations are, by nature, preliminary and subject to verification and/or modification during grading and construction when more subsurface data is exposed.

If you have any questions regarding this report, please contact our office. We appreciate the opportunity to provide our services.

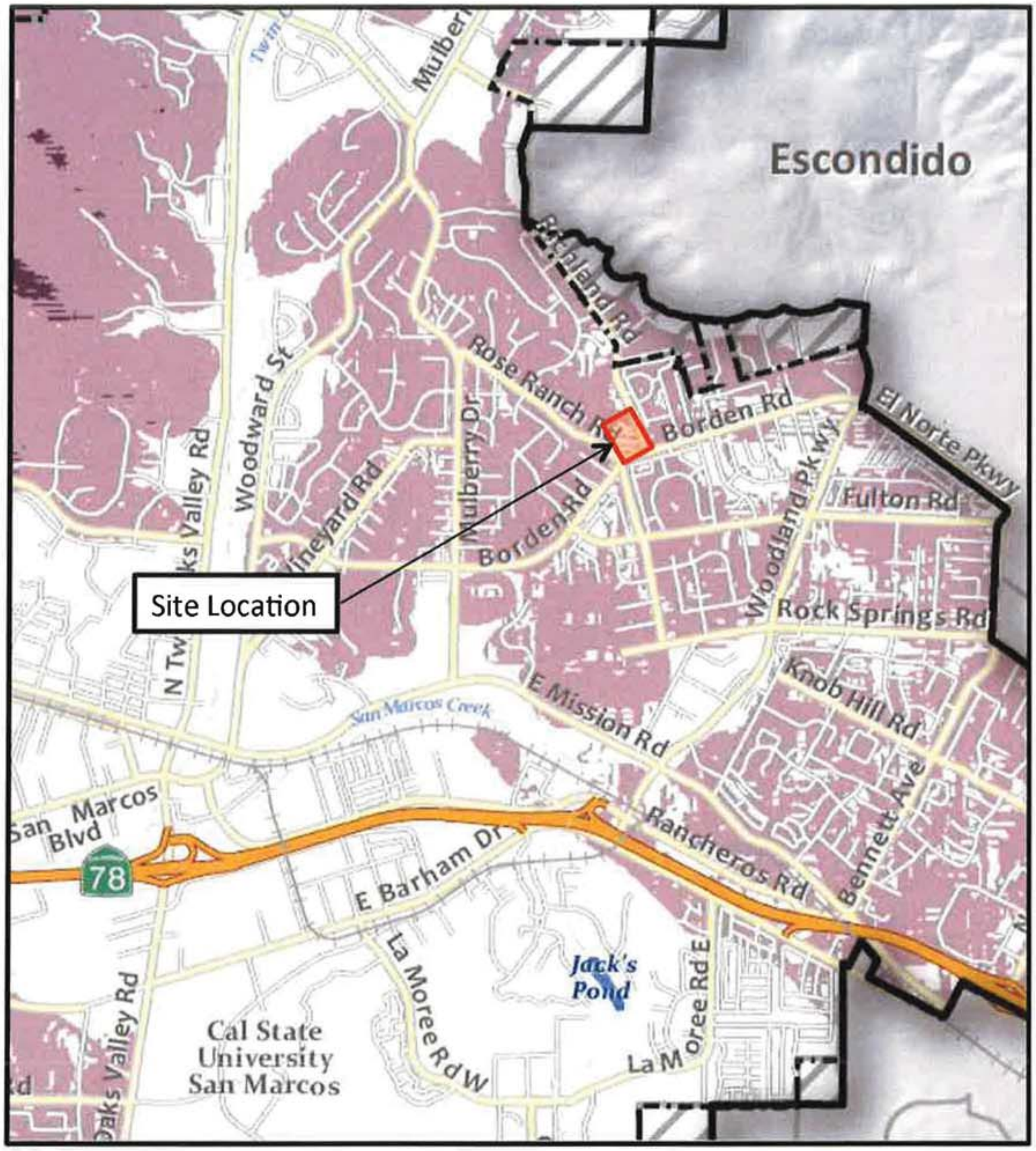
Respectfully submitted,

Peter Anderson CEG 2596

Principal Engineering Geologist

CERTIFIED ENGINEERING GEOLOGIST • STATE OF CALIFORNIA
PETER G. ANDERSON
No. 2596

Peter



Source: City of San Marcos General Plan-Safety Element, 2012

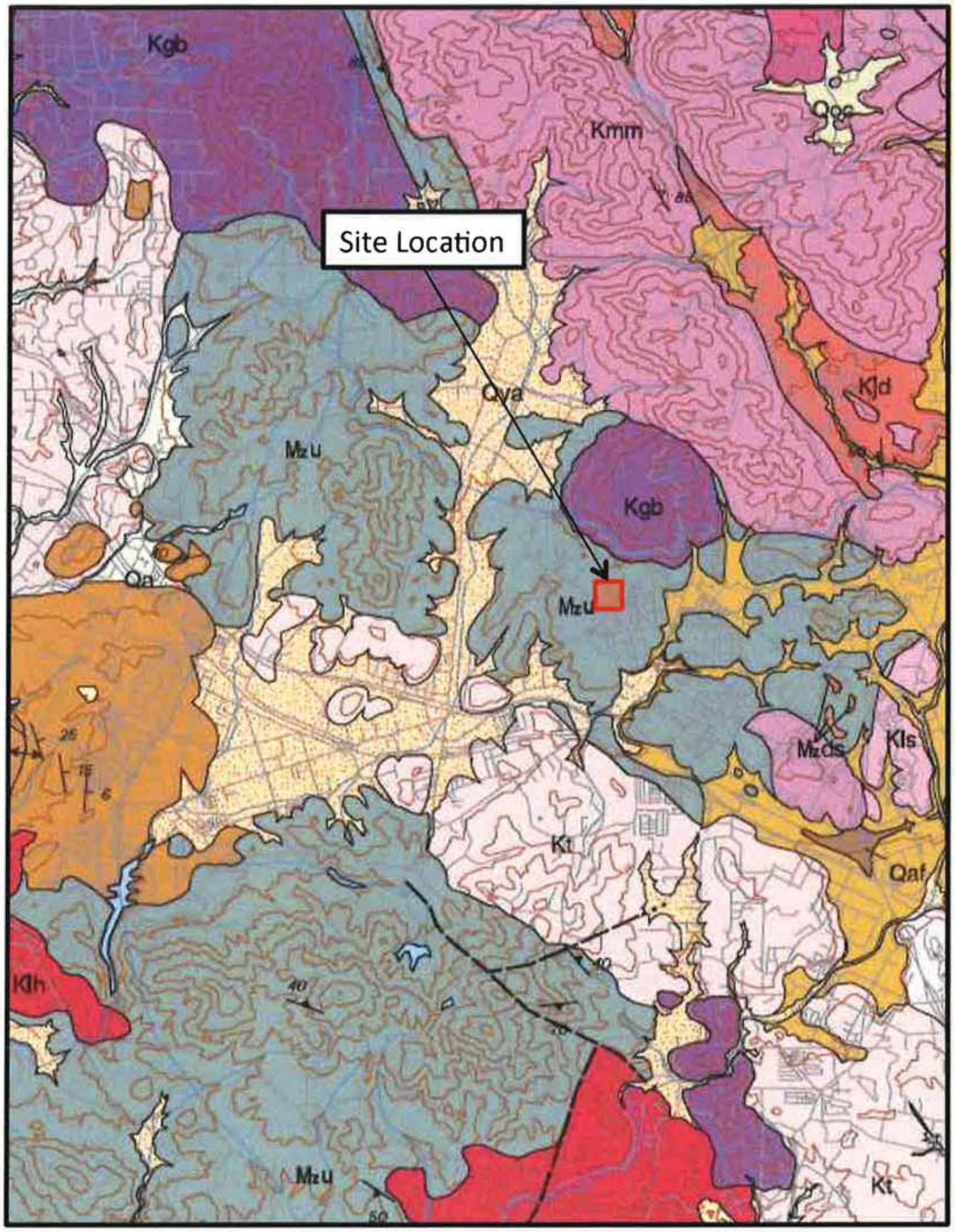
San Marcos City Limits
Sphere of Influence
Planning Area
Uncolored Areas have Zero Susceptibility
Low Susceptibility
Moderate Susceptibility

Site Location and Geologic Hazards

Richland Elementary
910 Borden Road
City of San Marcos, California

Project Number: 20076-01
Date: November 2020
Figure No. 1

A/G



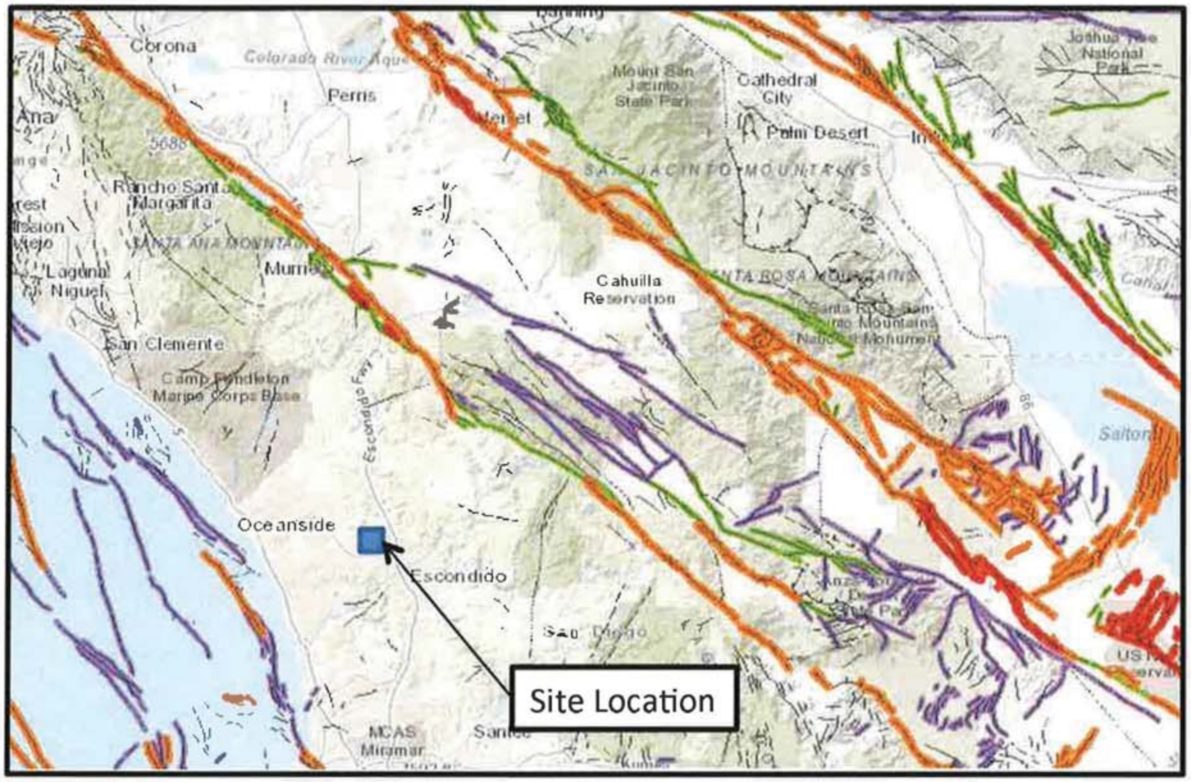
Source: Source: Geologic Map of the Oceanside 30'x60' Quadrangle, USGS 2005

Geologic Map

Richland Elementary
910 Borden Road
City of San Marcos, California

Project Number: 20076-01
Date: November 2020
Figure No. 2

A/G



Source: Fault Activity Map of California, CGS 2010

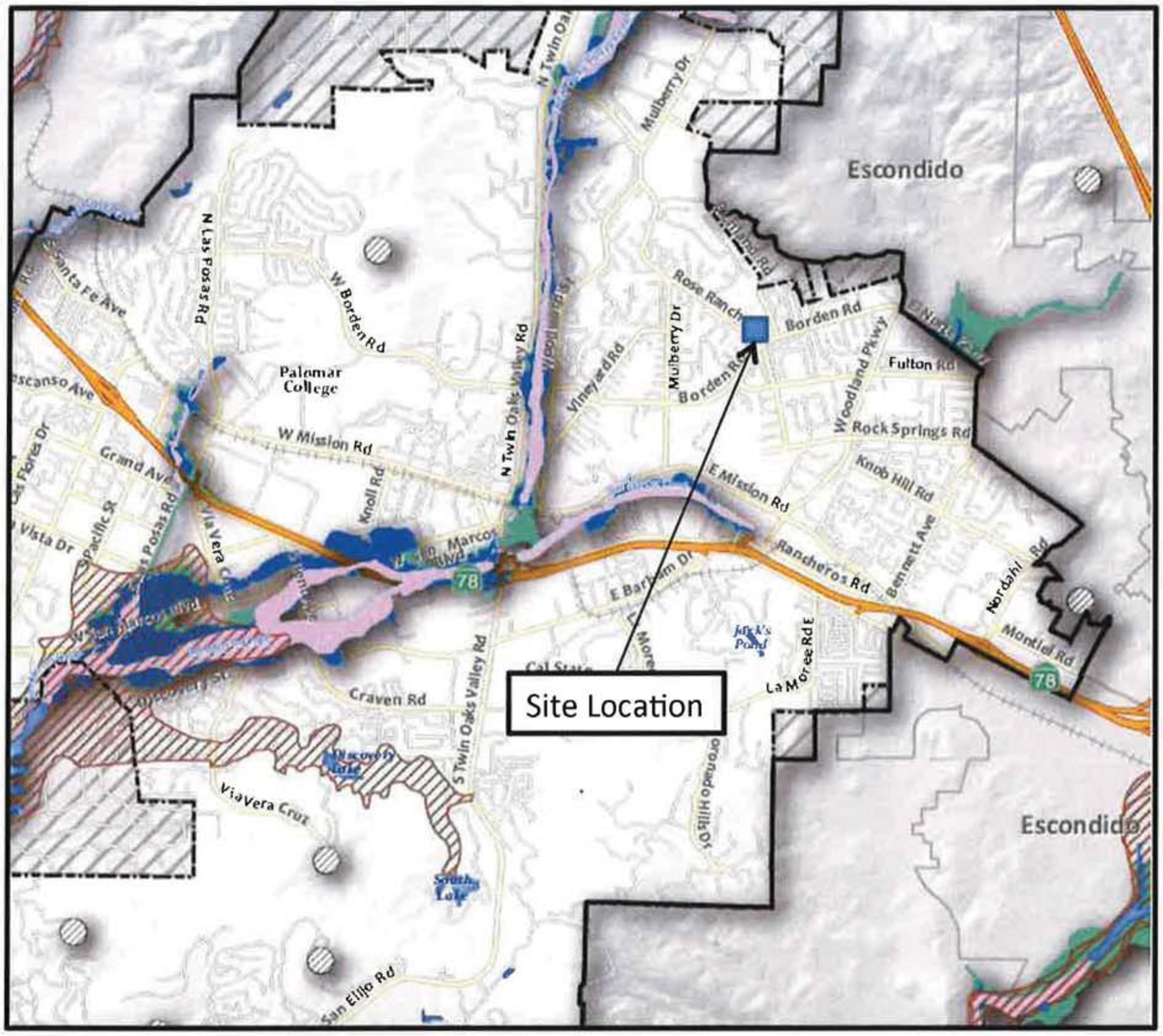
———— — — ······?	Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.
———— — — ······?	Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.
———— — — ······?	Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.
———— — — ······?	Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

Fault Map

Richland Elementary
910 Borden Road
City of San Marcos, California

Project Number: 20076-01
Date: November 2020
Figure No. 3

A/G



Source: City of San Marcos General Plan-Safety Element, 2012

▭ San Marcos City Limits
▨ Sphere of Influence
▭ Planning Area
● Major Hydrologic Features
Creeks
▨ Water Tank
▨ Dam Inundation Zone
● Floodway areas in Zone AE
● Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood
● Other Flood Areas

Flood Hazard Map

Richland Elementary
910 Borden Road
City of San Marcos, California

Project Number: 20076-01
Date: November 2020
Figure No. 4

A/G

Appendix A

APPENDIX A

REFERENCES

American Society Of Civil Engineers, 2010, Minimum Design Loads for Buildings and Other Structures.

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California Division of Mines and Geology, 1999, Fault-Rupture Hazard Zones in California, Special Publication 42, Revised 1997, 1 and 2 added 1999.

California Geological Survey, 2010, Fault Activity Map of California, California Geologic Data Map Series Map No. 6.

California Geological Survey, 2013, Checklist for the Review of Engineering Geologic and Seismology Reports for California Public Schools, Hospitals and Essential Service Buildings, Note 48, October 2013.

California Office of Statewide Health Planning and Development, 2019, Seismic Design maps https://seismicmaps.org.

City of San Marcos, General Plan-Safety Element. Approved February 14, 2012.

Google Earth Pro, 2018. V7.3.25491, https://www.google.com/earth/desktop/

Jennings, C. W., 1994, Fault Activity Map of California and Adjacent Areas, with Locations and Ages of Recent Volcanic Eruptions, California Department of Conservation, Division of Mines and Geology, Geologic Data Map No. 6.

San Bernardino County Land Use Plan, 2009, Geologic Hazard Overlays- Sheet FH22C

U.S. Geological Survey, 2005, Geologic Map of the Oceanside 30' X 60' Quadrangle, Southern California, dated 2005.

U.S. Geological Survey, 2014, Unified Hazard Tool: Deaggregation; web site address https://earthquake.usgs.gov/hazards/interactive/index.php

Appendix B

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (upd

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

Time Horizon

Return period in years

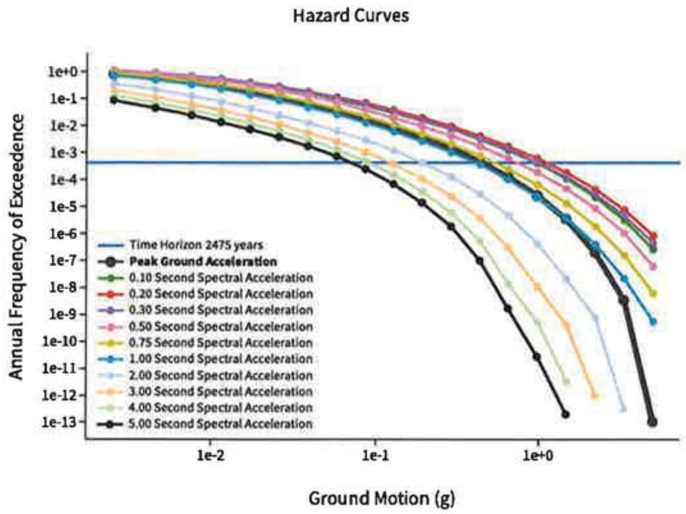
Longitude

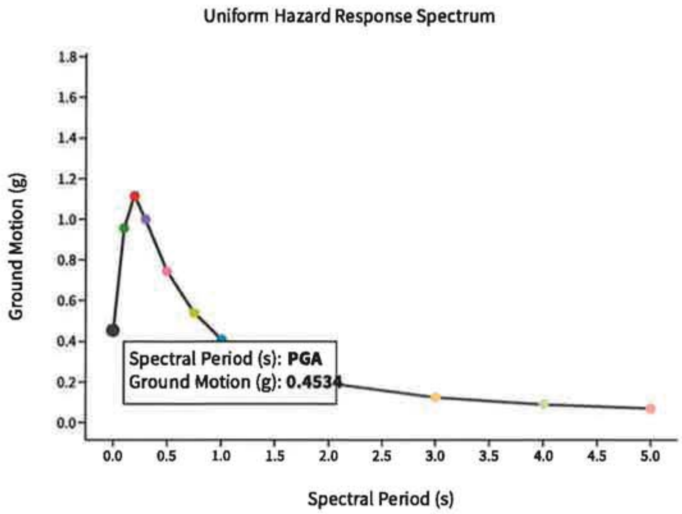
Decimal degrees, negative values for western longitudes

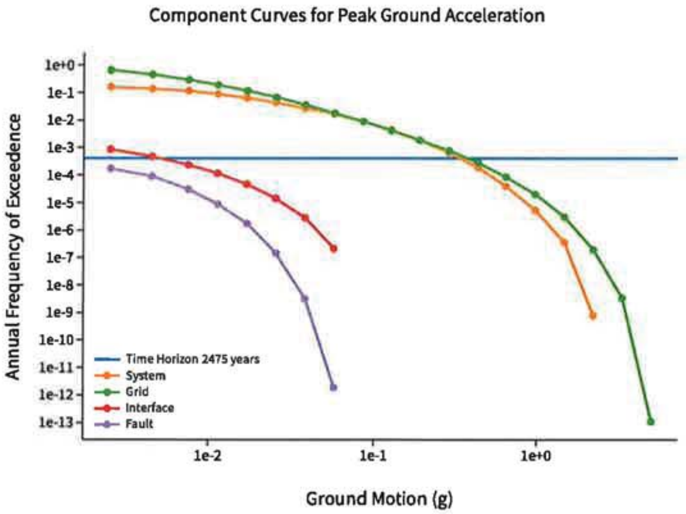
Site Class

537 m/s (Site class C)

^ Hazard Curve





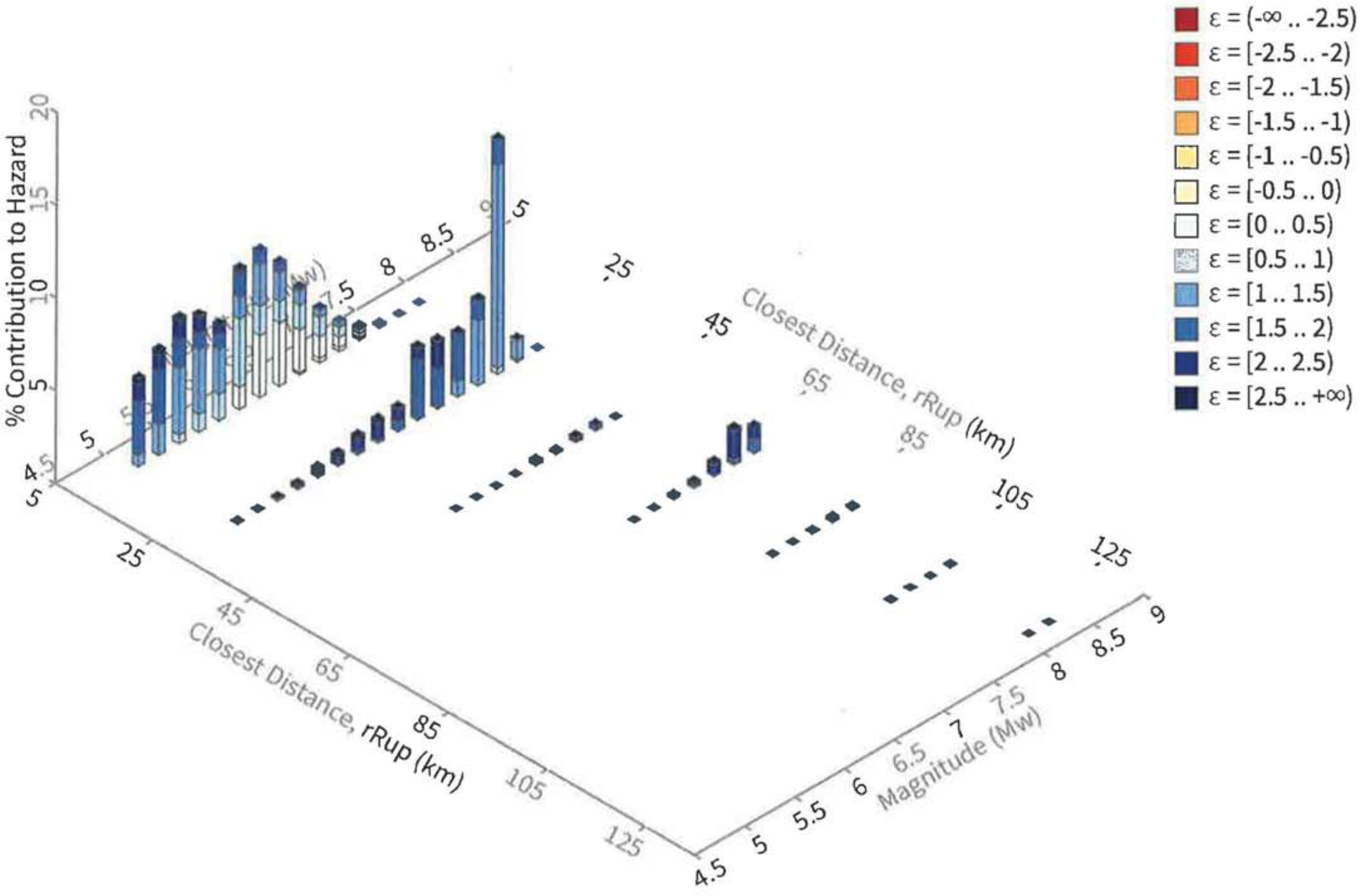


View Raw Data

^ **Deaggregation**

Component

Total ⌄



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.45335587 g

Recovered targets

Return period: 2826.4285 yrs
Exceedance rate: 0.0003538034 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.1 %

Mean (over all sources)

m: 6.56
r: 18.12 km
ε_0: 1.34 σ

Mode (largest m-r bin)

m: 7.71
r: 24.47 km
ε_0: 1.24 σ
Contribution: 12.61 %

Mode (largest m-r-ε_0 bin)

m: 7.71
r: 24.36 km
ε_0: 1.21 σ
Contribution: 10.93 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31 (opt)	Grid							31.74
PointSourceFinite: -117.141, 33.223		8.29	5.92	0.96	117.141°W	33.223°N	0.00	5.13
PointSourceFinite: -117.141, 33.223		8.29	5.92	0.96	117.141°W	33.223°N	0.00	5.13
PointSourceFinite: -117.141, 33.214		7.69	5.88	0.90	117.141°W	33.214°N	0.00	3.86
PointSourceFinite: -117.141, 33.214		7.69	5.88	0.90	117.141°W	33.214°N	0.00	3.86
PointSourceFinite: -117.141, 33.286		12.80	6.21	1.37	117.141°W	33.286°N	0.00	1.78
PointSourceFinite: -117.141, 33.286		12.80	6.21	1.37	117.141°W	33.286°N	0.00	1.77
PointSourceFinite: -117.141, 33.232		8.96	5.94	1.06	117.141°W	33.232°N	0.00	1.58
PointSourceFinite: -117.141, 33.232		8.96	5.94	1.06	117.141°W	33.232°N	0.00	1.58
PointSourceFinite: -117.141, 33.304		14.61	6.19	1.58	117.141°W	33.304°N	0.00	1.24
PointSourceFinite: -117.141, 33.304		14.61	6.19	1.58	117.141°W	33.304°N	0.00	1.24
UC33brAvg_FM32 (opt)	Grid							31.67
PointSourceFinite: -117.141, 33.223		8.29	5.92	0.97	117.141°W	33.223°N	0.00	5.13
PointSourceFinite: -117.141, 33.223		8.29	5.92	0.97	117.141°W	33.223°N	0.00	5.12
PointSourceFinite: -117.141, 33.214		7.69	5.88	0.90	117.141°W	33.214°N	0.00	3.86
PointSourceFinite: -117.141, 33.214		7.69	5.88	0.90	117.141°W	33.214°N	0.00	3.85
PointSourceFinite: -117.141, 33.286		12.80	6.21	1.37	117.141°W	33.286°N	0.00	1.77
PointSourceFinite: -117.141, 33.286		12.80	6.21	1.37	117.141°W	33.286°N	0.00	1.77
PointSourceFinite: -117.141, 33.232		8.96	5.94	1.06	117.141°W	33.232°N	0.00	1.58
PointSourceFinite: -117.141, 33.232		8.96	5.94	1.06	117.141°W	33.232°N	0.00	1.58
PointSourceFinite: -117.141, 33.304		14.61	6.19	1.58	117.141°W	33.304°N	0.00	1.23
PointSourceFinite: -117.141, 33.304		14.61	6.19	1.58	117.141°W	33.304°N	0.00	1.23
UC33brAvg_FM31	System							18.54
Elsinore (Temecula) rev [5]		24.08	7.54	1.39	117.008°W	33.341°N	30.98	7.97
Rose Canyon [15]		22.78	7.20	1.59	117.339°W	33.035°N	233.81	4.15
San Jacinto (Anza) rev [2]		64.67	8.10	2.17	116.721°W	33.619°N	37.01	2.12
UC33brAvg_FM32	System							18.05
Elsinore (Temecula) rev [5]		24.08	7.57	1.36	117.008°W	33.341°N	30.98	8.26
Rose Canyon [15]		22.78	7.17	1.62	117.339°W	33.035°N	233.81	3.97
San Jacinto (Anza) rev [2]		64.67	8.10	2.18	116.721°W	33.619°N	37.01	2.09

Appendix C

OSHPD

Richland Elementary

Latitude, Longitude: 33.1556, -117.1414

Date	11/4/2020, 9:57:21 AM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	C - Very Dense Soil and Soft Rock

Type	Value	Description
S_S	0.909	MCE$_R$ ground motion. (for 0.2 second period)
S_1	0.333	MCE$_R$ ground motion. (for 1.0s period)
S_{MS}	1.09	Site-modified spectral acceleration value
S_{M1}	0.5	Site-modified spectral acceleration value
S_{DS}	0.727	Numeric seismic design value at 0.2 second SA
S_{D1}	0.333	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.393	MCE$_G$ peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.471	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	0.909	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.986	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.333	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.361	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)

C_{RS}	0.921	Mapped value of the risk coefficient at short periods
C_{R1}	0.923	Mapped value of the risk coefficient at a period of 1 s

DISCLAIMER

APPENDIX B

FIELD EXPLORATION PROGRAM

APPENDIX B

FIELD EXPLORATION PROGRAM

The subsurface conditions for this Geotechnical Investigation were explored by excavating exploratory borings with a limited access, 6-inch diameter, solid-stem-auger to practical refusal. All drive samples were obtained by SPT or California Tube Sampler. The approximate locations of the borings are shown on the Site Plan (Figure 2). The field exploration was performed under the supervision of our geotechnical engineer who maintained a continuous log of the subsurface soils encountered and obtained samples for laboratory testing.

Subsurface conditions are summarized on the accompanying Logs of Borings. The logs include the information obtain from drilling of the borings. The logs contain factual information and interpretation of subsurface conditions between samples. The stratum indicated on these logs represents the approximate boundary between earth units and the transition may be gradual. The logs show subsurface conditions at the dates and locations indicated, and may not be representative of subsurface conditions at other locations and times.

Identification of the soils encountered during the subsurface exploration was made using the field identification procedure of the Unified Soils Classification System (ASTM D2488). A legend indicating the symbols and definitions used in this classification system and a legend defining the terms used in describing the relative compaction, consistency or firmness of the soil are attached in this appendix. Bag samples of the major earth units were obtained for laboratory inspection and testing, and the in-place density of the various strata encountered in the exploration was determined

The exploratory borings were located in the field by using cultural features depicted on a preliminary site plan provided by the client. Each location should be considered accurate only to the scale and detail of the plan used.

The exploratory borings were backfilled in accordance with State of California and County of San Diego Standards which included bentonite chips and compacted soil cuttings. Borings in paved areas were patched with black Portland cement concrete.

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)		
	Clean Gravels (Less than 5% fines)	
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	
	GM	Silty gravels, gravel-sand-silt mixtures
	GC	Clayey gravels, gravel-sand-clay mixtures
	Clean Sands (Less than 5% fines)	
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	SW	Well-graded sands, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	
	SM	Silty sands, sand-silt mixtures
	SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)		
SILTS AND CLAYS Liquid limit less than 50%	ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
	CH	Inorganic clays of high plasticity, fat clays
	OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils

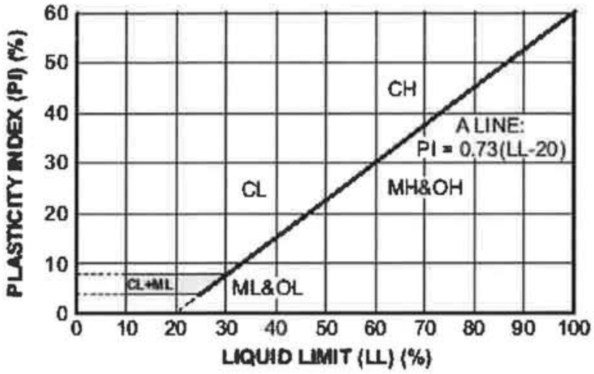
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent	GW, GP, SW, SP
More than 12 percent	GM, GC, SM, SC
5 to 12 percent	Borderline cases requiring dual symbols

PLASTICITY CHART



UNIFORM SOIL CLASSIFICATION SYSTEM

BORING NO. B-1

Logged by: SJC

Date Drilled: 9/28/2020

Method of Drilling: 6-inch diameter hollow-stem auger

Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						3" Asphalt concrete over 4" base course	
1			▨			Reddish brown, moist , stiff to very stiff, fine to medium grained sandy clay (CL) (Fill)	
2			▨			Reddish brown, moist, hard, fine to medium grained sandy claystone with fine gravel (CL).	
3			▨				
4			▨				
5	55	CAL		122.7	13.7		
6							
7							
8							
9							
10	43	CAL		107.1	17.2		
11							
12						Boring terminated at 11.5 feet. No ground water encountered. Boring patched with black Portland cement concrete.	
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							

PROJECT NO. 5016A74

LOG OF BORING B-1

FIGURE B-1

BORING NO. B-2

Logged by: SJC
Date Drilled: 9/28/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						3" Asphalt concrete over 4" base course	
1			▨			Reddish brown, moist , stiff to very stiff, fine to medium grained sandy clay (CL) (Fill)	
2			▨			Reddish brown, moist, hard, fine to medium grained sandy claystone with trace fine gravel (CL).	
3			▨				
4			▨				
5	50	CAL		106.7	21.4		
6							
7							
8							
9							
10	31	CAL		107.8	20.5		
11							
12						Boring terminated at 11.5 feet. No ground water encountered. Boring patched with black Portland cement concrete.	
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							

PROJECT NO. 5016A74

MTG

LOG OF BORING B-2

FIGURE B-2

BORING NO. B-3

Logged by: SJC
Method of Drilling: 6-inch diameter hollow-stem auger
Date Drilled: 9/28/2020
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						3" Asphalt concrete over 4" base course	
1			▨			Reddish brown, moist , stiff to very stiff, fine to medium grained sandy clay (CL) (Fill)	
2			▨			Reddish brown, moist, hard, fine to medium grained sandy claystone with trace fine gravel (CL).	
3			▨				
4			▨				
5	39	CAL		114.9	16.6		
6							
7							
8							
9							
10	32	CAL		125.5	9.5	Grading to containing trace fine black mineral flakes, trace fine gravel.	
11							
12							
13							
14							
15	39	CAL		112.5	19.1		
16							
17							
18							
19							
20	28, 50/4"	CAL		117.9	15.6	Becomes very hard.	
21							
22							
23						Grades to tan, moist, silty, fine to medium grained sandy claystone (CL) at 23 feet depth.	
24							
25	50/1-1/2"	CAL				No recovery in Cal sampler.	
26	50/1-1/2"	SPT			1.8	Tan, silty, fine to medium grained sandy claystone in SPT.	
27							

PROJECT NO. 5016A74

LOG OF BORING B-3

FIGURE B-3

BORING NO. B-3

Logged by: SJC
Date Drilled: 9/28/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
30	50/2-1/2	SPT				No recovery.	
31							
32						Practical rig refusal at 31.0 feet. No ground water encountered.	
33						Boring backfilled with cuttings and bentonite chips. Boring capped with black Portland cement concrete.	
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							

PROJECT NO. 5016A74

LOG OF BORING B-3

FIGURE B-4

BORING NO. B-4

Logged by: SJC
Date Drilled: 9/28/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1			▨			Dark brown, moist, medium dense silty fine to medium grained sandy (SM) (Fill)	
2			▨				
3			▨				
4			▨				
5	36	CAL		115.6	12.8	Grades to dark brown, moist, hard, fine to medium grained sandy claystone with silt.	
6							
7							
8							
9							
10	43	CAL				No recovery--rock in sampler shoe.	
11							
12						Boring terminated at 11.5 feet. No ground water encountered. Boring backfilled with cuttings.	
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							

PROJECT NO. 5016A74

LOG OF BORING B-4

FIGURE B-5

BORING NO. B-5

Logged by: SJC
Date Drilled: 9/28/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						2" Asphalt concrete over 3" base course.	
1			▨			Red brown, moist, stiff to very stiff, fine to medium grained sandy clay, with trace fine gravel (CL).	
2			▨				
3			▨			Grades to red brown, moist, hard, fine to medium grained sandy claystone with trace fine gravel at approximately 1.5 feet (CL).	
4			▨				
5	32	CAL		118.3	12.7		
6							
7							
8							
9							
10	17	CAL		112.4	14.7	Becomes very stiff at 10.0 feet.	
11							
12							
13						Grades back to red brown, moist, hard, fine to medium sandy claystone (CL).	
14							
15	39	CAL		105.6	19.4	Contains fine black mineral flakes.	
16							
17							
18							
19							
20	80	CAL		113.5	15.5	Grades to medium brown, moist, very hard, fine to medium sandy claystone (CL).	
21							
22							
23							
24							
25	48	CAL		114.0	16.1	Grades back to red brown, moist, very hard, fine to medium grained claystone (CL).	
26							
27							
28							

BORING NO. B-5

Logged by: SJC
Date Drilled: 9/28/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
30	53	CAL		108	19.4		
31							
32							
33							
34							
35	70	CAL					
36							
37							
38							
39							
40	50/2-1/2"	CAL				No recovery in California sampler.	
	50/2"	SPT			3.6	Tan-gray, moist, very hard, fine to medium grained sandy claystone (CL).	
41							
42							
43							
44							
45	50/1-1/2"	SPT				No recovery.	
46						Boring terminated at 45.1 feet. No ground water encountered. Boring backfilled with cuttings and bentonite chips. Boring patched with black Portland cement concrete.	
47							
48							
49							
50							

PROJECT NO. 5016A74

LOG OF BORING B-5

FIGURE B-7

BORING NO. B-6

Logged by: SJC **Date Drilled:** 9/29/2020
Method of Drilling: 6-inch diameter hollow-stem auger **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						3" Asphalt concrete over 4" base course.	
1						Red brown, moist, stiff to very stiff, fine to medium grained sandy clay, with trace fine gravel (CL).	
2							
3						Grades to red brown, moist, very hard, fine to medium grained sandy claystone with trace fine gravel at approximately 2.0 feet (CL).	
4							
5	39 50/4"	CAL		113.2	16.6		
6							
7							
8							
9							
10	31 50/4"	CAL		129.6	11.3		
11							
12						Becomes very hard at approximately 12.0 feet.	
13							
14							
15	18 50/5"	CAL		117.4	12.7		
16							
17							
18							
19							
20	17 50/5"	CAL		118.2	14.4		
21							
22						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cutings. Boring capped with black Portland cement concrete.	
23							
24							
25							
26							
27							

PROJECT NO. 5016A74

LOG OF BORING B-6

BORING NO. B-7

Logged by: **SJC** **Date Drilled: 9/29/2020**
Method of Drilling: **6-inch diameter hollow-stem auger** **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						3" Asphalt concrete over 4" base course.	
1						Red brown, moist, stiff to very stiff, fine to medium grained sandy clay, with trace fine gravel (CL).	
2						Grades to red brown, moist, hard, fine to medium grained sandy claystone with trace fine gravel at approximately 1.5 feet (CL).	
3							
4							
5	27	CAL		116.7	14.8		
6							
7							
8							
9							
10	33	CAL		119.3	16.1		
11							
12							
13							
14						Becomes very hard at 14.0 feet.	
15	82	CAL		117.4	16.8		
16							
17							
18							
19							
20	73	CAL		112.1	18.0		
21							
22						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cutings. Boring capped with black Portland cement concrete.	
23							
24							
25							
26							
27							

PROJECT NO. 5016A74 **LOG OF BORING B-7** **FIGURE B-9**

BORING NO. B-8

Logged by: SJC
Date Drilled: 9/29/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						3" Asphalt concrete over 4" base course.	
1						Red brown, moist, stiff to very stiff, fine to medium grained sandy clay, with trace fine gravel (CL).	
2						Grades to red brown, moist, hard, fine to medium grained sandy claystone with trace fine gravel at approximately 1.5 feet (CL).	
3							
4							
5	29	CAL		16.3			
6							
7							
8							
9							
10	37	CAL		111.3	19.7		
11							
12						Becomes very hard at 12.0 feet.	
13							
14						Becomes very hard at 14.0 feet.	
15	61	CAL		113.9	18.8		
16							
17							
18							
19							
20	64	CAL		105.8	20.6		
21							
22						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cutings. Boring capped with black Portland cement concrete.	
23							
24							

PROJECT NO. 5016A74

MTG

LOG OF BORING B-8

FIGURE B-10

BORING NO. B-9

Logged by: SJC **Date Drilled:** 9/29/2020

Method of Drilling: 6-inch diameter hollow-stem auger **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						3" Asphalt concrete over 4" base course.	
1			▨			Red brown, moist, stiff to very stiff, fine to medium grained sandy clay, with trace fine gravel (CL) (Fill).	
2			▨				
3			▨				
4			▨				
5	15	CAL		108.2	17.2		
6							
7							
8							
9							
10	23	CAL		123.8	12.2		
11							
12						Red brown, moist, hard, fine to medium grained sandy claystone (CL).	
13							
14							
15	37	CAL		103.9	21.6		
16							
17							
18							
19							
20	44 50/3"	CAL			10.0	Cobble fragment in sampler shoe.	
21							
22						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cutings. Boring capped with black Portland cement concrete.	
23							

PROJECT NO. 5016A74 **LOG OF BORING B-9** **FIGURE B-11**

BORING NO. B-10

Logged by: SJC **Date Drilled:** 9/29/2020

Method of Drilling: 6-inch diameter hollow-stem auger **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1						Reddish brown, moist , stiff to very stiff, fine to medium grained sandy clay (CL) (Fill)	
2						Reddish brown, moist, very hard, fine to medium grained sandy claystone with trace fine gravel (CL).	
3							
4							
5	30 50/5"	CAL		112.3	18.3		
6							
7							
8							
9							
10	42	CAL		115.2	18.0	Grading to containing trace fine black mineral flakes, trace fine gravel.	
11							
12							
13							
14							
15	26 50/4-1/2"	CAL		104.6	22.4		
16							
17							
18							
19							
20	48	CAL		104.5	22.2	Grades to olive brown, moist, very hard, fine to medium grained claystone (CL).	
21							
22						Boring terminated at 21.5 feet. No ground water encountered.	
23							
24							

BORING NO. B-11

Logged by: SJC
Date Drilled: 9/29/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1						Reddish brown, moist , very stiff, fine to medium grained sandy clay (CL) (Fill).	
2						Reddish brown, moist, very hard, fine to medium grained sandy claystone with trace fine gravel (CL).	
3							
4							
5	33 50/1"	CAL			11.6	Sample damaged.	
6							
7							
8							
9							
10	47	CAL		116.6	15.4	Grades to olive brown, moist, very hard, fine to medium grained sandy claystone, with trace fine gravel (CL).	
11							
12							
13							
14							
15	50/3" 50/2"	CAL SPT			4.1	No recovery in California or SPT samplers.	
16							
17							
18							
19							
20	50/5-1/2"	CAL					
21							
22						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cuttings.	
23							

PROJECT NO. 5016A74

LOG OF BORING B-11

FIGURE B-13

BORING NO. B-12

Logged by: SJC
Date Drilled: 9/30/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1						Reddish brown, moist , very stiff, fine to medium grained sandy clay (CL) (Fill).	
2						Reddish brown, moist, very hard, fine to medium grained sandy claystone with trace fine gravel, trace black mineral flecks (CL).	
3							
4							
5	73	CAL		112.6	17.1		
6							
7							
8							
9							
10	40	CAL		110.4	18.7	Grades to olive brown, moist, very hard, fine to medium grained sandy claystone, with trace fine gravel (CL).	
11							
12						Becomes harder at approximately 12.0 feet.	
13							
14							
15	3	CAL				No recovery in California or SPT samplers.	
16	50/1"	SPT					
17							
18							
19						Tube sample of cuttings at 19.0 feet. Practical drill rig refusal at 19.0 feet. Boring terminated at 19.0 feet. No ground water encountered. Boring backfilled with cuttings.	
20							
21							
22							
23							
24							
25							

PROJECT NO. 5016A74

LOG OF BORING B-12

FIGURE B-14

BORING NO. B-13

Logged by: SJC
Date Drilled: 9/30/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1						Reddish brown, moist , very stiff, fine to medium grained sandy clay (CL) (Fill).	
2						Reddish brown, moist, very hard, fine to medium grained sandy claystone with trace fine gravel, trace black mineral flecks (CL).	
3							
4							
5	53	CAL		112.2	8.5		
6							
7							
8							
9							
10	62	CAL		110.8	16.7		
11							
12							
13							
14							
15	46	CAL		108.3	18.2	Grades to medium brown.	
16							
17							
18							
19							
20	30	CAL		113.3	16.8	Grades to olive gray.	
21	50/1-1/2"					Boring terminated at 21.4 feet. No ground water encountered. Boring backfilled with cuttings.	
22							

PROJECT NO. 5016A74

LOG OF BORING B-13

FIGURE B-15

BORING NO. B-14

Logged by: SJC

Method of Drilling: 6-inch diameter hollow-stem auger

Date Drilled: 9/30/2020

Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1			▨			Reddish brown, moist , stiff to very stiff, fine to medium grained sandy clay (CL) (Fill)	
2			▨			Reddish brown, moist, hard, fine to medium grained sandy claystone with trace fine gravel (CL).	
3			▨				
4			▨				
5	33	CAL		118.3	13.0		
6							
7							
8							
9							
10	32	CAL		109.1	16.7		
11							
12							
13							
14							
15	41	CAL		108.8	18.0	Grades to olive brown/red brown, moist, very hard, fine to medium grained sandy claystone, trace fine gravel, trace black mineral flecks (CL).	
16							
17							
18							
19							
20	56	CAL		114.1	16.2	Grades back to red brown. Poor recovery in sampler.	
21							
22							
23							
24							
25	37	CAL			3.7	Grades to olive brown.	
26	50/1"					Tan, silty, fine to medium grained sandy claystone in SPT.	

PROJECT NO. 5016A74

LOG OF BORING B-14

FIGURE B-16

BORING NO. B-14

Logged by: SJC
Date Drilled: 9/28/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
30	50/2"	SPT			10.3		
31							
32							
33							
34							
35	58	SPT			4.9	Becomes gray brown, olive brown.	
36							
37							
38							
39							
40	27 50/3"	SPT			11.4	Becomes olive gray with oxidized zones.	
41							
42							
43							
44							
45	28 50/3-1/2"	SPT			16.8	Light gray to olive brown, moist, very hard, fine grained sandy claystone (CL).	
46							
47						Boring terminated at 45.8 feet. No ground water encountered. Boring backfilled with cuttings and bentonite chips.	
48							
49							
50							

BORING NO. B-15

Logged by: **SJC** **Date Drilled: 9/30/2020**
Method of Drilling: **6-inch diameter hollow-stem auger** **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1						Reddish brown, moist , very stiff, fine to medium grained sandy clay (CL) (Fill).	
2							
3							
4						Approximate fill/claystone contact. Reddish brown, moist, very hard, fine to medium grained sandy claystone with trace fine gravel and black mineral flecks (CL).	
5	21	CAL		115.6	14.0	Becomes hard.	
6							
7							
8						Reddish brown, moist, very hard, fine to medium grained sandy claystone with trace fine gravel and black mineral flecks (CL).	
9							
10	32	CAL		113.4	16.6		
11							
12							
13							
14							
15	48	CAL		109.3	17.8	Grades to olive brown and red brown.	
16							
17							
18							
19							
20	30	CAL		114.1	14.9	Grades to medium brown.	
21	50/1-1/2"					Boring terminated at 20.6 feet. No ground water encountered. Boring backfilled with cuttings.	
22							

PROJECT NO. 5016A74 **LOG OF BORING B-15** **FIGURE B-18**

BORING NO. B-16

Logged by: SJC **Date Drilled:** 9/30/2020

Method of Drilling: 6-inch diameter hollow-stem auger **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Bare dirt surface	
1						Mottled reddish brown, medium brown, moist, stiff to very stiff, fine to medium grained sandy clay (CL). Fill.	
2						Reddish brown, moist, hard, fine to medium grained sandy claystone, trace fine gravel and black mineral flecks (CL).	
3							
4							
5	27	CAL		112.3	12.4		
6							
7							
8							
9							
10	45	CAL		113.4	12.6		
11							
12							
13							
14							
15	30	CAL		106.6	18.4	Contains trace black fine mineral flecks.	
16							
17							
18							
19							
20	42	CAL		101.2	23.3		
21						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cuttings.	

PROJECT NO. 5016A74 **LOG OF BORING B-16** **FIGURE B-19**

BORING NO. B-17

Logged by: SJC
Date Drilled: 9/30/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface. Reddish brown, moist, very stiff, fine to medium grained sandy clay (CL) (Fill).	
1							
2						Reddish brown, moist, very stiff, fine to medium grained sandy claystone with trace fine gravel and black mineral flecks (CL).	
3							
4						Approximate fill/claystone contact.	
5	21	CAL		109.0	10.1	Reddish brown, moist, very stiff, fine to coarse grained sandy claystone (CL).	
6						Becomes hard.	
7							
8							
9							
10	52	CAL		128.0	10.4		
11							
12						Grades to gray/ tan material at twelve feet depth, much harder.	
13							
14							
15	50/1-1/2"	SPT				Grades to olive brown and red brown.	
16							
17							
18							
19							
20						Grades to medium brown.	
21						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cuttings.	

PROJECT NO. 5016A74

LOG OF BORING B-17

FIGURE B-20

BORING NO. B-18

Logged by: SJC **Date Drilled:** 10/1/2020
Method of Drilling: 6-inch diameter hollow-stem auger **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1						Reddish brown, moist, very stiff, fine to medium grained sandy clay (CL) (Fill).	
2							
3	34	CAL		121.8	11.2	Reddish brown, moist, hard, fine to medium grained sandy claystone with trace fine gravel (CL)	
4							
5	18	CAL		116.8	14.7	Becomes very stiff.	
6							
7							
8							
9							
10	61	CAL		123.1	11.4		
11							
12							
13							
14							
15	58	CAL		109.7	11.6	Grades to light brown.	
16							
17							
18							
19							
20	20 50/5"	CAL		142.9	3.3	Grades to reddish brown with olive gray lenses.	
21						Boring terminated at 20.9 feet. No ground water encountered. Boring backfilled with cuttings.	
22							

PROJECT NO. 5016A74

LOG OF BORING B-18

FIGURE B-21

BORING NO. B-19

Logged by: **SJC** **Date Drilled: 10/1/2020**

Method of Drilling: **6-inch diameter hollow-stem auger** **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Sod surface.	
1						Reddish brown, moist, very stiff, fine to medium grained sandy clay (CL) (Fill).	
2							
3	17	CAL		109.5	17.7		
4						Reddish brown, moist, hard, fine to medium grained sandy claystone, trace fine gravel (CL).	
5	31	CAL					
6							
7							
8							
9							
10	26	CAL		113.4	17.0	Includes trace black mineral flecks.	
11							
12							
13							
14							
15	49	CAL		110.5	19.2		
16							
17							
18							
19							
20	43	CAL		110.0	19.5		
21						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cuttings.	
22							

PROJECT NO. 5016A74 **LOG OF BORING B-19** **FIGURE B-22**

BORING NO. B-20

Logged by: SJC **Date Drilled:** 10/1/2020

Method of Drilling: 6-inch diameter hollow-stem auger **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Bare dirt surface.	
1			▨			Reddish brown, moist , stiff to very stiff, fine to medium grained sandy clay (CL) (Fill)	
2			▨			Reddish brown, moist, hard to very hard, fine to medium grained sandy claystone with trace fine gravel (CL).	
3			▨				
4			▨				
5	45	CAL		114.8	13.8		
6							
7							
8							
9							
10	32	CAL		110.7	17.1		
11							
12							
13							
14							
15	58	CAL		129.6	6.6	Grades to reddish brown, moist, very hard, fine to coase grained sandy claystone; tan colored material in sampler tip (CL).	
16							
17							
18							
19							
20	80	CAL		113.1	17.5		
21							
22							
23							
24							
25	21	CAL		110.5	18.8	Contains trace black mineral flecks.	
26	50/5-1/2"					Tan, silty, fine to medium grained sandy claystone in SPT.	

PROJECT NO. 5016A74

LOG OF BORING B-20

FIGURE B-23

BORING NO. B-20

Logged by: SJC

Date Drilled: 10/1/2020

Method of Drilling: 6-inch diameter hollow-stem auger

Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
30	52	CAL		108	20.4		
31							
32							
33							
34							
35	69	CAL		104.9	21.2	Becomes gray brown, olive brown.	
36							
37							
38							
39							
40	68	CAL		102.3	23.8	Becomes olive gray with oxidized zones.	
41							
42							
43							
44							
45	39 50/3"	CAL		111.0	17.4	Light gray to olive brown, moist, very hard, fine grained sandy claystone (CL).	
46						Practical drill rig refusal at 46.5 feet. Boring terminated at 46.5 feet. No ground water encountered. Boring backfilled with cuttings and bentonite chips.	
47							
48							
49							
50							

PROJECT NO. 5016A74

LOG OF BORING B-20

FIGURE B-24

BORING NO. B-21

Logged by: SJC **Date Drilled:** 10/2/2020
Method of Drilling: 6-inch diameter hollow-stem auger **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						1" Asphalt concrete over 4" base course.	
1						Reddish brown, moist, very stiff, fine to medium grained sandy clay (CL) (Fill).	
2							
3							
4						Reddish brown, moist, hard, fine to medium grained sandy claystone, trace fine gravel (CL).	
5	49	CAL		111.8	17.3		
6							
7							
8							
9							
10	21 50/6"	CAL		114.8	14.9	Grades to medium reddish brown, moist, very hard, fine to medium grained sandy claystone, with trace black mineral flecks (CL).	
11							
12						Boring terminated at 11.5 feet. No ground water encountered. Boring backfilled with cuttings.	
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

PROJECT NO. 5016A74 MTG **LOG OF BORING B-21** **FIGURE B-25**

BORING NO. B-22

Logged by: SJC | **Date Drilled:** 10/2/2020

Method of Drilling: 6-inch diameter hollow-stem auger | **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Gravel covered planting area.	
1						Mottled reddish brown, medium brown, moist, stiff to very stiff, fine to medium grained sandy clay (CL). Fill.	
2						Reddish brown, moist, very hard, fine to medium grained sandy claystone, trace fine gravel (CL).	
3							
4							
5	81	CAL		116.1	15.0		
6							
7							
8							
9							
10	59	CAL		103.1	16.9		
11							
12							
13							
14							
15	44	CAL		112.2	16.5	Contains trace black fine mineral flecks.	
16							
17							
18							
19							
20	40	CAL		113.6	15.2	Contains angular gravel fragments. Harder at 20.5 feet. Possible cobble fragment in sampler shoe.	
21						Boring terminated at 21.5 feet. No ground water encountered. Boring backfilled with cuttings.	
22							

PROJECT NO. 5016A74

LOG OF BORING B-22

FIGURE B-26

BORING NO. P-1

Logged by: **SJC** **Date Drilled: 10/1/2020**
Method of Drilling: **6-inch diameter hollow-stem auger** **Elevation:**

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Grassed area.	
1						Mottled reddish brown, medium brown, moist, stiff, fine to medium grained sandy clay (CL) (Fill).	
2						Reddish brown, moist, very hard, fine to medium grained sandy claystone, trace fine gravel (CL).	
3							
4							
5							
6							
7							
8						Boring terminated at 8.0 feet. Boring converted to percolation test.	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

PROJECT NO. 5016A74 **LOG OF BORING P-1** **FIGURE B-27**

BORING NO. P-2

Logged by: SJC
Date Drilled: 10/1/2020
Method of Drilling: 6-inch diameter hollow-stem auger
Elevation:

DEPTH (FT)	BLOWS PER FT	DRIVE SAMPLE	BULK SAMPLE	DENSITY (PCF)	MOISTURE (%)	DESCRIPTION	COMMENTS
						Grassed area.	
1						Mottled reddish brown, medium brown, moist, stiff, fine to medium grained sandy clay (CL) (Fill).	
2						Reddish brown, moist, very hard, fine to medium grained sandy claystone, trace fine gravel (CL).	
3							
4							
5							
6							
7							
8						Boring terminated at 8.0 feet. Boring converted to percolation test.	
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

LOG OF BORING P-2

APPENDIX C

LABORATORY TEST PROCEDURES

APPENDIX C

LABORATORY TESTING PROCEDURES

1. Classification

Soils were classified visually according to the Unified Soil Classification System as established by the American Society of Civil Engineers. Visual classification was supplemented by laboratory testing of selected soil samples and classification in general accordance with the laboratory soil classification tests outlined in ASTM test method D 2487. The resultant soil classifications are shown on the boring logs in Appendix B.

2. In-Situ Moisture/Density

The in-place moisture content and dry unit weight of selected soil samples were determined using relatively undisturbed samples from the liner rings of a CAL sampler. The dry unit weight and moisture content are shown on the boring logs in Appendix B

3. Atterberg Limits

The liquid limit, plastic limit, and plasticity index of selected soil sample were estimated in general accordance with the laboratory procedures outlined in ASTM D 4318. The results are shown on Figure C-1.

4. Expansion Index

Expansion Index testing was completed in accordance with the standard test method ASTM D4829. Test results are shown on Figures C-2 through C-6.

5. Direct Shear Tests

Direct shear tests were performed on selected samples with the standard test method ASTM D3080. Test results are shown on Figures C-7 through C-15.

7. Corrosion

Chemical testing was performed on representative samples to determine the corrosion potential of the onsite soils. Testing consisted of pH, chlorides (CTM 422), soluble sulfates (CTM 417), and resistivity (CTM 643). Test results are as follows:

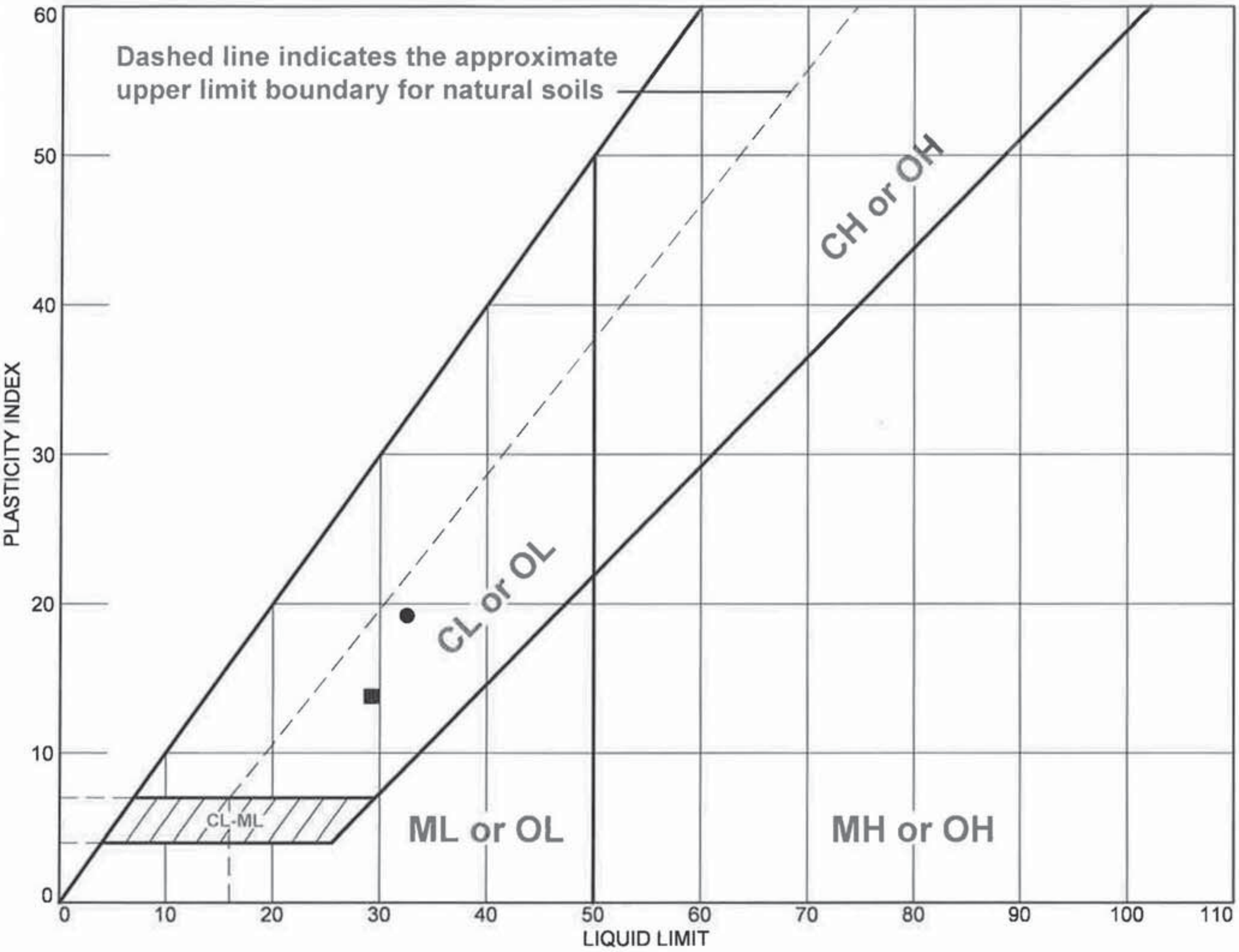
Sample Location	pH	Chlorides (ppm)	Sulfates (ppm)	Resistivity (ohm-cm)
B-5 at 1' to 5'	7.1	45	58	3,800
B-20 at 1' to 5'	7.2	71	197	2,300

7. R-Value

An R-Value test was performed on a sample of the upper soils in general accordance with the laboratory procedures outlined in CTM 301. Test results are presented below.

Sample Location	Soil Description	R-Value
B-1 at 1' to 5'	Reddish Brown, Sandy Clay (CL)	13

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	LEAN CLAY (CL), reddish-brown	32.5	13.3	19.2			
■	LEAN CLAY (CL), reddish-brown	29.2	15.4	13.8			

Project No. 5016-A74 **Client:**

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

● **Depth:** 1-5' **Sample Number:** B5

■ **Depth:** 1-5' **Sample Number:** B20

Remarks:

MTGL, Inc.

San Diego, CA

Figure C-1

Tested By: JH **Checked By:** SC

EXPANSION INDEX TEST

(ASTM D4829)

LAB NO. : n/a

PROJECT NAME : Richland ES PROJECT NO. : 5016A74

SAMPLE ID: SAMPLED BY: SC DATE: 9/28/20

SOURCE: On-Site TESTED BY: JH DATE: 10/13/20

LOCATION: B1 @ 1-5' REVIEWED BY: SC DATE: 10/28/20

TEST RESULTS

	Before	After
WT. WET SOIL & RING	**631.3**	**671.3**
WT. DRY SOIL & RING	**600.5**	600.5
WT. OF LOST MOISTURE	30.8	70.8
WT. OF RING	**217.8**	217.8
WT. OF DRY SOIL	382.7	382.7
MOISTURE CONTENT, %	8.0%	18.5%
WET DENSITY (PCF)	125.3	133.0
DRY DENSITY (PCF)	116.0	112.3
% SATURATION	48	100

Date/Time	Elapsed Time (min)	Surcharge (p.s.f.)	Dial Reading	Expansion
		0		
10/13/20	10		0.535	
		144		
10/14/20	1440		0.568	1.033

Expansion Index	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
> 130	Very High

POTENTIAL EXPANSION	**LOW**

SPECIFIC GRAVITY	2.70
EXPANSION INDEX	**33**

Figure: C-2

MTG

EXPANSION INDEX TEST

(ASTM D4829)

LAB NO. : n/a

PROJECT NAME : Richland ES PROJECT NO. : 5016A74

SAMPLE ID: SAMPLED BY: SC DATE: 9/28/20

SOURCE: On-Site TESTED BY: JH DATE: 10/20/20

LOCATION: B3 @ 1-5' REVIEWED BY: SC DATE: 10/28/20

TEST RESULTS

	Before	After
WT. WET SOIL & RING	**627.5**	**664.3**
WT. DRY SOIL & RING	**592.6**	592.6
WT. OF LOST MOISTURE	34.9	71.7
WT. OF RING	**219.9**	219.9
WT. OF DRY SOIL	372.7	372.7
MOISTURE CONTENT, %	9.4%	19.2%
WET DENSITY (PCF)	123.5	132.4
DRY DENSITY (PCF)	112.9	111.0
% SATURATION	51	100

Date/Time	Elapsed Time (min)	Surcharge (p.s.f.)	Dial Reading	Expansion
		0		
10/20/20	10		0.534	
		144		
10/21/20	1440		0.551	1.017

Expansion Index	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
> 130	Very High

POTENTIAL EXPANSION	**VERY LOW**

SPECIFIC GRAVITY	2.70
EXPANSION INDEX	**17**

Figure: C-3

EXPANSION INDEX TEST

(ASTM D4829)

LAB NO. : n/a

PROJECT NAME : Richland ES

PROJECT NO. : 5016A74

SAMPLE ID:

SAMPLED BY: SC

DATE: 9/28/20

SOURCE: On-Site

TESTED BY: JH

DATE: 10/27/20

LOCATION: B5 @ 1-5'

REVIEWED BY: SC

DATE: 10/28/20

TEST RESULTS

	Before	After
WT. WET SOIL & RING	**621.2**	**660.0**
WT. DRY SOIL & RING	**583.9**	583.9
WT. OF LOST MOISTURE	37.3	76.1
WT. OF RING	**219.8**	219.8
WT. OF DRY SOIL	364.1	364.1
MOISTURE CONTENT, %	10.2%	20.9%
WET DENSITY (PCF)	121.6	130.0
DRY DENSITY (PCF)	110.3	107.5
% SATURATION	52	100

Date/Time	Elapsed Time (min)	Surcharge (p.s.f.)	Dial Reading	Expansion
		0		
10/27/20	10		0.517	
		144		
10/28/20	1440		0.543	1.026

Expansion Index	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
> 130	Very High

POTENTIAL EXPANSION	**LOW**

SPECIFIC GRAVITY	2.70
EXPANSION INDEX	**26**

EXPANSION INDEX TEST

(ASTM D4829)

LAB NO. : n/a

PROJECT NAME : Richland ES

PROJECT NO. : 5016A74

SAMPLE ID:

SAMPLED BY: SC

DATE: 9/28/20

SOURCE: On-Site

TESTED BY: JH

DATE: 10/21/20

LOCATION: B9 @ 1-5'

REVIEWED BY: SC

DATE: 10/28/20

TEST RESULTS

	Before	After
WT. WET SOIL & RING	**597.2**	**643.9**
WT. DRY SOIL & RING	**560.0**	560.0
WT. OF LOST MOISTURE	37.2	83.9
WT. OF RING	**207.1**	207.1
WT. OF DRY SOIL	352.9	352.9
MOISTURE CONTENT, %	10.5%	23.8%
WET DENSITY (PCF)	118.2	126.8
DRY DENSITY (PCF)	106.9	102.4
% SATURATION	49	100

Date/Time	Elapsed Time (min)	Surcharge (p.s.f.)	Dial Reading	Expansion
		0		
10/21/20	10		0.529	
		144		
10/22/20	1440		0.573	1.044

Expansion Index	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
> 130	Very High

POTENTIAL EXPANSION	**LOW**

SPECIFIC GRAVITY	2.70
EXPANSION INDEX	**44**

Figure: C-5

EXPANSION INDEX TEST

(ASTM D4829)

LAB NO. : n/a

PROJECT NAME : Richland ES PROJECT NO. : 5016A74

SAMPLE ID: SAMPLED BY: SC DATE: 9/28/20

SOURCE: On-Site TESTED BY: JH DATE: 10/22/20

LOCATION: B20 @ 1-5' REVIEWED BY: SC DATE: 10/28/20

TEST RESULTS

	Before	After
WT. WET SOIL & RING	**598.7**	**651.0**
WT. DRY SOIL & RING	**557.4**	557.4
WT. OF LOST MOISTURE	41.3	93.6
WT. OF RING	**217.7**	217.7
WT. OF DRY SOIL	339.7	339.7
MOISTURE CONTENT, %	12.2%	27.6%
WET DENSITY (PCF)	115.4	123.3
DRY DENSITY (PCF)	102.9	96.6
% SATURATION	52	100

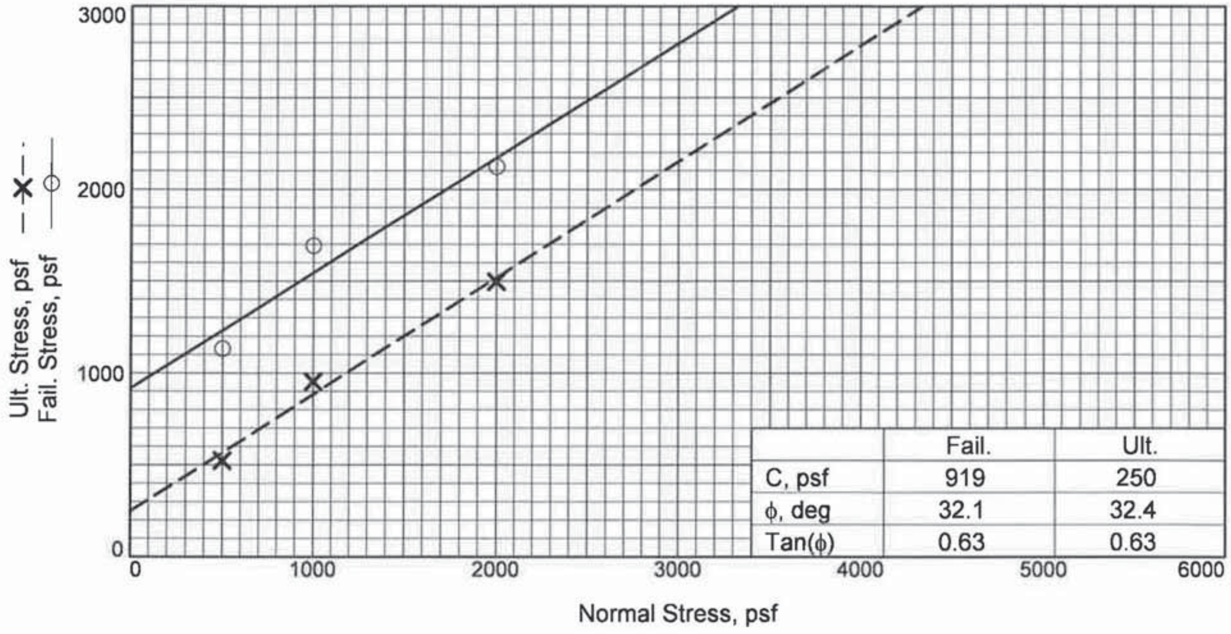
Date/Time	Elapsed Time (min)	Surcharge (p.s.f.)	Dial Reading	Expansion
		0		
10/22/20	10		0.566	
		144		
10/23/20	1440		0.631	1.065

Expansion Index	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
> 130	Very High

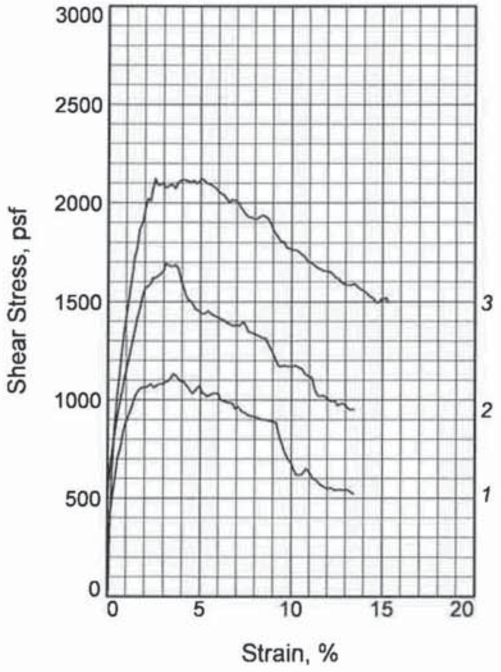
POTENTIAL EXPANSION	**MEDIUM**

SPECIFIC GRAVITY	2.70
EXPANSION INDEX	**65**

Figure: C-6



	Fail.	Ult.
C, psf	919	250
ϕ, deg	32.1	32.4
Tan(ϕ)	0.63	0.63



	Sample No.	1	2	3
Initial	Water Content, %	11.3	11.5	11.5
	Dry Density, pcf	122.6	123.6	121.8
	Saturation, %	85.5	90.2	84.9
	Void Ratio	0.3496	0.3387	0.3588
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	13.0	12.0	12.6
	Dry Density, pcf	123.1	125.5	124.1
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.3438	0.3180	0.3334
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	0.98	0.98
Normal Stress, psf		500	1000	2000
Fail. Stress, psf		1133	1694	2123
Strain, %		3.5	3.1	2.5
Ult. Stress, psf		523	952	1496
Strain, %		13.5	13.5	15.3
Strain rate, in./min.		0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B3 **Depth:** 5'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

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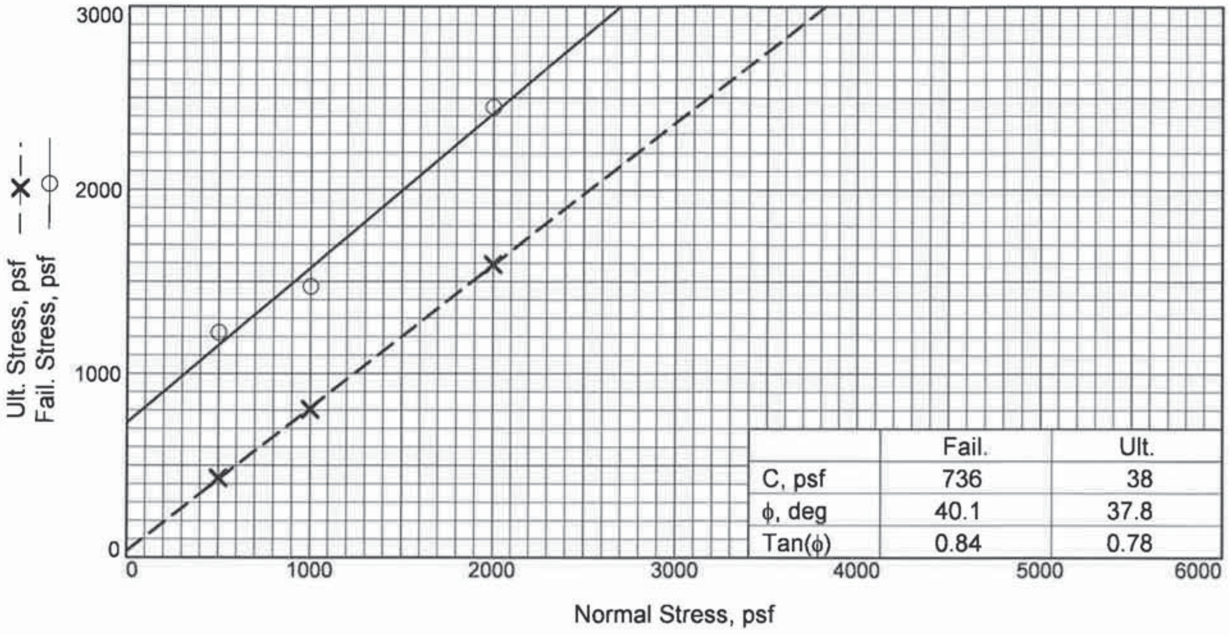
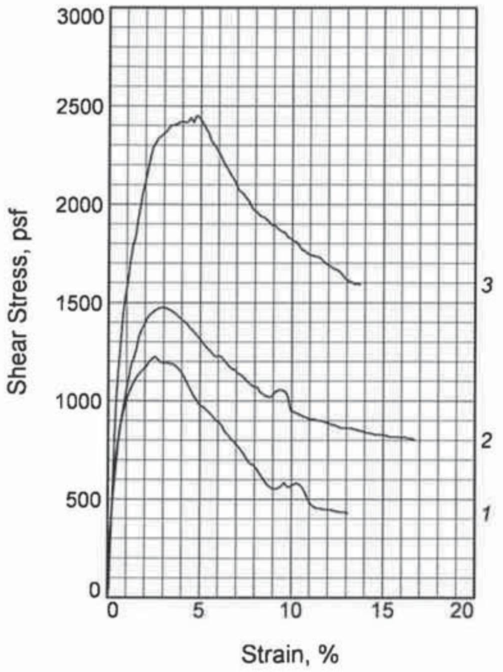
Figure C-7



	Fail.	Ult.
C, psf	736	38
ϕ, deg	40.1	37.8
Tan(ϕ)	0.84	0.78



Sample No.		1	2	3
Initial	Water Content, %	12.7	12.5	12.8
	Dry Density, pcf	118.4	118.9	117.6
	Saturation, %	85.0	84.3	83.5
	Void Ratio	0.3968	0.3919	0.4066
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	14.8	14.1	14.6
	Dry Density, pcf	118.9	120.3	119.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.3912	0.3748	0.3883
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	0.99	0.99
Normal Stress, psf		500	1000	2000
Fail. Stress, psf		1224	1475	2451
Strain, %		2.5	2.9	4.7
Ult. Stress, psf		432	805	1594
Strain, %		13.1	16.7	13.7
Strain rate, in./min.		0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B5 **Depth:** 5'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

DIRECT SHEAR TEST REPORT
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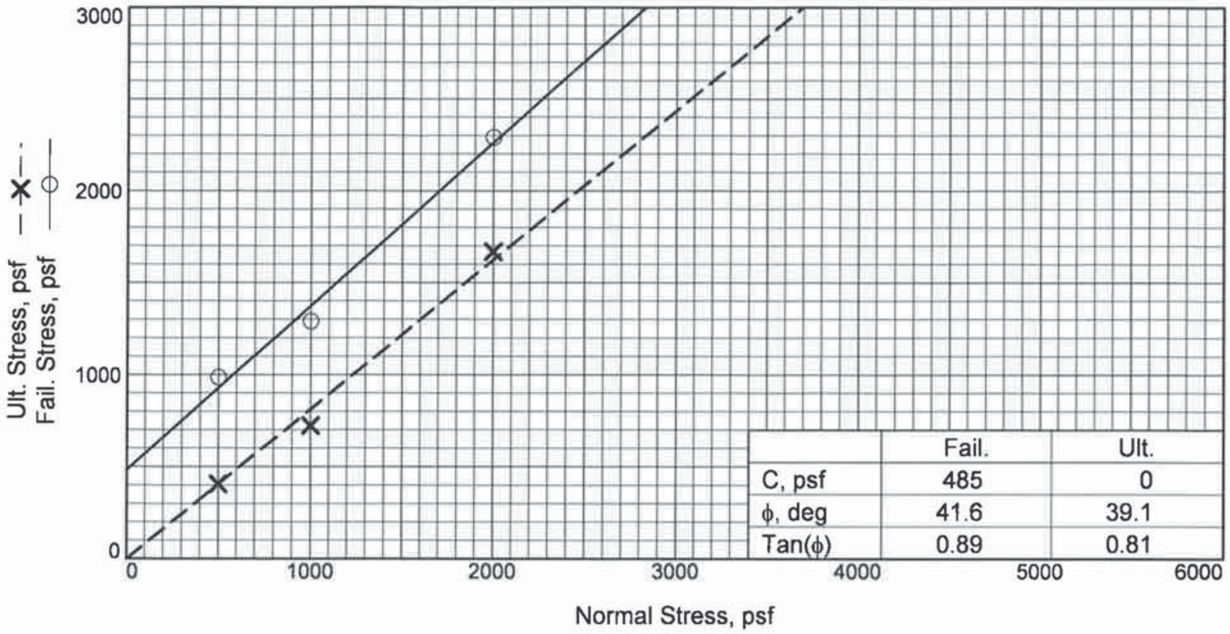
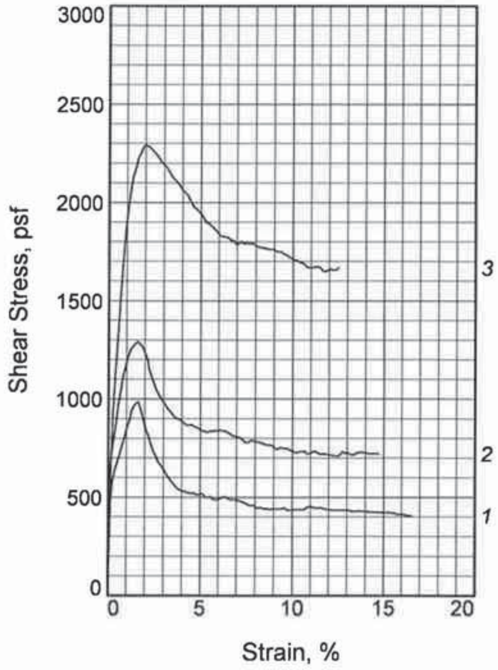
Figure C-8



	Fail.	Ult.
C, psf	485	0
φ, deg	41.6	39.1
Tan(φ)	0.89	0.81



	Sample No.	1	2	3
Initial	Water Content, %	14.8	14.6	14.7
	Dry Density, pcf	113.5	111.8	111.9
	Saturation, %	85.7	80.6	81.2
	Void Ratio	0.4580	0.4796	0.4785
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	15.5	17.6	17.2
	Dry Density, pcf	117.3	112.9	113.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.4101	0.4651	0.4570
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.97	0.99	0.99
Normal Stress, psf		500	1000	2000
Fail. Stress, psf		986	1290	2292
Strain, %		1.6	1.6	2.0
Ult. Stress, psf		407	723	1669
Strain, %		16.5	14.7	12.5
Strain rate, in./min.		0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Figure C-9

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B5 **Depth:** 10'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

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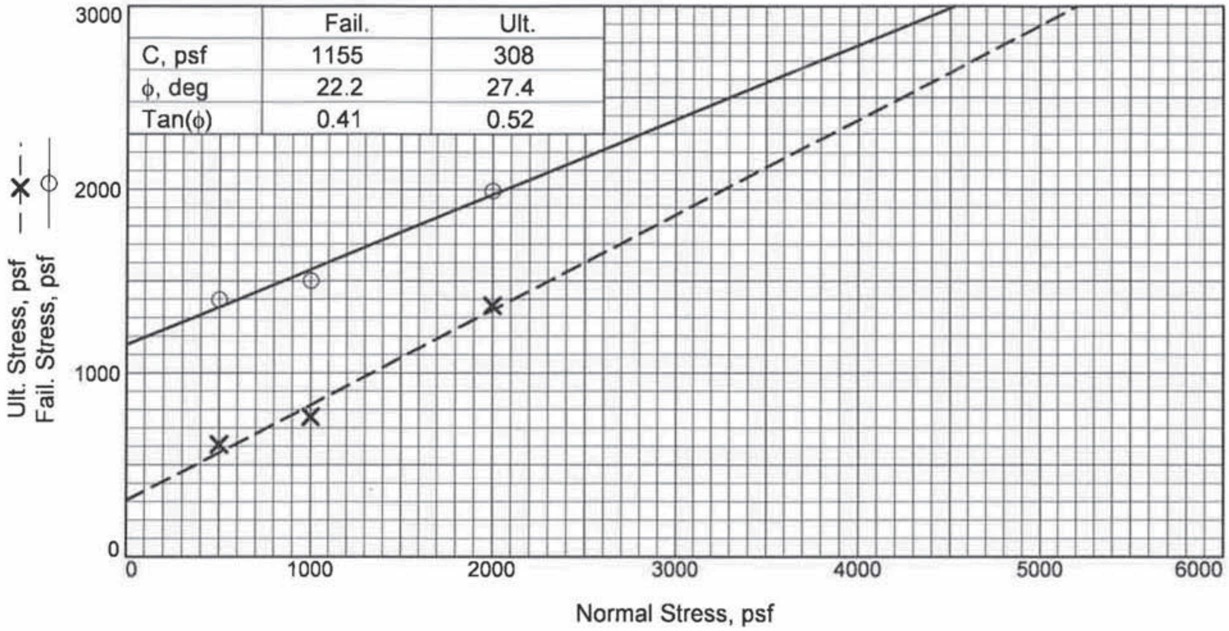
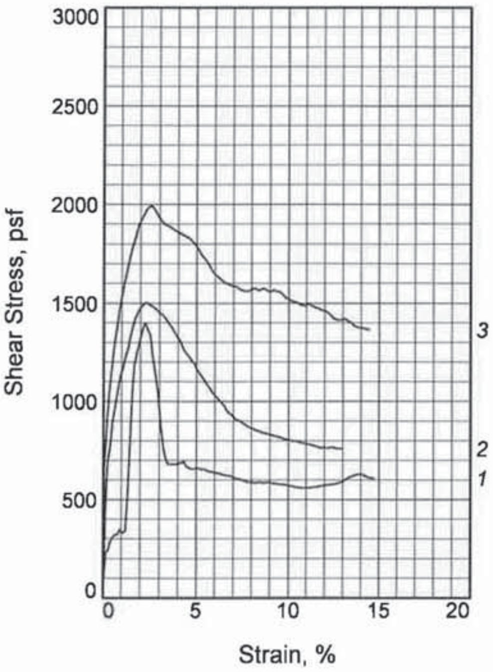


	Fail.	Ult.
C, psf	1155	308
ϕ, deg	22.2	27.4
Tan(ϕ)	0.41	0.52



Sample No.		1	2	3
Initial	Water Content, %	16.6	16.5	16.8
	Dry Density, pcf	113.5	113.6	112.6
	Saturation, %	95.9	96.2	94.8
	Void Ratio	0.4580	0.4558	0.4687
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	16.9	16.7	16.9
	Dry Density, pcf	114.2	114.7	114.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.4489	0.4422	0.4480
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.99	0.99	0.99
Normal Stress, psf		500	1000	2000
Fail. Stress, psf		1399	1503	1991
Strain, %		2.2	2.3	2.5
Ult. Stress, psf		610	761	1365
Strain, %		14.7	13.0	14.4
Strain rate, in./min.		0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B6 **Depth:** 5'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

DIRECT SHEAR TEST REPORT
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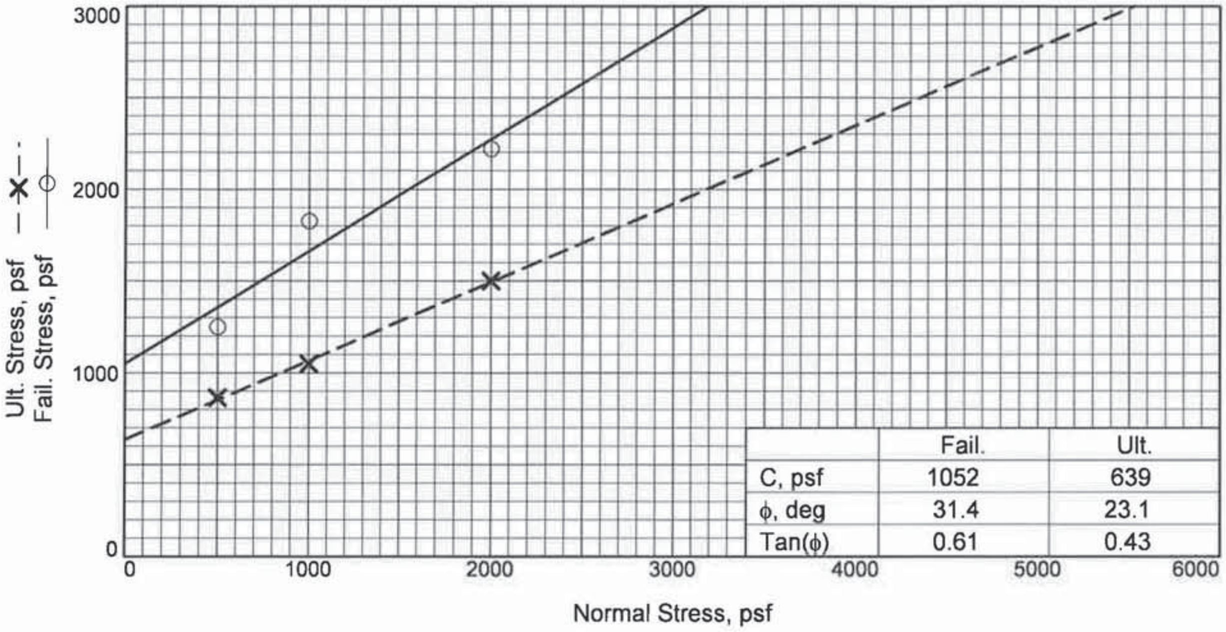
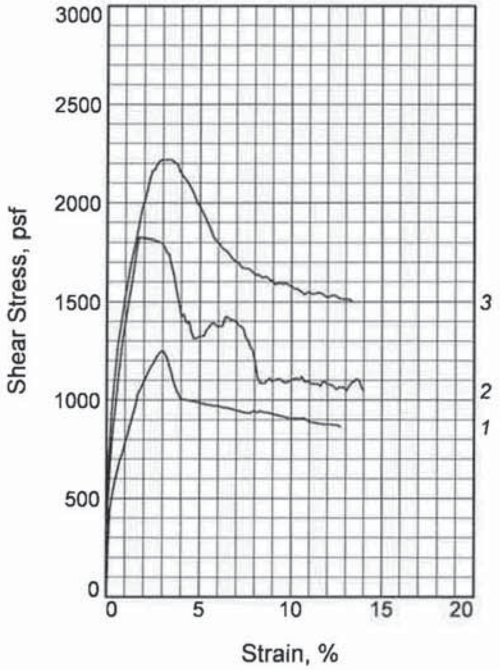
San Diego, CA

Figure C-10



	Fail.	Ult.
C, psf	1052	639
ϕ, deg	31.4	23.1
Tan(ϕ)	0.61	0.43



	Sample No.	1	2	3
Initial	Water Content, %	16.3	16.4	16.2
	Dry Density, pcf	111.8	111.4	112.1
	Saturation, %	90.1	89.4	90.1
	Void Ratio	0.4796	0.4851	0.4763
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	17.9	17.8	16.9
	Dry Density, pcf	112.1	112.5	114.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.4753	0.4710	0.4487
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	0.99	0.98
	Normal Stress, psf	500	1000	2000
	Fail. Stress, psf	1249	1825	2220
	Strain, %	2.9	1.7	2.9
	Ult. Stress, psf	864	1049	1500
	Strain, %	12.7	14.0	13.4
	Strain rate, in./min.	0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B8 **Depth:** 5'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

DIRECT SHEAR TEST REPORT
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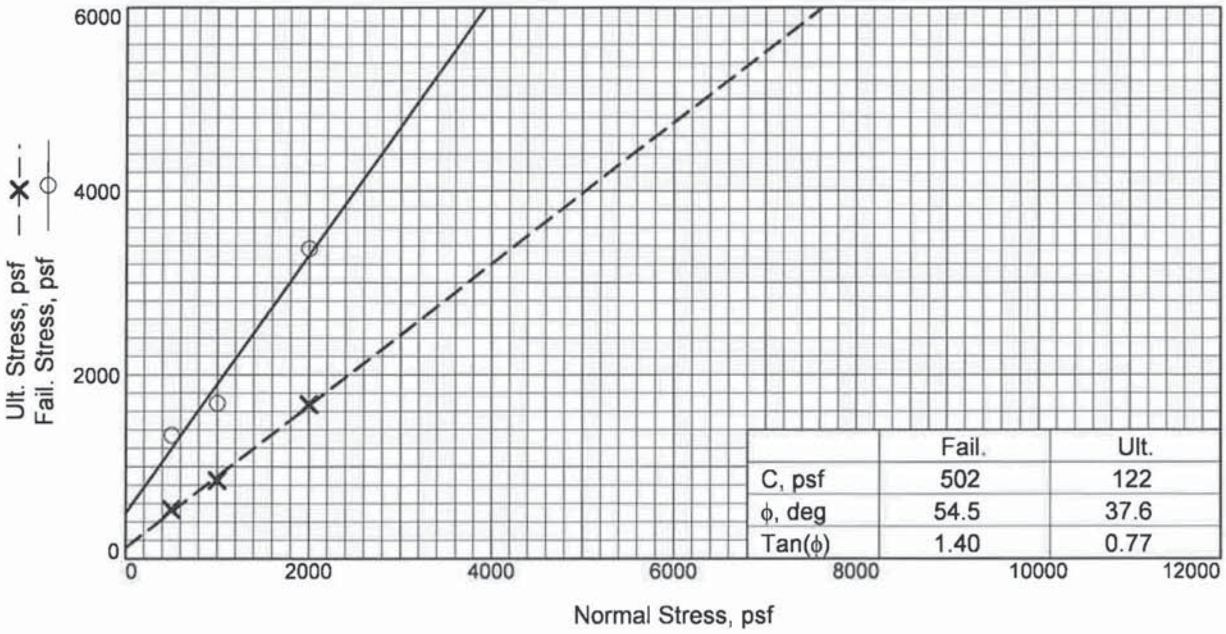
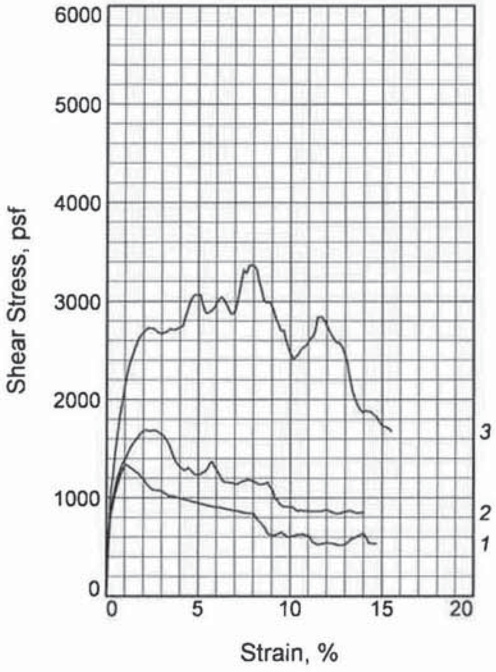
Figure C-11



	Fail.	Ult.
C, psf	502	122
ϕ, deg	54.5	37.6
Tan(ϕ)	1.40	0.77



	Sample No.	1	2	3
Initial	Water Content, %	13.0	13.0	13.1
	Dry Density, pcf	117.9	119.7	117.3
	Saturation, %	85.5	90.2	84.8
	Void Ratio	0.4027	0.3823	0.4106
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	15.0	13.9	14.8
	Dry Density, pcf	118.3	120.9	118.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.3980	0.3686	0.3911
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	0.99	0.99
Normal Stress, psf		500	1000	2000
Fail. Stress, psf		1343	1691	3372
Strain, %		1.0	2.1	7.9
Ult. Stress, psf		535	852	1678
Strain, %		14.7	14.0	15.5
Strain rate, in./min.		0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Figure C-12

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B14 **Depth:** 5'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

DIRECT SHEAR TEST REPORT
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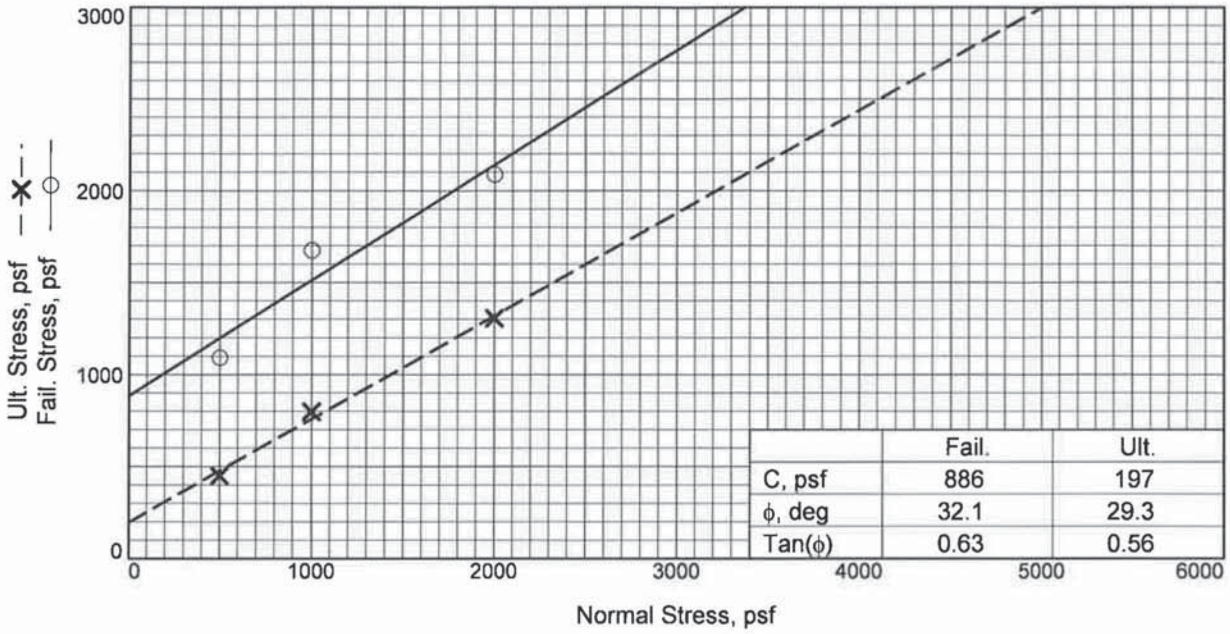
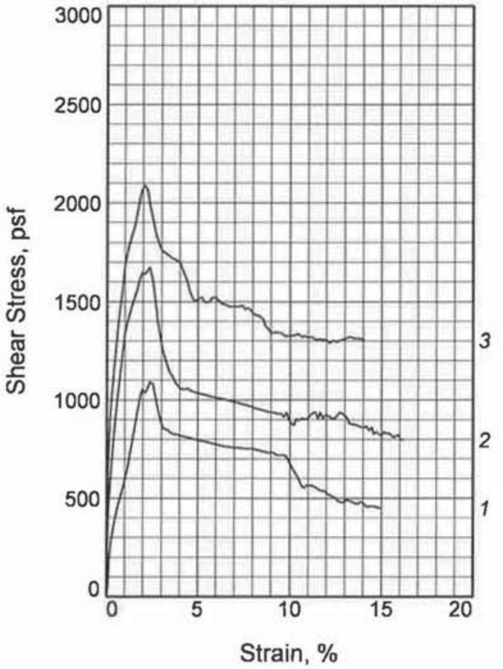


	Fail.	Ult.
C, psf	886	197
ϕ, deg	32.1	29.3
Tan(ϕ)	0.63	0.56



	Sample No.	1	2	3
Initial	Water Content, %	16.6	16.8	16.8
	Dry Density, pcf	108.1	109.7	109.6
	Saturation, %	83.1	87.4	87.2
	Void Ratio	0.5306	0.5086	0.5098
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	19.6	18.6	17.9
	Dry Density, pcf	108.8	110.9	112.2
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5200	0.4922	0.4747
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.99	0.99	0.98
	Normal Stress, psf	500	1000	2000
	Fail. Stress, psf	1093	1675	2088
	Strain, %	2.4	2.3	2.1
	Ult. Stress, psf	451	798	1306
	Strain, %	14.9	16.2	14.0
	Strain rate, in./min.	0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B14 **Depth:** 10'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

DIRECT SHEAR TEST REPORT
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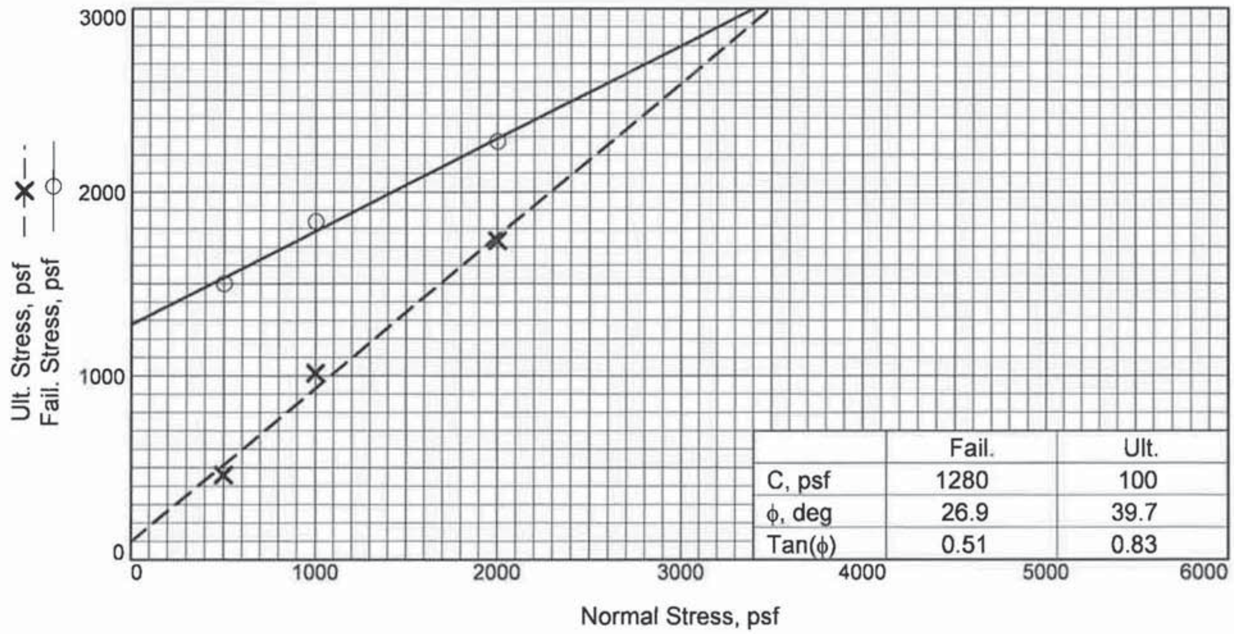
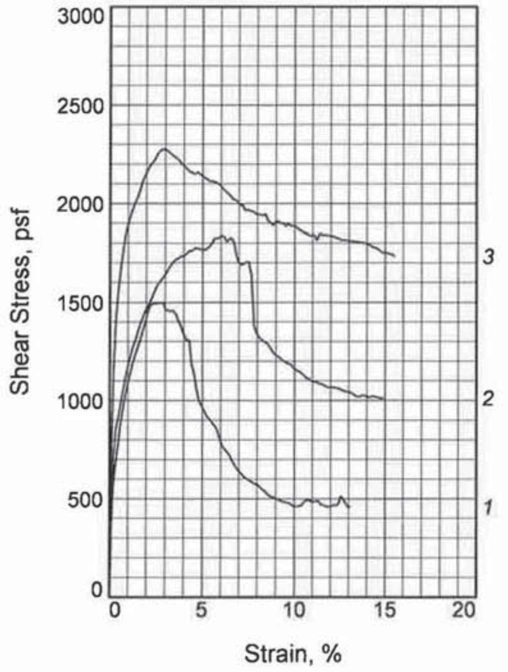
Figure C-13



	Fail.	Ult.
C, psf	1280	100
ϕ, deg	26.9	39.7
Tan(ϕ)	0.51	0.83



	Sample No.	1	2	3
Initial	Water Content, %	11.2	11.2	11.3
	Dry Density, pcf	121.8	121.9	121.6
	Saturation, %	82.9	83.2	83.1
	Void Ratio	0.3588	0.3569	0.3606
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	13.5	13.0	12.7
	Dry Density, pcf	121.9	123.1	123.7
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.3569	0.3438	0.3376
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	0.99	0.98
Normal Stress, psf		500	1000	2000
Fail. Stress, psf		1500	1838	2276
Strain, %		2.7	6.0	2.9
Ult. Stress, psf		460	1014	1734
Strain, %		13.1	14.9	15.5
Strain rate, in./min.		0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Figure C-14

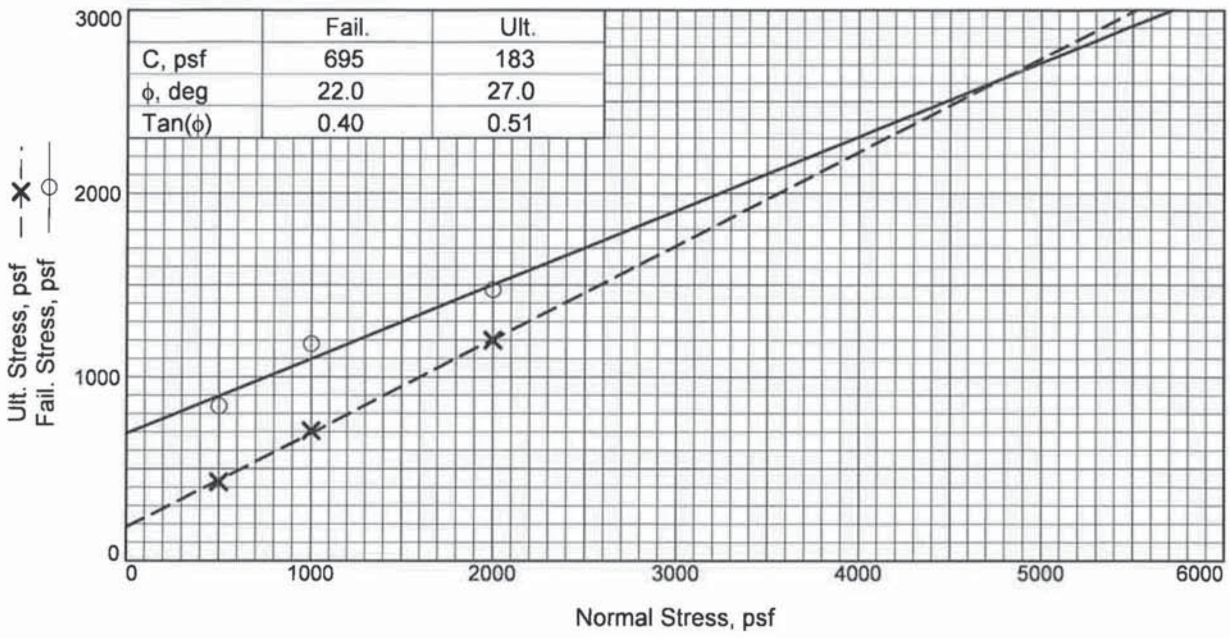
Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

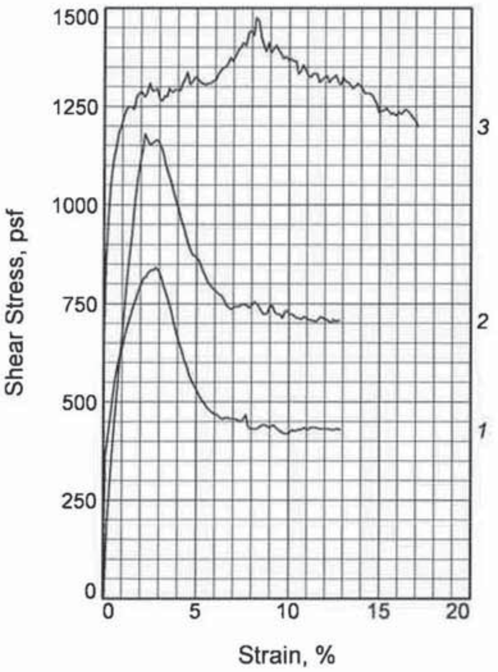
Sample Number: B18 **Depth:** 2.5'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

DIRECT SHEAR TEST REPORT
MTGL, Inc.
San Diego, CA



	Fail.	Ult.
C, psf	695	183
ϕ, deg	22.0	27.0
Tan(ϕ)	0.40	0.51



	Sample No.	1	2	3
Initial	Water Content, %	13.9	13.7	13.8
	Dry Density, pcf	115.1	112.2	117.2
	Saturation, %	84.2	76.7	88.7
	Void Ratio	0.4370	0.4741	0.4116
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	16.2	17.5	15.1
	Dry Density, pcf	115.8	113.0	118.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.4288	0.4635	0.3989
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.99	0.99	0.99
Normal Stress, psf		500	1000	2000
Fail. Stress, psf		842	1180	1475
Strain, %		2.8	2.2	8.2
Ult. Stress, psf		429	708	1199
Strain, %		12.9	12.8	17.1
Strain rate, in./min.		0.005	0.005	0.005

Sample Type:

Description:

Assumed Specific Gravity= 2.65

Remarks:

Client:

Project: RICHLAND ELEMENTARY SCHOOL REBUILD

Sample Number: B20 **Depth:** 5'

Proj. No.: 5016-A74 **Date Sampled:** 9/28/20

DIRECT SHEAR TEST REPORT
MTGL, Inc.
San Diego, CA

Figure C-15

APPENDIX D

STANDARD GRADING SPECIFICATIONS

APPENDIX D

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

GENERAL

These specifications present general procedures and requirements for grading and earthwork as shown on the approved grading plans, including preparation of areas to be filled, placement of fill, installation of subdrains, and excavations. The recommendations contained in the attached geotechnical report are a part of the earthwork and grading specifications and shall supersede the provisions contained herein in the case of conflict. Evaluations performed by the Consultant during the course of grading may result in new recommendations, which could supersede these specifications, or the recommendations of the geotechnical report.

EARTHWORK OBSERVATION AND TESTING

Prior to the start of grading, a qualified Geotechnical Consultant (Geotechnical Engineer and Engineering Geologist) shall be employed for the purpose of observing earthwork procedures and testing the fills for conformance with the recommendations of the geotechnical report and these specifications. It will be necessary that the Consultant provide adequate testing and observation so that he may determine that the work was accomplished as specified. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that he may schedule his personnel accordingly.

It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans.

Maximum dry density tests used to determine the degree of compaction will be performed in accordance with the American Society for Testing and Materials Test Method (ASTM) D1557.

PREPARATION OF AREAS TO BE FILLED

Clearing and Grubbing: All brush, vegetation and debris shall be removed or piled and otherwise disposed of.

Processing: The existing ground which is determined to be satisfactory for support of fill shall be scarified to a minimum depth of 8 to 12 inches. Existing ground, which is not satisfactory, shall be overexcavated as specified in the following section.

Overexcavation: Soft, dry, spongy, highly fractured or otherwise unsuitable ground, extending to such a depth that surface processing cannot adequately improve the condition, shall be overexcavated down to firm ground, approved by the Consultant.

Moisture conditioning: Overexcavated and processed soils shall be watered, dried-back, blended, and mixed as required to have a relatively uniform moisture content near the optimum moisture content as determined by ASTM D1557.

Recompaction: Overexcavated and processed soils, which have been mixed, and moisture conditioned uniformly shall be recompacted to a minimum relative compaction specified in the body of this report.

Benching: Where soils are placed on ground with slopes steeper than 5:1 (horizontal to vertical), the ground shall be stepped or benched. Benches shall be excavated in firm material for a minimum width of 4 feet.

FILL MATERIAL

General: Material to be placed as fill shall be free of organic matter and other deleterious substances, and shall be approved by the Consultant.

Oversize: Oversized material defined as rock, or other irreducible material with a maximum dimension greater than 4 inches, shall not be buried or placed in fill, unless the location, material, and disposal methods are specifically approved by the Consultant. Oversize disposal operations shall be such that nesting of oversized material does not occur, and such that the oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 feet vertically of finish grade or within the range of future utilities or underground construction, unless specifically approved by the Consultant.

Import: If importing of fill material is required for grading, the import material shall meet the general requirements.

FILL PLACEMENT AND COMPACTION

Fill Lifts: Approved fill material shall be placed in areas prepared to receive fill in near-horizontal layers not exceeding 6 inches in compacted thickness. The Consultant may approve thicker lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to attain uniformity of material and moisture in each layer.

Fill Moisture: Fill layers at a moisture content less than optimum shall be watered and mixed, and wet fill layers shall be aerated by scarification or shall be blended with drier material. Moisture conditioning and mixing of fill layers shall continue until the fill material is at uniform moisture content at or near optimum.

Compaction of Fill: After each layer has been evenly spread, moisture conditioned, and mixed, it shall be uniformly compacted to not less than the minimum compaction specified in the body of this report. Compaction equipment shall be adequately sized and shall be either specifically designed for soil compaction or of proven reliability, to efficiently achieve the specified degree of compaction.

Fill Slopes: Compacting on slopes shall be accomplished, in addition to normal compacting procedures, by backrolling of slopes with sheepsfoot rollers at frequent increments of 2 to 3 feet as the fill is placed, or by other methods producing satisfactory results. At the completion of grading, the relative compaction of the slope out to the slope face shall be at least 90 percent in accordance with ASTM D1557.

Compaction Testing: Field tests to check the fill moisture and degree of compaction will be performed by the consultant. The location and frequency of tests shall be at the consultant's discretion. In general, these tests will be taken at an interval not exceeding 2 feet in vertical rise, and/or 1,000 cubic yards of fill placed. In addition, on slope faces, at least one test shall be taken for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope.

SUBDRAIN INSTALLATION

Subdrain systems, if required, shall be installed in approved ground to conform to the approximate alignment and details shown on the plans or herein. The subdrain location or materials shall not be changed or modified without the approval of the Consultant. The Consultant, however, may recommend and, upon approval, direct changes in subdrain line, grade or materials. All subdrains should be surveyed for line and grade after installation and sufficient time shall be allowed for the surveys, prior to commencement of fill over the subdrain.

should be surveyed for line and grade after installation and sufficient time shall be allowed for the surveys, prior to commencement of fill over the subdrain.

EXCAVATION

Excavations and cut slopes will be examined during grading. If directed by the Consultant, further excavation or overexcavation and refilling of cut areas, and/or remedial grading of cut slopes shall be performed. Where fill over cut slopes are to be graded, unless otherwise approved, the cut portion of the slope shall be made and approved by the Consultant prior to placement of materials for construction of the fill portion of the slope.

Appendix D

Paleontological Records Search

SAN DIEGO NATURAL HISTORY MUSEUM

2 February 2020

Dr. Michael Williams
Dudek
605 Third Street
Encinitas, CA 92024

RE: Paleontological Records Search – Richland Elementary School Reconstruction

Dear Dr. Williams:

This letter presents the results of a paleontological records search conducted for the Richland Elementary School Reconstruction project (Project), located in the City of San Marcos, San Diego County, California. The Project site is bordered to the east by Richland Road, to the southeast by Borden Road, to the southwest by Rose Ranch Road, and to the northwest by existing residential development and vacant land.

Methods

A review of published geological maps covering the Project site and surrounding area was conducted to determine the specific geologic units underlying the Project site. Each geologic unit was subsequently assigned a paleontological resource sensitivity (Deméré and Walsh, 1993). In addition, a search of the paleontological collection records housed at the San Diego Natural History Museum (SDNHM) was conducted in order to determine if any documented fossil collection localities occur at the Project site or within the immediate surrounding area.

Results

Published geological reports (e.g., Kennedy and Tan, 2007) covering the Project area indicate that the proposed Project has the potential to impact Mesozoic-age metasedimentary and metavolcanic rocks. This geologic unit and its paleontological sensitivity are summarized below.

The SDNHM does not have any recorded fossil localities that lie within one mile of the Project site.

Mesozoic metasedimentary and metavolcanic rocks – Crystalline basement rocks of early Cretaceous age (approximately 125 to 145 million years old), mapped as Mesozoic metasedimentary and metavolcanic rocks by Kennedy and Tan (2007), underlie the entire Project site. The metavolcanic portions of this unit rarely preserve fossils due to the high temperatures associated with their formation, although some of the volcanic breccias have produced petrified wood. The metasedimentary portions have the potential to yield fossils, including siliceous microfossils (e.g., radiolarians) and marine macroinvertebrates (e.g., clams and belemnites). The lack of nearby localities from these deposits indicates that fossil recovery is unlikely, so the geologic unit as a whole is assigned a low paleontological sensitivity in the vicinity of the Project site.

Summary and Recommendations

The low paleontological sensitivity of the geologic unit underlying the Project site suggests that construction of the proposed Project is unlikely to result in significant impacts to paleontological resources. Therefore, implementation of a paleontological resource mitigation program is not recommended.

If you have any questions concerning these findings please feel free to contact me at 619-255-0264 or kmccomas@sdnhm.org.

Sincerely,

Katie McComas, M.S.
Paleontological Report Writer & GIS Specialist
San Diego Natural History Museum

Enc: Figure 1: Project map

Literature Cited

Deméré, T.A., and S.L. Walsh. 1993. Paleontological Resources, County of San Diego. Unpublished technical report prepared for the San Diego County Department of Public Works: 1–68.

Kennedy, M.P., and Tan, S.S. 2007. Geologic Map of the Oceanside 30' x 60' Quadrangle, California. California Geological Survey, Regional Geologic Map Series 1:100,000 scale, map no. 2.

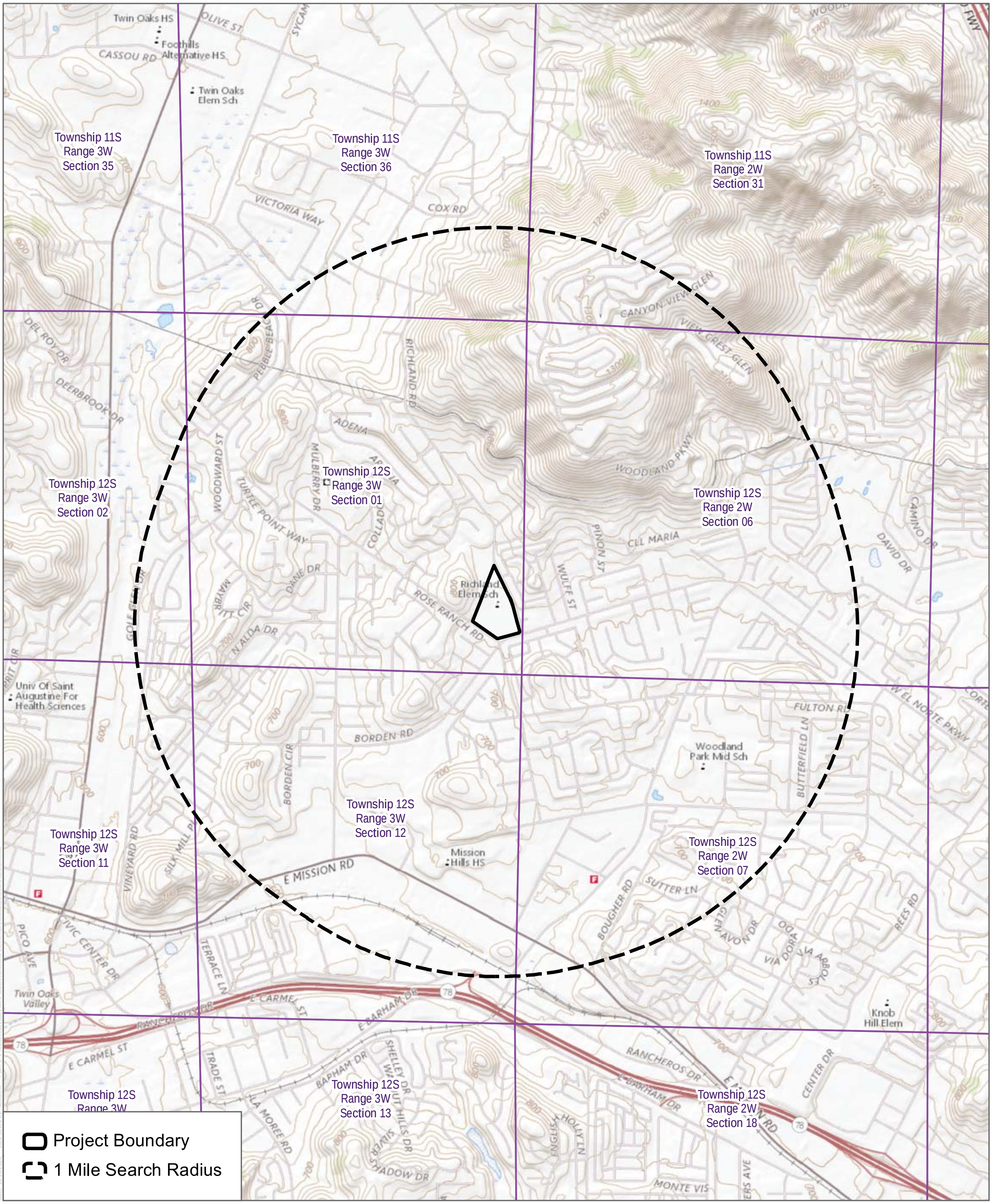
San Diego Natural History Museum (SDNHM), unpublished paleontological collections data.

Sources: World Transportation, World Imagery, and Terrain Hillshade, Esri et al., 2021

PALEOSERVICES
SAN DIEGO NATURAL HISTORY MUSEUM

Figure 1: Project Map

Richland Elementary School Reconstruction
City of San Marcos, San Diego County, California



SOURCE: USGS National Map 2020
San Marcos and Valley Centeri Quadrangles

FIGURE 1

Records Search

SMUSD Richland Elementary School Reconstruction Project

DUDEK

January 27, 2021 13115

Katie McComas
San Diego Natural History Museum

Subject: Paleontological Record Search Request, Richland Elementary School Reconstruction Project, City of San Marcos, San Diego County, California

Dear Katie,

Dudek has been retained by San Marcos Unified School District (District) to conduct a cultural and paleontological resources study in support of the Richland Elementary School Reconstruction Project (proposed project) to determine whether the proposed project will encroach on previously investigated fossil localities. The District is requesting a review of the paleontological localities maintained by your office.

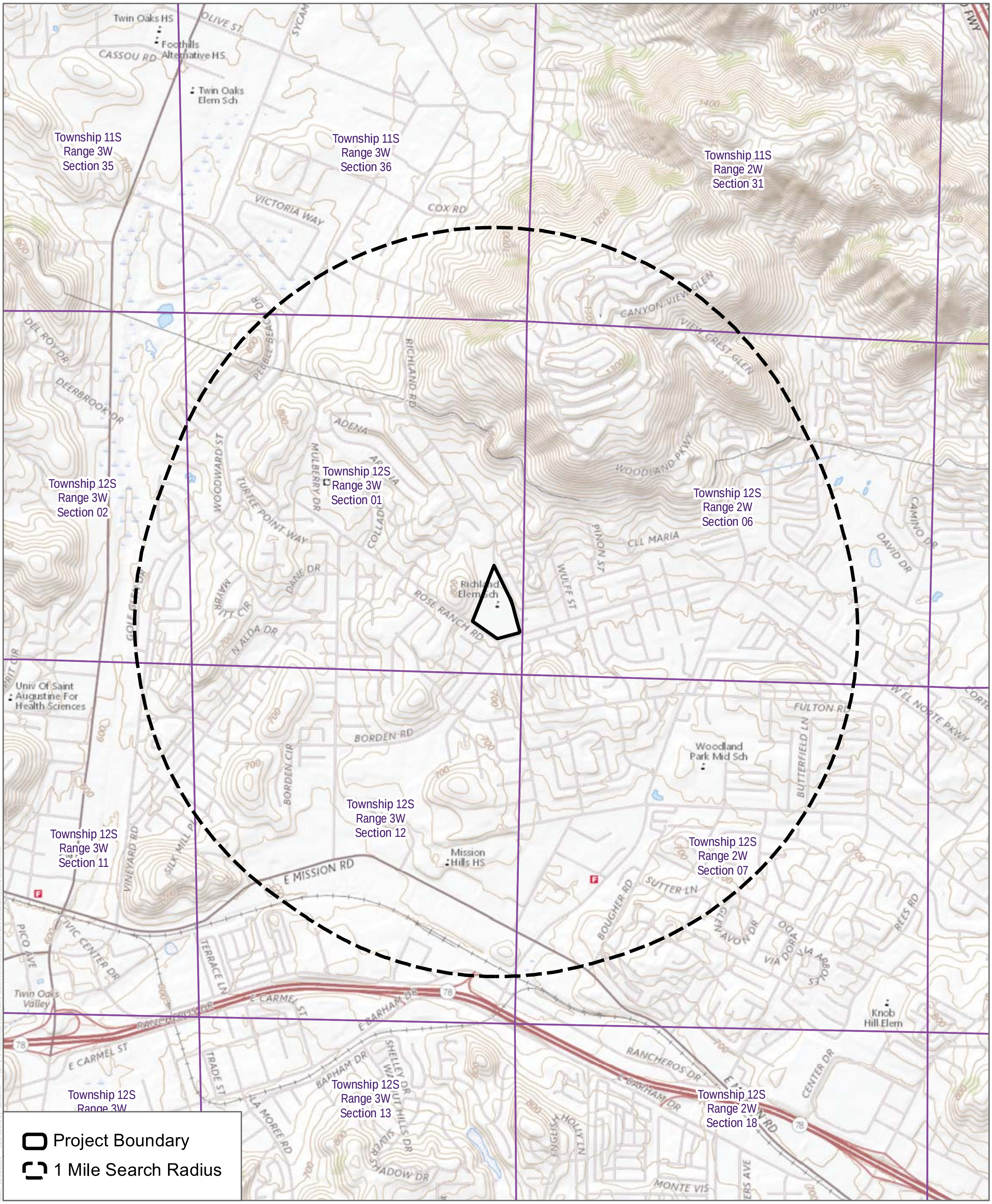
To facilitate the review, I have attached a map with the proposed project location and a one-mile radius buffer (Base map: San Marcos 7.5′ Topographic Quadrangle). Please conduct a review of the proposed project area, including the one-mile radius buffer, and provide a list of fossil localities within or nearby the proposed project boundaries. An invoice may be sent to my attention, Mike Williams (mwilliams@dudek.com) or Sarah Siren (ssiren@dudek.com), at your earliest convenience.

Thank you and if I can be of any further assistance, please call or email.

Sincerely,

Michael Williams

Michael Williams, Ph.D.
Senior Paleontologist
Dudek
(225) 892-7622
mwilliams@dudek.com



SOURCE: USGS National Map 2020
San Marcos and Valley Centeri Quadrangles

DUDEK

FIGURE 1

Records Search

SMUSD Richland Elementary School Reconstruction Project

Appendix E

Noise Technical Report

DRAFT

NOISE TECHNICAL REPORT for the Richland Elementary School Reconstruction Project San Marcos Unified School District City of San Marcos, California

Prepared for:

San Marcos Unified School District
255 Pico Ave, Ste 250
San Marco, California 92069
Contact: Ms. Tova Corman

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Connor Burke
760.479.4272

DECEMBER 2020

Printed on 30% post-consumer recycled material.

Table of Contents

SECTION **PAGE NO.**

APPENDICES

FIGURES

TABLES

Acronymns

Acronym	Definition
CEQA	California Environmental Quality Act
City	City of San Marcos
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibels
kph	kilometers per hours
L_{dn}	day-night average sound level
L_{eq}	equivalent sound level
L_{max}	maximum sound level during the measurement interval
mph	miles per hour
PPV	peak particle velocity
Project	Richland Elementary School Reconstruction Project
RCNM	Roadway Construction Noise Model
VdB	velocity decibel

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Summary

The proposed Richland Elementary School Reconstruction Project (Project) would involve demolition of the existing school and construction of new school facilities. The site would be redesigned to include several non-contiguous facility buildings, including construction of five new buildings, including three single-story and two 2-story buildings

The noise environment in the Project area is characterized by background, or “ambient,” noise generated by distant traffic, birds, rustling leaves, and occasional barking dogs. The noise assessment in this report quantifies construction and operational noise generation and the resulting noise levels at adjacent noise-sensitive receptors.

Demolition activities and construction of the proposed Project would result in temporary localized increases in noise levels from on-site construction equipment and off-site trucks hauling construction materials. Noise generated by construction equipment would occur with varying intensities and durations during demolition and the various phases of construction. Section 5.3 of this report discusses the construction noise impacts in detail. Groundborne vibration from heavy equipment during Project construction is discussed in Section 5.3 of this report. Following completion of construction activities, the Project would not result in increased noise levels from mobile sources (vehicular traffic) or from on-site activities since student capacity, faculty and staff numbers, and on-site activities would remain as they currently are. Section 5.3 of this report discusses operational noise impacts in detail.

This noise impact analysis evaluates the potential for significant adverse impacts due to demolition, construction, and operation of the proposed Project. Potential noise impacts during demolition, construction, and operation were determined to be less than significant; therefore, no mitigation would be required.

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1 Introduction

1.1 Purpose

The purpose of this report is to estimate and evaluate the potential noise and vibration impacts associated with implementation of the proposed Richland Elementary School Reconstruction Project (Project) relative to the significance thresholds and noise and vibration standards of the City of San Marcos (City).

1.2 Project Location

The Project is located at 910 Borden Road in the City of San Marcos (City), California (Figure 1, Project Location).

1.3 Project Description

The proposed Project would involve demolition of the existing school and construction of new school facilities (Figure 2, Site Plan). Specifically, the proposed Project would reconfigure uses on the Project site to locate open lawn/fields along Borden Road and consolidate buildings towards the western portion of the Project site. The parking area would be moved from the southern portion of the Project site to the eastern portion of the Project site.

The Project includes the following components:

- Demolition of the existing school buildings
- Construction of five new buildings, including three single-story and two, 2-story buildings
- A total of 91,477 square feet (including internal hallways)
- 44 classrooms, including a new Maker's space
- Reconfiguration of parking and drop off areas for a total of 117 parking spaces
- New play structures, play fields and a raised garden area

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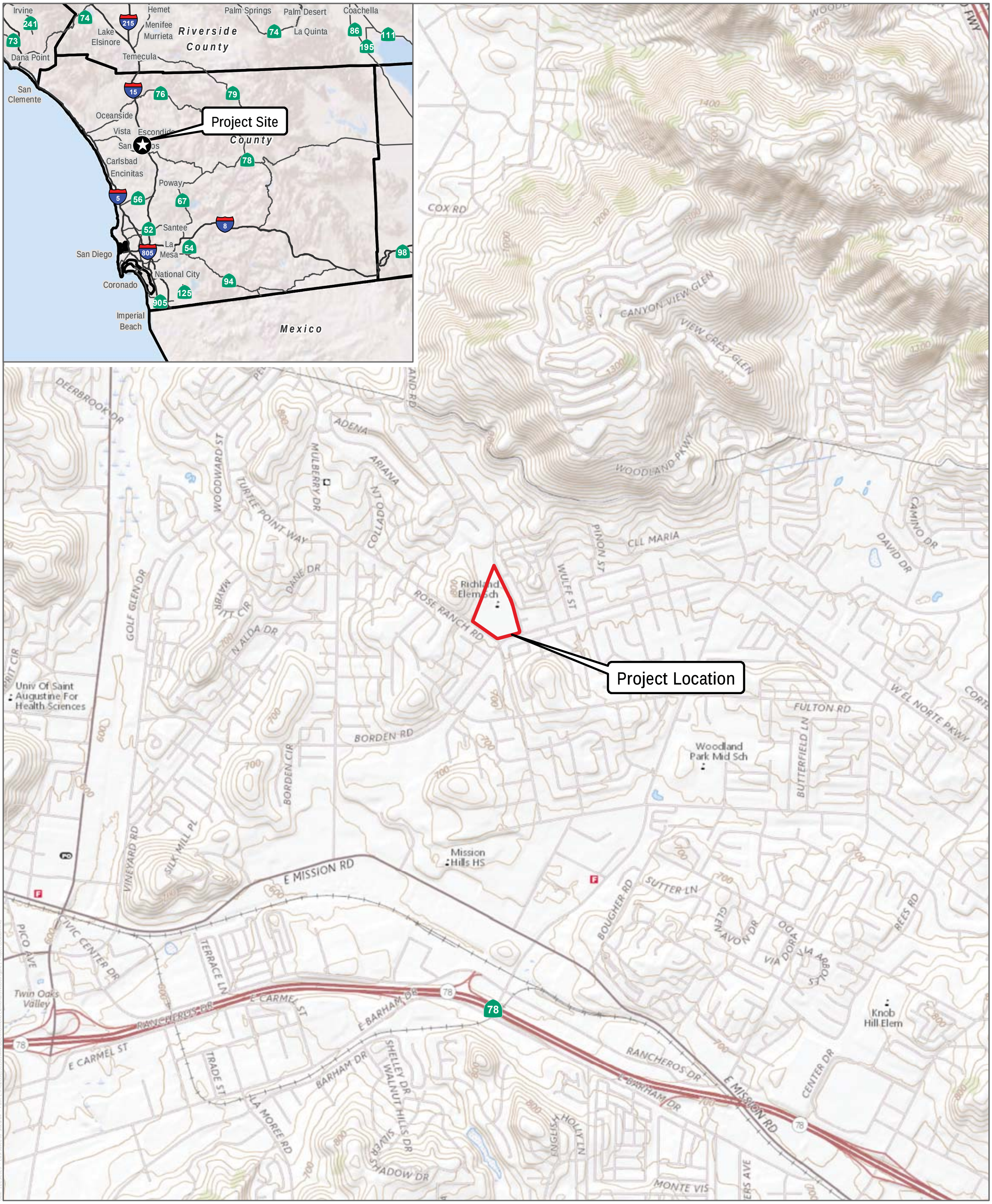

SOURCE: USGS National Map San Marcos Quadrangle

0 1,000 2,000 Feet

FIGURE 1

Project Location

SMUSD Richland Elementary School Reconstruction Project

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SOURCE: SANGIS 2017

DUDEK

0 50 100 Feet

FIGURE 2

Site Plan

SMUSD Richland Elementary School Reconstruction Project

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2 Fundamentals of Noise and Vibration

Following is a brief discussion of fundamental noise concepts and terminology.

2.1 Sound, Noise, and Acoustics

Sound is a process that consists of three components: The sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Similarly, without a medium to transmit sound pressure waves, there is no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receptors rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired.

2.2 Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases with increasing amplitude. Sound pressure amplitude is measured in units of micronewtons per square meter, also called micropascals. One micropascal is approximately one-hundred billionth (0.00000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million micropascals, or 10 million times the pressure of the weakest audible sound. Because expressing sound levels in terms of micropascals would be cumbersome, sound pressure level in logarithmic units is used instead to describe the ratio of actual sound pressure to a reference pressure squared. These units are called Bels. To provide a finer resolution, a Bel is subdivided into 10 decibels (dB).

2.3 A-Weighted Sound Level

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of a sound is a purely physical quantity, the loudness, or human response, is determined by the characteristics of the human ear.

Human hearing is limited not only in the range of audible frequencies, but also in the way it perceives the sound in that range. In general, a healthy human ear is most sensitive to sounds between 1,000 and 5,000 hertz, and it perceives a sound within that range as more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of sound level adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency-dependent.

The A-scale weighting network approximates the frequency response of the average young ear when listening to ordinary sounds. When people make judgments about the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound level of that sound. Other weighting networks have been devised to address high noise levels or other special situations (e.g., B-scale, C-scale, D-scale), but these scales are rarely used in conjunction with most environmental noise. Noise levels are typically reported in terms of A-weighted sound levels. All sound levels discussed in this report are A-weighted decibels (dBA). Examples of typical noise levels for common indoor and outdoor activities are depicted in Table 1.

Table 1. Typical Sound Levels in the Environment and Industry

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
—	110	Rock band
Jet flyover at 300 meters (1,000 feet)	100	—
Gas lawn mower at 1 meter (3 feet)	90	—
Diesel truck at 15 meters (50 feet), at 80 kph (50 mph)	80	Food blender at 1 meter (3 feet) Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime gas lawn mower at 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area Heavy traffic at 90 meters (300 feet)	60	Normal speech at 1 meter (3 feet)
Quiet urban daytime	50	Large business office Dishwasher, next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural night time	20	Bedroom at night, concert hall (background)
—	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2013.
kph = kilometers per hour; mph = miles per hour

2.4 Human Response to Changes in Noise Levels

Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 dBA when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA. A change of 5 dBA is readily perceptible, and a change of 10 dBA is perceived as twice or half as loud. A doubling of sound energy results in a 3 dBA increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a road) would result in a barely perceptible change in sound level).

2.5 Noise Descriptors

Additional units of measure have been developed to evaluate the long-term characteristics of sound. The equivalent sound level (L_{eq}) is also referred to as the time-average sound level. It is the equivalent steady-state sound level that in a stated period of time would contain the same acoustical energy as the time-varying sound level during the same time period. The 1-hour A-weighted equivalent sound level, $L_{eq}(h)$, is the energy average of the A-weighted sound levels occurring during a 1-hour period, and is the basis for the City's noise ordinance criteria.

People are generally more sensitive and annoyed by noise occurring during the evening and nighttime hours. Thus, another noise descriptor used in community noise assessments — the community noise equivalent level (CNEL) — was introduced. The CNEL scale represents a time-weighted, 24-hour average noise level based on the A-weighted sound level. CNEL accounts for the increased noise sensitivity during evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding 5 dBA and 10 dBA, respectively, to the average sound levels occurring during evening and nighttime hours.

2.6 Sound Propagation

Sound propagation (i.e., the passage of sound from a noise source to a receiver) is influenced by geometric spreading, ground absorption, atmospheric effects, and shielding by natural and/or built features.

Sound levels attenuate (or diminish) at a rate of approximately 6 dBA per doubling of distance from an outdoor point source due to the geometric spreading of the sound waves. Atmospheric conditions such as humidity, temperature, and wind gradients can also temporarily either increase or decrease sound levels. In general, the greater the distance the receiver is from the source, the greater the potential for variation in sound levels due to atmospheric effects. Additional sound attenuation can result from built features such as intervening walls and buildings, and by natural features such as hills and dense woods.

2.7 Groundborne Vibration Fundamentals

Groundborne vibration is a small, rapidly fluctuating motion transmitted through the ground. The strength of groundborne vibration attenuates fairly rapidly over distance. Some soil types transmit vibration quite efficiently; other types (primarily sandy soils) do not. Several basic measurement units are commonly used to describe the intensity of ground vibration. The descriptors used by the Federal Transit Administration are peak particle velocity (PPV), in units of inches per second, and velocity decibel (VdB). The calculation to determine PPV at a given distance is as follows:

$$PPV_{dist} = PPV_{ref}*(25/D)^{\wedge}1.5$$

Where:

PPV_{dist} = the peak particle velocity in inches per second of the equipment adjusted for distance

PPV_{ref} = the reference vibration level in inches per second at 25 feet

D = the distance from the equipment to the receiver

The velocity parameter (instead of acceleration or displacement) best correlates with human perception of vibration. Thus, the response of humans, buildings, and sensitive equipment to vibration is described in this section in terms of the root-mean square velocity level in VdB units relative to 1 micro-inch per second. As a point of reference, the average person can just barely perceive vibration velocity levels of less than 70 VdB (typically in the vertical direction). The calculation to determine the root-mean square at a given distance is as follows:

$$L_v(D) = L_v(25\text{ feet}) - 30*\log(D/25)$$

Where:

$L_v(D)$ = the vibration level at the receiver

$L_v(25\text{ feet})$ = the reference source vibration level

D = the distance from the vibration activity to the receiver

Typical background vibration levels are between 50 and 60 VdB, and the level for minor cosmetic damage to fragile buildings or blasting generally begins at 100 VdB.

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3 Regulatory Setting

3.1 Federal

There are no applicable federal regulations related to noise that would apply to this Project.

3.2 State

Government Code Section 65302(g)

California Government Code Section 65302(g) requires preparation of a Noise Element that identifies and appraises noise problems within a community. The Noise Element must recognize the guidelines adopted by the Office of Noise Control in the State Department of Health Services, and must quantify, to the extent practicable, current and projected noise levels for the following sources:

- Highways and freeways
- Primary arterials and major local streets
- Passenger and freight on-line railroad operations and ground rapid-transit systems
- Aviation and airport-related operations
- Local industrial plants
- Other ground stationary noise sources contributing to the community's noise environment

California Department of Transportation

In its Transportation and Construction Vibration Guidance Manual, Caltrans recommends a vibration velocity threshold of 0.2 ips PPV (Caltrans 2013b) for assessing annoying vibration impacts to occupants of residential structures. Although this Caltrans guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the local jurisdictional level. Similarly, thresholds to assess building damage risk due to construction vibration vary with the type of structure and its fragility but tend to range between 0.2 ips and 0.3 ips PPV for typical residential structures (Caltrans 2013b).

3.3 Local

The proposed Project is located in the City of San Marcos, and therefore the City of San Marcos' noise element and noise ordinance criteria apply. The City's noise element is contained within the City of San Marcos General Plan (City of San Marcos 2012). The noise/land use compatibility standards within the City's noise element are intended to be applicable for land use designations exposed to noise levels generated by transportation-related sources and use the CNEL/day-night average sound level (L_{dn}) noise descriptors. The exterior noise level standard for Category A land uses (single family residences, mobile homes, senior/age-restricted housing) is 60 dB CNEL and the interior noise level standard is 45 dB CNEL. The exterior noise level standard for Category B land uses (multifamily residential and mixed-use) is 65 CNEL, and the interior noise standard is 45 CNEL. The noise level standard for Category E land uses (which includes passive recreational parks, nature preserves, and contemplative spaces) is

65 CNEL. These are operational noise standards for transportation noise sources, and are not applicable to construction activity noise, but are included for informational purposes.

The City's noise ordinance (Chapter 10.24 of the San Marcos Municipal Code) prohibits loud, annoying, or unnecessary noises. It provides definitions and examples of prohibited noise sources but does not establish numeric noise thresholds for transportation related (e.g., vehicle, railroad, aircraft traffic) or non-transportation related (e.g., air conditioner units, loading docks, construction) noise sources. Specifically, subsection 9 of Section 10.24.020b (Definitions and Examples of Prohibited Noise) states:

> Erection or demolition of buildings, excluding owner resident additions or remodeling, and the grading and excavation of land including the use of blasting, the start up and use of heavy equipment such as dump trucks and graders and the use of jack hammers except on week days Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays 8:00 a.m. to 5:00 p.m. The City Manager may waive any or all of the provisions of this subsection in cases of urgent necessity, or in the interest of public health and safety. The provisions of this subsection may also be waived or modified pursuant to a Conditional Use Permit or other development entitlement processed and issued in accordance with the applicable City requirements and procedures (Ord. No. 2008-1300; 2/26/08).

Table 20.300-4, Noise Standards by Zone, is contained in Chapter 20.300, Section F, of the San Marcos Municipal Code (Title 20, Zoning Ordinance), and are provided here in Table 2. These are operational noise standards for non-transportation noise sources, and thus are applicable to on-site operational noise (for example, from mechanical equipment).

Table 2. City of San Marcos Noise Ordinance Standards

Zone	Allowable Noise Level (dBA) Measured from the Property Line
Single-Family Residential (A, R-1, R-2)	
7 a.m. to 10 p.m. (daytime)	60
10 p.m. to 7 a.m. (overnight)	50
Multifamily Residential (R-3)	
7 a.m. to 10 p.m. (daytime)	65
10 p.m. to 7 a.m. (overnight)	55
Commercial (C, O-P, SR)	
7 a.m. to 10 p.m. (daytime)	60
10 p.m. to 7 a.m. (overnight)	55
Industrial	
7 a.m. to 10 p.m. (daytime)	65
10 p.m. to 7 a.m. (overnight)	60

Source: City of San Marcos Zoning Code, Chapter 20.300 of Municipal Code

4 Existing Conditions

The Project site is located at the existing Richland Elementary School in the City of San Marcos. Major streets surrounding the campus are Rose Ranch Road, Borden Road, and Richland Road; residential land uses exist to the north, south, east, and west. Noise sources include distant traffic, birds, rustling leaves, and occasional barking dogs.

4.1 Ambient Noise Monitoring

SPL measurements were conducted near the Project site on November 18, 2020, to quantify and characterize the existing outdoor noise levels. Table 3 provides the location, date, and time at which these baseline noise level measurements were taken. The SPL measurements were performed by an attending Dudek field investigator using a Rion NL-52 sound level meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter (SLM). The accuracy of the SLM was verified using a reference sound signal (i.e., field calibrator) before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Five (5) short-term noise level measurement locations (ST1–ST5) that represent the vicinities of existing sensitive receivers were selected on and near the Project site. These locations are depicted as receivers ST1–ST5 on Figure 3, Noise Measurement Locations. The L_{eq} and L_{max} noise levels are provided in Table 3. The primary noise sources at the sites identified in Table 3 consisted of traffic along adjacent roadways, the sounds of leaves rustling, and birdsong. As shown in Table 3, the measured sound levels ranged from approximately 49.7 dBA L_{eq} at ST1 to 61.1 dBA L_{eq} at ST4. Noise measurement data is also included in Appendix A, Baseline Noise Measurement Field Data. These samples of daytime L_{eq} measured at the five representative receptor positions in Table 3 can be interpreted as approximations of CNEL, since evening SPL would likely be 5 dBA less, and nighttime SPL would be 10 dBA less than the daytime values (FTA 2006).

Table 3. Measured Baseline Outdoor Noise Levels

Receptor	Location/Address	Date & Time	L_{eq} (dBA)	L_{max} (dBA)
ST1	East of 924 Richland Rd San Marcos, CA 92069	2020-11-18, 09:25 AM to 09:35 AM	49.7	58.2
ST2	North of 855 Rose Ranch Rd San March, CA 92069	2020-11-18, 08:45 AM to 08:50 AM	59.9	73.8
ST3	Northwestern property line of 904 Wasatch Place San Marcos, CA 92069	2020-11-18, 09:15 AM to 09:25 AM	56.7	68.7
ST4	Southern edge of Front Street (entrance to mobile homes)	2020-11-18, 09:30 AM to 09:40 AM	61.1	74.9
ST5	Western property line of 904 Wasatch Place San Marcos, CA 92069	2020-11-18, 09:00 AM to 09:10 AM	59.3	70.1

Source: Appendix A.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dBA = A-weighted decibels; ST = short-term noise measurement locations.

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SOURCE: SANGIS 2017

FIGURE 3

Noise Measurement Locations

SMUSD Richland Elementary School Reconstruction Project

DUDEK

0 50 100 Feet

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5 Project Impact Analysis

5.1 Methodology

The noise assessment in this report quantifies construction and operational noise generation and the resulting noise levels at noise-sensitive receptors in the vicinity of the Project site. Assumptions regarding construction activities, construction equipment, and duration of construction activities are based on information provided by the applicant and from similar projects.

The operational noise impact assessment is based on a review of Project information provided by the applicant. Ambient noise measurements were conducted to quantify the existing daytime noise environment at the site. The criteria established in the City's General Plan and Municipal Code were used to determine the significance of potential noise impacts. Noise calculations are contained in Appendix B.

5.2 Thresholds of Significance

The following significance criteria are based on Appendix G of the California Environmental Quality Act Guidelines (14 CCR 15000 et seq.) and will be used to determine the significance of potential noise impacts. Impacts to noise would be significant if the proposed Project would result in the following:

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
b. Generation of excessive groundborne vibration or groundborne noise levels
c. Expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport)

In light of these above significance criteria, this analysis uses the following standards to evaluate potential noise and vibration impacts.

- Construction noise – The City's noise ordinance states noise from construction equipment operation shall not include the erection or demolition of buildings, excluding owner resident additions or remodeling, and the grading and excavation of land including the use of blasting, the start-up and use of heavy equipment such as dump trucks and graders and the use of jack hammers except on week days Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays 8:00 a.m. to 5:00 p.m. For purposes of this analysis, a direct construction noise impact would be considered significant if construction occurs outside of these hours.
- Off-site project-attributed transportation noise – For purposes of this analysis, a direct roadway noise impact would be considered significant if increases in roadway traffic noise levels attributed to the proposed Project were greater than 3 dBA CNEL at an existing noise-sensitive land use.
- Off-site project-attributed stationary noise – For purposes of this analysis, a noise impact would be considered significant if noise from typical operation of heating, ventilation, and air conditioning and other

electro-mechanical systems associated with the proposed Project exceeded 60 dBA hourly L_{eq} at the property line from 7:00 a.m. to 9:59 p.m., and 50 dBA hourly L_{eq} from 10:00 p.m. to 6:59 a.m.

- Construction vibration – Guidance from Caltrans indicates that a vibration velocity level of 0.2 ips PPV received at a structure would be considered annoying by occupants within (Caltrans 2013b). As for the receiving structure itself, aforementioned Caltrans guidance from Section 3 recommends that a vibration level of 0.3 ips PPV would represent the threshold for building damage risk. For purposes of this analysis, a vibration impact would be considered significant if these thresholds are exceeded.

5.3 Impact Discussion

a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Short-Term Construction

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor.

Equipment that would be in use during construction would include, in part, graders, scrapers, backhoes, rubber-tired dozers, loaders, cranes, forklifts, cement mixers, pavers, rollers, and air compressors. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 4. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the listed maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 4. Typical Construction Equipment Maximum Noise Levels

Equipment Type	Typical Equipment (L_{max}, dBA at 50 Feet)
Air compressor	78
Backhoe	78
Concrete pump truck	81
Concrete Saw	90
Grader	85
Crane	81
Dozer	82
Excavator	81
Generator	72
Front End Loader	79
Paver	77
Pneumatic tools	85
Welder	74

Source: DOT 2006.
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from proposed Project construction activities, broken down by sequential phase, was predicted at two distances to the nearest existing noise-sensitive receptor: 1) from the nearest position of the construction site boundary and 2) from the geographic center of the construction site, which serves as the time-averaged location or geographic *acoustical centroid* of active construction equipment for the phase under study. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary for some period of time, which would be most appropriate for phases such as site preparation, grading, and paving. The latter distance is used in a manner similar to the general assessment technique as described in the FTA guidance for construction noise assessment, when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety of) the construction site area. Because of this uncertainty, all the equipment for a construction phase is assumed to operate—on average—from the acoustical centroid. Table 5 summarizes these two distances to the apparent closest noise-sensitive receptor for each of the five sequential construction phases. At the site boundary, this analysis assumes that up to only one piece of equipment of each listed type per phase will be involved in the construction activity for a limited portion of the 8-hour period. In other words, at such proximity, the operating equipment cannot "stack" or crowd the vicinity and still operate. For the acoustical centroid case, which intends to be a geographic average position for all equipment during the indicated phase, this analysis assumes that the equipment may be operating up to all eight hours per day.

Table 5. Estimated Distances between Construction Activities and the Nearest Noise-sensitive Receptors

Construction Phase (and Equipment Types Involved)	Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet)	Distance from Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (Feet)
Demolition (concrete saw, excavator, dozer	60	250
Site preparation (backhoe, dozer)	60	250
Grading (grader, dozer, backhoe, excavator)	60	250
Building construction (crane, man-lift, generator, backhoe, welder/torch)	60	250
Architectural finishes (air compressor)	60	250
Paving (paver, roller, concrete mixer truck, backhoe, other equipment)	60	250

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 5), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. Conservatively, no topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Appendix B, Construction Noise Modeling Input and Output, and produce the predicted results displayed in Table 6.

Table 6. Predicted Construction Noise Levels per Activity Phase

Construction Phase (and Equipment Types Involved)	8-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA)	8-Hour L_{eq} at Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (dBA)
Demolition (concrete saw, excavator, dozer	83.4	72.8
Site preparation (backhoe, dozer)	77.9	70.7
Grading (grader, dozer, backhoe, excavator)	82.7	71.0
Building construction (crane, man-lift, generator, backhoe, welder/torch)	76.3	66.8
Architectural finishes (air compressor)	71.2	58.8
Paving (paver, roller, concrete mixer truck, backhoe, other equipment)	81.6	71.6

Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 6, the estimated construction noise levels are predicted to be as high as 83 dBA L_{eq} over an 8-hour period at the nearest occupied property (as close as 60 feet away) when demolition activities take place near the western Project boundaries. Note that these estimated noise levels at a source-to-receiver distance of 60 feet are conservatively high, in that they presume the noted pieces of heavy equipment would each operate, on average at this distance, for a cumulative period of eight hours a day. The reality of construction progress on-site would likely be different. By way of example, a grader might make multiple passes on site that are this close to a receiving occupied property; but, for the remaining time during the day, the grader is sufficiently farther away and either performing work at a more distant location or simply not operating. Other processes and/or equipment, such as a continuously operating air compressor at a fixed installation position, could be expected to produce noise at a fairly constant level over the entire 8-hour period. Hence, for these instances when operation of construction equipment and processes are sufficiently proximate, activity noise levels are predicted to be as high as 83 dBA L_{eq}. Although the City of San Marcos does not enforce a threshold for construction noise exposure over an 8-hour period at the property line, the following practices have been incorporated into the Project's construction program as project design features (**PDF-1**):

- Administrative controls (e.g., reduce operating time of equipment and/or prohibit usage of equipment type[s] within certain distances to a nearest receiving occupied off-site property).
- Engineering controls (upgrade noise controls, such as install better engine exhaust mufflers).
- Install noise abatement on the site boundary fencing (or within, as practical and appropriate) in the form of sound blankets or comparable temporary barriers to occlude construction noise emission between the site (or specific equipment operation as the situation may define) and the noise-sensitive receptor(s) of concern.

The above design features shall be implemented as indicated site conditions may warrant. Proper application of temporary noise barriers or comparable sound abatement can feasibly reduce noise levels by at least 8 dB, which would correspondingly reduce the predicted 83 dBA 8-hour L_{eq} for the site preparation to 75 dBA L_{eq}.

It is anticipated that construction activities associated with the proposed Project would take place only Monday through Friday between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays 8:00 a.m. to 5:00 p.m., in compliance with the City's noise ordinance. Therefore, temporary construction-related noise impacts would be **less than significant.**

Long-Term Operational

Increase of Off-Site Roadway Traffic Noise

Based on information provided by the District, the newly designed and constructed elementary school would not result in an increase in traffic noise, since the new school would not increase or permit an increase in the number of students, teachers, administrators, or other staff. Thus, the same number of vehicle trips would occur either with or without the Project, under existing and future traffic years, and related traffic noise would also be equivalent either with or without the Project. Therefore, impacts would be **less than significant**.

Stationary Operations Noise

The proposed Project would result in construction of non-contiguous buildings, as described in Section 1.3. Although the Project site would be reconfigured and modernized, the essential components of the Project (e.g., indoor classrooms, outdoor activity areas) and the nature of the activities that occur on site would be almost equivalent to existing conditions, as shown in Figure 2. The proposed Project has an addition of 3,701 square feet of building space and one additional classroom, but two fewer buildings. Additionally, the number of students, teachers, administrators, and other staff would not increase as a result of the proposed Project. The play field area, for example, would be relocated from the current location on the west side of the Project site to the southeast quadrant of the Project site; however, the distances from the nearest residences to the play field would be equivalent or slightly greater for the new site design than under existing conditions.

Most of these noise-producing equipment or sound sources would be considered stationary or limited in mobility to a defined area. Using a Microsoft Excel–based outdoor sound propagation prediction model, project-attributed operational noise at nearby community receptors was predicted on the assumption that noise-producing equipment are point-type sources with point-source geometric divergence (i.e., 6 dB noise reduction per doubling of distance) that conservatively ignores acoustical absorption from atmospheric and ground surface effects. Please see Appendix C for quantitative details of the below predictions.

Facility Unit Heating, Ventilation, and Air Conditioning Noise

According to its mechanical roof plan and schedule, the proposed Project would feature fifty-five (55) Carrier rooftop package units (RTU), spread across the five buildings roofs. Using the overall sound levels appearing on the Carrier product data sheets (Carrier, 2020), these distinct units of rooftop HVAC equipment individually have a sound emission source level between 68 dBA and 70 dBA at 3 feet. The proposed Project site plan suggests that the RTU units would be installed behind screening walls. The closest existing noise-sensitive residential receptor to the west of the proposed Project's building would be as close as approximately 150 horizontal feet to what would be an arrangement of up to 4 RTU units. However, due to the higher relative elevation of the sources on the roof and sound occlusion of the noise wall, and their horizontal distances away from the noise sensitive receivers as modeled, the predicted sound emission level from the combination of these units would be no more than 44 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 50 dBA hourly L_{eq}. Please see Appendix C, Facility HVAC Noise Prediction, for a graphical display of the predicted aggregate noise level from these units, superimposed on an aerial image of the expected layout of the HVAC equipment and proposed Project building and the proximate neighboring residences to the west. It is also noted that these units are turned off each night, every day and off on the weekends. Under such conditions, the operation of residential air-conditioning units would result in **less-than-significant** noise impacts.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities (Caltrans 2013b). Information from Caltrans indicates that continuous vibrations with a PPV of approximately 0.2 ips is considered annoying. For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the Project site, have peak particle velocities of approximately 0.089 ips or less at a reference distance of 25 feet (DOT 2006).

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance. By way of example, for a bulldozer operating on site and as close as the western Project boundary (i.e., 60 feet from the nearest occupied property) the estimated vibration velocity level would be 0.024 ips per the equation as follows (FTA 2006):

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.089 * (25/60)^{1.5} = 0.024 \text{ ips}$$

In the above equation, PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and D is the actual horizontal distance to the receiver. Therefore, at this predicted PPV, the impact of vibration-induced annoyance to occupants of nearby existing homes would be less than significant.

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, anticipated construction vibration associated with the proposed Project would yield levels of 0.024 ips, which do not surpass the guidance limit of 0.2 to 0.3 ips PPV for preventing damage to residential structures (Caltrans 2013b). Because the predicted vibration level at 60 feet is less than this guidance limit, the risk of vibration damage to nearby structures is considered less than significant.

Once operational, the proposed Project would not be expected to feature major producers of groundborne vibration. Anticipated mechanical systems like heating, ventilation, and air-conditioning units are designed and manufactured to feature rotating (fans, motors) and reciprocating (compressors) components that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, potential vibration impacts due to proposed Project operation would be **less than significant.**

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

There are no private airstrips within the vicinity of the Project site. The closest airport to the Project site is the McClellan Palomar Airport, approximately 7.8 miles southwest of the site. According to the Comprehensive Land Use for McClellan-Palomar Airport the Project site is not located within a noise exposure contour and would therefore not expose people residing or working in the Project area to excessive noise levels (SANDAG 1994). Impacts from aviation overflight noise exposure would be **less than significant.**

6 Mitigation Measures

The results indicate that potential impacts during construction and operation would be less than significant. No mitigation is required with proper implementation of the proposed Project design features.

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7 References

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FTA (Federal Transit Administration). 2006. Transit Noise and Vibration Impact Assessment. Final Report. FTA-VA-90-1003-06. May 2006.

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Appendix A

Baseline Noise Measurement Field Data

DUDEK FORMS FIELD DATA REPORT

Field Noise Measurement Data

Record: 1316

Project Name	*Richland elementary*
Observer(s)	*Connor Burke*
Date	*2020-11-18*

Meteorological Conditions

Temp (F)	*57*
Humidity % (R.H.)	*63*
Wind	*Calm*
Wind Speed (MPH)	*1*
Wind Direction	*East*
Sky	*Sunny*

Instrument and Calibrator Information

Instrument Name List	*(ENC) Rion NL-52*
Instrument Name	*(ENC) Rion NL-52*
Instrument Name Lookup Key	*(ENC) Rion NL-52*
Manufacturer	*Rion*
Model	*NL-52*
Serial Number	*553896*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name Lookup Key	*(ENC) LD CAL150*
Calibrator Manufacturer	*Larson Davis*
Calibrator Model	*LD CAL150*
Calibrator Serial #	*5152*
Pre-Test (dBA SPL)	*94*
Post-Test (dBA SPL)	*94*
Windscreen	*Yes*
Weighting?	*A-WTD*
Slow/Fast?	*Slow*
ANSI?	*Yes*

Monitoring

Record #	*1*
Site ID	*ST2*
Site Location Lat/Long	*33.154992, -117.142104*
Begin (Time)	*08:45:00*
End (Time)	*08:50:00*
Leq	*59.9*
Lmax	*73.8*
Lmin	*40.9*
Other Lx?	*L90, L50, L10*
L90	*43.6*
L50	*47.60*
L10	*62*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*2*
Site ID	*ST5*
Site Location Lat/Long	*33.155143, -117.139931*
Begin (Time)	*09:00:00*
End (Time)	*09:10:00*
Leq	*59.3*
Lmax	*70.1*
Lmin	*42.8*
Other Lx?	*L90, L50, L10*
L90	*45.9*
L50	*54.7*
L10	*63.9*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic*
Other Noise Sources Additional Description	*Hvac from school*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo

Monitoring

Record #	*3*
Site ID	*ST3*
Site Location Lat/Long	*33.155771, -117.139995*
Begin (Time)	*09:15:00*
End (Time)	*09:25:00*
Leq	*56.7*
Lmax	*68.7*
Lmin	*45.6*
Other Lx?	*L90, L50, L10*
L90	*46.5*
L50	*50*
L10	*60.5*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Kids Playing, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*4*
Site ID	*ST1*
Site Location Lat/Long	*33.157098, -117.141628*
Begin (Time)	*09:25:00*
End (Time)	*09:35:00*
Leq	*49.7*
Lmax	*58.2*
Lmin	*42.5*
Other Lx?	*L90, L50, L10*
L90	*44*
L50	*47.8*
L10	*53*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Birds*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*5*
Site ID	*ST4*
Site Location Lat/Long	*33.157032, -117.140709*
Begin (Time)	*09:30:00*
End (Time)	*09:40:00*
Leq	*61.1*
Lmax	*74.9*
Lmin	*39*
Other Lx?	*L90, L50, L10*
L90	*40*
L50	*49.10*
L10	*63.8*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic, Rustling Leaves*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Appendix B

Construction Noise Modeling Input and Output

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per County = N/A
allowable hours over which Leq is to be averaged (example: 8 for County of San Diego, FTA guidance) = 8

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Concrete Saw	1	20	90		60	88.4	8	480	81
	Excavator	1	40	81		60	79.4	8	480	75
	Dozer	1	40	82		60	80.4	8	480	76
								Total for Demolition Phase:		**83.4**
Site Preparation	Backhoe	1	40	78		60	76.4	8	480	72
	Dozer	1	40	82		60	80.4	8	480	76
								Total for Site Preparation Phase:		**77.9**
Grading	Excavator	1	40	81		60	79.4	8	480	75
	Grader	1	40	85		60	83.4	8	480	79
	Dozer	1	40	82		60	80.4	8	480	76
	Backhoe	1	40	78		60	76.4	8	480	72
								Total for Grading Phase:		**82.7**
Building Construction	Crane	1	16	81		60	79.4	7	420	71
	Man lift	1	20	75		60	73.4	8	480	66
	Generator	1	50	72		60	70.4	8	480	67
	Backhoe	1	40	78		60	76.4	7	420	72
	Welder / Torch	1	40	73		60	71.4	8	480	67
								Total for Building Construction Phase:		**76.3**
Paving	Paver	1	50	77		60	75.4	8	480	72
	Concrete Mixer Truck	1	40	79		60	77.4	6	360	72
	Roller	1	20	80		60	78.4	6	360	70
	All Other Equipment > 5 HP	1	50	85		60	83.4	6	360	79
	Backhoe	1	40	78		60	76.4	8	480	72
								Total for Paving Phase:		**81.6**

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per County = N/A
allowable hours over which Leq is to be averaged (example: 8 for County of San Diego, FTA guidance) = 8

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Concrete Saw	1	20	90		250	76.0	8	480	69
	Excavator	3	40	81		250	67.0	8	480	68
	Dozer	2	40	82		250	68.0	8	480	67
								Total for Demolition Phase:		**72.8**
Site Preparation	Backhoe	4	40	78		250	64.0	8	480	66
	Dozer	3	40	82		250	68.0	8	480	69
								Total for Site Preparation Phase:		**70.7**
Grading	Excavator	1	40	81		250	67.0	8	480	63
	Grader	1	40	85		250	71.0	8	480	67
	Dozer	1	40	82		250	68.0	8	480	64
	Backhoe	3	40	78		250	64.0	8	480	65
								Total for Grading Phase:		**71.0**
Building Construction	Crane	1	16	81		250	67.0	7	420	58
	Man lift	3	20	75		250	61.0	8	480	59
	Generator	1	50	72		250	58.0	8	480	55
	Backhoe	3	40	78		250	64.0	7	420	64
	Welder / Torch	1	40	73		250	59.0	8	480	55
								Total for Building Construction Phase:		**66.8**
Paving	Paver	1	50	77		250	63.0	8	480	60
	Concrete Mixer Truck	2	40	79		250	65.0	6	360	63
	Roller	2	20	80		250	66.0	6	360	61
	All Other Equipment > 5 HP	2	50	85		250	71.0	6	360	70
	Backhoe	1	40	78		250	64.0	8	480	60
								Total for Paving Phase:		**71.6**

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Lesser of or available Lmax	Spec. 721 Lmax	Measured L_{max} @50ft (dBA, slow)
All Other Equipment > 5 HP	No	50	85	85	-- N/A --
Auger Drill Rig	No	20	84	85	84
Backhoe	No	40	78	80	78
Bar Bender	No	20	80	80	-- N/A --
Blasting	Yes	-- N/A --	94	94	-- N/A --
Boring Jack Power Unit	No	50	80	80	83
Chain Saw	No	20	84	85	84
Clam Shovel (dropping)	Yes	20	87	93	87
Compactor (ground)	No	20	80	80	83
Compressor (air)	No	40	78	80	78
Concrete Batch Plant	No	15	83	83	-- N/A --
Concrete Mixer Truck	No	40	79	85	79
Concrete Pump Truck	No	20	81	82	81
Concrete Saw	No	20	90	90	90
Crane	No	16	81	85	81
Dozer	No	40	82	85	82
Drill Rig Truck	No	20	79	84	79
Drum Mixer	No	50	80	80	80
Dump Truck	No	40	76	84	76
Excavator	No	40	81	85	81
Flat Bed Truck	No	40	74	84	74
Front End Loader	No	40	79	80	79
Generator	No	50	72	72	81
Generator (<25KVA, VMS signs)	No	50	70	70	73
Gradall	No	40	83	85	83
Grader	No	40	85	85	-- N/A --
Grapple (on backhoe)	No	40	85	85	87
Horizontal Boring Hydr. Jack	No	25	80	80	82
Hydra Break Ram	Yes	10	90	90	-- N/A --
Impact Pile Driver	Yes	20	95	95	101
Jackhammer	Yes	20	85	85	89
Man Lift	No	20	75	85	75
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	90
Pavement Scarafier	No	20	85	85	90
Paver	No	50	77	85	77
Pickup Truck	No	40	55	55	75
Pneumatic Tools	No	50	85	85	85
Pumps	No	50	77	77	81
Refrigerator Unit	No	100	73	82	73
Rivit Buster/chipping gun	Yes	20	79	85	79

Rock Drill	No	20	81	85	81
Roller	No	20	80	85	80
Sand Blasting (Single Nozzle)	No	20	85	85	96
Scraper	No	40	84	85	84
Shears (on backhoe)	No	40	85	85	96
Slurry Plant	No	100	78	78	78
Slurry Trenching Machine	No	50	80	82	80
Soil Mix Drill Rig	No	50	80	80	-- N/A --
Tractor	No	40	84	84	-- N/A --
Vacuum Excavator (Vac-truck)	No	40	85	85	85
Vacuum Street Sweeper	No	10	80	80	82
Ventilation Fan	No	100	79	85	79
Vibrating Hopper	No	50	85	85	87
Vibratory Concrete Mixer	No	20	80	80	80
Vibratory Pile Driver	No	20	95	95	101
Warning Horn	No	5	83	85	83
Welder / Torch	No	40	73	73	74

Appendix C

Facility HVAC Noise Prediction

	dBA range	
Color	High	Low
🟪	80	75
🟥	75	70
🟥	70	65
🟧	65	60
🟨	60	55
🟩	55	50
🟩	50	45
🟦	45	40
🟦	40	35
🟦	35	30

Appendix F

Transportation Assessment

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

TECHNICAL MEMORANDUM

To:	Tova Corman, M.A. San Marcos Unified School District
From:	Sabita Tewani, AICP, Transportation Planner
Subject:	Transportation Assessment for the Richland Elementary School Reconstruction Project
Date:	January 8, 2021
cc:	Sean Kilkenny, Senior Project Manager Dennis Pascua, Transportation Services Manager
Attachments:	A – Site Plan B – Raw Traffic Counts C – Richland Elementary Student Density Map D – Synchro Worksheets E – Traffic Signal Analysis Worksheets

The following technical memorandum provides a Transportation Assessment for the Richland Elementary School Reconstruction (proposed Project), in the City of San Marcos (City). This memo includes a trip generation analysis, and a vehicle miles traveled (VMT) and level of service (LOS) screening analysis for the proposed Project. This memo also includes an analysis of intersection control and a traffic signal warrant analysis of the Richland Road/Borden Road intersection under Existing Conditions and Existing plus Project conditions. The Existing condition is based on the day traffic counts were collected (in 2019) which reflects the school's attendance of 766 students during on that day. The Existing plus Project condition analysis is based on the relocation of the school's driveways and conservatively assumes the maximum permitted enrollment of the school at 850 students.

1.0 Project Description and Setting

The Project proposes to reconstruct the existing Richland Elementary School in the City of San Marcos.

The Project site is located at 910 Borden Road on an approximately 10.3-acre site with existing vehicular access driveways on Borden Road and Richland Road. The Project site is currently home to Richland Elementary School, a K-5 Elementary School serving the San Marcus Unified School District (District). This Project proposes the like for like reconstruction of an existing Elementary School, including the redevelopment of play fields and playgrounds, to meet current District initiatives and Department of the State Architect (DSA) building standards.

Specifically, the proposed Project would reconfigure uses on the Project site to locate open lawn/fields along Borden Road and consolidate buildings towards the western portion of the Project site. The parking area would be moved from the southern portion of the Project site to the eastern portion of the Project site.

The Project includes the following components:

- Demolition of the existing school buildings
- Construction of five new buildings, including three single-story and two, 2-story buildings

- A total of 91,477 square feet (including internal hallways)
- 44 classrooms, including a new Maker's space
- Reconfiguration of parking and drop off areas for a total of 117 parking spaces
- New play structures, play fields and a raised garden area

Table 1 provides a summary comparing the existing conditions on the Project site (ie., the current Richland Elementary School) with the proposed Project. As shown in Table 1, the Project would consolidate the number of buildings, slightly increase the total square footage of buildings through the introduction of interior corridors and one new classroom for a maker's space, maintain the same overall capacity, and add 36 parking space.

Table 1. Summary of Proposed Project and Existing Richland Elementary School

Use	*Existing Condition(s)*	*Proposed Project*	*Difference*
Total # of Buildings:	Seven (7) permanent single-story and twenty-four (24) portable classrooms	Five total with three (3) single-story and two (2) two-story buildings	(2) fewer buildings
Total Building Square Feet:	87,776 square feet (external hallways)	91,477 square feet (internal hallways)	+3,701 square feet
Total Capacity:	850 students	850 students	0
Total number of classrooms:	43 (with no designated Maker's space)	44 (including the Maker's space)	+1 classroom (Maker's space)
Outdoor Play Areas	Existing play structures, play fields, and raised garden area	New play structures, play fields, and raised garden area	-
Drop Off/Delivery areas	Two (2) pick-up and drop-off for all grade levels, bus drop-off, and deliveries	Three (3) new pick-up and drop-off locations for: 1) Kindergarten, 2) Grades 1-5, and 3) Bus drop-off and food service deliveries	-
Parking Spaces	81 parking spaces	117 parking spaces	+36 parking spaces

Source: SMUSD, 2020

The existing pick-up and drop-off area for students in Kindergarten through 3rd grade is located at the front of the school where cars enter from Richland Road and exit on to Borden Road. For the 4th and 5th grade students, pick-up and drop-off location is on-site with access to and from Richland Road. School buses also use the driveways on Richland Road. The Project proposes that all vehicular access would occur at four driveways located along Richland Road, and there would no longer be access on Borden Road. With the new layout of the school, all school-related traffic from Borden Road would have to travel through the intersection of Richland Road/Borden Road. Attachment A illustrates the proposed site plan for the school.

Descriptions of the primary roadways and intersection that would serve the reconstructed school are provided below:

Richland Road is within the County of San Diego and the City of San Marcos. Richland Road is not classified on the City of San Marcos Circulation Element or the County of San Diego Mobility Element. The segment of Richland Road along the Project site is within the City of San Marcos. It is currently constructed as a two-lane undivided north-south roadway. There are no bike lanes. Curbside parking is provided intermittently along the roadway. The posted speed limit is 35 miles per hour (MPH) near the school.

Borden Road is classified as a secondary four-lane arterial per the City of San Marcos Circulation Element, and is currently constructed as a four-lane undivided east-west roadway generally from Los Posas Road up to the Mulberry Drive/Borden Road intersection. In the vicinity of the School, Borden Road is constructed with one lane in each direction with a two-way-left-turn lane (TWLTL) with additional turn lanes at its intersection with Rose Ranch Road and Richland Road. Class II (striped) bike lanes are provided along Borden Road. Curbside parking is provided intermittently along the roadway. The posted speed limit along Borden Road ranges from 25-40 MPH within the school's vicinity.

Richland Road/Borden Road intersection is a one-way stop-controlled intersection located at the south east corner of the school site. The main vehicular access to the proposed Project would be via the Richland Road/Borden Road intersection since the reconstruction would require the pick-up/drop-off for all students to occur via driveways on Richland Road. Currently, the intersection provides an eastbound left turn lane and a westbound right turn lane on Borden Road to northbound Richland Road. The southbound approach of Richland Road is stop-controlled. There is a pedestrian crosswalk along Richland Road at this intersection.

Existing average daily traffic (ADT) volumes along the roadway segments near Richland Elementary School are shown in Table 2.

Table 2. Existing Average Daily Traffic Volumes

Roadway Segment	Average Daily Traffic (ADT)	Date
Richland Road, north of Borden Road	1,263	3/13/2019
Borden Road, Mulberry Drive to Rose Ranch Road	11,921	4/23/2019
Borden Road, Rose Ranch Road/Richland Road to Woodland Parkway	13,978	4/18/2019
Rose Ranch Road, Mulberry Drive to Borden Road	3,318	4/23/2019
Richland Road, Borden Road to Fulton Road	1,923	4/18/2019

Source: NDS 2019

Bike Facilities

As defined in the General Plan Mobility Element, the following classes are used to identify bicycle facilities within the City of San Marcos:

> **Class I Bikeway (Bike Path)** is a paved "Bike Path" within an exclusive right-of-way, physically separated from vehicular roadways and intended specifically for non-motorized use.
>
> **Class II Bikeway (Bike Lane)** are signed and striped "Bike Lane" within a street right-of-way.
>
> **Class III Bikeway (Bike Route)** are "Bike Route" within a street right-of-way identified by signage only.

As noted above, there is an existing Class II bike lane along Borden Road.

Pedestrian Facilities

Richland Road and Borden Road are generally constructed with curbs, gutters, and sidewalks along both sides of the street. There are pedestrian crosswalks with Americans with Disabilities Act (ADA) compliant curb ramps at the intersections of Rose Ranch Road/Borden Road and Richland Road/Borden Road. Also, there are crossing guards at those intersections that serve pedestrians and school children during school arrival and dismissal times in the morning and mid-day periods, respectively.

Transit Facilities

The North County Transit District (NCTD) provides public transit service (bus and rail) in North San Diego County. There are no transit facilities in the vicinity of the proposed Project. The nearest bus stop for Route 305 is located along Mission Avenue, near its intersection with Mulberry Drive, approximately 1.2 miles from the proposed Project.

2.0 Trip Generation

The Project proposes to demolish the school and reconstruct the school building as shown in proposed site plan (Attachment A). Trip generation estimates for the proposed Project are based on daily and AM and PM peak hour trip generation rates obtained from the SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region* (2002). Trip generation estimates for the proposed Project are based on the trip generation rates for elementary schools. The reconstruction of the School would provide for a capacity of 850 students. The attendance data from the District for the year 2019-2020 indicated that approximately 766 students currently attend the school.

Table 3: Project Trip Generation Summary

Land Use	Daily Trip Rate/ Unit	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Trip Rates							
Elementary School	1.6/Student	60%	40%	32%	40%	60%	9%

Trip Generation

Land Use	No. of Units	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Capacity (Proposed Richland Elementary)	850 Students	1,360	261	174	435	49	73	122
Existing (Based on attendance data for 2019-2020)	766 Students	1,226	235	157	392	44	66	110

Source: Trip rates from the SANDAG (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, 2002.

As shown in Table 3, at capacity (maximum enrollment) of 850 students, the proposed Project would generate approximately 1,360 daily trips, with 435 trips (261 inbound and 174 outbound) in the AM peak hour, and 122 trips (49 inbound and 73 outbound) in the PM peak hour. Based on 2019-2020 attendance data, the existing school generates approximately 1,226 daily trips, with 392 trips (235 inbound and 157 outbound) in the AM peak hour, and 110 trips (44 inbound and 66 outbound) in the PM peak hour. Therefore, the intersection analysis for Existing condition is based on day the traffic counts were collected (in 2019) which reflects that school's attendance of 766 students during that period. The Existing plus Project condition is based on the relocation of the school's driveways and conservatively assumes the maximum permitted enrollment (capacity) of the school at 850 students. The net increase of 134 ADT (1,360 – 1,226 = 134) is only reflective of a single day when students may be absent and not the maximum ADT generated at full capacity/attendance.

3.0 Analysis Methodology

3.1 Vehicle Miles Traveled Analysis

The Governor's Office of Planning and Research (OPR) was directed to amend the California Environmental Quality Act (CEQA) Guidelines to provide an alternative to level of service (LOS) for evaluating transportation impacts with the passage of Senate Bill (SB) 743. CEQA Guidelines Section 15064.3(b) focuses on specific criteria (VMT) for determining the significance of transportation impacts. Under the new transportation guidelines, LOS, or vehicle delay, shall not constitute an environmental impact. Vehicle miles traveled has been adopted as the most appropriate measure of transportation impacts under CEQA. The City of San Marcos has adopted the vehicle miles traveled metric and significance criteria for transportation impact analysis. This memo has been prepared per City of San Marcos Interim *Transportation Impact Analysis Guidelines*, July 1, 2020 which provides guidance on the requirements to evaluate transportation impacts for projects.

3.2 Level of Service Analysis

LOS is used as a qualitative description of segments and intersection operations based on the design capacity of the segment or intersection configuration, compared to the volume of traffic using the segment or intersection. The analysis is used to determine whether a project may result in traffic effects that could require improvements to maintain or improve traffic operation. It is not used to determine impacts under CEQA.

3.2.1 Intersections

For the study area intersections, the Highway Capacity Manual, 6th Edition (HCM 6) methodology (TRB 2016) was used. The intersection was analyzed per HCM 6 methodology using Synchro LOS software (version 10). The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding control delay experienced per vehicle.

Table 4 shows the LOS values by delay ranges for unsignalized and signalized intersections under the HCM methodology.

Table 4. Levels of Service for Intersections Using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds)	Signalized Intersections Control Delay (in seconds)
A	< 10.0	< 10.0
B	> 10.0 to < 15.0	> 10.0 to < 20.0
C	> 15.0 to < 25.0	> 20.0 to < 35.0
D	> 25.0 to < 35.0	> 35.0 to < 55.0
E	> 35.0 to < 50.0	> 55.0 to < 80.0

Table 4. Levels of Service for Intersections Using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds)	Signalized Intersections Control Delay (in seconds)
F	> 50.0	> 80.0

Source: HCM 6 (TRB 2016).

3.3 Traffic Signal Warrant Analysis

A traffic signal warrant analysis for the study area intersection (Richland/Borden Road) was investigated using the traffic signal warrants provided in the California Manual of Uniform Traffic Control Devices (CA MUTCD 2014).

4.0 VMT and LOS Screening Analysis

The City considers both VMT and LOS to be relevant and necessary measurements for transportation impacts. Therefore, the City has provided criteria and methodology for conducting these analyses to provide consistency with General Plan Circulation Element while adhering to CEQA.

4.1 VMT Screening Analysis

The City of San Marcos has developed VMT metrics and impact thresholds for land use projects including residential uses, employment projects, and retail uses. A project screening approach can be used to determine if a project would require a detailed VMT analysis. A project that meets at least one of the screening criteria would be considered to have a less-than significant VMT impact due to project or location characteristics. The proposed Project would be screened out using the following criteria:

Local-Serving Public Facility: Uses that are local-serving public facilities can be presumed to have a less-than-significant transportation impact and would not require a detailed analysis, absent substantial evidence that they will generate significant VMT. These uses include, but are not limited to:

- Public services (e.g., police, fire stations, public utilities)
- Local-serving neighborhood schools
- Local neighborhood parks

Since the proposed Project is a local-serving neighborhood school, it can be presumed to have a **less-than-significant** transportation impact.

4.2 LOS Screening Analysis

Per City of San Marcos guidelines, a local transportation analysis will be required projects generating more than 1,000 daily vehicle trips or more than 100 peak hour vehicle trips (if consistent with the latest version of the City's General Plan) or generating at least 500 daily vehicle trips or at least 50 peak hour trips if inconsistent with the City's latest General Plan).

Since the proposed Project is reconstruction of an existing school and would not exceed the capacity of 850 students. As explained in Section 2.0, Trip Generation, the proposed Project would not increase the total capacity of the school and therefore, the maximum number of ADT generated; however, for purposes of this analysis, a representative random school day during pre-COVID conditions was selected to determine ADT. Based on that day, the net new traffic generated from approximately 84 additional students is estimated to be 134 net new daily trips, with 43 trips in the AM peak hour, and 12 trips in the PM peak hour. Since the proposed Project would generate less than 500 daily trips or 50 peak hour trips, it would not warrant a local transportation analysis.

5.0 Intersection Control and Traffic Signal Warrant Analysis

As shown in the proposed site plan, the main access to the school would be via the Richland Road/Borden Road intersection. Therefore, a focused analysis of the operating conditions at this one-way stop-controlled intersection has been included in the memorandum to assess if any improvements to the intersection control would be warranted under Existing and Existing plus Proposed Project conditions.

5.1 Traffic Volumes and Levels of Service

Existing weekday ADT counts at the Borden Road and Richland Road segments and peak hour turn movement counts at the Borden Road/Richland Road intersection were obtained during a typical non-holiday week while area schools were in-session for pre-COVID conditions (April 2019 and May 2019). The existing weekday ADT volumes along the roadway segments in the study area and the AM and PM peak hour volumes at the Richland Road/Borden Road intersection are summarized on Figure 1. The traffic count worksheets are provided in Attachment B.

To estimate Existing plus Project traffic volumes, the existing peak hour volumes at the intersection were compared with the trip generation, distribution and assignment of existing school traffic based on the 2019-2020 attendance data provided by the school district. A distribution percentage for the existing school traffic as shown on Figure 1 was estimated from attendance boundary and student density map of Richland Elementary (see Attachment C) and existing traffic volumes at the Richland Road/Borden Road intersection. A majority of the student population resides in the areas to the east of the school and accesses the site by traveling in the westbound along Borden Road. Approximately 60% and 30% of the school traffic is estimated to travel westbound and eastbound, respectively, along Borden Road. Approximately, 10% of the school traffic is estimated to travel southbound along Richland Road to access the site. Based on the new site plan and the proposed location of drop-off/pick-up zones, all inbound and outbound traffic from the school would travel along Richland Road and therefore, use the Richland Road/Borden Road intersection. Therefore, existing traffic volumes at the Richland Road/Borden Road intersection were adjusted to estimate the Existing plus Project conditions to account for the redistribution of existing school traffic.

This operational analysis focuses on the AM (7:00 a.m. to 9:00 a.m.) and the PM (4:00 p.m. to 6:00 p.m.) peak periods at the Borden Road/Richland Road intersection. The peak periods represent the highest volume of traffic for the adjacent street system. After-school peak hour (i.e. mid-day) traffic counts were unavailable for pre-COVID conditions. Since the school was operating at reduced student capacity and implementing a hybrid learning model due to COVID restrictions, any new traffic counts collected would not represent typical school or adjacent street traffic conditions. Therefore, the operational analysis includes only the AM and the PM peak hours. It should be noted that for adjacent street traffic, the AM and PM commute peak hour represent the worst-case operating conditions. As shown in Table 5, the Richland Road/Borden Road intersection currently operates at LOS E and F during the AM and PM peak hours, respectively. With the adjusted existing project traffic, the Richland Road/Borden Road intersection would operate at LOS F during both AM and PM peak hours. Attachment D includes the detailed Synchro LOS analysis worksheets.

Table 5. Intersection Level of Service

			Existing				Existing plus Project			
			AM Peak		PM Peak		AM Peak		PM Peak	
No.	Intersection	Control	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
1	Richland Road/ Borden Road	Stop-Control	42.5	E	283.1	F	129.9	F	308.3	F

Notes: LOS Method from HCM.
[1] Delay = Delay in seconds per vehicle.
[2] LOS = Level of Service.

Since the Richland Road/Borden Road intersection operates at a deficient LOS under Existing and Existing plus Project conditions, a traffic signal warrant analysis was conducted to determine if a traffic signal is warranted for the intersection.

5.2 Traffic Signal Warrant Analysis

The CA MUTCD contains minimum guidelines regarding traffic volumes, collisions, speeds, and other criteria in order to satisfy the requirements for the recommendation of a traffic signal, all-way-stop or other traffic control device. In order to justify and recommend the installation of traffic control signals, there are nine (9) CA MUTCD traffic signal warrants that should be analyzed. Per CA MUTCD, if any one, or a combination, of these warrants is met then a traffic signal should be considered; however, satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal. The analysis of all applicable traffic signal warrants is provided below.

5.2.1 Warrant 1: Eight-Hour Vehicular Volume: Condition A or B - Not Satisfied

The need for a traffic control signal shall be considered if an engineering study finds that one of the following conditions (Condition A or Condition B) exist for each of any 8 hours of an average day. As shown in Table 6, the eight-hour vehicular warrant is not met for either of the conditions.

Table 6. Eight-Hour Vehicular Volume (Condition A and B)

	Condition A - Minimum Vehicular Volume (80% shown in brackets)					
	Existing			Existing Plus Project		
Warrant 1 - Eight Hour Vehicular Volume	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	Signal Warrant Met?	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	Signal Warrant Met?
Threshold	600 (480)	150 (120)		600 (480)	150 (120)	
7:00 AM-8:00 AM	1,256	47	No	-	-	No
8:00 AM-9:00 AM	1,070	31		1,106	107	
12:00 PM-1:00 PM	641	31		-	-	
2:00 PM-3:00 PM	930	32		-	-	
3:00 PM-4:00 PM	1,327	44		-	-	
4:00 PM-5:00 PM	1,512	89		1,517	95	
5:00 PM-6:00 PM	1,502	67		-	-	
6:00 PM-7:00 PM	1,001	42		-	-	
	Condition B - Interruption of Continuous Traffic (80% shown in brackets)					
	Existing			Existing Plus Project		
Warrant 1 - Eight Hour Vehicular Volume	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	Signal Warrant Met?	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	Signal Warrant Met?
Threshold	900 (720)	75 (60)		900 (720)	75 (60)	
7:00 AM-8:00 AM	1,256	47	No	-	-	No
8:00 AM-9:00 AM	1,070	31		1,106	107	
12:00 PM-1:00 PM	641	31		-	-	
2:00 PM-3:00 PM	930	32		-	-	
3:00 PM-4:00 PM	1,327	44		-	-	
4:00 PM-5:00 PM	1,512	89		1,517	95	
5:00 PM-6:00 PM	1,502	67		-	-	
6:00 PM-7:00 PM	1,001	42		-	-	

Notes: Based on ADT collected for Borden Road and Richland Road.

[1] VPH on the major street (Total of both approaches)

[2] VPH on the minor street (One direction only for Higher volume approach)

5.2.2 Warrant 2: Four-Hour Vehicular Volume - Satisfied

The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. As shown in Table 7 and Attachment E (Figure 4C-1), under Existing Conditions, the warrant is met for three out of four hours and under Existing plus Project Conditions, the warrant is met for all four hours.

Table 7. Four-Hour Vehicular Volume

Warrant 2 -Four Hour Vehicular Volume	Existing		Signal Warrant Met?	Existing Plus Project		Signal Warrant Met?
	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)		VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	
7:00-8:00 AM	1,243	100	**Yes**	1,279	176	**Yes**
8:00-9:00 AM	1,073	116	No	1,109	192	**Yes**
4:00-5:00 PM	1,207	120	**Yes**	1,212	126	**Yes**
5:00-6:00 PM	1,318	152	**Yes**	1,323	158	**Yes**

Notes: Based on AM and PM turn movement counts collected for Richland Road/Borden Road intersection.
[1] VPH on the major street (Total of both approaches)
[2] VPH on the minor street (One direction only for Higher volume approach)

5.2.3 Warrant 3: Peak Hour Vehicular Volume: Condition A and B - Satisfied

The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street. The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following conditions are met:

Condition A: If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

- The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and
  - Delay on southbound lane at Richland Road/Borden Road intersection = 135 veh*269.1 sec or 0.07 hour = 10 vehicle-hours under Existing Conditions during the PM peak hour. Therefore, the stopped time delay exceeds 4 vehicle-hours for a one-lane approach.
- The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour (VPH) for two moving lanes; and
  - As shown in Table 8, minor-street approach along Richland Road carries 165 VPH under Existing Conditions and 171 VPH under Existing plus Project conditions, and therefore, exceeds 100 vehicles per hour.
- The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.
  - As shown on Figure 1, total entering volumes during the PM peak hour exceeds 650 VPH for the Richland Road/Borden Road intersection during both peak hours under Existing and Existing plus Project Conditions.

Condition B: The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding VPH on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

- As shown in Table 8 and Attachment E (Figure 4C-3), this condition is met under Existing and Existing plus Project conditions during the PM peak hour.

Table 8 Peak-Hour Vehicular Volume (Condition B)

Warrant 3 -Peak Hour Vehicular Volume	Existing		Signal Warrant Met?	Existing Plus Project		Signal Warrant Met?
	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)		VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	
4:45-5:45 PM	1,389	165	**Yes**	1,394	171	**Yes**

Notes: Based on AM and PM turn movement counts collected for Richland Road/Borden Road intersection.
[1] VPH on the major street (Total of both approaches)
[2] VPH on the minor street (One direction only for Higher volume approach)

5.2.4 Warrant 4: Pedestrian Volume - Not Satisfied

Since pedestrians do not cross the major street (i.e., Borden Street), the warrant conditions as mentioned in MUTCD 2014 would not be applicable. Additionally, the pedestrians and school children crossing the intersection along Richland Road (as noted in the intersection count collected in 2019) were significantly lower than 100 pedestrians per hour requirement per minimum volume for the pedestrian volume warrant.

5.2.5 Warrant 5: School Crossing - Not Applicable

Since pedestrians do not cross the major street (i.e., Borden Street), the warrant conditions as mentioned in MUTCD 2014 would not be applicable.

5.2.6 Warrant 6: Coordinated Signal System - Not Applicable

Since the closest traffic signal at Rose Ranch Road/Borden Road is located less than 1,000 feet of Richland Road/Border Road intersection, the warrant conditions as mentioned in MUTCD 2014 would not be applicable.

5.2.7 Warrant 7: Crash Experience – Not Satisfied

The Crash Experience signal warrant conditions are intended for application where the severity and frequency of crashes are the principal reasons to consider installing a traffic control signal. Based on review of Statewide Integrated Traffic Records System (SWITRS) report for the year 2019, two crashes were reported along Borden Road near the Richland Road intersection. The reason for both the crashes was reported as unsafe speed. Since the number of crashes reported is less than five in a year as required per warrant, the intersection is not considered to have a high rate of crashes. Further, the intersection does not meet the 8-hour vehicular, roadway network or Pedestrian Volume Warrant which are required as part of Crash Experience warrant. Although this warrant is not met, the District has indicated that vehicles traveling east and west along Borden Road pass through this intersection at unsafe speeds (as noted in the reason for crashes above) and impede safe movement of southbound left turning vehicles from Richland Road to eastbound Borden Road.

5.2.8 Warrant 8: Roadway Network – Not Satisfied

Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network. There are few conditions per MUTCD that need to be met for the common intersection where two or more major routes meet. Although the intersection meets partial requirements of this warrant (i.e., Warrant 2 and Warrant 3), the average daily traffic estimate as shown below in Table 9 are not met.

Table 9. Warrant 8 Roadway Network

Average Traffic Estimate Form Figure 4C-103 (CA)	Condition A - Minimum Vehicular Volume (80% shown in brackets)					
	Existing		Signal Warrant Met?	Existing Plus Project		Signal Warrant Met?
	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)		VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	
Threshold	9,600	2,400		9,600	2,400	
Average Daily Traffic Volume	13,978	584	No	14,099	651	No
Average Traffic Estimate Form Figure 4C-103 (CA)	Condition B - Interruption of Continuous Traffic (80% shown in brackets)					
	Existing		Signal Warrant Met?	Existing Plus Project		Signal Warrant Met?
	VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)		VPH on Major Street Approach[1] (Borden Rd)	VPH on Higher-Volumes Minor Street Approach[2] (Richland Rd)	
Threshold	14,400	1,600		14,400	1,600	
Average Daily Traffic Volume	13,978	584	No	14,099	651	No

Notes: Based on ADT collected for Borden Road and Richland Road.

[1] VPH on the major street (Total of both approaches)

[2] VPH on the minor street (One direction only for Higher volume approach)

5.2.9 Warrant 9: Intersection near a Grade Crossing – Not Applicable

The Intersection near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal. This warrant does not apply to the Richland Road/Borden Road intersection.

5.3 Improvement Measures

Based on results of the traffic signal warrants analysis, the intersection was analyzed with an all-way stop-control and signal control. As shown in Table 10, the Richland Road/Borden Road intersection would continue to operate at LOS F in both peak hours with an all-way stop control. With traffic signal control, the intersection would operate at an acceptable LOS C in both peak hours. Attachment D includes the detailed synchro analysis worksheets for the intersection with an all-way stop control and a traffic signal.

Table 10. Intersection Level of Service – With Improvement Measures

			Existing plus Project			
			AM Peak		PM Peak	
No.	Intersection	Control	Delay[1]	LOS[2]	Delay[1]	LOS[2]
1	Richland Road/ Borden Road	All-way stop-control	101.1	F	127.6	F
		Signalized	26.7	C	24.9	C

Notes: LOS Method from HCM;
[1] Delay = Delay in seconds per vehicle.
[2] LOS = Level of Service.

Therefore, because several of the traffic warrants are met, and because a traffic signal would reduce vehicle delay at the Richland Road/Borden Road intersection, it is recommended that a traffic signal be installed at the Richland Road/Borden Road intersection. Since the intersection operates acceptably with the installation of a traffic signal, no further improvements are recommended.

6.0 Findings and Recommendations

- At capacity of 850 students, the proposed Project would generate approximately 1,360 daily trips, with 435 trips (261 inbound and 174 outbound) in the AM peak hour, and 122 trips (49 inbound and 73 outbound) in the PM peak hour. Based on 2019-2020 attendance data, the existing school generates approximately 1,226 daily trips, with 392 trips (235 inbound and 157 outbound) in the AM peak hour, and 110 trips (44 inbound and 66 outbound) in the PM peak hour.
- Since the proposed Project is a local-serving neighborhood school, it would not require a detailed VMT analysis and can be presumed to have a less-than-significant transportation impact.
- The proposed Project would not exceed any City of San Marcos thresholds to require a local transportation analysis.
- The one-way stop-controlled Richland Road/Borden Road intersection provides primary vehicular access to the proposed Project and operates at LOS E and F during the AM and PM peak hours, respectively, under existing conditions.
- As shown in the intersection control and traffic signal warrants analysis, Signal Warrants 2 Four Hour Vehicular Volume, and 3 Peak Hour Vehicular Warrant, are met under both Existing and Existing plus Project conditions.
- With the installation of a traffic signal, the Richland Road/Borden Road intersection would operate at LOS C during both peak hour under Existing plus Project conditions.

- It is recommended that a traffic signal be installed at the Richland Road/Borden Road intersection to improve the levels of service.

7.0 References:

City of San Marcos. 2012. General Plan Mobility Element. Accessed December 2020. https://www.san-marcos.net/departments/development-services/planning/general-plan

City of San Marcos. 2020. Interim Transportation Impact Analysis Guidelines. July 1, 2020.

CA MUTCD. 2014. California Manual on Uniform Traffic Control Devices. Revision 5. Effective March 27, 2020. Accessed December 2020. https://dot.ca.gov/programs/safety-programs/camutcd/camutcd-rev5

OPR (California Governor's Office of Planning and Research). 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. December 2018. Accessed December 2020. http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf.

SANDAG (San Diego Association of Governments). 2002. *Brief Guide of Vehicular Trip Generation Rates for the San Diego Region*. April 2002.

Source: Google Earth 2020

FIGURE 1

Traffic Volumes in the Study Area

Richland Elementary School Reconstruction Project

Attachment A

Site Plan


LOT 1
38 SPACES
LOT 2
77 SPACES
10-11 CAR QUEUE CAPACITY
STUDENT DROP OFF
KINDER DROP OFF
FIRE ACCESS
WORK
TOILET
STORAGE
PRESCHOOL
PRE-K SPED
PRE-K SPED
KOC
KOC
PROFESSIONAL DEVELOPMENT
PARENT ROOM
RECORDS STORAGE
RECEPTION
HEALTH
CONFERENCE
ASST. PRINCIPAL
PRINCIPAL
PSYCH. OFFICE
IEP CONFERENCE
VESTIBULE
HYGIENE
MOD / SEV SPED
MOD / SEV SPED
BLDG. A - IDF
CUSTODIAL
WORK ROOM
RESTROOMS W
RESTROOMS M
MANAGER
STAFF LOUNGE
SPEECH
SPEECH
LOBBY
MUSIC STEAM
PLATFORM
MPR
BIKE
STORAGE
M&O STORAGE
BLDG. E - IDF
BLDG. E - ELECT.
DRY STORAGE
FREEZER & COOLER
OFFICE
SINK
KITCHEN
SERVERY
FOOD SERVICE &
MAINTENANCE YARD
READING GARDEN
FIRE RISER
ELECTRICAL ROOM
MDF
TK CLASSROOM
KINDERGARTEN
KINDERGARTEN
KINDERGARTEN
KINDERGARTEN
KINDERGARTEN
EXISTING DRAINAGE CULVERT
UP
LIBRARY
WORK ROOM
RSP OFFICE
MAKER LAB
(STEAM)
MILD / MOD
SPED
OCC. THERAPY
ADAPTIVE PE
PE STORAGE
COLLABORATION
BLDG. D IDF
ELEV. MACH.
NON-RATED CORRIDOR
OFFICE
CONFERENCE
BLDG. C. ELECT.
RESTROOM - BOYS
RESTROOM - GIRLS
LEARNING LAB
CLASSROOM - 2
CLASSROOM - 2
CLASSROOM - 2
CLASSROOM - 2
CLASSROOM - 2
CLASSROOM - 1
CLASSROOM - 1
CLASSROOM - 1
CLASSROOM - 1
CLASSROOM - 1
ART (STEAM)
FIELDS
NINJA
RETENTION
BASIN
GARDENS
STORAGE CONTAINER


LOT 1
38 SPACES
LOT 2
77 SPACES
NO PARKING
NO PARKING - LOADING ONLY
10-11 CAR QUEUE CAPACITY
STUDENT DROP OFF
KINDER DROP OFF
BLDG. B BELOW
BLDG. E BELOW
BLDG. B BELOW
CLASSROOM - 3
CLASSROOM - 3
CLASSROOM - 3
CLASSROOM - 3
CLASSROOM - 3
UP
UP
COLLABORATION
BLDG. D ELECT.
ELEV.
RSP OFFICE
RESTROOM - BOYS
RESTROOM - GIRLS
CUSTODIAL
TOILET
MILD / MOD
SPED
SPEECH
CLASSROOM - 4
CLASSROOM - 4
CLASSROOM - 4
CLASSROOM - 4
CLASSROOM - 4
OFFICE
COLLABORATION
BLDG C - IDF
RESTROOMS - BOYS
RESTROOMS - GIRLS
CUSTODIAL
TOILET
LEARNING LAB
CLASSROOM - 5
CLASSROOM - 5
CLASSROOM - 5
CLASSROOM - 5
CLASSROOM - 5

Attachment B

Raw Traffic Counts

Prepared by NDS/ATD

VOLUME

Richland Rd Bet. Mulberry Dr & Borden Rd

Day: Wednesday
Date: 3/13/2019

City: San Marcos
Project #: CA19_4129_001

DAILY TOTALS	NB	SB	EB	WB	Total
	679	584	0	0	1,263

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		0				0		**12:00**	3		6				9	
00:15	0		0				0		**12:15**	7		9				16	
00:30	0		0				0		**12:30**	5		9				14	
00:45	0		0				0		**12:45**	7	22	7	31			14	53
01:00	0		0				0		**13:00**	9		5				14	
01:15	0		1				1		**13:15**	6		8				14	
01:30	0		0				0		**13:30**	15		7				22	
01:45	0		0	1			0	1	**13:45**	13	43	6	26			19	69
02:00	0		0				0		**14:00**	12		6				18	
02:15	0		0				0		**14:15**	12		10				22	
02:30	0		0				0		**14:30**	11		10				21	
02:45	0		0				0		**14:45**	15	50	6	32			21	82
03:00	0		0				0		**15:00**	14		15				29	
03:15	0		0				0		**15:15**	8		8				16	
03:30	0		0				0		**15:30**	21		11				32	
03:45	0		0				0		**15:45**	11	54	10	44			21	98
04:00	0		0				0		**16:00**	7		26				33	
04:15	1		1				2		**16:15**	12		19				31	
04:30	0		0				0		**16:30**	15		23				38	
04:45	0	1	0	1			0	2	**16:45**	7	41	21	89			28	130
05:00	1		1				2		**17:00**	17		13				30	
05:15	2		0				2		**17:15**	13		25				38	
05:30	2		3				5		**17:30**	9		14				23	
05:45	6	11	4	8			10	19	**17:45**	14	53	15	67			29	120
06:00	9		4				13		**18:00**	14		12				26	
06:15	13		5				18		**18:15**	14		10				24	
06:30	14		10				24		**18:30**	9		9				18	
06:45	35	71	14	33			49	104	**18:45**	19	56	11	42			30	98
07:00	36		8				44		**19:00**	7		9				16	
07:15	17		16				33		**19:15**	4		6				10	
07:30	20		15				35		**19:30**	6		8				14	
07:45	16	89	8	47			24	136	**19:45**	3	20	5	28			8	48
08:00	16		6				22		**20:00**	2		6				8	
08:15	18		6				24		**20:15**	7		5				12	
08:30	7		11				18		**20:30**	8		1				9	
08:45	10	51	8	31			18	82	**20:45**	5	22	1	13			6	35
09:00	8		7				15		**21:00**	1		6				7	
09:15	5		3				8		**21:15**	10		7				17	
09:30	7		5				12		**21:30**	2		1				3	
09:45	9	29	5	20			14	49	**21:45**	4	17	5	19			9	36
10:00	3		4				7		**22:00**	5		0				5	
10:15	1		4				5		**22:15**	1		0				1	
10:30	6		7				13		**22:30**	2		1				3	
10:45	6	16	6	21			12	37	**22:45**	2	10	1	2			3	12
11:00	6		13				19		**23:00**	0		0				0	
11:15	5		7				12		**23:15**	3		0				3	
11:30	5		6				11		**23:30**	0		0				0	
11:45	4	20	3	29			7	49	**23:45**	0	3	0				0	3
TOTALS		288		191				**479**	**TOTALS**		391		393				**784**
SPLIT %		60.1%		39.9%				**37.9%**	**SPLIT %**		49.9%		50.1%				**62.1%**

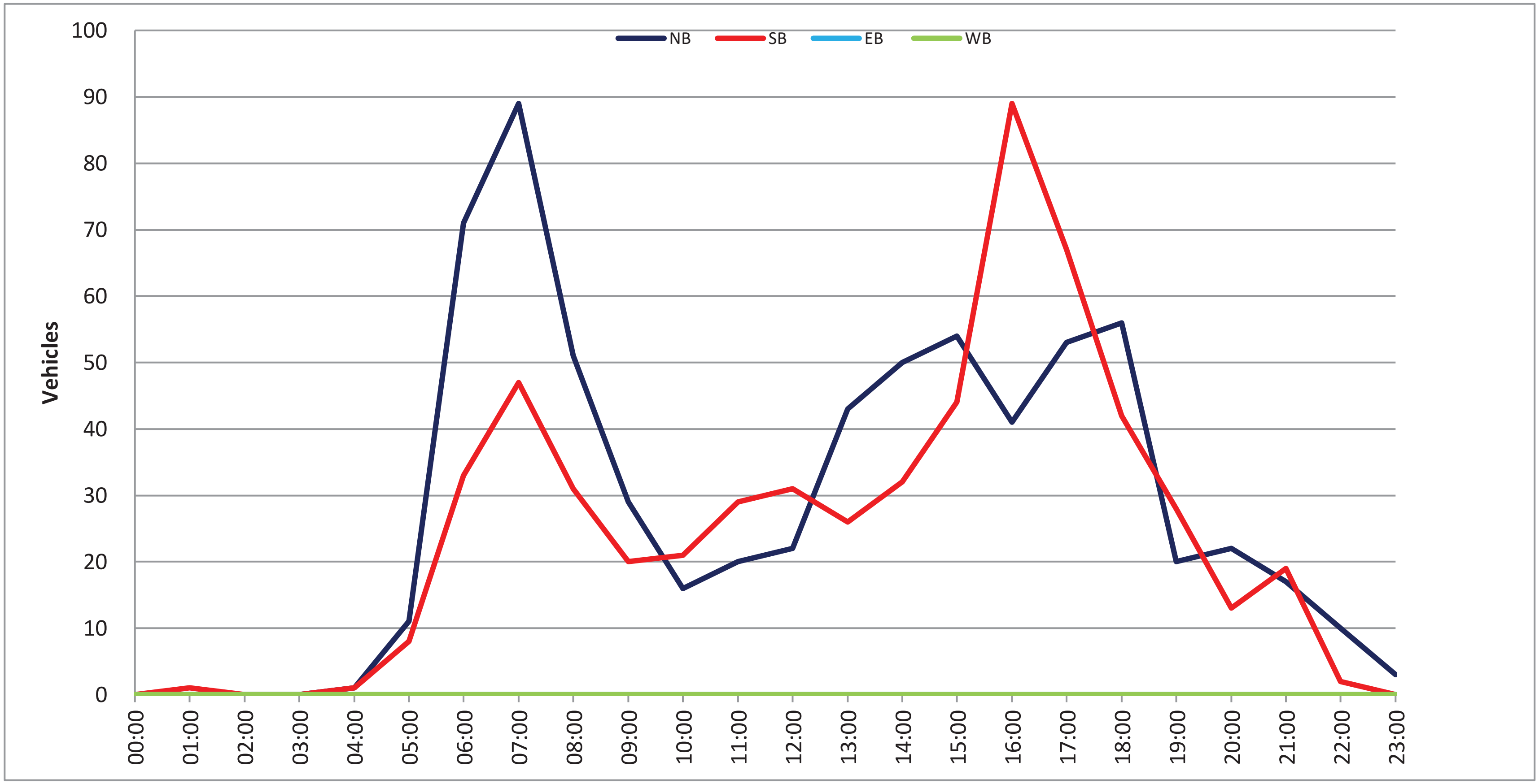
DAILY TOTALS	NB	SB	EB	WB	Total
	679	584	0	0	1,263

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	06:45	06:45			**06:45**	**PM Peak Hour**	14:45	16:00			**16:30**
AM Pk Volume	108	53			**161**	**PM Pk Volume**	58	89			**134**
Pk Hr Factor	0.750	0.828			**0.821**	**Pk Hr Factor**	0.690	0.856			**0.882**
7 - 9 Volume	140	78	0	0	**218**	**4 - 6 Volume**	94	156	0	0	**250**
7 - 9 Peak Hour	07:00	07:00			**07:00**	**4 - 6 Peak Hour**	17:00	16:00			**16:30**
7 - 9 Pk Volume	89	47	0	0	**136**	**4 - 6 Pk Volume**	53	89	0	0	**134**
Pk Hr Factor	0.618	0.734	0.000	0.000	**0.773**	**Pk Hr Factor**	0.779	0.856	0.000	0.000	**0.882**

Prepared by NDS/ATD

Project #: CA19_4129_001 **City:** San Marcos

Location: Richland Rd Bet. Mulberry Dr & Borden Rd **Date:** 3/13/2019



Prepared by NDS/ATD

VOLUME

Borden Rd Bet. Mulberry Dr & Rose Ranch Rd/Richland Rd

Day: Tuesday
Date: 4/23/2019

City: San Marcos
Project #: Historical

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	6,100	5,821	11,921

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			6		7		13		12:00			49		70		119	
00:15			7		5		12		12:15			62		56		118	
00:30			5		2		7		12:30			72		52		124	
00:45			4	22	4	18	8	40	12:45			97	280	56	234	153	514
01:00			6		3		9		13:00			52		44		96	
01:15			3		2		5		13:15			72		41		113	
01:30			6		3		9		13:30			59		46		105	
01:45			4	19	5	13	9	32	13:45			75	258	69	200	144	458
02:00			2		1		3		14:00			110		64		174	
02:15			5		0		5		14:15			152		82		234	
02:30			2		2		4		14:30			160		124		284	
02:45			2	11	0	3	2	14	14:45			143	565	70	340	213	905
03:00			2		2		4		15:00			163		83		246	
03:15			1		1		2		15:15			163		132		295	
03:30			3		8		11		15:30			164		112		276	
03:45			3	9	2	13	5	22	15:45			183	673	85	412	268	1085
04:00			2		3		5		16:00			172		79		251	
04:15			7		3		10		16:15			197		99		296	
04:30			6		11		17		16:30			175		116		291	
04:45			3	18	15	32	18	50	16:45			175	719	130	424	305	1143
05:00			4		18		22		17:00			186		136		322	
05:15			17		16		33		17:15			186		117		303	
05:30			10		25		35		17:30			200		109		309	
05:45			15	46	26	85	41	131	17:45			161	733	100	462	261	1195
06:00			30		40		70		18:00			159		88		247	
06:15			35		68		103		18:15			119		72		191	
06:30			29		92		121		18:30			107		52		159	
06:45			58	152	163	363	221	515	18:45			74	459	49	261	123	720
07:00			68		167		235		19:00			83		44		127	
07:15			115		217		332		19:15			72		57		129	
07:30			160		273		433		19:30			59		32		91	
07:45			90	433	275	932	365	1365	19:45			49	263	28	161	77	424
08:00			90		183		273		20:00			64		28		92	
08:15			99		219		318		20:15			45		26		71	
08:30			100		173		273		20:30			54		42		96	
08:45			72	361	156	731	228	1092	20:45			51	214	23	119	74	333
09:00			53		137		190		21:00			51		24		75	
09:15			41		134		175		21:15			41		18		59	
09:30			55		69		124		21:30			26		12		38	
09:45			44	193	79	419	123	612	21:45			21	139	25	79	46	218
10:00			39		57		96		22:00			20		11		31	
10:15			57		56		113		22:15			18		11		29	
10:30			37		66		103		22:30			12		10		22	
10:45			49	182	62	241	111	423	22:45			16	66	7	39	23	105
11:00			56		62		118		23:00			7		7		14	
11:15			81		47		128		23:15			6		7		13	
11:30			68		45		113		23:30			3		2		5	
11:45			61	266	67	221	128	487	23:45			3	19	3	19	6	38
TOTALS				1712		3071		**4783**	**TOTALS**				4388		2750		**7138**
SPLIT %				35.8%		64.2%		**40.1%**	**SPLIT %**				61.5%		38.5%		**59.9%**

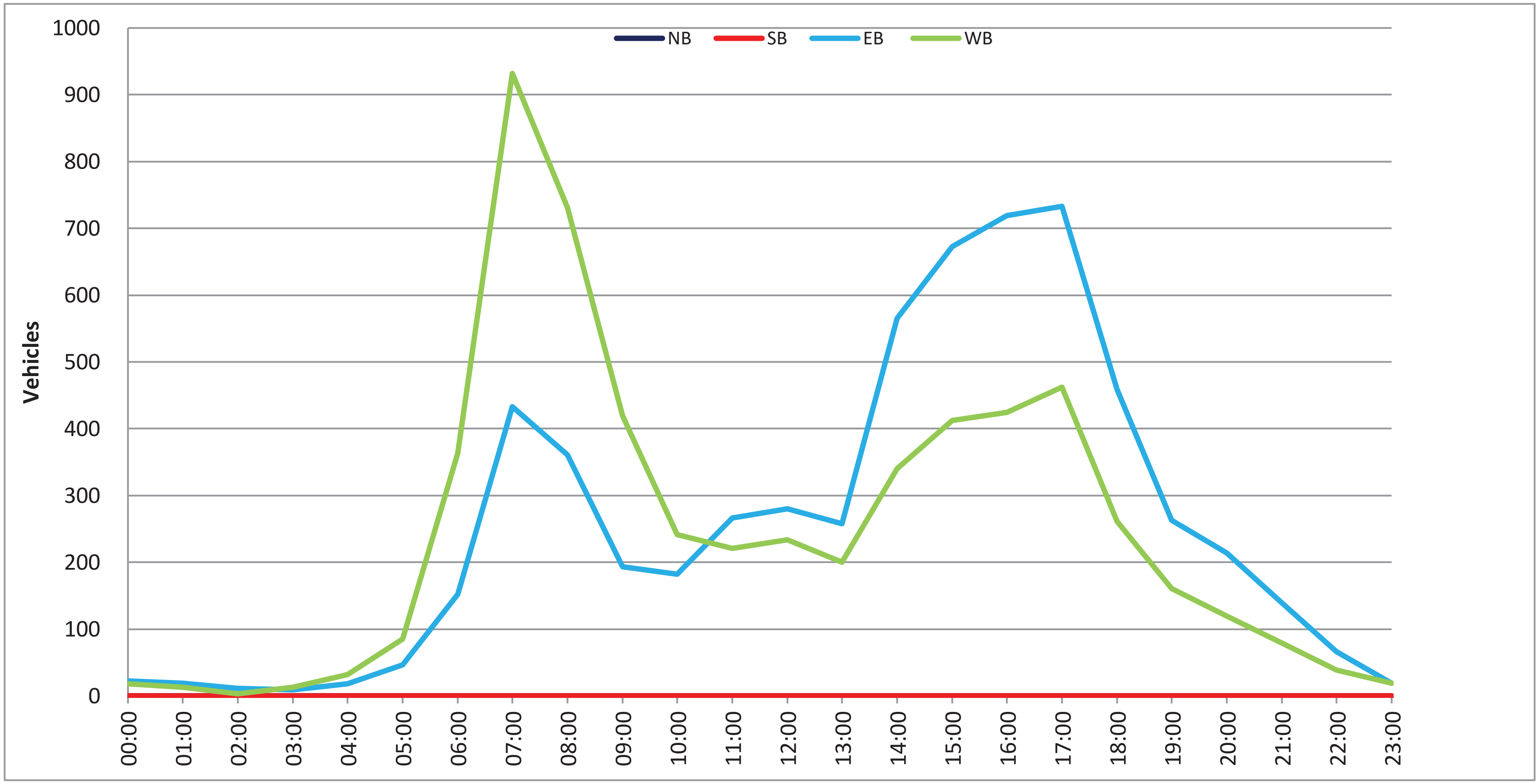
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	6,100	5,821	11,921

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			07:15	07:30	**07:15**	**PM Peak Hour**			16:45	16:30	**16:45**
AM Pk Volume			455	950	**1403**	**PM Pk Volume**			747	499	**1239**
Pk Hr Factor			0.711	0.864	**0.810**	**Pk Hr Factor**			0.934	0.917	**0.962**
7 - 9 Volume	0	0	794	1663	**2457**	**4 - 6 Volume**	0	0	1452	886	**2338**
7 - 9 Peak Hour			07:15	07:30	**07:15**	**4 - 6 Peak Hour**			16:45	16:30	**16:45**
7 - 9 Pk Volume	0	0	455	950	**1403**	**4 - 6 Pk Volume**	0	0	747	499	**1239**
Pk Hr Factor	0.000	0.000	0.711	0.864	**0.810**	**Pk Hr Factor**	0.000	0.000	0.934	0.917	**0.962**

Prepared by NDS/ATD

Project #: Historical **City:** San Marcos

Location: Borden Rd Bet. Mulberry Dr & Rose Ranch **Date:** 4/23/2019



Prepared by NDS/ATD

VOLUME

Borden Rd Bet. Rose Ranch Rd/Richland Rd & Woodland Pkwy

Day: Thursday
Date: 4/18/2019

City: San Marcos
Project #: Historical

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	6,670	7,308	13,978

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00					6		10		16		12:00					69		86		155	
00:15					5		10		15		12:15					63		71		134	
00:30					4		5		9		12:30					90		74		164	
00:45					5	20	5	30	10	50	12:45					108	330	80	311	188	641
01:00					2		4		6		13:00					72		70		142	
01:15					2		3		5		13:15					68		100		168	
01:30					2		7		9		13:30					90		82		172	
01:45					2	8	2	16	4	24	13:45					64	294	84	336	148	630
02:00					1		3		4		14:00					88		83		171	
02:15					2		2		4		14:15					121		100		221	
02:30					1		2		3		14:30					120		143		263	
02:45					2	6	1	8	3	14	14:45					145	474	130	456	275	930
03:00					1		1		2		15:00					133		154		287	
03:15					3		1		4		15:15					213		153		366	
03:30					5		2		7		15:30					181		145		326	
03:45					7	16	7	11	14	27	15:45					226	753	122	574	348	1327
04:00					6		2		8		16:00					225		137		362	
04:15					12		6		18		16:15					232		132		364	
04:30					13		5		18		16:30					241		172		413	
04:45					8	39	12	25	20	64	16:45					222	920	151	592	373	1512
05:00					16		7		23		17:00					203		180		383	
05:15					23		16		39		17:15					199		187		386	
05:30					28		22		50		17:30					180		198		378	
05:45					44	111	31	76	75	187	17:45					176	758	179	744	355	1502
06:00					53		52		105		18:00					143		169		312	
06:15					76		62		138		18:15					124		168		292	
06:30					82		110		192		18:30					87		98		185	
06:45					71	282	150	374	221	656	18:45					94	448	118	553	212	1001
07:00					67		161		228		19:00					90		81		171	
07:15					88		229		317		19:15					81		49		130	
07:30					99		253		352		19:30					78		47		125	
07:45					87	341	272	915	359	1256	19:45					61	310	64	241	125	551
08:00					92		218		310		20:00					49		50		99	
08:15					92		182		274		20:15					56		53		109	
08:30					93		191		284		20:30					48		52		100	
08:45					85	362	117	708	202	1070	20:45					46	199	34	189	80	388
09:00					69		130		199		21:00					36		31		67	
09:15					57		108		165		21:15					33		33		66	
09:30					66		66		132		21:30					31		25		56	
09:45					49	241	60	364	109	605	21:45					24	124	21	110	45	234
10:00					56		76		132		22:00					17		26		43	
10:15					64		61		125		22:15					18		21		39	
10:30					67		63		130		22:30					13		14		27	
10:45					53	240	80	280	133	520	22:45					17	65	14	75	31	140
11:00					69		60		129		23:00					13		11		24	
11:15					92		67		159		23:15					3		10		13	
11:30					53		82		135		23:30					8		14		22	
11:45					84	298	65	274	149	572	23:45					7	31	11	46	18	77
TOTALS						1964		3081		**5045**	**TOTALS**						4706		4227		**8933**
SPLIT %						38.9%		61.1%		**36.1%**	**SPLIT %**						52.7%		47.3%		**63.9%**

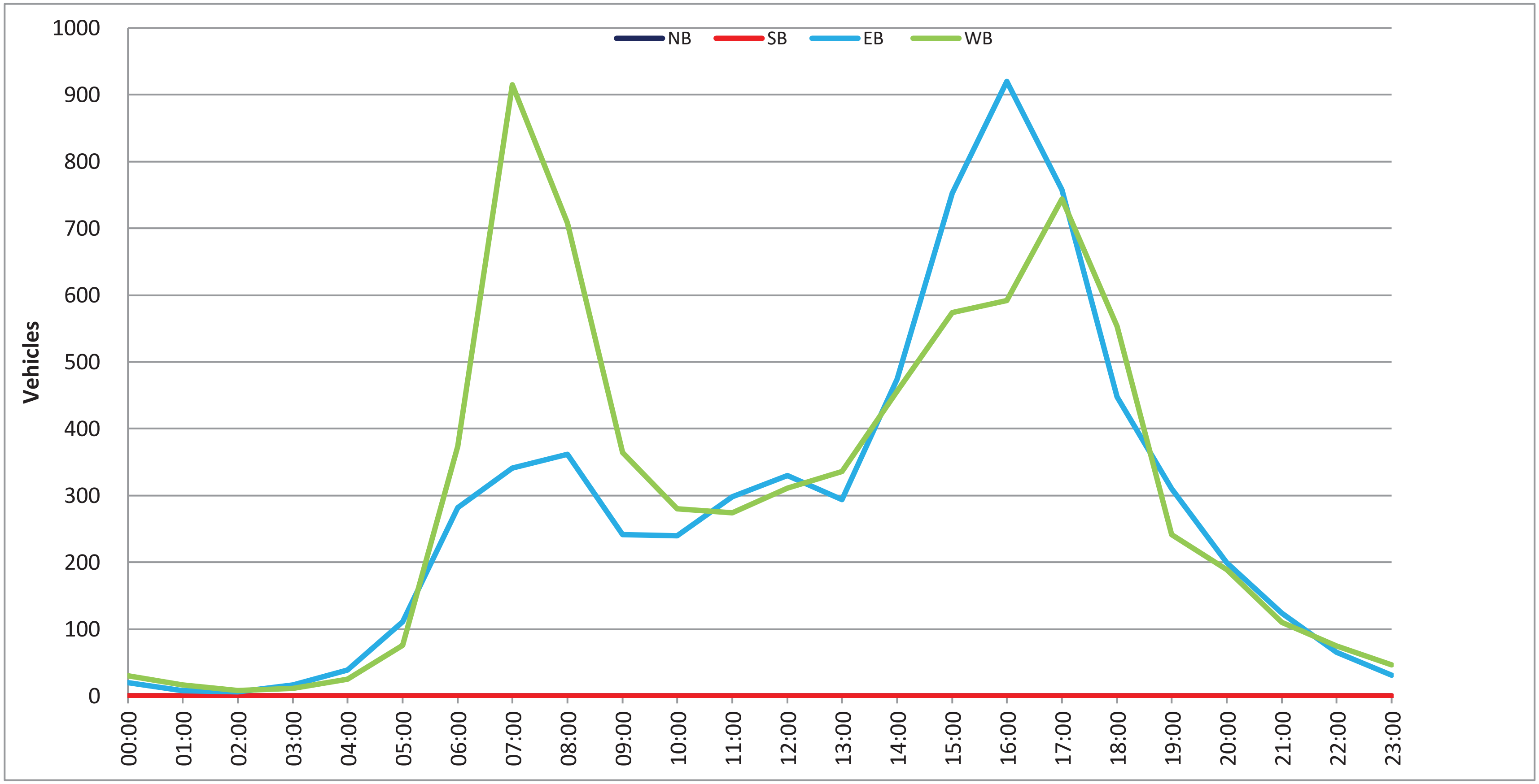
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	6,670	7,308	13,978

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour			07:30	07:15	**07:15**	**PM Peak Hour**			15:45	17:00	**16:30**
AM Pk Volume			370	972	**1338**	**PM Pk Volume**			924	744	**1555**
Pk Hr Factor			0.934	0.893	**0.932**	**Pk Hr Factor**			0.959	0.939	**0.941**
7 - 9 Volume	0	0	703	1623	**2326**	**4 - 6 Volume**	0	0	1678	1336	**3014**
7 - 9 Peak Hour			07:30	07:15	**07:15**	**4 - 6 Peak Hour**			16:00	17:00	**16:30**
7 - 9 Pk Volume	0	0	370	972	**1338**	**4 - 6 Pk Volume**	0	0	920	744	**1555**
Pk Hr Factor	0.000	0.000	0.934	0.893	**0.932**	**Pk Hr Factor**	0.000	0.000	0.954	0.939	**0.941**

Prepared by NDS/ATD

Project #: Historical **City:** San Marcos

Location: Borden Rd Bet. Rose Ranch Rd/Richland Rd **Date:** 4/18/2019



Prepared by NDS/ATD

VOLUME

Rose Ranch Rd Bet. Mulberry Dr & Borden Rd

Day: Tuesday
Date: 4/23/2019

City: San Marcos
Project #: Historical

DAILY TOTALS	NB	SB	EB	WB	Total
	1,597	1,721	0	0	3,318

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	3		2				5		12:00	22		12				34	
00:15	1		1				2		12:15	18		16				34	
00:30	0		0				0		12:30	18		12				30	
00:45	4	8	1	4			5	12	12:45	15	73	13	53			28	126
01:00	1		0				1		13:00	15		17				32	
01:15	0		0				0		13:15	12		13				25	
01:30	1		1				2		13:30	11		24				35	
01:45	0	2	1	2			1	4	13:45	26	64	23	77			49	141
02:00	1		0				1		14:00	13		20				33	
02:15	0		1				1		14:15	34		41				75	
02:30	0		0				0		14:30	52		33				85	
02:45	1	2	1	2			2	4	14:45	32	131	26	120			58	251
03:00	1		2				3		15:00	41		26				67	
03:15	0		1				1		15:15	52		36				88	
03:30	1		0				1		15:30	29		41				70	
03:45	0	2	1	4			1	6	15:45	30	152	44	147			74	299
04:00	1		1				2		16:00	40		33				73	
04:15	2		1				3		16:15	40		34				74	
04:30	1		4				5		16:30	42		56				98	
04:45	1	5	3	9			4	14	16:45	47	169	42	165			89	334
05:00	2		5				7		17:00	33		43				76	
05:15	3		5				8		17:15	35		36				71	
05:30	4		2				6		17:30	39		50				89	
05:45	11	20	7	19			18	39	17:45	40	147	26	155			66	302
06:00	6		20				26		18:00	32		23				55	
06:15	7		23				30		18:15	28		23				51	
06:30	8		30				38		18:30	16		10				26	
06:45	16	37	23	96			39	133	18:45	21	97	15	71			36	168
07:00	14		30				44		19:00	14		17				31	
07:15	26		70				96		19:15	15		20				35	
07:30	62		84				146		19:30	16		17				33	
07:45	67	169	45	229			112	398	19:45	13	58	15	69			28	127
08:00	47		45				92		20:00	10		7				17	
08:15	41		66				107		20:15	14		6				20	
08:30	48		61				109		20:30	15		9				24	
08:45	38	174	31	203			69	377	20:45	16	55	7	29			23	84
09:00	19		19				38		21:00	7		13				20	
09:15	18		18				36		21:15	9		6				15	
09:30	19		15				34		21:30	7		4				11	
09:45	17	73	25	77			42	150	21:45	2	25	5	28			7	53
10:00	16		22				38		22:00	4		3				7	
10:15	12		25				37		22:15	5		2				7	
10:30	10		14				24		22:30	4		2				6	
10:45	15	53	11	72			26	125	22:45	2	15	2	9			4	24
11:00	12		19				31		23:00	3		3				6	
11:15	11		20				31		23:15	4		2				6	
11:30	12		19				31		23:30	1		2				3	
11:45	21	56	14	72			35	128	23:45	2	10	2	9			4	19
TOTALS		601		789				**1390**	**TOTALS**		996		932				**1928**
SPLIT %		43.2%		56.8%				**41.9%**	**SPLIT %**		51.7%		48.3%				**58.1%**

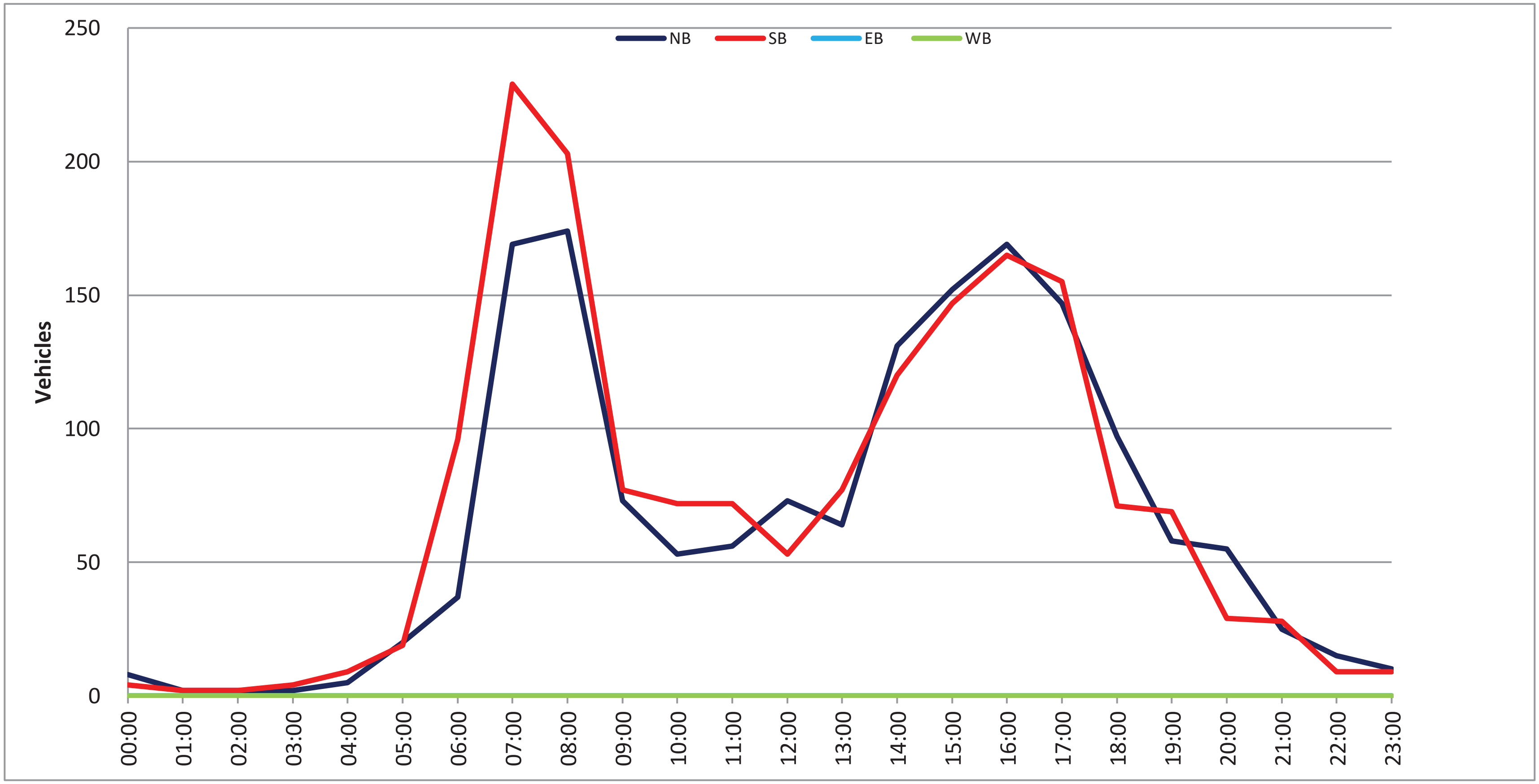
DAILY TOTALS	NB	SB	EB	WB	Total
	1,597	1,721	0	0	3,318

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	07:30	07:15			**07:30**	**PM Peak Hour**	14:30	16:30			**16:15**
AM Pk Volume	217	244			**457**	**PM Pk Volume**	177	177			**337**
Pk Hr Factor	0.810	0.726			**0.783**	**Pk Hr Factor**	0.851	0.790			**0.860**
7 - 9 Volume	343	432	0	0	**775**	**4 - 6 Volume**	316	320	0	0	**636**
7 - 9 Peak Hour	07:30	07:15			**07:30**	**4 - 6 Peak Hour**	16:00	16:30			**16:15**
7 - 9 Pk Volume	217	244	0	0	**457**	**4 - 6 Pk Volume**	169	177	0	0	**337**
Pk Hr Factor	0.810	0.726	0.000	0.000	**0.783**	**Pk Hr Factor**	0.899	0.790	0.000	0.000	**0.860**

Prepared by NDS/ATD

Project #: Historical **City:** San Marcos

Location: Rose Ranch Rd Bet. Mulberry Dr & Borden **Date:** 4/23/2019



Prepared by NDS/ATD

VOLUME

Richland Rd Bet. Borden Rd & Fulton Rd

Day: Thursday
Date: 4/18/2019

City: San Marcos
Project #: Historical

DAILY TOTALS	NB	SB	EB	WB	Total
	968	955	0	0	1,923

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		2				2		12:00	7		9				16	
00:15	0		0				0		12:15	12		9				21	
00:30	0		0				0		12:30	7		7				14	
00:45	0		1	3			1	3	12:45	6	32	7	32			13	64
01:00	0		0				0		13:00	5		3				8	
01:15	1		0				1		13:15	9		7				16	
01:30	0		0				0		13:30	7		12				19	
01:45	0	1	0				0	1	13:45	7	28	16	38			23	66
02:00	0		0				0		14:00	8		12				20	
02:15	0		0				0		14:15	19		30				49	
02:30	0		1				1		14:30	53		25				78	
02:45	1	1	1	2			2	3	14:45	21	101	16	83			37	184
03:00	0		0				0		15:00	32		18				50	
03:15	0		0				0		15:15	25		66				91	
03:30	0		0				0		15:30	20		32				52	
03:45	0		0				0		15:45	8	85	17	133			25	218
04:00	1		1				2		16:00	19		13				32	
04:15	0		0				0		16:15	9		15				24	
04:30	0		0				0		16:30	31		16				47	
04:45	1	2	1	2			2	4	16:45	15	74	30	74			45	148
05:00	1		1				2		17:00	13		17				30	
05:15	1		0				1		17:15	13		21				34	
05:30	1		0				1		17:30	20		13				33	
05:45	3	6	1	2			4	8	17:45	16	62	14	65			30	127
06:00	1		3				4		18:00	14		9				23	
06:15	6		4				10		18:15	12		3				15	
06:30	3		6				9		18:30	13		6				19	
06:45	6	16	7	20			13	36	18:45	7	46	13	31			20	77
07:00	12		13				25		19:00	13		8				21	
07:15	41		41				82		19:15	7		3				10	
07:30	78		82				160		19:30	7		3				10	
07:45	86	217	40	176			126	393	19:45	2	29	11	25			13	54
08:00	50		30				80		20:00	5		6				11	
08:15	22		50				72		20:15	23		2				25	
08:30	33		38				71		20:30	11		6				17	
08:45	6	111	24	142			30	253	20:45	5	44	3	17			8	61
09:00	8		8				16		21:00	4		1				5	
09:15	9		2				11		21:15	3		4				7	
09:30	8		5				13		21:30	4		4				8	
09:45	2	27	4	19			6	46	21:45	2	13	3	12			5	25
10:00	4		10				14		22:00	1		0				1	
10:15	9		3				12		22:15	1		1				2	
10:30	8		3				11		22:30	0		0				0	
10:45	7	28	6	22			13	50	22:45	1	3	0	1			1	4
11:00	7		8				15		23:00	1		1				2	
11:15	10		9				19		23:15	1		0				1	
11:30	12		5				17		23:30	2		1				3	
11:45	8	37	31	53			39	90	23:45	1	5	1	3			2	8
TOTALS		446		441				**887**	**TOTALS**		522		514				**1036**
SPLIT %		50.3%		49.7%				**46.1%**	**SPLIT %**		50.4%		49.6%				**53.9%**

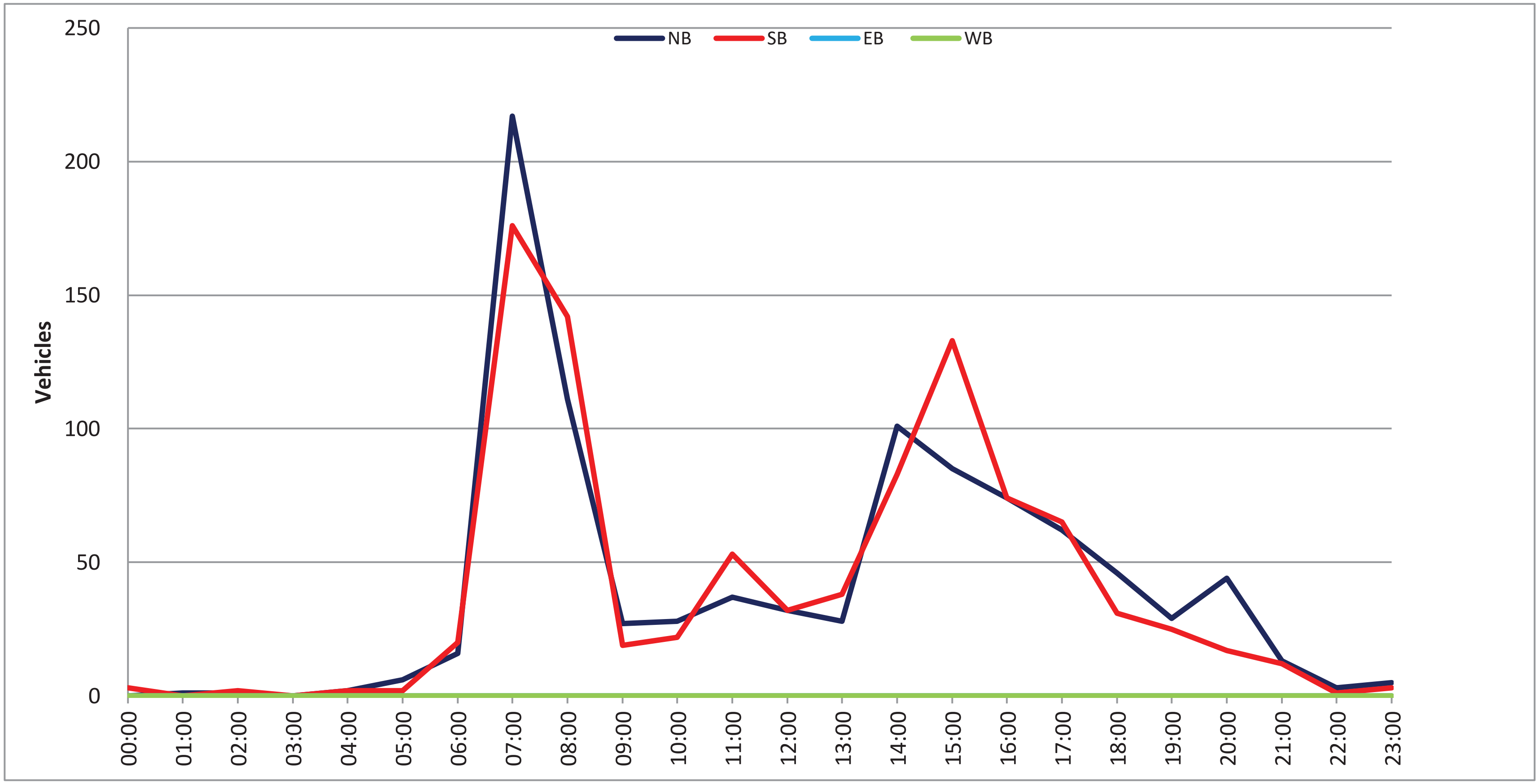
DAILY TOTALS	NB	SB	EB	WB	Total
	968	955	0	0	1,923

	NB	SB	EB	WB	Total		NB	SB	EB	WB	Total
AM Peak Hour	07:15	07:30			**07:15**	**PM Peak Hour**	14:30	15:00			**14:30**
AM Pk Volume	255	202			**448**	**PM Pk Volume**	131	133			**256**
Pk Hr Factor	0.741	0.616			**0.700**	**Pk Hr Factor**	0.618	0.504			**0.703**
7 - 9 Volume	328	318	0	0	**646**	**4 - 6 Volume**	136	139	0	0	**275**
7 - 9 Peak Hour	07:15	07:30			**07:15**	**4 - 6 Peak Hour**	16:00	16:30			**16:30**
7 - 9 Pk Volume	255	202	0	0	**448**	**4 - 6 Pk Volume**	74	84	0	0	**156**
Pk Hr Factor	0.741	0.616	0.000	0.000	**0.700**	**Pk Hr Factor**	0.597	0.700	0.000	0.000	**0.830**

Prepared by NDS/ATD

Project #: Historical **City:** San Marcos

Location: Richland Rd Bet. Borden Rd & Fulton Rd **Date:** 4/18/2019



National Data & Surveying Services Intersection Turning Movement Count

Location: Richland Rd & Borden Rd
City: San Marcos
Control: 1-Way Stop (SB)

Project ID: Historical
Date: 3/12/2019

Total

NS/EW Streets:	Richland Rd				Richland Rd				Borden Rd				Borden Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	20	0	10	0	7	65	0	0	0	142	34	0	278
7:15 AM	0	0	0	0	17	0	7	0	8	85	0	0	0	221	33	0	371
7:30 AM	0	0	0	0	16	0	11	0	15	68	0	0	0	235	20	0	365
7:45 AM	0	0	0	0	11	0	8	0	17	67	0	0	0	177	49	0	329
8:00 AM	0	0	0	0	7	0	12	0	27	45	0	0	0	139	53	0	283
8:15 AM	0	0	0	0	18	0	28	0	23	69	0	0	0	138	59	0	335
8:30 AM	0	0	0	0	10	0	20	0	39	61	0	0	0	133	75	0	338
8:45 AM	0	0	0	0	9	0	12	0	17	65	0	0	0	109	21	0	233
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	108	0	108	0	153	525	0	0	0	1294	344	0	2532
APPROACH %'s :					50.00%	0.00%	50.00%	0.00%	22.57%	77.43%	0.00%	0.00%	0.00%	79.00%	21.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	51	0	38	0	67	265	0	0	0	772	155	0	1348
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.750	0.000	0.792	0.000	0.620	0.779	0.000	0.000	0.000	0.821	0.731	0.000	0.908
					0.824				0.892				0.909				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	22	0	6	0	9	151	0	0	0	78	12	0	278
4:15 PM	0	0	0	0	15	0	5	0	7	143	0	0	0	80	18	0	268
4:30 PM	0	0	0	0	24	0	3	0	25	198	0	0	0	112	35	0	397
4:45 PM	0	0	0	0	34	0	11	0	11	177	0	0	0	116	35	0	384
5:00 PM	0	0	0	0	31	0	7	0	11	183	0	0	0	118	21	0	371
5:15 PM	0	0	0	0	24	0	4	0	5	164	0	0	0	136	16	0	349
5:30 PM	0	0	0	0	46	0	8	0	11	193	0	0	0	165	27	0	450
5:45 PM	0	0	0	0	28	0	4	0	9	137	0	0	0	107	15	0	300
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	224	0	48	0	88	1346	0	0	0	912	179	0	2797
APPROACH %'s :					82.35%	0.00%	17.65%	0.00%	6.14%	93.86%	0.00%	0.00%	0.00%	83.59%	16.41%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	135	0	30	0	38	717	0	0	0	535	99	0	1554
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.734	0.000	0.682	0.000	0.864	0.929	0.000	0.000	0.000	0.811	0.707	0.000	0.863
					0.764				0.925				0.826				

National Data & Surveying Services Intersection Turning Movement Count

Location: Richland Rd & Borden Rd
City: San Marcos
Control: 1-Way Stop (SB)

Project ID: Historical
Date: 3/12/2019

Bikes

NS/EW Streets:	Richland Rd				Richland Rd				Borden Rd				Borden Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
APPROACH %'s :													0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250
													0.250				

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	0	0	0	0	0	1	0	0	1	1	0	0	0	1	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	0	5
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.375
									0.250				0.500				

National Data & Surveying Services Intersection Turning Movement Count

Location: Richland Rd & Borden Rd
City: San Marcos
Project ID: Historical
Date: 3/12/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Richland Rd		Richland Rd		Borden Rd		Borden Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	2	0	0	0	0	0	0	2
7:45 AM	0	5	0	0	0	0	0	0	5
8:00 AM	2	18	0	0	0	0	0	0	20
8:15 AM	11	7	0	0	0	0	0	0	18
8:30 AM	3	9	0	0	0	0	0	0	12
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	16	41	0	0	0	0	0	0	57
APPROACH %'s :	28.07%	71.93%							
PEAK HR :	**07:15 AM - 08:15 AM**								TOTAL
PEAK HR VOL :	2	25	0	0	0	0	0	0	27
PEAK HR FACTOR :	0.250	0.347							0.338
	0.338								

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	0	0	0	0	1
4:45 PM	6	0	0	0	0	0	0	0	6
5:00 PM	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	2	0	0	0	0	0	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	8	3	0	0	0	0	0	0	11
APPROACH %'s :	72.73%	27.27%							
PEAK HR :	**04:45 PM - 05:45 PM**								TOTAL
PEAK HR VOL :	6	1	0	0	0	0	0	0	7
PEAK HR FACTOR :	0.250	0.250							0.292
	0.292								

Prepared by National Data & Surveying Services

Richland Rd & Borden Rd

Peak Hour Turning Movement Count

ID: Historical
City: San Marcos

Day: Tuesday
Date: 03/12/2019

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Richland Rd
SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	38	0	51	0	222
NOON	0	0	0	0	0
PM	30	0	135	0	137
	0	1	0	0	

Borden Rd
EASTBOUND

	AM	NOON	PM	
⇦	810	0	565	
↷	0	0	0	0
↱	67	0	38	1
→	265	0	717	1
↴	0	0	0	0

Borden Rd
WESTBOUND

		PM	NOON	AM
1	↰	99	0	155
1	←	535	0	772
0	↱	0	0	0
0	↶	0	0	0
	⇨	852	0	316

CONTROL

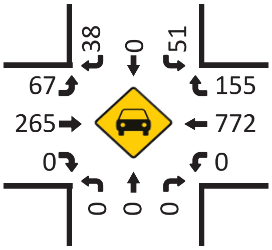
1-Way Stop (SB)

	AM	NOON	PM
TEV	1348	0	1554
PHF	0.91		0.86

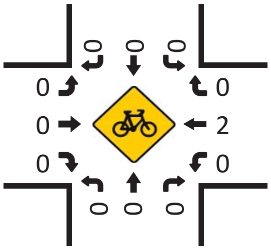
NORTHBOUND
Richland Rd

	⇩	↶	↰	↑	↱
		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

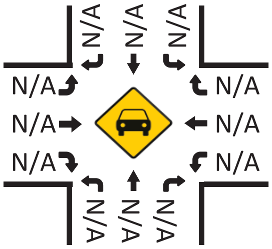
Total Vehicles (AM)



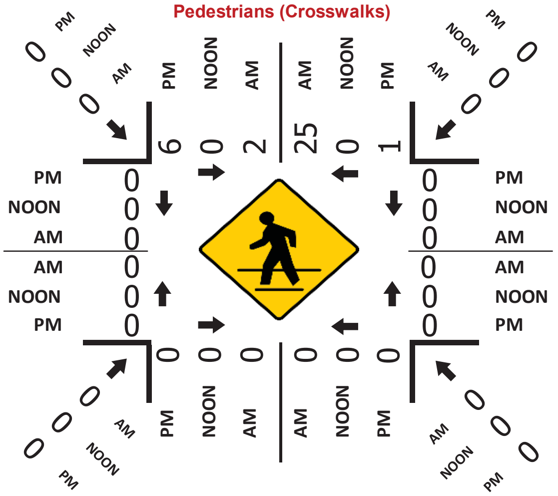
Bikes (AM)



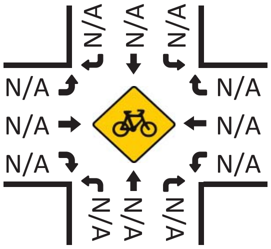
Total Vehicles (Noon)



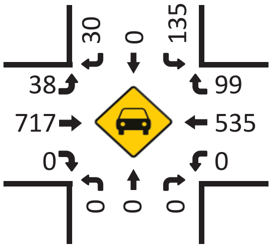
Pedestrians (Crosswalks)



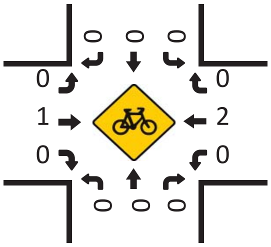
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)

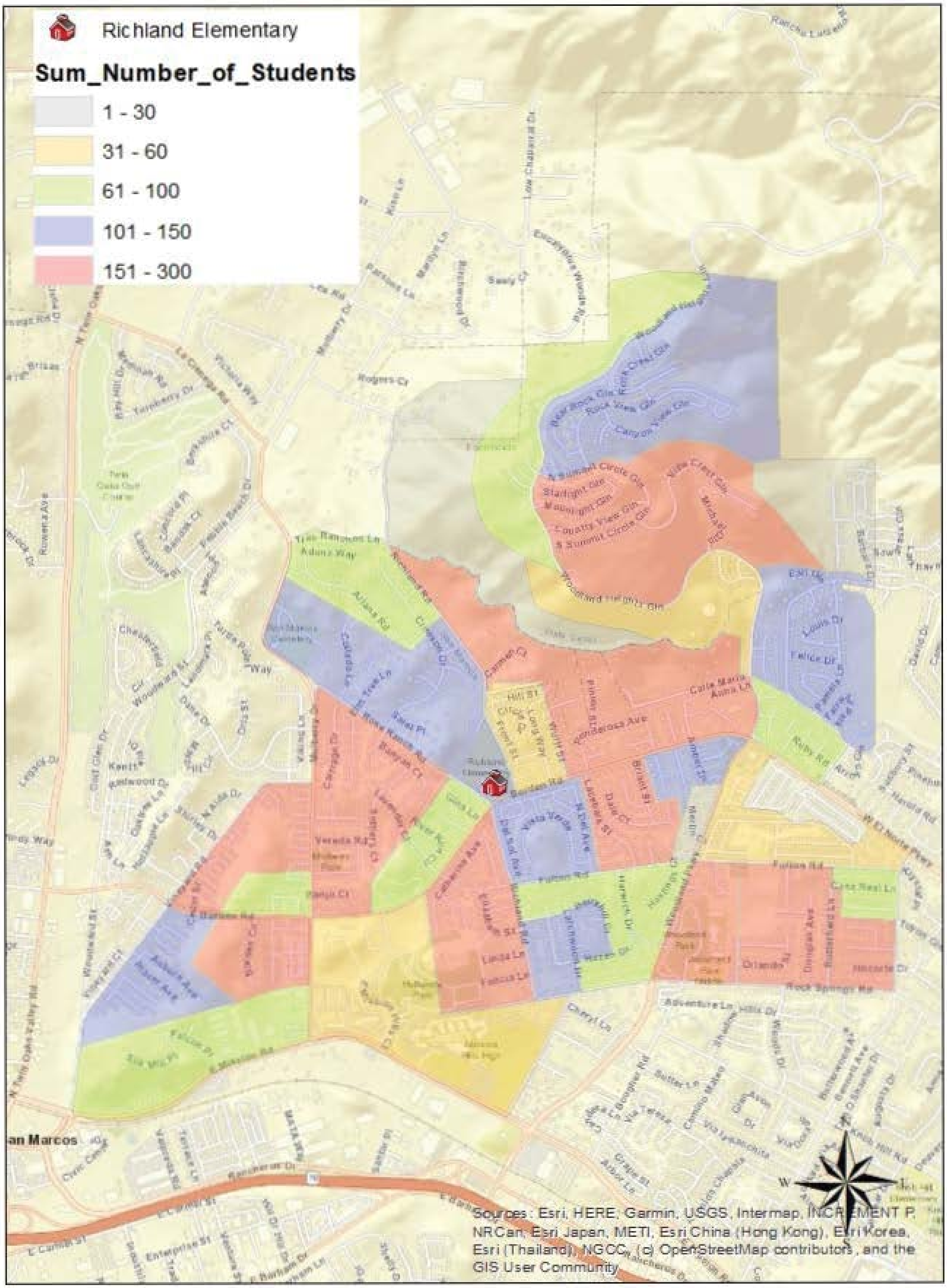


Attachment C

Richland Elementary Student Density Map

SAN MARCOS UNIFIED SCHOOL DISTRICT

Elementary School Enrollment Density by Study Area



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Attachment D

Synchro Worksheets

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	Y	
Traffic Vol, veh/h	67	265	772	155	51	38
Future Vol, veh/h	67	265	772	155	51	38
Conflicting Peds, #/hr	0	0	0	27	0	27
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	135	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	74	291	848	170	56	42

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1045	0	-	0	1314	902
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	439	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	666	-	-	-	174	336
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	650	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	649	-	-	-	146	319
Mov Cap-2 Maneuver	-	-	-	-	146	-
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	633	-

Approach	EB	WB	SB
HCM Control Delay, s	2.3	0	42.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	649	-	-	-	190
HCM Lane V/C Ratio	0.113	-	-	-	0.515
HCM Control Delay (s)	11.3	-	-	-	42.5
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.4	-	-	-	2.6

HCM 6th TWSC
1: Borden Rd & Richland Rd

Intersection	
Int Delay, s/veh	30.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	Y	
Traffic Vol, veh/h	38	717	535	99	135	30
Future Vol, veh/h	38	717	535	99	135	30
Conflicting Peds, #/hr	0	0	0	7	0	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	135	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	834	622	115	157	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	744	0	-	0	1551	636
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	922	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	864	-	-	-	~ 125	478
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	387	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	858	-	-	-	~ 117	472
Mov Cap-2 Maneuver	-	-	-	-	~ 117	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	384	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	283.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	858	-	-	-	136
HCM Lane V/C Ratio	0.051	-	-	-	1.411
HCM Control Delay (s)	9.4	-	-	-	283.1
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	12.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	15.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	↰↱	
Traffic Vol, veh/h	79	265	772	179	102	63
Future Vol, veh/h	79	265	772	179	102	63
Conflicting Peds, #/hr	0	0	0	27	0	27
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	135	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	291	848	197	112	69

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1072	0	-	0	1340	902
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	465	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	650	-	-	-	168	336
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	633	-	-	-	138	319
Mov Cap-2 Maneuver	-	-	-	-	138	-
Stage 1	-	-	-	-	343	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	129.9
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	633	-	-	-	176
HCM Lane V/C Ratio	0.137	-	-	-	1.03
HCM Control Delay (s)	11.6	-	-	-	129.9
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	0.5	-	-	-	8.6

Intersection	
Int Delay, s/veh	33.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	Y	
Traffic Vol, veh/h	40	717	535	102	139	32
Future Vol, veh/h	40	717	535	102	139	32
Conflicting Peds, #/hr	0	0	0	7	0	7
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	135	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	834	622	119	162	37

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	748	0	-	0	1557	636
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	928	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	861	-	-	-	~ 124	478
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	855	-	-	-	~ 116	472
Mov Cap-2 Maneuver	-	-	-	-	~ 116	-
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	382	-

Approach	EB		WB		SB
HCM Control Delay, s	0.5		0		$ 308.3
HCM LOS					F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	855	-	-	-	135
HCM Lane V/C Ratio	0.054	-	-	-	1.473
HCM Control Delay (s)	9.5	-	-	-	$ 308.3
HCM Lane LOS	A	-	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	13.5

Notes

~: Volume exceeds capacity
$: Delay exceeds 300s
+: Computation Not Defined
*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	101.1
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	↰↱	
Traffic Vol, veh/h	79	265	772	179	102	63
Future Vol, veh/h	79	265	772	179	102	63
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	291	848	197	112	69
Number of Lanes	1	1	1	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	14.1	147.8	13
HCM LOS	B	F	B

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	0%	62%
Vol Thru, %	0%	100%	100%	0%	0%
Vol Right, %	0%	0%	0%	100%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	79	265	772	179	165
LT Vol	79	0	0	0	102
Through Vol	0	265	772	0	0
RT Vol	0	0	0	179	63
Lane Flow Rate	87	291	848	197	181
Geometry Grp	7	7	7	7	2
Degree of Util (X)	0.157	0.486	1.337	0.271	0.319
Departure Headway (Hd)	6.951	6.442	5.672	4.963	6.86
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	519	562	645	728	528
Service Time	4.651	4.142	3.372	2.663	4.86
HCM Lane V/C Ratio	0.168	0.518	1.315	0.271	0.343
HCM Control Delay	10.9	15.1	179.9	9.5	13
HCM Lane LOS	B	C	F	A	B
HCM 95th-tile Q	0.6	2.6	35.7	1.1	1.4

Intersection	
Intersection Delay, s/veh	127.6
Intersection LOS	F

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	↰↱	
Traffic Vol, veh/h	40	717	535	102	139	32
Future Vol, veh/h	40	717	535	102	139	32
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	834	622	119	162	37
Number of Lanes	1	1	1	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	2
HCM Control Delay	203.2	67.8	15.6
HCM LOS	F	F	C

Lane	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	0%	81%
Vol Thru, %	0%	100%	100%	0%	0%
Vol Right, %	0%	0%	0%	100%	19%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	717	535	102	171
LT Vol	40	0	0	0	139
Through Vol	0	717	535	0	0
RT Vol	0	0	0	102	32
Lane Flow Rate	47	834	622	119	199
Geometry Grp	7	7	7	7	2
Degree of Util (X)	0.085	1.412	1.056	0.178	0.387
Departure Headway (Hd)	6.822	6.313	6.527	5.812	7.749
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	528	584	560	621	467
Service Time	4.522	4.013	4.227	3.512	5.749
HCM Lane V/C Ratio	0.089	1.428	1.111	0.192	0.426
HCM Control Delay	10.2	214	78.9	9.8	15.6
HCM Lane LOS	B	F	F	A	C
HCM 95th-tile Q	0.3	37.4	16.8	0.6	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	↰↱	
Traffic Volume (veh/h)	79	265	772	179	102	63
Future Volume (veh/h)	79	265	772	179	102	63
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	291	848	197	112	69
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	111	1136	914	753	290	179
Arrive On Green	0.06	0.61	0.49	0.49	0.28	0.28
Sat Flow, veh/h	1781	1870	1870	1541	1035	637
Grp Volume(v), veh/h	87	291	848	197	182	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1541	1681	0
Q Serve(g_s), s	3.9	5.8	33.9	6.0	7.0	0.0
Cycle Q Clear(g_c), s	3.9	5.8	33.9	6.0	7.0	0.0
Prop In Lane	1.00			1.00	0.62	0.38
Lane Grp Cap(c), veh/h	111	1136	914	753	471	0
V/C Ratio(X)	0.78	0.26	0.93	0.26	0.39	0.00
Avail Cap(c_a), veh/h	122	1204	970	800	471	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.0	7.3	19.1	12.0	23.2	0.0
Incr Delay (d2), s/veh	25.0	0.1	14.2	0.2	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.0	16.8	2.0	3.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	62.0	7.4	33.3	12.2	25.6	0.0
LnGrp LOS	E	A	C	B	C	A
Approach Vol, veh/h		378	1045		182	
Approach Delay, s/veh		20.0	29.3		25.6	
Approach LOS		B	C		C	

Timer - Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				53.1		26.9	9.5	43.6
Change Period (Y+Rc), s				4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s				51.5		19.5	5.5	41.5
Max Q Clear Time (g_c+I1), s				7.8		9.0	5.9	35.9
Green Ext Time (p_c), s				1.9		0.4	0.0	3.1

Intersection Summary			
HCM 6th Ctrl Delay			26.7
HCM 6th LOS			C

HCM 6th Signalized Intersection Summary
1: Borden Rd & Richland Rd

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑	↑	↱	Y	
Traffic Volume (veh/h)	40	717	535	102	139	32
Future Volume (veh/h)	40	717	535	102	139	32
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	47	834	622	119	162	37
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	81	923	698	586	502	115
Arrive On Green	0.05	0.49	0.37	0.37	0.36	0.36
Sat Flow, veh/h	1781	1870	1870	1570	1409	322
Grp Volume(v), veh/h	47	834	622	119	200	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	1570	1740	0
Q Serve(g_s), s	1.6	24.4	18.7	3.1	5.0	0.0
Cycle Q Clear(g_c), s	1.6	24.4	18.7	3.1	5.0	0.0
Prop In Lane	1.00			1.00	0.81	0.18
Lane Grp Cap(c), veh/h	81	923	698	586	620	0
V/C Ratio(X)	0.58	0.90	0.89	0.20	0.32	0.00
Avail Cap(c_a), veh/h	148	1029	733	615	620	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.1	13.9	17.6	12.7	14.0	0.0
Incr Delay (d2), s/veh	6.5	10.3	12.7	0.2	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	11.0	9.5	1.0	2.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.6	24.2	30.4	12.9	15.4	0.0
LnGrp LOS	C	C	C	B	B	A
Approach Vol, veh/h		881	741		200	
Approach Delay, s/veh		24.8	27.6		15.4	
Approach LOS		C	C		B	

Timer - Assigned Phs	4	6	7	8
Phs Duration (G+Y+Rc), s	34.1	25.9	7.2	26.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	33.0	18.0	5.0	23.5
Max Q Clear Time (g_c+I1), s	26.4	7.0	3.6	20.7
Green Ext Time (p_c), s	3.2	0.4	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	24.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Attachment E

Traffic Signal Analysis Worksheets

Project	Richland Elementary	**Intersection #**	Volumes	**N-S**	**E-W**
Scenario	Existing	**Major Street**	Borden Road	☐	☑
Peak Hour	PM	**Minor Street**	Richland Road	☑	☐

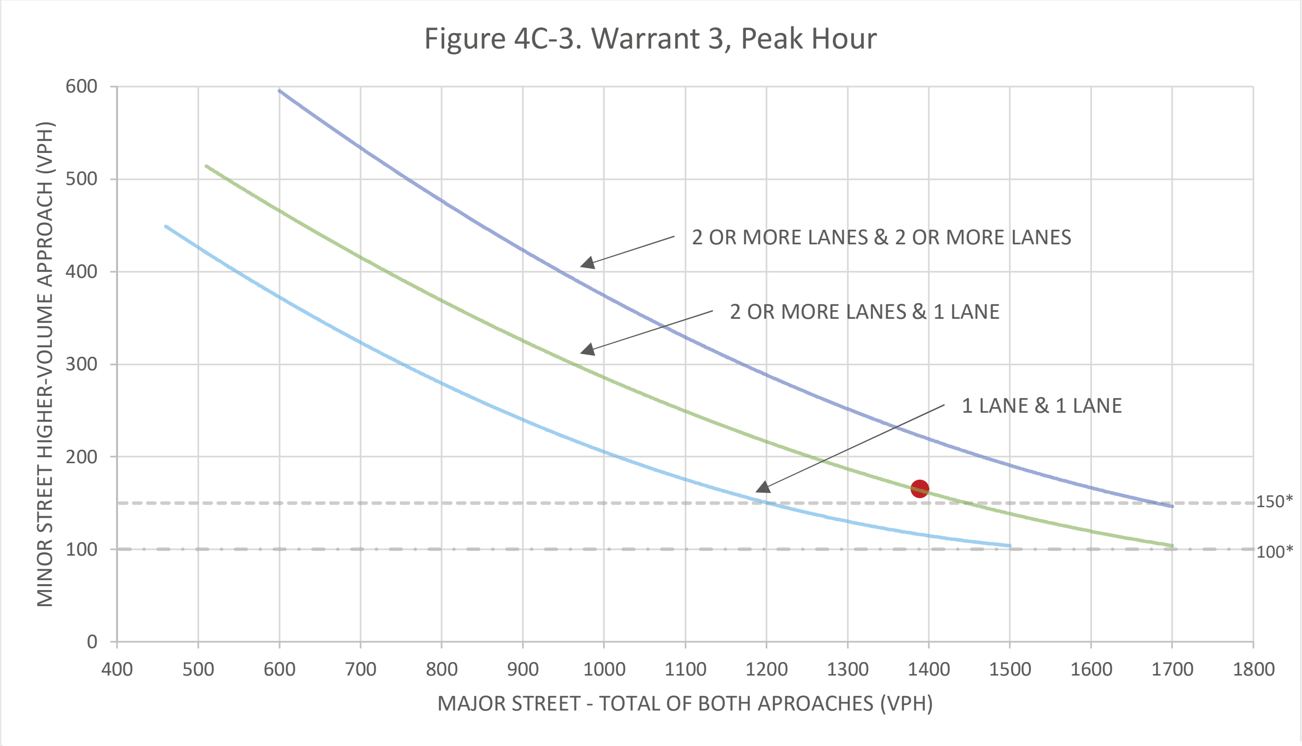


Figure 4C-3. Warrant 3, Peak Hour

Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Major Street**	**Warrant Met?**
	Borden Road	Richland Road	
Number of Approach Lanes	2	1	Yes
Traffic Volume (VPH)*	1,389	165	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

Project	Richland Elementary	**Intersection #**	Volumes	**N-S**	**E-W**
Scenario	Existing plus Project	**Major Street**	Borden Road	☐	☑
Peak Hour	PM	**Minor Street**	Richland Road	☑	☐

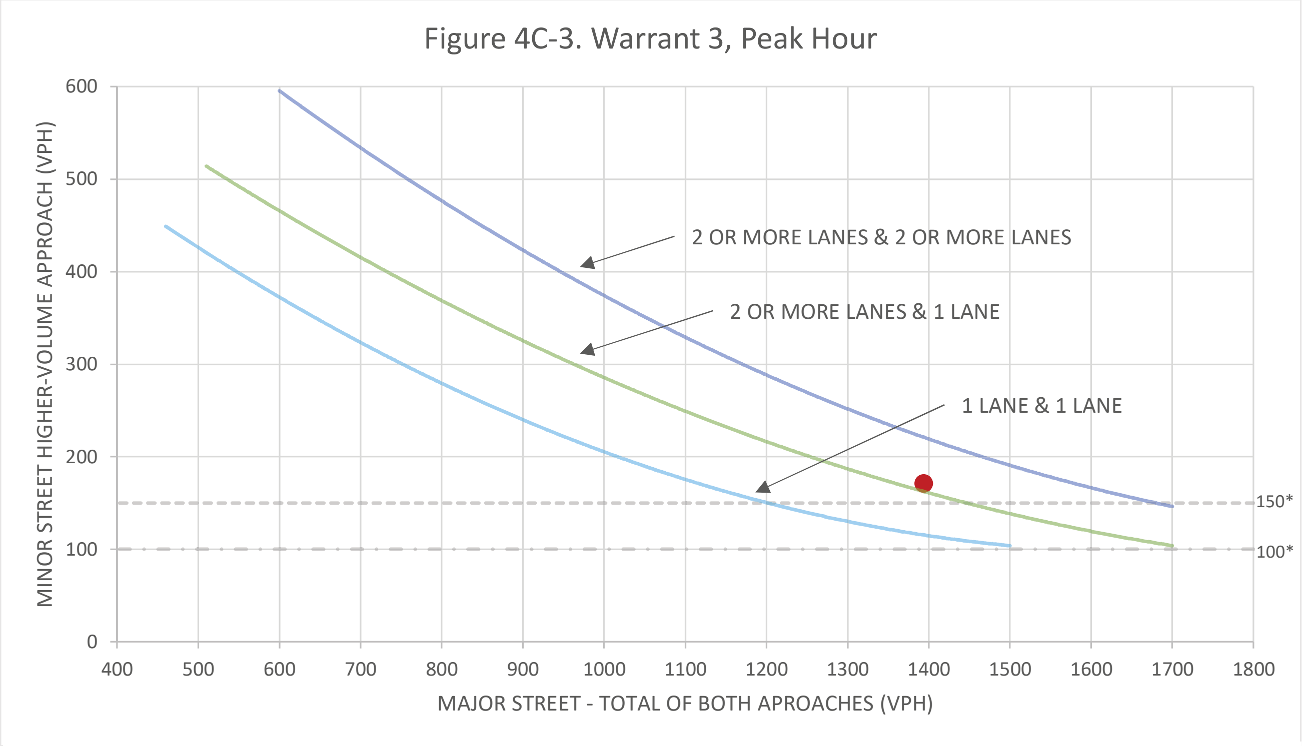


Figure 4C-3. Warrant 3, Peak Hour

Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Major Street**	**Warrant Met?**
	Borden Road	Richland Road	
Number of Approach Lanes	2	1	**Yes**
Traffic Volume (VPH)*	1,394	171	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	Richland Elementary	**Intersection #**	1	**N-S**	**E-W**
Scenario	Exisitng	**Major Street**	Borden Road	☐	☑
Peak Hour	4 hour	**Minor Street**	Richland Road	☑	☐

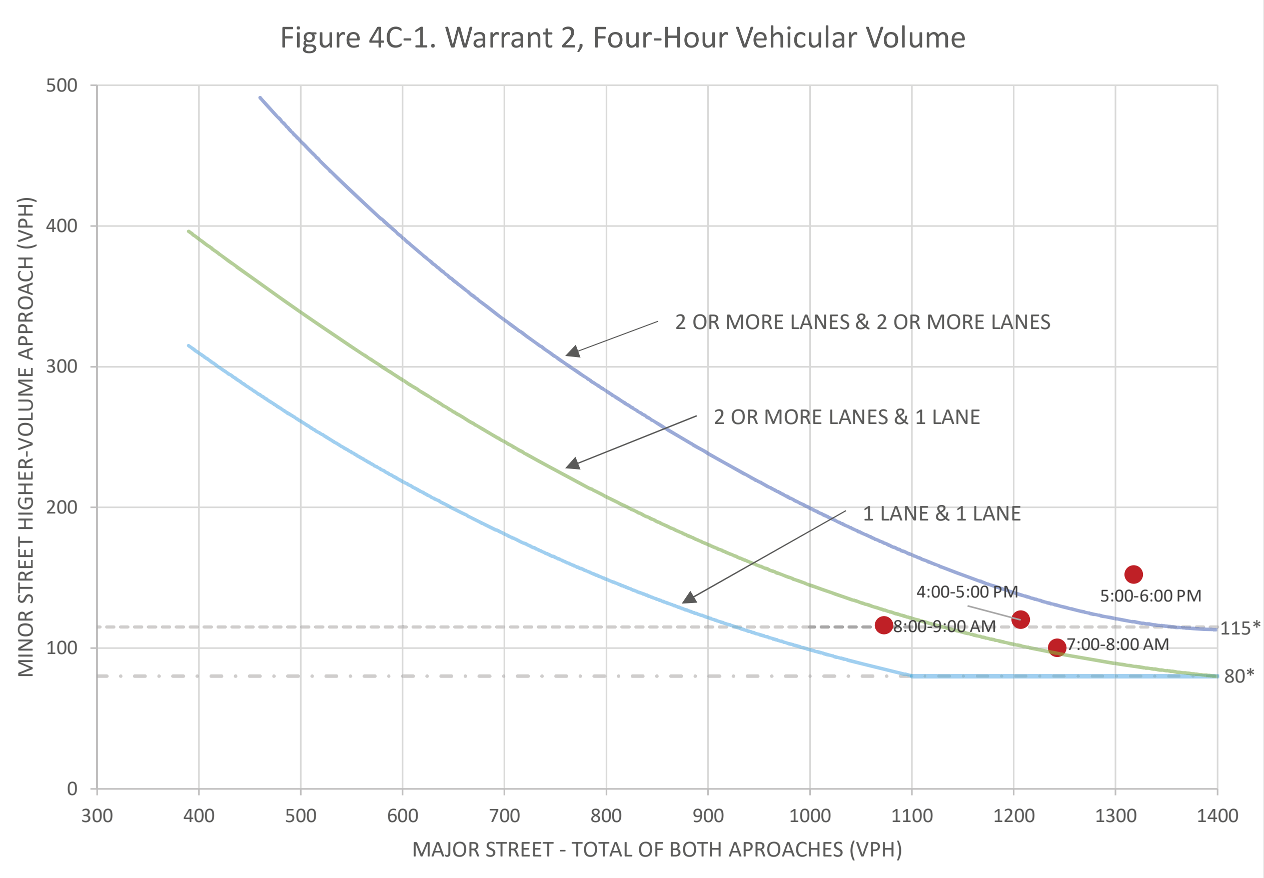


Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

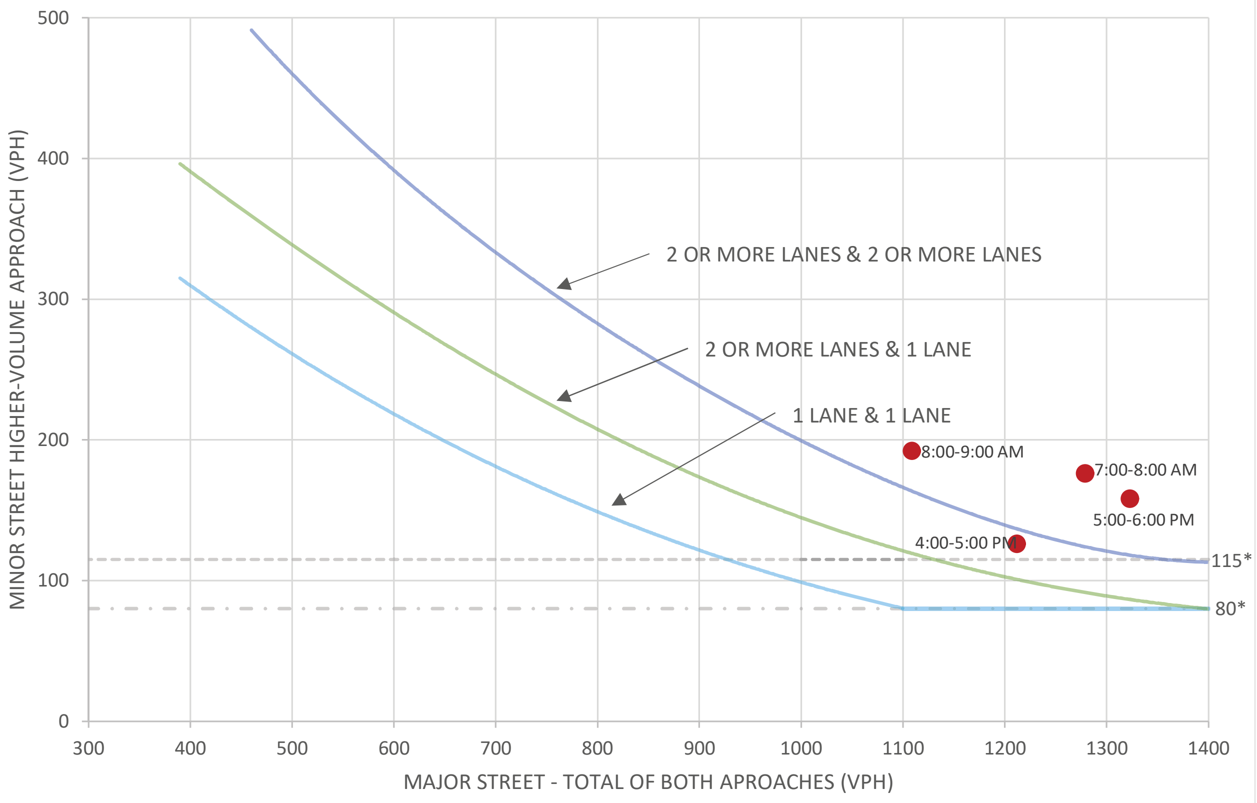
*Note: 115 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Borden Road	Richland Road	
Number of Approach Lanes	2	1	
7:00-8:00 AM	1,243	100	Yes
8:00-9:00 AM	1,073	116	No
4:00-5:00 PM	1,207	120	Yes
5:00-6:00 PM	1,318	152	Yes

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

Project	Richland Elementary	**Intersection #**	1	**N-S**	**E-W**
Scenario	Existing plus Project	**Major Street**	Borden Road	☐	☑
Peak Hour	4 hour	**Minor Street**	Richland Road	☑	☐

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 115 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Borden Road	Richland Road	
Number of Approach Lanes	2	1	
7:00-8:00 AM	1,279	176	Yes
8:00-9:00 AM	1,109	192	Yes
4:00-5:00 PM	1,212	126	Yes
5:00-6:00 PM	1,323	158	Yes

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.