ADDENDUM
MITIGATED NEGATIVE DECLARATION/INITIAL STUDY

FOR THE

SOUTHWESTERN COMMUNITY COLLEGE DISTRICT
PUBLIC SAFETY TRAINING CENTER AND AUTOMOTIVE TECHNOLOGY CENTER

AT THE

OTAY MESA HIGHER EDUCATION CENTER

STATE CLEARINGHOUSE # 2005091113

October 2019

Prepared for:
Southwestern Community College District

Prepared by:
BRG Consulting, Inc.

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Addendum Mitigated Negative Declaration (MND)/ Initial Study (IS)

For:

Southwestern Community College District
Public Safety Training Center and Automotive Technology Center at the Otay Mesa Higher Education Center

State Clearinghouse # 2005091113

Prepared By:

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October 2019

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SECTION 1. INTRODUCTION

1.1 Purpose

This document is a ☐ policy-level; ☒ project level Initial Study for evaluation of potential environmental impacts resulting with the proposed Public Safety Training Center and Automotive Technology Center at Southwestern College's Higher Education Center.

1.2 California Environmental Quality Act (CEQA) Requirements

As defined by Section 15063 of the State California Environmental Quality Act (CEQA) Guidelines, an Initial Study is prepared primarily to provide the Lead Agency with information to use as the basis for determining whether an Environmental Impact Report (EIR), Mitigated Negative Declaration, Negative Declaration, or other environmental document, would be appropriate for providing the necessary environmental documentation and clearance for any proposed project.

☐ According to Section 15065, an EIR is deemed appropriate for a particular proposal if the following conditions occur:

- The proposal has the potential to substantially degrade quality of the environment.
- The proposal has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The proposal has possible environmental effects that are individually limited but cumulatively considerable.
- The proposal could cause direct or indirect adverse effects on human beings.

☐ According to Section 15070(a), a **Negative Declaration** is deemed appropriate if the proposal would not result in any significant effect on the environment.

☐ According to Section 15070(b), a **Mitigated Negative Declaratio**n is deemed appropriate if it is determined that though a proposal could result in a significant effect, mitigation measures are available to reduce these significant effects to insignificant levels.

☒ This Initial Study has determined that the proposed project will not result in potentially significant environmental impacts different than those already disclosed in the previously adopted Mitigated Negative Declaration (2005 Final MND) for the Higher Education Center at Otay Mesa (SCH No.2005091113) and findings consistent with CEQA Guidelines Section 15162 have been made.

1.2.1 Initial Study

This Initial Study is prepared in conformance with the California Environmental Quality Act of 1970, as amended (Public Resources Code, Section 21000 et. seq.); Section 15070 of the State CEQA Guidelines to Implement CEQA as Amended" (California Code of Regulations, Title 14, Chapter 3, Section 15000, et. seq.); applicable requirements of the Southwestern

Community College District; and the regulations, requirements, and procedures of any other responsible public agency or an agency with jurisdiction by law.

Pursuant to Section 15050 of the CEQA Guidelines, Southwestern Community College District is the Lead Agency. The Lead Agency is the public agency which has the principal responsibility for approving the necessary environmental clearances and analyses for any project within its jurisdiction.

1.2.2 Intended Uses of The Initial Study

This Initial Study is an informational document which is intended to inform Southwestern Community College District decision-makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed project. The environmental review process has been established to enable public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any potentially adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency and other responsible public agencies must balance adverse environmental effects against other public objectives, including economic and social goals.

1.3 Project Background

On November 9, 2005, the Governing Board of Southwestern Community District (Board) approved the Final Mitigated Negative Declaration (2005 Final MND), dated September 2005 (SCH No. 2005091113) for the Higher Education Center at Otay Mesa, along with the Mitigation Monitoring and Reporting Program (MMRP). The Final MND analyzed the direct, indirect and cumulative changes to the physical environment that would result from construction and operation of approximately 68,415 square feet (SF) for the facilities listed below, with a capacity of 5,000 students and 100 faculty:

- Administration & Student Services Building
- Assembly Hall/Student Activities and Health Services Building
- Bookstore/Food Service/Library Building
- Two Classroom Buildings
- Outdoor areas (Academic Grove and Scholar's Plaza); and
- Two parking areas

The 2005 Final MND determined that impacts to the following environmental categories would be less than significant and would not require mitigation: Aesthetics, Agricultural and Forest Resources, Biological Resources, Cultural Resources, Hydrology and Water Quality, Mineral Resources, Paleontological Resources, Population and Housing, Public Services, Recreational Resources, and Utilities and Service Systems.

The 2005 Final MND determined that construction and operation of the Higher Education Center would result in significant direct impacts to Air Quality, Geology and Soils, and Transportation/Traffic, which would be reduced to a level less than significant with the incorporation of mitigation measures.

1.4 Otay Mesa Campus Existing Conditions

The Southwestern College's Otay Mesa Campus, also referred to as the Higher Education Center, is located within the Otay Mesa Community of the City of San Diego (Figure 1), on the northern side of Gigantic Street, just south of State Route 905 (SR-905). The campus consists of nine (9) buildings within the central portion of the campus, arranged around a courtyard with gathering spaces for the campus community (Figure 2). Buildings include the Administration & Student Services Building, Instructional Facilities, a Conference Center with Student Services and a Student Center/Library on the west side of the courtyard. These buildings are on the west side of campus along with an outdoor training area and a student parking lot. The eastern portion of the campus consists of an additional parking lot for faculty and students and a vacant/previously graded lot. Table 1 shows the existing facilities and parking at the Otay Mesa Campus.

Table 1 - Otay Mesa Campus
Existing Development

Building	**Name/Location**	
4100	Administration & Student Services	
4200	Student Center/Library	
4300	Classroom Building (South East Corner)	
4300	Classroom Building (South West Corner)	
4300	Police Academy	
4400	Classroom Building (North West Corner)	
4400	Classroom Building (Within courtyard)	
4400	Classroom Building (North East Corner)	
4500	Conference Center	
--	Outdoor Training Area (West End of Campus)	
Parking	**Location**	**Count**
Student Parking Lot	West End of Campus	230
Faculty/Staff Parking Lot	East End of Campus	107
Total Spaces		**337**

The existing Faculty/Staff Parking Lot conveys stormwater via surface flow to the northeast and southeast corners of the lot, where it collects into catch basins and discharges into the Eastern Detention Basin. The basin is approximately five feet deep. The basin slopes from north to south, with the low point in the southern corner. The basin discharges into an existing 30" pipe that connects into a public storm drain and continues south through Centurion Street.

A second detention basin is located south of the campus buildings. These two detention basins serve all areas of the campus, except for the western parking lot. The Western Detention Basin is located west of the campus entrance at Gigantic Street and south of the Student Parking Lot.

The Eastern Field covers the eastern five acres of the campus. The field slopes gradually from northwest to southeast at approximately 0.5% slope. The site discharges stormwater into existing City of San Diego storm drainage easements via surface flow on the south and east sides of the site.

The area surrounding the campus consists of light industrial/commercial uses interspersed with parcels of undeveloped land. Immediately adjacent to the campus, there are undeveloped parcels to the south, north, east and southeast and light industrial uses to the west and southwest. The SR-905 and SR-125 are to the north and east of the campus, respectively. Interstate 805 and I-5 are located to the west of the campus.

1.5 Southwestern College 2018 Facilities Master Plan

The Southwestern Community College District 2018 Facilities Master Plan (FMP) identified buildings and site improvements at the Otay Mesa Campus to support the growing Fire, Science, Police and EMS training programs. The improvements included new buildings for training and storage of program supplies and improvements to the outdoor training areas (Public Safety Training Center). A new Automotive Technology Center, to be relocated from the Chula Vista Campus, was also identified in the FMP.

1.6 Project Description

The proposed Facilities Master Plan Projects (Project) at the Otay Campus include the construction of a Public Safety Training Center; construction of an Automotive Technology Complex; new parking lots, a detention basin, utilities, lighting and outdoor site improvements (Figure 3). The Fire Science, EMS, and Public Safety Training Center includes three (3) single-story buildings to serve as classrooms, offices, vocational training and equipment storage totaling 23,570 SF. These facilities would be located within a paved parking lot at the west end of the campus. The Project also includes construction of an Auto Technology Center (50,000 SF), parking lot and retention basin on five (5) acres of vacant/previously graded land at the eastern end of campus.

Public Safety Training Center

The proposed Public Safety Training Center would be constructed within the student parking lot at the western end of the campus. As shown on Table 2, proposed improvements would include:

- Four (4) small one-story buildings (Buildings A, B, C and E) with a combined area of 18,920 SF to be used for classrooms, offices, vocational training, equipment and storage. Building A would consist of a steel-framed structure containing offices, simulation and

classroom space, restrooms and storage areas. Building B would consist of a one-story, steel-framed structure to provide drive-through spaces for emergency vehicles and enclosed storage areas. Building C would consist of a one-story, concrete masonry structure to provide two separate storage areas. Building E would consist of a one-story concrete masonry structure that would serve as a Simulation Apartment Building.

- Building D would consist of a four-story (44-foot high), concrete masonry structure (1,700 SF) to be used for firefighting training drills, for a total floor area of 4,650 SF.
- Replacement of lost parking spaces within new lots included in the proposed Automotive Technology Center.
- Installation of three (3) new light poles (28 feet in height) within the Student Parking Lot;
- Resurfacing of the existing running track;
- New building mounted LED[1] wall sconces; and,
- Replacement of track light standards with LED lighting.

Automotive Technology Center

The Automotive Technology Center (ATC) would be constructed on a vacant and previously graded five-acre parcel within the eastern portion of the campus and would consist of the following:

- A one-story (50,000 SF) building with classrooms, lab space, shared spaces, lab bays, project space, and tool storage areas;
- New parking areas that would provide 258 student, faculty and accessible parking spaces. This new parking would offset spaces removed from the Student Parking Lot by the proposed Public Safety Training Center;
- Outdoor covered car yard storage area;
- Outdoor areas with seating, decking;
- A new retention basin at the easternmost portion of the site (referred to herein as the Eastern Detention Basin);
- A new vehicular and pedestrian access to the ATC from Centurion Drive.

The design of the ATC would be consistent with the existing color and material palette of the existing campus and would incorporate sustainable strategies with the goal of earning Leadership in Energy and Environmental Design (LEED) certification.

[1] Light emitting diode.

The outdoor landscape design would include outdoor seating, decking, landscape rock mulches, and erosion control native/drought tolerant container landscape for the new parking lots, site and perimeter. The landscape design would utilize Low-Impact Development standards and sustainable landscape, materials and procedures.

Table 2 – Proposed New Buildings and Parking

Building Count	Building Letter	Name/Location
1	A	Fire Science/Police/ EMS Training Classroom Building
2	B	Fire Science/Police/ EMS Training Apparatus Building
3	C	Fire Science/Police/ EMS Training – Storage
4	D	Fire Training Simulator
5	E	Fire Science/Police/ EMS Training Simulation Apartment Building
6	-	Auto Technology Center
Parking Lot	**Use**	**Spaces**
West Lot	Student, Faculty, Visitor	95
Front Lot	Faculty/Staff	107
ATC Lots	Student, Faculty	258
	Total Spaces	**456**

Proposed Utilities

Potable Water

The project would connect to the onsite existing 2" potable water line just south of the Eastern Detention Basin or a new line would be installed into the public water main, if required.

Fire Water

The project would connect to the onsite existing 10" fire line just south of the Eastern Detention Basin. There would not be the need to install a new service in the public right-of-way.

Sewer

Sewer service would be provided via a connection to the onsite existing 8" sewer lateral just south of the Eastern Detention Basin. The existing 8" service should be adequate to convey the anticipated wastewater flow from this project.

Storm Drain

Surface drainage from the existing Faculty/Staff Parking Lot would continue to discharge into the Eastern Detention Basin. The Eastern Detention Basin will be modified and may include an underground vault storage. The discharge point for the existing Faculty/Staff Parking Lot and the Eastern Detention Basin will remain unchanged.

In the Eastern Field, stormwater will convey into new bioretention basins on the south and east edges of the site. These basins will discharge via reinforced concrete pipe into the public storm drain easement on the south edge of the site.

Project Construction

Construction on the Public Safety Training Center is expected to start in the fall of 2019 and be complete within a year and a half. Construction activities include removal of existing asphalt and concrete, with approximately 670 cubic yards (CY) of cut and 1,410 CY of fill; mixing of the existing base with the proposed fill and compaction; replacement/repair of irrigation lines, potable water lines and fire water lines; construction of facilities; and, installation of landscaping.

Construction of the ATC is expected to start in the second quarter of 2020 and be completed within one year. Construction activities include clearing and disposing of surface vegetation, demolition rubble, trash, pavement, debris, etc. with approximately 10,417 CY of cut and fill (balanced on-site); over excavation of surface soils and recompaction; construction of facilities; and, installation of landscaping.

Table 3 – Proposed Campus Improvements

Project	Proposed Use	Existing Use	Proposed Improvement
Public Safety Training Center	– Classrooms, offices, vocational, equipment and storage (Buildings A, B, C and E) – A four-story fire training simulator (Building D)	Parking	– Construction of new buildings – Replace parking spaces in new lot on eastern portion of campus
Auto Technology Center (ATC)	– One story auto technology classroom – Outdoor covered car and storage – Outdoor landscaping, detention basin – Parking, and new vehicular and pedestrian access	Vacant	– Construction of new building and outdoor site improvements – Relocation of existing parking

1.7 Analysis and Required Findings

CEQA Guidelines, Sections 15162 through 15164 set forth the criteria for determining the appropriate additional environmental documentation, if any, to be completed when there is a previously-approved Negative Declaration or a previously-certified EIR for the project. CEQA Guidelines, Sections 15162(a) and 15163, state that when a Negative Declaration has been adopted or an EIR certified for a project, no Subsequent or Supplemental EIR or Subsequent Negative Declaration shall be prepared for that project unless the lead agency determines that none of the conditions described in Section 15162 requiring the preparation of a subsequent Negative Declaration or EIR have occurred. The CEQA Guidelines require that a brief explanation be provided to support the findings that no subsequent EIR or Negative Declaration is needed for further discretionary approval. These findings are described below. The analysis in support of these findings is provided in the Initial Study portion of this document.

Required Finding: Substantial changes are not proposed for the project that will require major revisions of the previously-adopted 2005 Final MND due to the involvement of new, significant environmental effects or a substantial increase in the severity of previously-identified effects (CEQA Section 15162a(1)).

Substantial changes are not proposed for the project that will require revisions to 2005 Final Mitigated Negative Declaration for the Higher Education Center at Otay Mesa (2005 Final MND). The previously-adopted 2005 Final MND identified the direct, indirect and cumulative changes to the physical environment that would result from the Otay Mesa Higher Education Center project. The construction and operation of additional educational facilities on the eastern and western portions of the campus would not involve any new, significant environmental effects or a substantial increase in the severity of previously-identified effects as documented in the Initial Study. Additionally, all previously-adopted mitigation measures presented in the Otay Mesa MND that are applicable to the proposed project are a condition of project approval and are incorporated herein by reference.

Required Finding: Substantial changes have not occurred with respect to the circumstances under which the project is undertaken, that would require major revisions of the previous MND due to the involvement of new significant environmental effects or a substantial increase in the severity of previously-identified significant effects (CEQA Section 15162a(2)).

Substantial changes have not occurred with respect to the circumstances under which the project would be undertaken, that would require major revisions to the adopted 2005 Final MND. Since adoption of the Final MND in November of 2005, there have been some updates to the CEQA Guidelines and adoption of new legislation requiring additional environmental analysis. The changes to CEQA and new legislation have been incorporated into the following Initial Study but did not result in major revisions to the previous 2005 Final MND. Therefore, no proposed changes or revisions to the 2005 Final MND are required. In addition, all

previously-adopted mitigation measures that are applicable to the proposed project are a condition of project approval and are incorporated herein by reference.

Required Finding: No new information has been provided that would indicate that the proposed project would result in one or more significant effects not discussed in the previous MND (CEQA Section 15162a(3)).

There is nothing in the proposed project that would suggest that its adoption and implementation would result in any new significant environmental effects not previously discussed in the adopted Otay Mesa MND. Therefore, no proposed changes or revisions to the 2005 Final MND are required. In addition, all previously-adopted mitigation measures that are applicable to the proposed project, are a condition of project approval and are incorporated herein by reference.

1.8 Conclusion

The Initial Study provided in a subsequent section of this document substantiates the conclusions that no additional CEQA documentation is required for the proposed project. Based on the findings and information contained in the previously-adopted Mitigated Negative Declaration for the Southwestern College Higher Education Center at Otay Mesa Project (2005 Final MND), the analysis above and contained within the Initial Study, the CEQA statute and State CEQA Guidelines, including Sections 15164 and 15162, the project will not result in any new, increased, or substantially different impacts, other than those previously considered and addressed in the 2005 Final MND.

No major changes or additions to the 2005 Final MND are necessary, nor is there a need for any additional mitigation measures. Therefore, pursuant to State CEQA Guidelines, Section 15164, the Governing Board of the Southwestern Community College District hereby adopts these 15162 and 15164 findings as it relates to the proposed project and the previously-adopted MND.

SECTION 2. INITIAL STUDY AND ENVIRONMENTAL CHECKLIST

1. Project Title:

Southwestern College Otay Mesa Additional Facilities

2. Lead Agency Name and Address:

Southwestern Community College District
900 Otay Lakes Road
Chula Vista, CA 91910-7299

3. Contact Person and Phone Number:

Aurora Ayala
aayala@swccd.edu
(619) 482-6320

4. Project Location:

The proposed project is located at the Southwestern College's Otay Mesa Campus within the Otay Mesa Community of the City of San Diego. The address is 8100 Gigantic Street, San Diego, CA 92154. The campus is situated south of State Route 905 (SR 905), north of Gigantic Street, west of La Media Road and east of Britannia Boulevard (APN 646-111-42).

5. Project Sponsor's Name and Address:

Southwestern Community College District
Department of Facilities, Operations and Planning
900 Otay Lakes Road
Chula Vista, CA 91910-7299

6. General Plan Designation:

The 2014 Otay Mesa Community Plan designates the site as "Institutional". Allowable uses include, but are not limited to, military facilities, community colleges, communication and utilities, transit centers, schools, libraries, police and fire facilities, post offices, hospitals, park-and-ride lots, government offices and civic centers.

7. Zoning:

IP-1-1 (Industrial Park). This zoning allows research and development uses with some limited manufacturing.

8. Description of Project:

Please see Section 1.6 for a description of the proposed Project.

9. Surrounding Land Uses and Setting: Briefly describe the project's surroundings:

The campus is surrounded, in general, by light industrial/commercial uses interspersed with some parcels of undeveloped land. Immediately adjacent to the campus, there are undeveloped parcels to the south, north, east and southeast and light industrial uses to the west and southwest. The SR-905 and SR-125 are to the north and east of the campus, respectively. The Interstate (I)-805 and I-5 are located to the west of the campus.

10. Other Public Agencies Whose Approval is Required (e.g., permits, financing approval, or participation agreement.):

The permits and consultations that may be required for the proposed project include:

- Office of Division of State Architect
- San Diego Regional Water Quality Control Board General Construction Stormwater Permit

11. Native American Consultation: 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.?

No California Native American tribes, traditionally and culturally affiliated with the project area, have requested consultation with the Southwestern Community College District, pursuant to Public Resources Code Section 21080.3.1.

BRG submitted a written request to the State of California's Native American Heritage Commission (NAHC) in May 2019 requesting a search of the Sacred Lands File. As of the date of the MND's publication, a response has not been received.

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 /Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology / Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION:

On the basis of this initial evaluation:

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

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

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

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 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 EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Kindred Murillo, Ed.D
Superintendent/President

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 EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) The significance criteria or threshold, if any, used to evaluate each question; and

   b) The mitigation measure identified, if any, to reduce the impact to less than significance.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

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) 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?	☐	☐	☒	☐

Potential aesthetics impacts associated with construction and operation of the Higher Education Center at Otay Mesa were analyzed in the 2005 Final MND. No impacts to aesthetic resources were identified and no mitigation measures were required.

a) No Impact. The 2005 Final MND determined there are no officially designated scenic vistas in the project area and there has been no change or addition of scenic vistas. The addition of new facilities to an existing campus would have no adverse effects on a scenic vista.

b) No Impact. The 2005 Final MND found there are no state scenic highways within the project area and no highways in the vicinity of the project have been designated or deemed eligible for designation since 2005. SR-905 is not a designated scenic highway. There are no natural scenic resources on the Higher Education Center campus, such as trees, rock outcroppings or historic buildings. Therefore, the proposed project would have no impact on scenic resources.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

c) No Impact. The visual character of the surrounding area is defined by vacant land and existing light industrial/commercial buildings. The proposed project will add small buildings to an existing campus and thus will not result in an impact to the visual character or quality of the project site and its surrounding area.

d) Less Than Significant. The proposed project would include the installation of lights in the parking lot and track area and around the campus buildings for security purposes. However, all lighting would be designed to direct lighting downward to minimize spill onto off-site properties. In addition, the architectural materials and windows for the campus buildings are not anticipated to result in substantial glare impacts to off-site land uses. As such, light and glare impacts would be less than significant.

Mitigation: No impacts to aesthetics would occur and therefore no mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. The proposed project would not result in any new significant aesthetic impacts, nor would there be a substantial increase in the severity of previously identified impacts to aesthetic/visual resources from those discussed in the 2005 Final MND.

II. AGRICULTURAL AND FOREST 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	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Potential impacts to agriculture and forest resources associated with construction and operation of the Higher Education Center at Otay Mesa were analyzed in the 2005 Final MND. No impacts to agricultural resources were identified and no mitigation measures were required. Since the adoption of the 2005 Final MND, there have been no changes in circumstances or new information with respect to agriculture or forest resources.

a and b) No Impact. According to the California Department of Conservation's 2016 Important Farmlands Map for San Diego County, the Higher Education Center Campus is designated as Developed with eastern undeveloped portion of the campus is designated as Farmland of Local Importance. No prime farmland, Farmland of Statewide Importance, or Unique Farmland occurs within the project site. However, based on a site visit conducted January 7, 2019, this area is disturbed, and is not utilized for agricultural production. The portion of the site that is designated as Farmland of Local Importance is zoned IP-1-1 Industrial Park and is designated in the Community Plan as an institutional use. The proposed project would not result in the conversion of the project site to a non-agriculture use. Therefore, the proposed project will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to a non-agricultural use and no impact would occur.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

No agricultural resources including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance would be converted to a non-agricultural use and no conflict with existing zoning for agricultural use or a Williamson Act contract would occur.

c) No Impact. The project site is located within an area developed primarily with industrial and commercial uses therefore the project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. No impact would occur.

d) No Impact. Neither the project site nor surrounding areas support forest uses. The project site is located within an area developed primarily with industrial and commercial uses therefore the project would not result in the loss of forest land or conversion of forest land to non-forest use, therefore no impact would occur.

e) No Impact. As there are no active agricultural operations within the immediate vicinity of the project area, the proposed project would not result in the conversion of farmland to non-agricultural use. No impacts would occur.

Mitigation: The proposed project would not result in significant impacts to agricultural or forestry resources. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, there is no evidence that the proposed project would require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. The proposed project would not result in any new significant agriculture or forest impacts, nor would there be a substantial increase in the severity of previously identified impacts to agriculture or forest resource impacts from those discussed in the 2005 Final MND.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

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) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Potential air quality impacts associated with construction and operation of the Higher Education Center were evaluated in the 2005 Final MND. The 2005 Final MND identified a mitigation measure to reduce construction-related air quality impacts to a level less than significant. Mitigation Measure A1 requires fugitive dust control measures to be implemented in accordance with San Diego County Air Pollution Control District regulations and is applicable to the proposed project.

An Air Quality and Greenhouse Gas Analysis (Birdseye Consulting Group, 2019; Appendix A) was prepared for the proposed Project to assess potential air quality impacts and greenhouse gas emissions. The analysis contained in this section is based on the findings of that technical report.

Existing Setting

The project site is located in the San Diego Air Basin (SDAB) and are subject to the San Diego County Air Pollution Control District (SDCAPCD) guidelines and regulations. The weather of San Diego County is profoundly influenced by the Pacific Ocean and its semi-permanent high-pressure systems that result in dry, warm summers and mild, occasionally wet winters. The average minimum temperature for January ranges from the mid-40s to the high-50s degrees Fahrenheit (4 to 15 degrees Celsius) across the county. July maximum temperatures average in the mid-80s to the high-90s degrees Fahrenheit (high-20s to the high-

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

30s degrees Celsius). Most of the county's precipitation falls from November to April, with infrequent (approximately 10 percent) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches (254 millimeters); the amount increases with elevations as moist air is lifted over the mountains.

The SDAPCD is required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment." San Diego County is listed as a federal non-attainment area for ozone (eight hour) and a state non-attainment area for ozone (one hour and eight-hour standards), PM10 and PM2.5. The SDAB is in attainment for the state and federal standards for nitrogen dioxide, carbon monoxide, sulfur dioxide and lead.

Sensitive Receptors

Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to air pollutants. Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare as well that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The project site is located in an industrial area. There are no residences or other sensitive properties located in proximity. The Otay Mesa campus itself would be the closest sensitive receptor to the construction areas.

Methodology and Significance Thresholds

Air quality modeling was performed in general accordance with the methodologies outlined in the SDAPCD 2009 RAQS to identify both construction and operational emissions associated with the Proposed projects. All emissions were calculated using the California Emissions Estimator Model (CalEEMod) software version 2016.3.2 which incorporates current air emission data, planning methods and protocol approved by the California Air Resources Board.

Construction activities would require the use of equipment that would generate criteria air pollutant emissions. For modeling purposes, it was assumed that all construction equipment used would be diesel-powered. Construction emissions associated with development of the proposed Project were quantified by estimating the types of equipment, including the number

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

of individual pieces of equipment, that would be used on-site during each of the construction phases as well as off-site haul trips to remove demolition debris. Construction emissions were analyzed using the regional thresholds established by the SDAPCD and published under Regulation II, Rule 20-2, Table 20-2-1. "AQIA Trigger Levels."

Operational emissions include mobile source emissions, energy emissions and area source emissions. Mobile source emissions are generated by motor vehicle trips associated with operation of the Project. Emissions attributable to energy use include electricity and natural gas consumption for space and water heating. Area source emissions are generated by landscape maintenance equipment, use of consumer products and painting. To determine whether a regional air quality impact would occur, the increase in emissions were compared with the SDAPCD's recommended regional thresholds for operational emissions.

A significant adverse air quality impact may occur when a project individually or cumulatively interferes with progress toward the attainment of the ozone standard by generating emissions that equal or exceed the established long-term quantitative thresholds for pollutants or exceed a state or federal ambient air quality standard for any criteria pollutant.

The SDAPCD does not provide quantitative thresholds for determining the significance of construction or mobile source-related projects. However, the SDAPCD does specify Air Quality Impact Analysis (AQIA) trigger levels for new or modified stationary sources (SDAPCD Rules 20.1 through 20.3) If these incremental levels are exceeded, an AQIA must be performed. Although these trigger levels do not generally apply to mobile sources or general land development projects, for comparative purposes, these levels may be used to evaluate the increased emissions from these projects. For CEQA purposes, the screening level thresholds can be used to demonstrate that a project's total emissions would not result in a significant impact to air quality. Because the AQIA screening thresholds do not include VOCs, the screening level for VOCs used in this analysis are from the South Coast Air Quality Management District (SCAQMD), which generally has stricter emissions thresholds than SDAPCD. The thresholds shown below are used in this analysis to determine whether the solar program has the potential to violate an air quality standard or contribute substantially to an existing or projected air quality violation:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 4 – Air Quality Significance Criteria

Criteria Pollutant	Significance Threshold
Carbon Monoxide (CO)	550 pounds/day
Nitrogen Oxides (NOx)	250 pounds/day
Particulate Matter (PM10	100 pounds/day
Particulate Matter (PM2.5)	67 pounds/day
Sulfur Oxides (SOx)	250 pounds/day
Volatile Organic Compounds (VOCs)/ Reactive Organic Gases (ROGs)	75 pounds/day

a) Less Than Significant. The project site is within the San Diego Air Basin (SDAB), the boundaries of which are contiguous with San Diego County. Within San Diego County, the San Diego Air Pollution Control District (SDAPCD) has primary responsibility for the development and implementation of rules and regulations designed to attain national ambient air quality standards (NAAQS) and California ambient air quality standards (CAAQS), as well as the permitting of new or modified sources and the development of air quality management plans. Projects that propose development that is consistent with the growth anticipated by the relevant planning documents used in the formulation of the RAQS and SIP would be consistent with the RAQS and SIP.

The project site is designated as Institutional and is an allowable use under the existing general plan designation and zoning of the project site. The proposed project would be consistent with the site's existing zoning and general plan designation and would not conflict with the implementation of the San Diego Air Quality Management Plan. Because the Proposed projects would be consistent with the applicable General Plans that were used in the formulation of the RAQS and SIP, they are considered consistent with the RAQS and SIP. Additionally, the Proposed projects would not result in any increase in enrollment capacity of the campus and are therefore consistent with regional growth projections. Additionally, the Proposed projects would implement all applicable SDAPCD rules and short-term construction and long-term operations would result in minimal emissions far below thresholds, as described below under response **III.b**.

b) Less Than Significant with Mitigation Incorporated. San Diego County is designated as a federal non-attainment area for ozone (eight hour) and a state non-attainment area for ozone (one hour and eight-hour standards), PM10 and PM2.5. These designations are a result of emissions generated by past and present projects and will continue to be influenced by reasonably foreseeable future projects. Cumulative impacts could result if the proposed project

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

exceeds established thresholds for pollutants in which the region is nonattainment. In addition, cumulative impacts could result if the proposed project would be constructed at the same time as other development projects in the area, thereby exposing sensitive receptors to cumulative emission concentrations.

Tables 5 and 6 summarize the estimated maximum daily emissions of pollutants occurring during the construction and operation, respectively. As shown in Table 4, construction of the proposed project would not exceed the SDAPCD regional construction emission thresholds for daily emissions. Thus, the project construction would not conflict with the SIP, RAQS or AQMP, violate an air quality standard or contribute to an existing or projected violation, result in a cumulatively considerable increase in ozone or particulate matter emissions or expose receptors to substantial pollutant concentrations.

Table 5. Estimated Maximum Mitigated Daily Construction Emissions

Construction Phase	Maximum Emissions (lbs./day)					
	ROG	NOx	CO	SOx	PM10	PM2.5
2020 Maximum lbs./day	4.8	61.2	25.9	0.08	12.0	7.0
2021 Maximum lbs./day	39.7	22.6	19.7	0.04	1.9	1.2
SCAPCD Regional Thresholds	75	250	550	250	100	67
Threshold Exceeded	**No**	**No**	**No**	**No**	**No**	**No**

Source: Birdseye Consulting Group, 2019 (Appendix A).

Table 6. Estimated Operational Emissions

Operational Phase	Estimated Emissions (lbs./day)					
	ROG	NOx	CO	SOx	PM10	PM2.5
Area	1.8	0.01	0.03	0.0	0.01	0.01
Energy	0.07	0.7	0.6	0.01	0.05	0.05
Mobile	3.4	13.6	28.5	0.1	10.9	3.0
Maximum lbs./day	5.3	14.4	39.1	0.11	11.0	3.0
SCAPCD Thresholds	75	250	550	250	100	67
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Birdseye Consulting Group, 2019 (Appendix A).

The project would be required to comply with SDAPCD Rules 52 and 54 which identify measures to reduce fugitive dust and is required to be implemented at all construction sites

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

located within the SDAB. The following best management practices shall be shown on all applicable grading and building plans as details, notes, or as otherwise appropriate:

- Minimization of Disturbance. Construction contractors should minimize the area disturbed by clearing, grading, earth moving, or excavation operations to prevent excessive amounts of dust.
- Soil Treatment. Construction contractors should treat all graded and excavated material, exposed soil areas and active portions of the construction site, including unpaved on-site roadways to minimize fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. As referenced, watering would be implemented for dust control. Watering will be performed as often as necessary, and at least twice daily, preferably in the late morning and after work is done for the day. Note – it was assumed watering would occur two times daily for modeling purposes.
- Soil Stabilization. Construction contractors should monitor all graded and/or excavated inactive areas of the construction site at least weekly for dust stabilization. Soil stabilization methods, such as water and roll compaction, and environmentally safe dust control materials shall be applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until landscape growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.
- No Grading During High Winds. Construction contractors should stop all clearing, grading, earth moving, and excavation operations during periods of high winds (20 miles per hour or greater, as measured continuously over a one-hour period).
- Street Sweeping. Construction contractors should sweep all on-site driveways and adjacent streets and roads at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

The proposed project would be subject to the conditions noted above to minimize construction emissions and therefore would not negatively impact regional air quality. Operational emissions would be minor and would not contribute to any significant cumulative impacts related to the nonattainment status for ozone, PM10, or PM2.5. Possible cumulative impacts on air quality as a result of construction activities in the area would be addressed by compliance with SDAPCD rules and regulations, which apply to all construction projects.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Therefore, project construction and operation would not result in a cumulatively considerable net increase in emissions. This impact would be less than significant.

c) **Less Than Significant.** Potential sources of odor during construction activities include equipment exhaust and process would occur periodically and end when construction is completed. Therefore, the proposed project's odor impact would be less than significant.

d) Less Than Significant. The project site is located in an industrial area. There are no residences or other sensitive properties located in proximity. The Otay Mesa campus itself would be the closest sensitive receptor to the construction areas.

The greatest potential for toxic air contaminant emissions would be related to diesel particulate emissions associated with heavy equipment operations during construction of the proposed project. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk". The California Office of Environmental Health Hazard Assessment (OEHHA) health risk guidance states that a residential receptor should be evaluated based on a 30-year exposure period. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. Given the short-term construction schedule and the fact that there are no sensitive residential properties located in proximity to the site, the proposed project would not result in a long-term (i.e., 30 or 70 year) exposure to a substantial source of toxic air contaminant emissions; and thus, would not be exposed to the related individual cancer risk. The proposed project would not expose sensitive receptors to substantial pollutant concentrations and this impact would be less than significant.

Mitigation

The following mitigation measure adopted with the 2005 Final MND is applicable to the proposed project.

A1: Fugitive Dust Control

During clearing, grading, earth moving, the District shall control fugitive dust by regular watering of the site and the following practices shall be implemented:

- Spread soil binders;
- Wet the area down, sufficient enough to form a crust on the surface with repeated soakings, as necessary, to maintain

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

- the crust and prevent dust pick up by the wind;
- Use water trucks and sprinkler systems to keep all areas where vehicles move wet enough to prevent dust raised when
- leaving the site; and,
- Wet down areas in the late morning and after work is completed for the day.

Conclusion: Based on the foregoing analysis and information, there is no evidence that the proposed project would require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. The proposed project would not result in any new significant air quality impacts, nor would there be a substantial increase in the severity of previously identified impacts to air quality impacts from those discussed in the 2005 Final MND.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Wildlife 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 Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Potential biological impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. No impacts or less than significant impacts to biological resources were identified and no mitigation measures were required. Since the adoption of the 2005 Final MND, there have been no changes in circumstances or new information with respect to biological resources.

a) No Impact. The project site is either developed or previously graded. There is an unnamed drainage channel located north of project site that collects storm water runoff from SR-905. This drainage will not be indirectly or directly impacted by the construction of the proposed project. Additionally, no sensitive plant or animal species are expected on the project site due to its developed/disturbed nature. For these reasons, there would be no impact to any species identified as a candidate, sensitive or special status in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

b) No Impact. The project site is either developed or previously graded with weedy habitat. There is an unnamed drainage channel located north of project site that collects storm water runoff from SR-905. This drainage, along with the detention basins bordering the west and south of the eastern undeveloped area will not be indirectly or directly impacted by the construction of the proposed project. There are no riparian or other sensitive natural communities identified win the vicinity pf the project site. The nearest Multi-Habitat Planning Area (MHPA) as designated by the City of San Diego's Multiple Species Conservation Program (MSCP) is about 800 feet to the south of the campus and will not be impacted. The proposed project will not impact these resources.

c) No Impact. See a) and b) above. The project site is either developed or previously graded with weedy habitat. There are no federally protected wetlands on or near the project site. No wetland impacts would occur.

d) No Impact. The project site is either developed or disturbed (previously graded) and is within an area zoned for Industrial Park use. There are no sensitive wildlife or established wildlife corridors within or adjacent to the project site. Therefore, the proposed project would not affect the movement of any native or migratory fish or wildlife species, wildlife corridors or nursery sites.

e) No Impact. The project site does not contain biological resources and no biological resources will be directly or indirectly impacted. Therefore, the proposed project could not conflict with any local policies or ordinances protecting biological resources.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

f) No Impact. The project site is located within the City of San Diego's MSCP Subarea, but it is not designated as an MHPA. Therefore, the proposed project will not conflict with an adopted HCP/NCCP.

Mitigation: The proposed project would not result in significant impacts to biological resources. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or an increase in the severity of an impact identified in the 2005 Final MND would occur. Less than significant impact would occur to biological resources and no mitigation is required.

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 State CEQA Guidelines §15064.5?	☐	☐	☐	☒
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Potential cultural resource impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Because the project site had been mass graded prior to the District's purchase of the property, no impacts to cultural resources were identified and no mitigation measures were required. Since the adoption of the MND, there have been no changes in circumstances or new information with respect to cultural resources.

a) No Impact. The facilities included in the proposed project would be constructed on areas of the campus that are previously developed or previously disturbed by mass grading. Specifically, the proposed Public Safety Training Center would be developed within the existing Student Parking Lot and the proposed Auto Technology Center and associated

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

parking lot would be developed within the eastern portion of the campus that was previously mass graded. There are no historical resources as defined in §15064.5 located onsite. Therefore, the proposed project would not cause a substantial adverse change in the significance of a historical resource and no impact would occur.

b) No Impact. The facilities included in the proposed project would be constructed on areas of the campus that are previously developed or previously disturbed by mass grading. No archaeological resources have previously been identified within the site. Therefore, the proposed project would not cause a substantial adverse change in the significance of an archaeological resource and no impact would occur.

c) No Impact. The project site is either developed or disturbed (previously graded) and historical activities on the site did not include habitation or other uses that would produce in situ burials. Therefore, it is highly unlikely that human remains exist on the project site. Therefore, the proposed project would not disturb any human remains and no impact would occur.

Mitigation: The proposed project would not result in significant impacts to cultural resources. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or an increase in the severity of an impact identified in the 2005 Final MND would occur. No impact would occur to cultural resources and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

a) Less Than Significant Impact. Project construction would utilize common methods for site preparation, grading and installation of all infrastructure. Techniques are not expected to be wasteful or otherwise result in inefficient use of fuels or other sources of energy. The proposed project would be required to comply with California Energy Code Title 24 requirements in effect at the time buildings are being designed. The Auto Technology Center would employ sustainable strategies with the goal of achieving LEED certification. Impacts would be less than significant.

b) No Impact. The proposed project is an approved use under the existing general plan designation and zoning of the site. The proposed project would be consistent with the City of San Diego Climate Action Plan and state plans for renewable energy and energy efficiency. No impact would occur.

Mitigation: The proposed project would not result in significant impacts to energy. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or an increase in the severity of an impact identified in the 2005 Final MND would occur. No impact would occur to energy and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐
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 wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Existing Conditions

Potential geology and soils impacts associated with construction and operation of the Higher Education Center were evaluated in the 2005 Final MND. The 2005 Final MND identified a mitigation measure to reduce geology/soils impacts to below a level of significance. Mitigation Measure G1 required the District to perform a subsequent geotechnical evaluation which would include geotechnical subsurface observation and laboratory testing. It also required the District to implement specific grading and structural design recommendations as identified in the report. Since the adoption of the 2005 Final MND, there have been no changes to the geotechnical environment evaluated in the previous 2005 Final MND. While the proposed project would be required to comply with the most current California Building Code standards at the time of its construction, it would not result in any new or substantially more severe significant geology and soil effects.

A site-specific geotechnical investigation was prepared for the proposed project by NV5 (dated May 31, 2018), which is included as Appendix B of this report. The geotechnical investigation evaluated subsurface soil conditions at the eastern and western ends of the project site; and included exploratory borings and laboratory testing, thereby satisfying Mitigation Measure G1.

The project site is not mapped within a State-designated Earthquake Fault Zone, and active faults have not been mapped on the site. Furthermore, evidence of active faulting at the project site was not observed during the geotechnical investigation. The project site is located in an area of California considered a seismically active area, and as such, the seismic hazard most likely to impact the project site is ground shaking resulting from an earthquake along one of the known active faults in the region. The project area is relatively flat ground with no steep adjacent slopes. There are no known landslides on or near the project site, and the project site is not located in the path of any known landslides. The project site is not located in an area of known ground subsidence due to the withdrawal of subsurface fluids.

The near-surface natural soils have an expansion potential that ranges from medium to high and therefore considered to be unsuitable for support of the proposed development in their present condition. Groundwater was not encountered during the project site exploration and it is anticipated that groundwater would not be a constraint during construction. The project site appears to be underlain predominantly by indurated clay-rich and dense/stiff, natural deposits which are not considered to be susceptible to liquefaction or susceptible to failure due to lateral spreading.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

a. i) No Impact. Neither the project site nor the project area is located in a hazard zone identified by the Alquist-Priolo Earthquake Zoning Act, Special Publication 42, Revised 1994, Fault-Rupture Hazard Zones in California.

Although no active faults are known to transect the project site, the campus is considered to be in a seismically active area, as is most of Southern California. The closest fault is the active Rose Canyon Fault, located approximately 10.4 miles to the west. The surface traces of any active or potentially active faults are not known to pass directly through, or to project toward the project site. Thus, the potential for surface rupture due to faulting occurring beneath the site is considered low. Therefore, the risk of loss, injury, or death as a result of rupture of a known fault is less than significant.

a. ii) Less Than Significant Impact. Although no active faults are known to transect the project site, the campus is considered to be in a seismically active area, as is most of Southern California. Several earthquake fault zones exist in the regional vicinity of the site. The active Rose Canyon Fault is the closest fault and is located approximately 10.4 miles to the west. Although there is a potential for strong ground motions the proposed project would be designed to withstand earthquakes in accordance with the Earthquake Design requirements of the 2016 edition Chapter 16A, Division IV of the California Building Code (CBC). The standards were adopted for the purpose of safeguarding against major structural failures and loss of life, not to limit damage or maintain function due to an earthquake. The basis of the CBC design criteria shall be determined based on the site's seismic zoning, site characteristics, occupancy, configuration, structural system and height. In accordance with CBC, structures shall be designed with adequate strength to withstand strong ground motion. As such, impacts with regards to strong seismic ground shaking would be less than significant.

a. iii) Less Than Significant Impact. According to the 2018 Geotechnical Investigation the project site appears to be underlain predominantly by indurated clay-rich and dense/stiff, natural deposits which are not considered to be susceptible to liquefaction. Therefore, the potential for liquefaction and associated ground deformation occurring beneath the structural site areas is considered low.

Some of the near-surface soils encountered in the exploratory borings at the foundation levels of the structure are considered to be susceptible to seismic settlement. With implementation of grading and earthwork recommendations for removal and recompaction, the potential damage to structures due to seismic settlement is considered to be low. Therefore, impacts from seismic-related ground failure, including liquefaction are less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

a. iv) No Impact. According to the 2018 Geotechnical Investigation the project sites are relatively flat ground with no steep adjacent slopes. There are no known landslides on or near the project site, and the site is not located in the path of any known landslides. Thus, the potential damage to the proposed project due to landsliding or slope instability is considered very low. In addition, the onsite materials are not known to be prone to slope instability in properly engineered slopes. Therefore, the proposed project would not expose people or structures to potential substantial adverse effects associated with landslides.

b) Less Than Significant Impact. The project site is either developed or disturbed (previously graded) and is thus relatively flat. According to the Natural Resource Conservation Service for San Diego County (NRCS, 2019), the project site is underlain by Stockpen Gravelly Clay Loam (SuA and SuB). The Stockpen Gravelly Clay Loam has a moderate erosion hazard.

The potential for wind and water erosion of soil may occur temporarily during the construction period of the eastern portion of the project site. However, all storm water conveyance systems, structures and maintenance practices would be consistent with the Clean Water Act and California Regional Water Quality Control Board. The project would require a coverage under a General Stormwater Construction Permit and disturbed areas would be landscaped upon completion of construction. A less than significant impact would occur.

c) Less Than Significant Impact. The project site is not located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse (refer to VI.a)iii for liquefaction and VI.a)iv for landslide discussion above). Regarding lateral spreading and collapse, the site is underlain by dense natural materials which are not considered susceptible to failure due to lateral spreading. Therefore, the potential for lateral spreading causing a catastrophic collapse of the proposed structures is considered low. Regarding subsidence, the site is not located in an area of known ground subsidence due to the withdrawal of subsurface fluids. Accordingly, the potential for subsidence occurring at the site due to the withdrawal of oil, gas, or water is considered to be low. Therefore, a less than significant impact would occur.

d) Less Than Significant With Mitigation Incorporated. The project site is underlain predominantly by clayey sands and sandy clays with fine to coarse grained sand. These materials have medium to high expansion potential. It is anticipated that standard geotechnical recommendations to address structural issues related to expansive soils would be implemented as part of site preparation and building design. For example, for the proposed

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

project, the sandy materials are generally considered unsuitable for use as backfill for retaining walls or pipe bedding. Since site grading would redistribute onsite soils, potential expansive soil properties should be verified at the completion of rough grading.

The presence of expansive soils is considered a significant impact. Implementation of Mitigation Measure G2, which includes following the recommendations from the 2018 Geotechnical Investigation, would reduce this impact to a level less than significant.

Mitigation Measures:

G2: Grading, Earthwork and Structural Design

The project shall incorporate specific grading, earthwork and structural design recommendations presented in the *Geotechnical Investigation prepared for the Southwestern College Higher Education Center Otay Mesa Campus Improvements* prepared by NV5, dated May 31, 2018 (Appendix B). Potential measures (clearing and grubbing, site grading, moisture conditioning, specially designed foundations and slabs, retaining walls, pavements) identified in this process for expansive soil shall be incorporated into the project plans and specifications and implemented prior to or during construction. Site preparation, removal of unsuitable soils, assessment of imported fill materials, fill placement, and other earthwork operations should be observed and tested. Continuous observation during construction allows for evaluation of the soil/rock conditions as they are encountered and allows the opportunity to recommend appropriate revisions where necessary.

e) No Impact. The proposed project does not include the use of septic tanks or alternative wastewater disposal systems. Therefore, soil suitability for wastewater disposal is not an issue and no impact would occur.

f) Less Than Significant Impact The project site is either developed or disturbed (previously graded) and there are no unique geological features. The site is underlain with fills, topsoil, alluvial deposits and materials of the Otay Formation, which has a high potential for paleontological resources (Deméré, 1993). However, site preparation would require only minor cutting into the ground of less than 1,000 cubic yard and less than 10 feet deep. According to the City of San Diego Significance Determination Thresholds, projects requiring less than 10 feet of excavation would not be required to be monitoring for paleontological resources. In addition, due to previous grading activities that occurred on the project site, it is highly unlikely that paleontological resources exist. Therefore, a less than significant impact would occur.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. A significant impact was identified for the proposed project but there is not or an increase in the severity of associated impact identified in the 2005 Final MND. With implementation of the Mitigation Measure G1, impacts to geology and soils are less than significant.

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 or policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

An Air Quality and Greenhouse Gas Analysis (Birdseye Consulting Group, 2019; Appendix A) was prepared for the proposed project to assess potential air quality impacts and greenhouse gas emissions. The analysis contained in this section is based on the findings of that technical report.

Existing Setting

Certain gases in Earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining Earth's surface temperature. A portion of the solar radiation that enters the atmosphere is absorbed by Earth's surface, and a smaller portion of this radiation is reflected toward space. This infrared radiation (i.e., thermal heat) is absorbed by GHGs within the atmosphere; therefore, infrared radiation released from Earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth.

Without the naturally occurring greenhouse effect, Earth would not be able to support life as we know it. However, GHG emissions associated with human activities are likely responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of Earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

GHGs are present in the atmosphere naturally; are released by natural and anthropogenic (human-caused) sources; and are formed from secondary reactions taking place in the atmosphere. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change:

- carbon dioxide (CO2)
- hydrofluorocarbons
- methane (CH4)
- nitrous oxide (N2O)
- perfluorocarbons
- sulfur hexafluoride

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO2. The concept of CO2 equivalents (CO2e) is used to account the different GWP potentials of GHGs to absorb infrared radiation. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas in absorbing infrared radiation, and the length of time (i.e., lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The reference gas for GWP is CO2; therefore, CO2 has a GWP of 1. The other main GHGs that have been attributed to human activity are CH4, which has a GWP of 21, and N2O, which has a GWP of 310 (UNFCC 2013). For example, 1 ton of CH4 has the same contribution to the greenhouse effect as approximately 21 tons of CO2. GHGs with lower emissions rates than CO2 still may contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO2 (i.e., high GWP).

Impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and TACs. The quantity of GHGs that it takes ultimately to result in climate change is not known precisely; the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature, or to a global, local, or micro-climate. From the standpoint of CEQA, GHG- related effects to global climate change are inherently cumulative.

Executive Order S-3-05

The goal of this Executive Order, enacted on June 1, 2005, is to reduce California's GHG emissions to year 2000 levels by 2010, 1990 levels by 2020, and 80 percent below the 1990 levels by the year 2050. In 2006, this goal was reinforced with the passage of Assembly Bill (AB) 32.

Senate Bill 32 (SB 32) and Assembly Bill 197 (AB)

SB 32 and AB 197 (enacted in 2016) are companion bills that set new statewide GHG reduction targets, make changes to CARB's membership, increase legislative oversight of

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

CARB's climate change–based activities, and expand dissemination of GHG and other air quality–related emissions data to enhance transparency and accountability. More specifically, 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 added two members of the Legislature to CARB as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

Local Regulations and CEQA Requirements

As referenced, pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents but contain no suggested thresholds of significance for GHG emissions. Instead, lead agencies are given the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. The general approach to developing a Threshold of Significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move the state towards climate stabilization. If a project would generate GHG emissions above the threshold level, its contribution to cumulative impacts would be considered significant. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted quantitative significance thresholds for GHGs. However, in March 2013 the Bay Area's thresholds were overruled by the Alameda County Superior Court (California Building Industry Association v. Bay Area Air Quality Management District), on the basis that adoption of the thresholds constitutes a "project" under CEQA but did not receive the appropriate environmental review. As a result, BAAQMD has elected to not recommend specific GHG thresholds for use in CEQA documents.

The South Coast Air Quality Management District (SCAQMD) threshold, which was adopted in December 2008, considers emissions of over 10,000 metric tons CO2E /year to be significant. However, the SCAQMD's threshold applies only to stationary sources and is

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

expressly intended to apply only when the SCAQMD is the CEQA lead agency. Although not formally adopted, the SCAQMD has developed a draft quantitative threshold for all land use types of 3,000 metric tons CO2E /year (SCAQMD, September 2010). Note that lead agencies retain the responsibility to determine significance on a case-by-case basis for each specific project.

City of San Diego Climate Action Plan

On January 29, 2002, the City Council unanimously approved the San Diego Sustainable Community Program. In 2005, the City released a Climate Protection Action Plan. The Climate Protection Action Plan evaluated citywide GHG emissions; however, the Climate Protection Action Plan did not recommend or require specific strategies or measures for projects within the City to reduce emissions. In December 2015, the City adopted its Final CAP and a Program Environmental Impact Report was prepared for the City's Draft CAP, which was certified in December 2015.

With implementation of the CAP, the City intends to reduce emissions 15% below the baseline, to approximately 11.1 MMT CO2E, by 2020; 40% below the baseline, to approximately 7.8 MMT CO2E, by 2030; and 50% below the baseline, to approximately 6.5 MMT CO2E, by 2035. The 2015 CAP demonstrates that the City acknowledges the existing and potential impacts of a changing climate and is committed to keeping it in the forefront of decision making. Successful implementation of the CAP would prepare for anticipated climate change impacts in the coming decades, help the State of California achieve its reduction target by contributing the City's fair share of GHG reductions and have a positive impact on the regional economy.

The CAP meets the requirements set forth in CEQA Guidelines, Section 15183.5, whereby a lead agency (e.g., the City) may analyze and mitigate the significant effects of GHG emissions at a programmatic level, such as in a general plan, a long-range development plan, or a separate plan, to reduce GHG emissions. The CAP Consistency Checklist, which was adopted by the City Council on July 12, 2016, and subsequently updated February 2017, is intended to provide a streamlined review process for the GHG emissions analysis of proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA.

While the Southwestern Community College District Otay Mesa Campus is located in the City of San Diego, the District is a lead agency as defined under CEQA; and thus, is able to establish thresholds with respect to compliance with applicable rules and regulations affecting environmental resources. The Southwestern Community College District does not have an

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

approved CAP. Thus, for the purpose of demonstrating consistency with local efforts to reduce GHG emissions, the project is evaluated per the County of San Diego screening threshold of 900 metric tons per year of GHG emissions. Projects that generate less than 900 metric tons of CO2E annually, are not considered large enough to cumulatively contribute to global climate change.

This analysis includes a quantification of total modeled construction-related GHG emissions. Those emissions are then amortized and evaluated as a component of the proposed project's operational emissions over the 30-year project life. The intent of this analysis to put project-generated GHG emissions into the appropriate statewide context regarding whether the proposed project's contribution of GHG emissions would reach the level that would have a considerable incremental contribution to global climate change. The GHG emission modeling results are included in Appendix A.

a and b) Less Than Significant Impact.

Construction-Related Impact

Project construction would generate short-term GHG emissions. Construction-related GHG emissions would be generated by vehicle engine exhaust from construction equipment, haul trips, and construction worker trips. GHG emissions generated by the proposed project would consist primarily of CO2. Emissions of other GHGs, such as CH4 and N2O, are important with respect to global climate change; however, even when considering the higher GWPs of these other GHGs, their contribution to total GHG emissions is small compared with CO2 emissions from the proposed project's emission sources (i.e., construction equipment and on-road vehicles). However, where appropriate emission factors were available, emissions of CH4 and N2O were included in the analysis of the proposed project.

Based on CalEEMod results project construction would generate approximately 504 MT CO2e over the entire construction period, which would last up to 12 months. These emissions would include heavy-duty construction equipment, haul trucks, and construction worker vehicles. To estimate amortized construction emissions, the total construction-related GHG emissions of 129 MT CO2e associated with the proposed project are divided by 30 years (approximately 16.8 MT CO2 per year).

As mentioned previously, many air districts recommend that construction-related GHG emissions be amortized over the lifetime of the project and compared to the thresholds of significance along with operational GHG emissions.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Project Operation-Related Impact

Long-term emissions relate to energy use, water use, solid waste, and transportation.

Energy

GHGs are emitted where electricity and natural gas are used as energy sources. GHGs are generated during the generation of electricity from fossil fuels off-site in power plants. These emissions are considered indirect but are calculated in association with a building's operation. Emissions were only calculated for the direct combustion of natural gas. Building energy use is typically divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as plugin appliances. In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. The overall net increase in energy use (i.e., natural gas and electricity) at the project site would result in 370 metric tons of CO2E per year.

Water Use

The amount of water used, and wastewater generated by a project has indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, distribute, and treat the water and wastewater. In addition to the indirect GHG emissions associated with energy use, wastewater treatment can directly emit both CH4 and N2O. Water demand is estimated conservatively to generate approximately 33 MT CO2E annually.

Solid Waste

The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. To calculate the GHG emissions generated by solid waste disposal, the total volume of solid waste was calculated using waste disposal rates identified by California Department of Resources Recycling and Recovery. The methods for quantifying GHG emissions from solid waste are based on the Intergovernmental Panel on Climate Change method, using the degradable organic content of waste. GHG emissions associated with the project's waste disposal were calculated using these parameters.

For solid waste generated onsite, it was assumed that the project would be involved in a municipal recycling program that would achieve a 75% diversion rate, as required by AB 341. The CalEEMod results indicate that the project would result in approximately 12 metric tons of CO2E per year associated with solid waste disposed within landfills. Assuming 75% of the solid waste is recycled, CO2E emissions would be 12 MT annually.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Transportation

Estimated mobile emissions of GHGs for the project based on the estimated annual VMT of 4,000,064. The project would generate approximately 1,763 metric tons of CO2E associated with new vehicle trips.

Combined Construction, Stationary, and Mobile Source Emissions

Temporary emissions associated with construction activity (approximately 504 metric tons CO2E) are amortized over 30 years (the anticipated life of the project). The combined annual emissions are conservatively estimated to be approximately 2,195 metric tons per year in CO2E. This total represents less than 0.001% of California's total 2015 emissions of 440.4 million metric tons. The majority (80%) of the project's GHG emissions are associated with the vehicle trips.

The Southwestern Community College District does not have adopted GHG emissions thresholds that apply to land use projects or an approved CAP. Therefore, the proposed project is evaluated based on the SCAQMD's recommended/preferred option threshold of 3,000 metric tons CO2E per year. Project-related annual GHG emissions would not exceed the threshold of 3,000 metric tons per year; therefore, no measures are required to reduce GHG emissions. Impacts related to GHG emissions would be less than significant CEQA thresholds. Thus, construction and operation of the proposed project would not have a significant or adverse effect on global climate change. Impacts would be less than significant.

b) Less Than Significant Impact.

Construction-Related Impact

None of the measures listed in ARB's Climate Change Scoping Plan (ARB 2008), which contains the main strategies that California would use to achieve emission reductions necessary to meet the goals of AB 32, relate directly to project construction activities. The scoping plan includes some measures that indirectly would address GHG emissions levels associated with construction activity, such as the phasing in of cleaner technology for diesel engine fleets (including construction equipment) and development of a low-carbon fuel standard. However, successful implementation of these measures primarily would depend on development of laws and policies at the State level. Those policies formulated under the mandate of AB 32 that would apply to project construction- related activity, either directly or indirectly, presumably would be implemented during project construction, if those policies in

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

fact are developed and adopted before the start of project construction. Therefore, Project construction is not expected to conflict with the scoping plan.

Project Operation-Related Impact

Project implementation would not require or result in substantial additional operational and maintenance activities above existing conditions. Therefore, impacts would be less than significant.

Mitigation

No mitigation would be required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or an increase in the severity of an impact identified in the 2005 Final MND would occur. No impact would occur to greenhouse gas emissions.

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 which 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	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
significant hazard to the public or the environment?				
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?	☐	☐	☐	☒

Potential hazards and hazardous material impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. No impacts to hazards and hazardous materials were identified, and no mitigation measures were required. Since the adoption of the MND, there have been no changes in circumstances or new information with respect to hazards and hazardous materials.

a) Less Than Significant Impact. The proposed project is for the construction of small buildings within an existing developed or disturbed/previously graded area of a college campus including a building to be utilized as a Public Safety Training Center and an Automotive Technology Center. Storage onsite of flammable liquids and combustible liquids in a control area is an allowable use (CBC Table 307.1(1)), including closed and open storage. The Automotive Technology Center includes a hazardous materials storage yard separate from the instructional building. These substances would be stored, transported, used and disposed of in accordance with applicable regulations and codes. Therefore, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials and thus there would be a less than significant impact.

b) No Impact. The Phase I Environmental Assessment (Ninyo and Moore, 2005) conducted a historic record search for both the project site and the surrounding area. The project site (and immediately adjacent undeveloped area which is the eastern portion of the proposed project) is not considered a current or former “hazardous waste disposal site” or a “solid waste disposal site”. Therefore, the proposed project would not create a significant hazard to the public or the environment involving the release of hazardous materials and the no impact would occur.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

c) Less Than Significant Impact. The project site is an existing school and the proposed project include storage onsite hazardous materials. The materials would be stored, transported, used and disposed of in accordance with applicable regulations and codes. Therefore, the proposed project would not create a significant hazard on site. There are no other existing schools located within one-quarter mile of the site.

d) No Impact. Based upon review of the following data resources that provide information regarding the facilities or sites identified as meeting the "Cortese List" requirements the project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and is not located near known hazardous waste sites or non-contaminated permitted facilities including gas stations, underground storage tanks, or land disposal sites:

- List of Hazardous Waste and Substances sites from Department of Toxic Substances Control (DTSC) EnviroStor database (https://www.envirostor.dtsc.ca.gov/public/search.asp?cmd=search&reporttype=CORTESE&site_type=CSITES,OPEN,FUDS,CLOSE&status=ACT,BKLG,COM&reporttitle=HAZARDOUS+WASTE+AND+SUBSTANCES+SITE+LIST)
- List of Leaking Underground Storage Tank Sites by County and Fiscal Water Board Year from State Water Resource Control Boards GeoTracker database (https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=Search+GeoTracker)
- List of solid waste disposal sites identified by Water Board with waste constituents above hazardous waste levels outside the waste management unit (https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/SiteCleanup-CorteseList-CurrentList.pdf)
- List of "active" Cease and Desist Orders and Cleanup and Abatement Orders from California State Water Board (https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/SiteCleanup-CorteseList-CDOCAOList.xlsx)

No recognized environmental conditions have been identified within 1 mile of the proposed project site.

e) No Impact. The campus is located approximately a half-mile south of the Brown Field Municipal Airport and is within the Brown Field Municipal Airport Land Use Compatibility Plan (ALUCP) (ALUCP, 2010). The campus is located within Zone D of the ALUCP. An adult school is an allowed use within the Zone D area and the proposed project would comply

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

with all standards of the ALUCP for Zone D. Therefore, the proposed project would not result in a safety hazard for people residing or working within the project area and no impact would occur.

f) No Impact. The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The proposed project would be consistent with the campus emergency response/evacuation plan. Therefore, no impact associated with implementation/interference with an emergency evacuation/response plan would occur.

g) Less Than Significant Impact. The proposed project is for the addition of small buildings to an existing campus within a mostly developed area. The site is not located adjacent to wildlands or a fire hazard area. The proposed project buildings would be constructed of fire-resistant materials such as concrete and steel, would include reflective ceilings, and the installation of a fire alarm system. A site fire piping plan has been prepared. The fire main installation is subject to inspection by the Chula Vista Fire Department prior to backfilling hydrant services and prior to pipe pressure testing. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires and of less than significant impact would occur.

Mitigation: The proposed project would not result in significant impacts to hazards and hazardous materials. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or an increase in the severity of an impact identified in the 2005 Final MND would occur. Less than significant impacts would occur to hazards and hazardous materials and no mitigation is required.

X. HYDROLOGY AND WATER QUALITY.

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 resources of polluted runoff; or	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Potential hydrology and water quality impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND and a Water Quality Technical Report was prepared (Nasland Engineering, 2005). Hydrology and water quality impacts were found to be less than significant, and no mitigation measures were required. Since the adoption of the 2005 Final MND, there have been no changes in circumstances or new information with respect to hydrology and water quality.

a) Less Than Significant Impact. The proposed project would maintain the existing onsite drainage patterns and would not cause any increase in peak runoff from the site. The potential for anticipated pollutants to affect the nearest body of water is minimal. In addition, Best Management Practices (BMPs), in accordance with the City of San Diego Land Development Manual – Storm Water Standards, would be included in the proposed project design to

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

minimize pollutants impacting the local environment. BMPs include landscaped areas around the project site, the use of urban/curb/swale system with streets sloping to concrete gutters and inlets draining to bio-swales. For these reasons, the proposed project would not violate water quality standard or wastewater discharge requirement and a less than significant impact would occur.

b) Less Than Significant Impact. The project does not propose the use of groundwater. Drainage from the proposed project area would be directed to existing detention basins and thus would not contribute to depleting groundwater supplies or impact groundwater recharge areas. Therefore, the proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge and no impact would occur.

c) i) No Impact. The campus site was approved by the City of San Diego in 1988 for the development known as the Empire Centre. The existing streets, utilities and storm drain system were all constructed for the Empire Centre prior to the District purchase of the land for development of the campus.

According to the Water Quality Technical Report prepared by Nasland Engineering (2005) for the Higher Education Center project, the project site drains into an existing detention basin located north of Airway Road. The detention basin is within a conservation and permanent open space easement. As such, runoff from the campus drains directly into two existing underground storm drains, both of which eventually discharge into the detention basin within the open space easement. The westerly parking lot and running track and fire station/police/EMS training buildings generally drain easterly through a bio-swale/detention basin, discharging into the westerly drain. Runoff from the building roofs and courtyard flow easterly through the bio-swale/detention basin located between the buildings and Gigantic Street, then into an extended detention basin located to the east side of the campus. The easterly parking lot and driveway behind the buildings would drain into an underground drainage system that would empty directly into the extended detention basin. The extended detention basin would discharge into the easterly drain. The existing drainage pattern would be maintained where the buildings and parking lots would be placed. Therefore, the proposed project would not substantially alter the existing drainage pattern of the site or area which would result in substantial erosion or siltation on- or off-site and no impact would occur.

c) ii) Less Than Significant Impact. The proposed project would result in a net increase in impervious surfaces by developing the Auto Technology Center on land that is currently undeveloped. However, this area was already pre-determined as an area for impervious surfaces when the site was prepared as an industrial pad for the Empire Centre development.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

The existing storm drain system on the site has been sized to accommodate any additional surface runoff from the project site (underground storm drains which are 30" reinforced concrete pipes). The western portion of the proposed project is currently an impervious parking lot and so there would not be a net increase in impervious surface in this area. This western area includes landscaping such that there would be a net decrease in impervious area. Therefore, a less than significant impact would occur.

c) iii) Less Than Significant Impact. In addition to the existing stormwater system on the project site as discussed above in IX.c) and d), as part of the original project design, inlets, bio-swales and detention basins were installed to limit runoff from the project site. The proposed project would utilize the drainage systems in place and would not create or contribute to runoff water, which would exceed the capacity of the existing stormwater drainage system or provide substantial additional sources of polluted runoff. Therefore, a less than significant impact would occur.

d) No Impact. The proposed project area is located several miles from the coast within the inland area of San Diego County and is, therefore, not an area susceptible to a tsunami. There is also no risk of inundation as a result of a seiche occurrence as the project site is not located on a lake. The site is located on a slightly elevated topography, and is not in a floodplain area; therefore, the risk of flood is also considered low. Tsunami, seiches, and floods are not considered a significant hazard at the site. Therefore, there is no impact due to flood hazard, tsunami, or seiche zones that would risk release of pollutants due to project inundation.

e) No Impact. The proposed project would maintain onsite drainage patterns and use existing detention basins and storm drain system; implement BMPs in accordance with City standards; would not use groundwater; would not deplete groundwater supplies; and would not impact groundwater recharge areas. The proposed project would not conflict with water quality control plan or sustainable groundwater management plan, and no impact would occur.

Mitigation: The proposed project would not result in significant impacts to hydrology and water quality. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of a hydrology and water quality impact identified in the 2005 Final MND would occur and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

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?	☐	☐	☐	☒

Potential land use and planning impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Land use and planning impacts were found to be less than significant, and no mitigation measures were required. The proposed project has been analyzed to ensure consistency with the City of San Diego General Plan/Community Plan updates.

a) No Impact. The project site is located within an area developed primarily with industrial and commercial uses. The proposed project occurs on Southwestern College District property. Therefore, the proposed project would not physically divide an established community and no impact would occur.

b) No Impact. Since the 2005 Final MND has been adopted, there have been updates to the City of San Diego General Plan. According to the City of San Diego's General Plan's Land Use Element for the Otay Mesa Community Plan, the proposed project area is designated institutional and is zoned as Industrial-Park. The proposed project is consistent with the City of San Diego's current land use designation and zoning and therefore the no impact would occur.

Mitigation: The proposed project would not result in significant impacts to land use and planning. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of an impact identified in the 2005 Final MND would occur and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

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?	☐	☐	☐	☒

Potential mineral resources impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. No impacts to mineral resources were identified and no mitigation measures were required.

a) No Impact. According to a Geotechnical Evaluation that was prepared for the original project (Ninyo and Moore, 2005), no significant economic mineral resources have been discovered within the limits of the project site. Although the study did not include the eastern portion of the project site which would include the Automotive Technology Center and parking, this area was previously graded as part of the approved Empire Center project and also does not have significant economic mineral resources. Therefore, the potential for loss of availability of mineral resources due to the development of the proposed project would be considered low and no impact would occur.

b) No Impact. The project site and vicinity are not delineated as locally important mineral resource recovery sites on a local general plan, specific plan or other land use plan. Therefore, the proposed project as would not result in the loss of availability of a locally-important mineral resource recovery site and no impact would occur.

Mitigation: The proposed project would not result in significant impacts to mineral resources. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of an impact identified in the 2005 Final MND would occur. Less than significant impacts would occur to mineral resources and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Potential noise impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Noise impacts were found to be less than significant, and no mitigation measures were required. The proposed project has been analyzed in accordance with applicable noise regulations and ordinances.

a) Less Than Significant Impact. The proposed project is for the construction of several small building within an existing campus that is surrounded by industrial/commercial buildings and undeveloped land. There are no residential units located in close proximity to the project site. Construction of the proposed project would result in temporary, short-term noise during construction. However, construction would occur in accordance with the City of San Diego noise ordinance. Additionally, the construction noise would be temporary and would not significantly impact students on campus or the industrial/commercial uses in the vicinity.

The proposed project would not result in an increase in enrolment and thus operational noise associated with vehicular trips to the campus would not increase. Other potential operational noise sources such as exterior heating, ventilation, and air conditioning (HVAC) equipment would comply with City of San Diego's noise ordinance. Therefore, the proposed project

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

would not expose persons to or generate excessive noise levels a less than significant impact would occur.

b) No Impact. Construction or operation of the proposed project would not expose persons to or generate excessive groundborne vibration or noise levels. Therefore, the MND conclusion of no impact remains the same.

c) No Impact. The proposed project is located approximately a half-mile south of the Brown Field Municipal Airport and is within the Brown Field Municipal Airport Land Use Compatibility Plan (ALUCP). The proposed project is located outside of the noise exposure area as depicted on the ALUCP Compatibility Policy Map for noise. Therefore, noise experienced at the proposed project from the Brown Field Municipal Airport would be less than 60 dB CNEL (ALUCP, 2005). There are no private airstrips within the vicinity of the project site. Therefore, the proposed project would not expose students or people working in the project area to excessive noise levels and no impact would occur.

Mitigation: The proposed project would not result in significant impacts from noise. No mitigation measures are required.

Conclusion: No new significant impacts or increases in the severity of an impact identified in the 2005 Final MND would occur. Less than significant impacts associated with noise and vibration would occur and no mitigation is required. There is no change in this conclusion between the project studied in the 2005 Final MND and the proposed project.

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 road 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 with Mitigation Incorporated	Less Than Significant Impact	No Impact

Potential population and housing impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Population and housing impacts were found to be less than significant, and no mitigation measures were required.

a and b) No Impact. The proposed project does not include new homes or businesses, nor would it displace housing. It would not directly or indirectly induce population growth and would not require replacement housing.

Mitigation: The proposed project would have no impacts to population and housing. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of an impact identified in the 2005 Final MND would occur. Less than significant impacts would occur to population and housing and no mitigation is required.

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 public services:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Potential public service impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Impacts were found to be less than

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

significant, and no mitigation measures were required. The proposed project does differ from the project studied in the 2005 Final MND, but the difference involves the addition of small training buildings and does not propose the need for new or physically altered governmental facilities.

Fire Protection: No Impact. The City of San Diego Fire Station 43 provides existing fire protection services to the project site. The station is located at 1590 La Media Road and its apparatus includes an engine, truck, crash, and brush. The proposed project would not result in unusual or substantially new fire service requirements, and water suppression hookups and flow would be provided in accordance with applicable regulations. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities and no impact would occur.

Police Protection: No Impact. The San Diego Police Department, Southern Division, provides police protection to the project site and the communities of the Border, Egger, Highlands, Nestor Ocean Crest, Otay Mesa, Otay Mesa West, Palm City, and San Ysidro. This station serves an existing population of 107,631 within a 31.5-mile area. Even though the population in the area has increased by about 15,000, this station would continue to provide sufficient police protection services to the project site. Additional police protection services are provided by a campus police department that only provide services to the campus. Therefore, the proposed project would not result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities no impact would occur.

Schools: No Impact. The proposed project would not promote population growth or require a need for the development of a new school that would potentially result in a significant impact.

Parks: No Impact. The proposed project would not promote population growth resulting in the need for new or physically altered parks.

Other Public Facilities: No Impact. Otay Mesa has two libraries within 6 miles of the Southwestern College Otay Mesa Campus (San Ysidro Branch and Otay Mesa Branch). The project would not promote population growth that would create the need for additional libraries.

Mitigation: The proposed project would not result in significant impacts to public services. No mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the previous 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant public service impacts or increases in the severity of impacts identified in the 2005 Final MND would occur. No impacts would occur to public services and no mitigation is required.

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 have an adverse physical effect on the environment?	☐	☐	☐	☒

Potential recreation impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Impacts were found to be less than significant, and no mitigation measures were required.

a and b) No Impact. The proposed project would not result in an increase in population (which could generate an increase in use of regional parks or other recreational facilities). Additionally, the proposed project does not include recreational facilities nor construction or expansion of recreational facilities.

Mitigation: The proposed project would result in no impacts to recreation resources. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of an impact identified in the MND would occur. No impacts would occur to recreation and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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) Would the project 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?	☐	☐	☐	☒

Potential transportation impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Significant impacts to intersection and street segment operations were identified and two mitigation measures (T1 and T2) were adopted to reduce the impacts to less than significant.

MM T-1 required the District to contribute its fair share to the City of San Diego for the signalization of the Airway Road/Britannia intersection.

MM T-2 required the District to contribute its fair share to the City of San Diego to improve Airway Road, Britannia Boulevard and La Media Road to four-lane major standards.

City of San Diego has verified that these measures have been satisfied and therefore no longer apply to the proposed project.

a) No Impact. The proposed project would not conflict with alternative transportation policies, plans or programs. Bicycle and bus access to and from the campus would not be affected. The project would have pedestrian connectivity throughout the entire campus. The circulation system of the campus would remain the same. Therefore, no impact would occur.

b) No Impact. The proposed project would not cause an increase in traffic volumes above those identified in the 2005 Final MND. The new facilities at the existing campus are not

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

expected to increase student population and are being built to serve the existing students, therefore the project would not add trips and no impact would occur.

A Traffic Impact Analysis was prepared for the construction and operation of the Higher Education Center by Linscott, Law & Greenspan in September 2005. Their analysis assumed the Higher Education Center would accommodate up to 500 students and 100 faculty. Direct impacts to key street segments and key intersections were identified along with mitigation measures (T1 and T2) to reduce impacts to below significance. The proposed project would not increase enrollment or faculty levels above those identified in the 2005 Final MND; therefore, impacts would be less than significant.

c) No Impact. The proposed project does not propose the construction of any new roadways nor does it propose an incompatible use.

d) No Impact. Emergency access to the project site is provided to the site via Gigantic Road. The proposed project does not include the closure of any public roads and would not interfere with an emergency response or an emergency evacuation plan for the area. Traffic control during construction would maintain emergency access to the project site, therefore of no emergency access impacts would occur.

Mitigation: The proposed project would not result in significant impacts to transportation. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of an impact identified in the 2005 Final MND would occur. No transportation impacts would occur and no mitigation is required.

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	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

Potential tribal cultural resource impacts associated with the construction and operation of the Higher Education Center were evaluated under the Cultural Resource topic in the 2005 Final MND. Since the adoption of the 2005 Final MND, Assembly Bill 52 (AB 52) was implemented (July 2015) which established a consultation process for California Native American Tribes and added consideration of tribal cultural values in the determination of project impacts and mitigation. Specifically, AB 52 requires a lead agency to begin consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if the tribes have formally requested, in writing, to receive notification of CEQA projects under AB 52.

No California Native American tribes, traditionally and culturally affiliated with the project area, have requested to be informed by the Southwestern Community College District, of proposed projects, pursuant to Public Resources Code Section 21080.3.1.

A sacred lands search was requested from the Native American Heritage Commission (NAHC) on May 23, 2019. The purpose of the search was to ascertain whether additional resources or locations exist that may be of importance to Native Americans who traditionally have resided in the project area. As of the date of the Addendum MND's publication, as response has not been received.

a) No Impact. The project site does not support tribal cultural resources listed or eligible for listing in the California or local register of historical places. The facilities included in the proposed project would be constructed on areas of the campus that are previously developed, or previously disturbed, by mass grading. Specifically, the proposed Public Safety Training Center would be developed within the existing Student Parking Lot and the proposed Auto Technology Center and associated parking lot would be developed within the eastern portion

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

of the campus that was previously mass graded. There are no historical resources as defined in §15064.5 located onsite. Therefore, the proposed project would not cause a substantial adverse change in the significance of a historical resource and no impact would occur.

b) No Impact. The project site does not contain any resources that meets the criteria in subdivision (c) of Public Resources Code Section 5024.1. The project site is either developed or previously disturbed by mass grading. Therefore, there is no impact.

Mitigation: The proposed project would not result in significant impacts to tribal cultural resources. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or an increase in the severity of an impact identified in the 2005 Final MND would occur. No impact would occur to tribal cultural resources and no mitigation is required.

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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒

Potential utilities and service impacts associated with construction and operation of the Higher Education Center were analyzed in the 2005 Final MND. Impacts were found to be less than significant, and no mitigation measures were required. would

a) No Impact. All existing wet utilities (potable water, fire water, sewer, storm drain) are in adequate condition to serve the project and would not need to be replaced or reconstructed. Other utilities (electrical, natural gas, telecommunications) already serve the Southwestern Community College Otay Mesa campus and there is no need for construction of new utilities or relocation. The proposed project would not require or result in the construction of new facilities or expansion of existing facilities. Therefore, no impact would occur.

b) No Impact. All water facilities are existing and no new or expanded entitlements are needed to serve the proposed project. Therefore, no impact would occur.

c) No Impact. The proposed project may generate wastewater; however, the campus site is served by an existing public sewer system. As such, the proposed project is located in area that has adequate wastewater facilities and would not exceed the existing wastewater requirements. Therefore, no impact would occur.

d) No Impact. The proposed project would generate construction/demolition waste (CDW) as well as ongoing domestic waste from the uses on-site. It is not expected that the proposed project would generate large amounts of solid waste. Additionally, the landfill serving the area has sufficient permitted capacity to accommodate any solid waste generated. Therefore, there is no impact.

e) No Impact. The proposed project would comply with all current and applicable federal, state, and local regulations regarding solid waste, including construction debris recycling. Therefore, there is no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Mitigation: The proposed project would not result in significant impacts to utilities and service systems. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of an impact identified in the 2005 Final MND would occur. Less than significant impacts would occur to utilities and service and no mitigation is required.

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?	☐	☐	☒	☐

Potential wildfire impacts associated with construction and operation of the Higher Education Center were not analyzed in the 2005 Final MND. The CEQA initial study checklist was amended in 2019 to include questions related to wildfire. According to the City of San Diego's

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

Official Very High Fire Hazard Severity Zone Map the project site is located in a Very High Fire Hazard Severity Zone (City of San Diego, 2009).

a) No Impact. The proposed project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. The proposed project would be consistent with the campus emergency response/evacuation plan. Therefore, there would be no impact associated with implementation/interference with an emergency evacuation/response plan.

b) Less Than Significant Impact. This area could be affected by wildfire; however, it is surrounded by urban development and industrial uses. The project site is not expected to be exposed to high risk resulting from surrounding slopes, prevailing winds, or other factors. Impacts would be less than significant.

c) Less Than Significant Impact. The project does not require the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. The western area of the campus is already developed, and the new buildings would be surrounded by parking and defensible space. The vacant eastern portion of the campus would be developed with the Auto Technology Center which would also be surround by parking and defensible space. The project would follow City guides, standards, and codes. Impacts would be less than significant.

d) Less Than Significant Impact. There is adequate distance between vegetated areas and development areas on the project site. The site and surrounding areas do not contain steep slopes that if burned would result in substantive risk from landslide or mudflows. The project would not expose people or structures to significant risk, and impacts would be less than significant.

Mitigation: The proposed project would not result in significant impacts from wildfire. No mitigation measures are required.

Conclusion: Based on the foregoing analysis and information, the proposed project would not require major revisions to the 2005 Final MND due to substantial changes in the project or substantial changes to the circumstances under which the project would occur. No new significant impacts or increases in the severity of an impact identified in the 2005 Final MND would occur. Less than significant impacts would occur to wildfires and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 project, and the effects of probable future projects.)	☐	☐	☐	☒
c) Does the project have environmental effects, which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

a) No Impact. The proposed project has no impact to biological resources due to the site's developed nature. 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 rate or endangered plant or animal. The project site is either developed or previously graded with weedy habitat. No sensitive plant or animal species are expected on the project site due to its developed/disturbed nature. There are no designated sensitive natural communities immediately adjacent to the project site. The project site does not contain biological resources therefore no impact would occur.

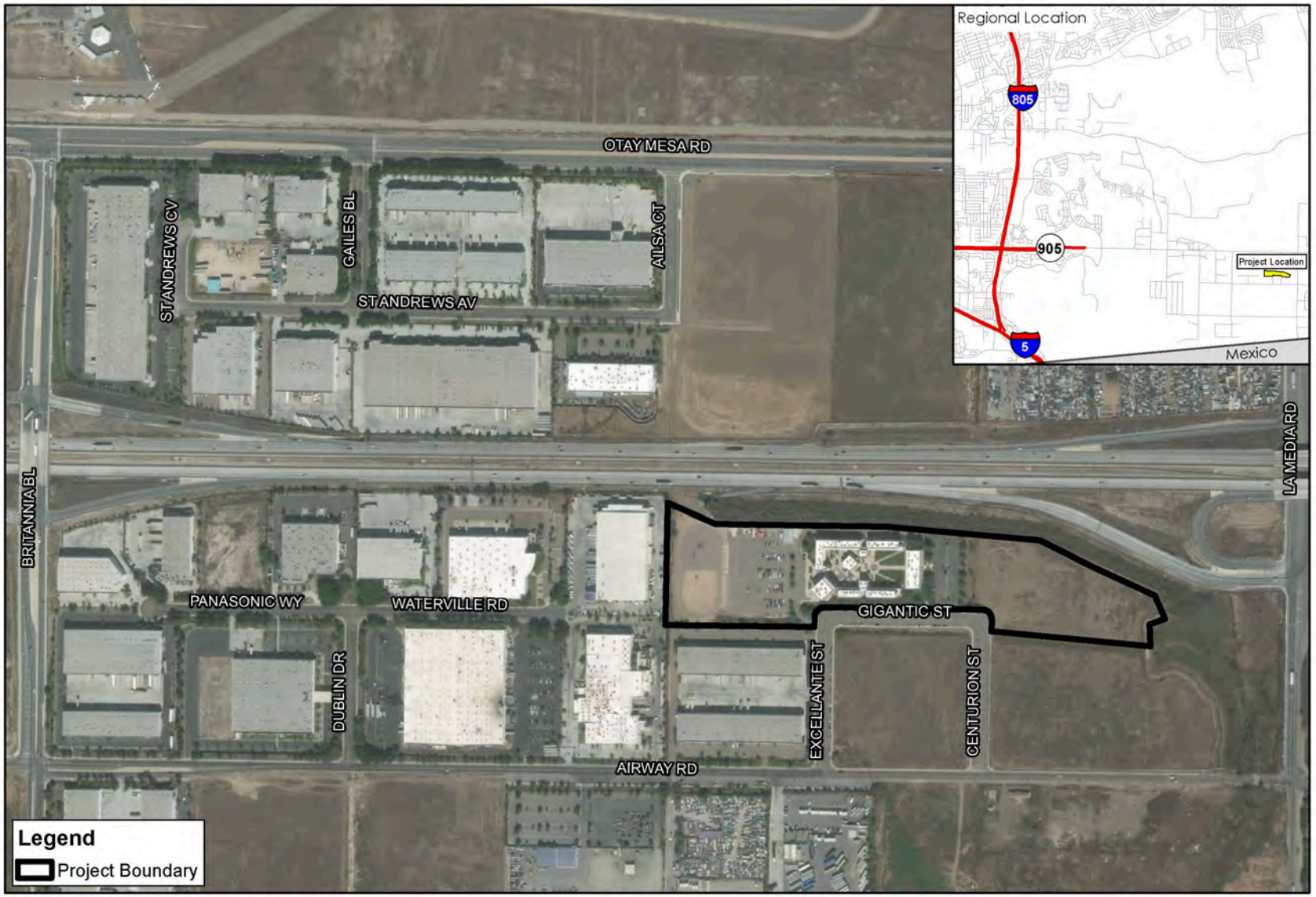
The project site contains no known cultural resources. The site has been previously graded, and the proposed project has no impacts to cultural resources. The project would not eliminate

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

important examples of the major periods of California history or prehistory as the site is graded and has been developed with the Otay Mesa Campus. No impact would occur.

b) No Impact. As demonstrated in this Initial Study environmental checklist, implementation of the proposed project would have no impact or a less than significant impact to all environmental resources. As such, the proposed project, when combined with the effects of past projects, the effects of other current projects, and the effects of probable future projects, would not result in cumulatively considerable impacts.

c) No Impact. As demonstrated in this Initial Study, the proposed project does not have environmental effects that would cause substantial adverse effects on human beings either directly or indirectly.



SOURCE: Basemap- Esri; SanGIS, 2018

BRG CONSULTING, INC.

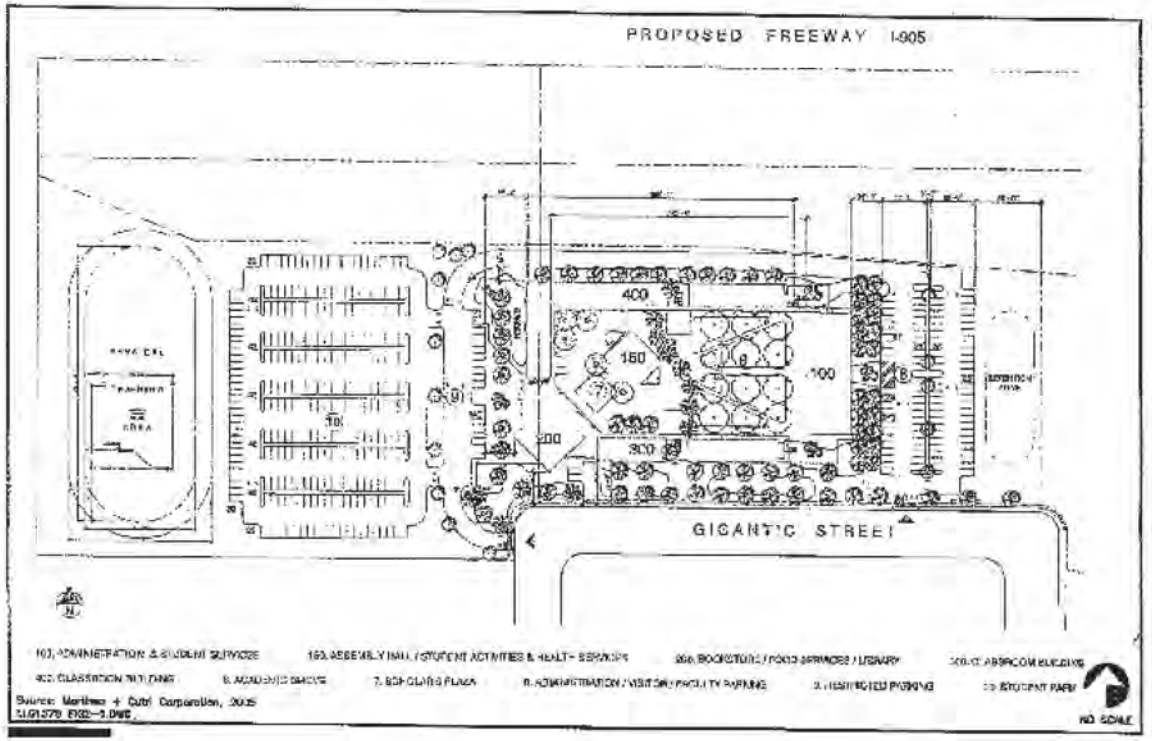
N

0 0.1 0.2 Miles

Project Location

Public Safety Training Center & Automotive Technology Center SWC Otay Mesa Higher Education Center

Figure 1

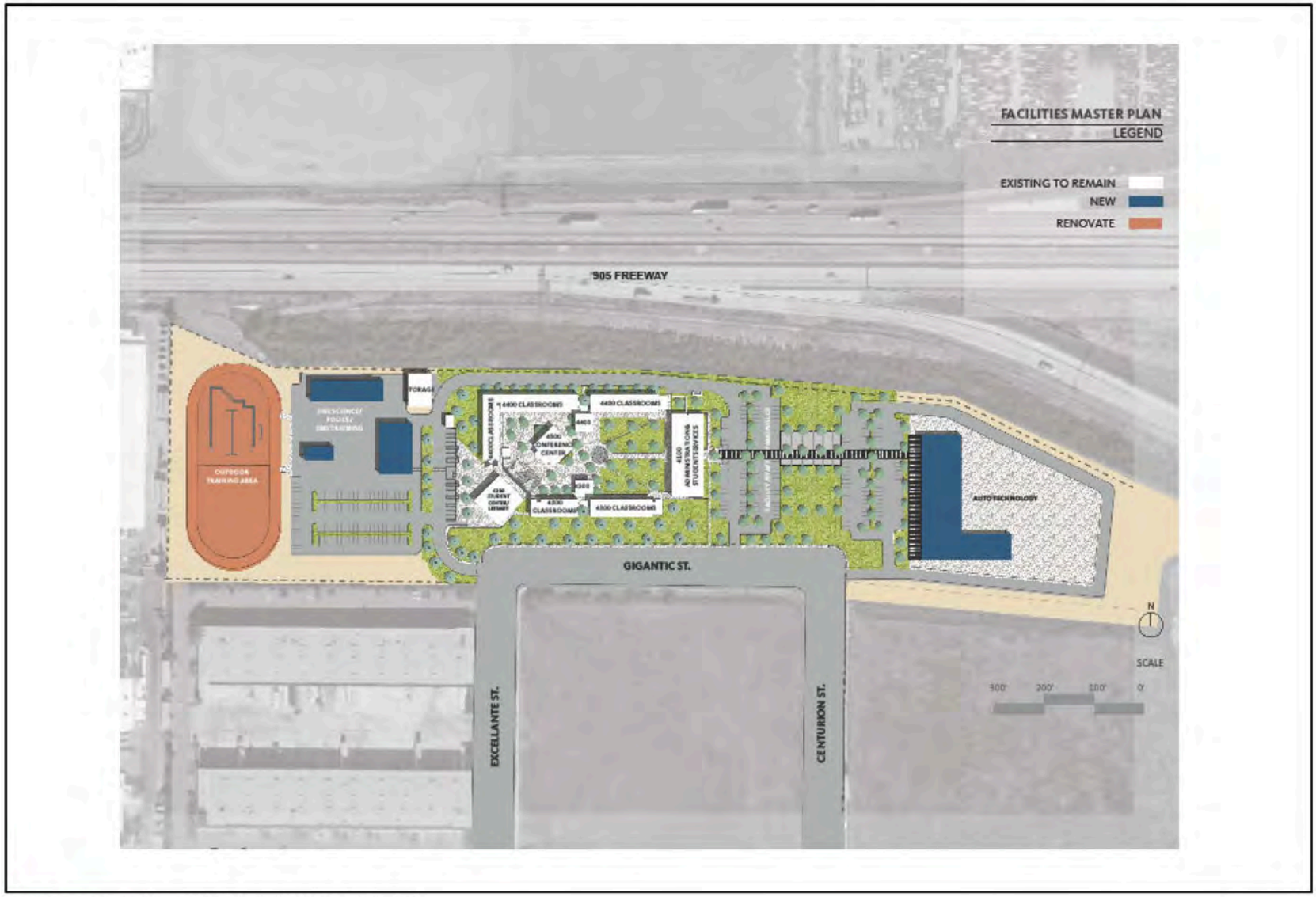


SOURCE: Martinez + Cutri Corporation, 2005

Original Site Plan

Public Safety Training Center & Automotive Technology Center SWC Otay Mesa Higher Education Center

Figure 2



SOURCE: Southwestern College Facilities Master Plan, 2018

BRG CONSULTING, INC.

Proposed Site Plan

Public Safety Training Center & Automotive Technology Center SWC Otay Mesa Higher Education Center

Figure 3

SECTION 3. REFERENCES

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SECTION 4. FINDINGS

This is to advise that the Southwestern Community College District, acting as the lead agency, has conducted an Initial Study to determine if the project may have a significant effect on the environmental and is proposing the attached environmental document based upon the following findings:

☐ The Initial Study shows that there is no substantial evidence that the project may have a significant effect on the environment and a NEGATIVE DECLARATION would be prepared.

☐ The Initial Study identifies potentially significant effects but:

(1) Proposals made or agreed to by the applicant before this proposed Mitigated Negative Declaration was released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur.

(2) There is no substantial evidence before the agency that the project may have a significant effect on the environment.

(3) Mitigation measures are required to ensure all potentially significant impacts are reduced to levels of insignificance.

☒ The Initial Study shows that although the proposed project could have a significant effect on the environment, Southwestern Community College District shall prepare an addendum to the previously adopted MND because some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR/MND have occurred.

Based on the environmental analysis, an ADDENDUM to the Final Mitigated Negative Declaration for the Higher Education Center at Otay Mesa (SCH # 2005091113) has been prepared for the proposed project.

If adopted, the Addendum to the Final Mitigated Negative Declaration for the Higher Education Center at Otay Mesa means that no further environmental analysis will be required. Reasons to support this finding are included in the attached Initial Study. The project file and all related documents are available for review Southwestern Community College District, 900 Otay Lakes Road, Chula Vista, CA 91910-7229.

_____ _____

Date of Determination Kindred Murillo, E.d.D, Superintendent/President , SWC District

SECTION 5. MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Monitoring and Reporting Program for Southwestern Community College District's Public Safety Training Center and Automotive Technology Center at the Otay Mesa Higher Education Center (State Clearinghouse #2005091113)

The Southwestern Community College District (District) will adopt this Mitigation Monitoring and Reporting Program (MMRP) in accordance with Public Resources Code (PRC) Section 21081.6 and Section 15097 of the California Environmental Quality Act (CEQA) Guidelines. The purpose of the MMRP is to ensure that the Public Safety Training Center and Automotive Technology Center at the Higher Otay Mesa Education Center, also known as the Southwestern College Facilities Master Plan Phase I Projects at the Otay Mesa Campus, which is the subject of this Addendum to the Mitigated Negative Declaration (MND) for the Higher Education Center at Otay Mesa Project, complies with all applicable environmental mitigation requirements. Mitigation measures for the project will be adopted by the Southwestern Community College District, in conjunction with the adoption of the Addendum and MND. Those mitigation measures have been integrated into this MMRP. Within this document, mitigation measures are organized and referenced by subject category and include those for: Air Quality (A1); and Geology and Soils (G2). Specific mitigation measures are identified, as well as the method and timing of verification and the responsible party that will ensure that each action is implemented.

Public Resources Code Section 21081.6 requires the Lead Agency, for each project that is subject to the California Environmental Quality Act (CEQA), to monitor performance of the mitigation measures included in any environmental document to ensure that implementation does, in fact, take place. The District is the designated lead agency for the MMRP and is responsible for review of all monitoring reports, enforcement actions, and document disposition. The District will rely on information provided by the monitor as accurate and up to date and will field check mitigation measure status as required.

A record of the MMRP will be maintained at the Southwestern Community College District, Facilities, Operations, and Planning, 900 Otay Lakes Road, Suite 1651, Chula Vista, CA 91910. All mitigation measures contained in the Addendum shall be made conditions of the project as may be further described below.

Mitigation Monitoring and Reporting Program
Public Safety Training Center and Automotive Technology Center at the Otay Mesa Higher Education Center -

MM No.	Mitigation Measure	Timing of Verification	Responsible Person	Date of Completion / Initials
A1	During clearing, grading, earth moving, the District shall control fugitive dust by regular watering of the site and the following practices shall be implemented: • Spread soil binders; • Wet the area down, sufficient enough to form a crust on the surface with repeated soakings, as necessary, to maintain the crust and prevent dust pick up by the wind; • Use water trucks and sprinkler systems to keep all areas where vehicles move wet enough to prevent dust raised when leaving the site; and, • Wet down areas in the late morning and after work is completed for the day.	Prior to and During Construction	Southwestern Community College District	
G2	The project shall incorporate specific grading, earthwork and structural design recommendations presented in the *Geotechnical Investigation prepared for the Southwestern College Higher Education Center Otay Mesa Campus Improvements* prepared by NV5, dated May 31, 2018 (Appendix B). Potential measures (clearing and grubbing, site grading, moisture conditioning, specially designed foundations and slabs, retaining walls, pavements) identified in this process for expansive soil shall be incorporated into the project plans and specifications and implemented prior to or during construction. Site preparation, removal of unsuitable soils, assessment of imported fill materials, fill placement, and other earthwork operations should be observed and tested. Continuous observation during construction allows for evaluation of the soil/rock conditions as they are encountered and allows the opportunity to recommend appropriate revisions where necessary	Prior to and During Construction	Southwestern Community College District	

A Air Quality and Greenhouse Gas Emission Report

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SOUTHWESTERN COMMMUNITY COLLEGE DISTRICT OTAY MESA CAMPUS PHASE I IMPROVEMENT PROJECT

AIR QUALITY/GREENHOUSE GAS STUDY

Prepared for:

BRG Consultants, Inc.
304 Ivy Street
San Diego, CA 92101

Prepared by:

BPG
BIRDSEYE
PLANNING GROUP

September 2019

SOUTHWESTERN COMMUNITY COLLEGE
OTAY MESA CAMPUS PHASE I IMPROVEMENTS
SAN DIEGO, CALIFORNIA

AIR QUALITY and GREENHOUSE GAS STUDY

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SOUTHWESTERN COMMUNITY COLLEGE
OTAY MESA CAMPUS PHASE I IMPROVEMENTS
SAN DIEGO, CALIFORNIA

AIR QUALITY and GREENHOUSE GAS STUDY

This report is an analysis of the potential air quality and greenhouse gas impacts associated with the proposed Southwestern Community College Otay Mesa Campus Phase I Improvements. This report has been prepared by Birdseye Planning Group (BPG) under contract to BRG Consultants, Inc., to support preparation of the environmental documentation pursuant to the California Environmental Quality Act (CEQA). This study analyzes the potential for temporary impacts associated with construction activity and long-term impacts associated with operation of the proposed project.

PROJECT DESCRIPTION

The proposed project is comprised of Phase I of a campus-wide master plan and consists of constructing a Public Safety Training Center; an Automotive Technology Complex; new parking lots, a detention basin, utility and outdoor site improvements. The project would remove the existing parking lot and athletic track located at the west end of campus and construct a Public Safety Training Center. An Automotive Technology Center would be constructed on a vacant and previously graded 5-acre parcel on the eastern portion of the campus. Proposed facilities would consist of:

- Four (4) small one-story buildings (Buildings A, B, C and E) with a combined area of 18,920 SF to be used for classrooms, offices, vocational training, equipment and storage; Building A would consist of a steel-framed structure containing offices, simulation and classroom space, restrooms and storage areas. Building B would consist of a one-story, steel-framed structure to provide drive-through spaces for emergency vehicles and enclosed storage areas. Building C would consist of a one-story, concrete masonry structure to provide two separate storage areas. Building E would consist of a one-story concrete masonry structure that would serve as a Simulation Apartment Building.
- Building D would consist of a four-story (44-foot high), concrete masonry structure (1,700 SF) to be used for firefighting training drills, for a total floor area of 4,650 SF.
- A one-story (50,000 SF) building with classrooms, lab space, shared spaces, lab bays, project space, and tool storage areas;
- New parking areas that would provide 258 student, faculty and accessible parking spaces. This new parking would replace spaces removed from the west side of the campus by the proposed Public Safety Training Center;

- Outdoor covered car yard storage space;
- Outdoor areas with seating, decking; and,
- Retention basin and landscaping improvements with erosion control native/drought tolerant vegetation.

Construction would begin in Fall 2019 and be completed in 18 months. The project site is shown in Figure 1.

SETTING

California Air Resources Board

CARB, which became part of the California EPA (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act (CCAA), meeting state requirements of the federal Clean Air Act and establishing California Ambient Air Quality Standards (CAAQSs). It is also responsible for setting emission standards for vehicles sold in California and for other emission sources such as consumer products and certain off-road equipment. CARB also established passenger vehicle fuel specifications and oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level. The CCAA is administered by CARB at the state level and by the Air Quality Management Districts at the regional level. Federal and state standards have been established for six criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), and lead (Pb). California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Both state and federal standards are summarized in Table 1. The federal "primary" standards have been established to protect the public health. The federal "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the general welfare.

San Diego Air Pollution Control District

The SDAPCD was created to protect the public from the harmful effects of air pollution, achieve and maintain air quality standards, foster community involvement and develop and implement cost-effective programs that meet state and federal mandates while considering environmental and economic impacts. Specifically, the SDAPCD is responsible for monitoring air quality and planning, implementing, and enforcing programs designed to attain and maintain state and federal ambient air quality standards in the district. Programs developed include air quality rules and regulations that regulate stationary source emissions, including area sources, point sources, and certain mobile source emissions. The SDAPCD is also responsible for establishing permitting requirements for stationary sources and ensuring that new, modified or relocated stationary sources do not create net emissions increases; and thus, are consistent with the region's air quality goals. The SDAPCD provides significance thresholds in Regulation II, Rule

Figure 1 — Vicinity Map

- Project Site

Table 1
State and Federal Ambient Air Quality Standards

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS[1]		NATIONAL STANDARDS[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]
Ozone[8] (O_3)	1 hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 hours	0.070 ppm (137µg/m³)		0.070 ppm (137 µg/m³)		
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m³)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m³)	--	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
Nitrogen Dioxide (NO_2)[10]	Annual Average	0.030 ppm (57 µg/m³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (339 µg/m³)		100 ppb (188 µg/m³)	--	
Sulfur Dioxide (SO_2)[11]	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 µg/m³)	--	Pararosaniline
	24 hours	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	--	
	3 hours	--		--	0.5 ppm (1300 µg/m³)	
	1 hour	0.25 ppm (655 µg/m³)		75 ppb (196 µg/m³)	--	
Respirable Particulate Matter (PM_{10})[9]	24 hours	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	150 µg/m³	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		--	--	
Fine Particulate Matter ($PM_{2.5}$)[9]	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12 µg/m³	15 µg/m³	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 µg/m³	Same as Primary Standard	
Sulfates	24 hours	25 µg/m³	Ion Chromatography	--	--	--
Lead[12, 13] (Pb)	30-day Average	1.5 µg/m³	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 µg/m³		

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS[1]		NATIONAL STANDARDS[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]
	3-month Rolling Average	--		0.15 μg/m^3	Same as Primary Standard	
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride[12]	24 hours	0.010 ppm (26 μg/m^3)	Gas Chromatography	--	--	--

Notes:

ppm = parts per million
μg/m^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
Source: California Air Resources Board 2017

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and 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. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three 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/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon 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.
4. Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/ m^3 to 12.0 μg/ m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/ m^3, as was the annual secondary standard of 15 μg/ m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/ m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (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.
11. 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 1-hour national 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 one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' 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.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 μg/ m^3 as a quarterly average) remains in effect until one 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.
14. In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

20.2, Table 20-2-1. "AQIA Trigger Levels." These trigger levels were established for stationary sources of air pollution and are commonly used for environmental evaluations. The SDAPCD enforces air quality rules and regulations through a variety of means, including inspections, educational or training programs, or fines, when necessary.

Regional Climate and Local Air Quality

San Diego Air Basin. The weather of San Diego County is profoundly influenced by the Pacific Ocean and its semi-permanent high-pressure systems that result in dry, warm summers and mild, occasionally wet winters. The average minimum temperature for January ranges from the mid-40s to the high-50s degrees Fahrenheit (4 to 15 degrees Celsius) across the county. July maximum temperatures average in the mid-80s to the high-90s degrees Fahrenheit (high-20s to the high-30s degrees Celsius). Most of the county's precipitation falls from November to April, with infrequent (approximately 10 percent) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches (254 millimeters); the amount increases with elevations as moist air is lifted over the mountains.

The interaction of ocean, land, and the Pacific High-Pressure Zone maintains clear skies for much of the year and drives the prevailing winds. Local terrain is often the dominant factor inland and winds in inland mountainous areas tend to blow upwards in the valleys during the day and down the hills and valleys at night.

In conjunction with the onshore/offshore wind patterns, there are two types of temperature inversions (reversals of the normal decrease of temperature with height), which occur within the region that affect atmospheric dispersive capability and that act to degrade local air quality. In the summer, an inversion at about 1,100 to 2,500 feet (335 to 765 meters) is formed over the entire coastal plain when the warm air mass over land is undercut by a shallow layer of cool marine air flowing onshore. The prevailing sunny days in this region further exacerbate the smog problem by inducing additional adverse photochemical reactions. During the winter, a nightly shallow inversion layer (usually at about 800 feet or 243 meters) forms between the cooled air at the ground and the warmer air above, which can trap vehicular pollutants. The days of highest Carbon Monoxide (CO) concentrations occur during the winter months.

The predominant onshore/offshore wind pattern is sometimes interrupted by so-called Santa Ana conditions, when high pressure over the Nevada-Utah region overcomes the prevailing westerly wind direction. This draws strong, steady, hot, and dry winds from the east over the mountains and out to sea. Strong Santa Ana winds tend to blow pollutants out over the ocean, producing clear days. However, at the onset or breakdown of these conditions or if the Santa Ana is weak, prevailing northwesterly winds are reestablished which send polluted air from the Los Angeles basin ashore in the SDAB. "Smog transport from the South Coast Air Basin (the metropolitan areas of Los Angeles, Orange, San Bernardino, and Riverside counties) is a key factor on more than half the days San Diego exceeds clean air standards" (San Diego Air Pollution Control District, 2010).

Pollutants

The SDAPCD is required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment." San Diego County is listed as a federal non-attainment area for ozone (eight hour) and a state non-attainment area for ozone (one hour and eight-hour standards), PM_{10} and $PM_{2.5}$. As shown in Table 2, the SDAB is in attainment for the state and federal standards for nitrogen dioxide, carbon monoxide, sulfur dioxide and lead. Characteristics of ozone, carbon monoxide, nitrogen dioxide, and suspended particulates are described below.

Ozone. Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_x) and reactive organic gases (ROG)[1]. Nitrogen oxides are formed during the combustion of fuels, while reactive organic compounds are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a

[1] Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile, and result in a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). While most of these differ in some significant way from a chemical perspective, from an air quality perspective two groups are important: non-photochemically reactive in the lower atmosphere, or photochemically reactive in the lower atmosphere (HC, RHC, ROG, ROC, and VOC).

pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Table 2
San Diego County Attainment Status

Criteria Pollutant	Federal Designation	State Designation
Ozone (one hour)	Attainment*	Non-Attainment
Ozone (eight hour)	Non-Attainment	Non-Attainment
Carbon Monoxide	Attainment	Attainment
PM_{10}	Unclassifiable**	Non-Attainment
$PM_{2.5}$	Attainment	Non-Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility	No Federal Standard	Unclassified

** The federal 1-hour standard of 12 ppm was in effect from 1979 through June 1, 2005. The revoked standard is referenced here because it was used for such a long period and because this benchmark is addressed in State Implementation Plans (SIPs).*

*** At the time of designation, if the available data does not support a designation of attainment or non-attainment, the area is designated as unclassifiable.*

Source: San Diego Air Pollution Control District. June 2016. http://www.sandiegocounty.gov/content/sdc/apcd/en/air-quality-planning/attainment-status.html

Carbon Monoxide. Carbon monoxide is a local pollutant that is found in high concentrations only near the source. The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, carbon monoxide reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Nitrogen Dioxide. Nitrogen dioxide (NO_2) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light and causes a reddish-brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulates. PM_{10} is particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in

diameter. Suspended particulates are mostly dust particles, nitrates and sulfates. Both PM_{10} and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Toxic Air Contaminants/Diesel Particulate Matter. Hazardous air pollutants, also known as toxic air pollutants (TACs) or air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Examples of toxic air pollutants include:

- benzene, which is found in gasoline;
- perchloroethylene, which is emitted from some dry-cleaning facilities; and
- methylene chloride, which is used as a solvent.

Transportation related emissions are focused on particulate matter constituents within diesel exhaust and TAC constituents that comprise a portion of total organic gas (TOG) emissions from both diesel and gasoline fueled vehicles. Diesel engine emissions are comprised of exhaust particulate matter and TOGs which are collectively defined for the purpose of an HRA, as Diesel Particulate Matter (DPM). DPM and TOG emissions from both diesel and gasoline fueled vehicles is typically composed of carbon particles and carcinogenic substances including polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and oxides of nitrogen (NO_x). Information on TAC and DPM is provided herein for reference only. As proposed, the project would be comprised of commercial uses serving a primarily automobile dependent customer base. While the project is located in proximity to a freeway, customers would be on-site for short periods of time and proposed uses would not generate DPM or TACs in concentrations that would pose a health risk or justify further evaluation in a health risk assessment.

State Implementation Plan/Air Quality Management Plan/Regional Air Quality Strategy

The federal Clean Air Act Amendments (CAAA) mandate that states submit and implement a State Implementation Plan (SIP) for areas not meeting air quality standards. SIPs are comprehensive plans that describe how an area will attain national and state ambient air quality

standards. SIPs are a compilation of new and previously submitted plans, programs (i.e., monitoring, modeling and permitting programs), district rules, state regulations and federal controls and include pollution control measures that demonstrate how the standards will be met through those measures.

State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB forwards SIP revisions to the USEPA for approval and publication in the Federal Register. Thus, the Regional Air Quality Strategy (RAQS) and Air Quality Management Plan (AQMP) prepared by SDAPCD and referenced herein become part of the SIP as the material relates to efforts ongoing in San Diego to achieve the national and state ambient air quality standards. The most recent SIP element for San Diego County was submitted in December 2016. The document identifies control measures and associated emission reductions necessary to demonstrate attainment of the 2008 Federal 8-hour ozone standard by July 20, 2018.

The San Diego RAQS was developed pursuant to California Clean Air Act (CCAA) requirements. The RAQS was initially adopted in 1991 and was updated in 1995, 1998, 2001, 2004, 2009 and 2016. The RAQS can be found at the following: http://www.sdapcd.org/content/dam/sdc/apcd/PDF/Air%20Quality%20Planning/2016%20RAQS.pdf. The RAQS identifies feasible emission control measures to provide progress in San Diego County toward attaining the State ozone standard. The pollutants addressed in the RAQS are volatile organic compounds (VOC) and oxides of nitrogen (NOx), precursors to the photochemical formation of ozone (the primary component of smog). The RAQS was initially adopted by the San Diego County Air Pollution Control Board on June 30, 1992, and amended on March 2, 1993, in response to ARB comments. At present, no attainment plan for particulate matter less than 10 microns in diameter (PM_{10}) or particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) is required by the state regulations; however, SDAPCD has adopted measures to reduce particulate matter in San Diego County. These measures range from regulation against open burning to incentive programs that introduce cleaner technology. These measures can be found in a report titled "*Measures to Reduce Particulate Matter in San Diego County*" December 2005 and can be found at: http://www.sdapcd.org/content/dam/sdc/apcd/PDF/Air%20Quality%20Planning/PM-Measures.pdf.

The RAQS relies on information from CARB and San Diego Association of Governments (SANDAG), including mobile and area source emissions, as well as information regarding projected growth in the County, to estimate future emissions and then determine strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends as well as land use plans developed by the cities and the County as part of the development of the individual General Plans. As such, projects that propose development consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development which is less dense than anticipated within the General Plan, the project would likewise be consistent with the RAQS. If a project

proposes development that is greater than that anticipated in the General Plan and SANDAG's growth projections, the project might conflict with the RAQS and SIP; and thus, have a potentially significant impact on air quality.

Under state law, the SDAPCD is required to prepare an AQMP for pollutants for which the SDAB is designated non-attainment. Each iteration of the SDAPCD's AQMP is an update of the previous plan and has a 20-year horizon. Currently the SDAPCD has implemented a 2012 8-hour National Ozone Implementation/Maintenance Plan, a 2007 8-hour Ozone Plan, and a 2004 Carbon Monoxide Plan. The SDAPCD adopted the 2008 8-hour Ozone Attainment Plan for San Diego County on December 16, 2016. CARB adopted the ozone plan as a revision to the California SIP on March 23, 2017. The ozone plan was submitted to the USEPA for review on April 12, 2017. Comments from the USEPA are pending. These plans are available for download on the ARB website located at the following URL: http://www.arb.ca.gov/planning/sip/planarea/sansip.htm.

Sensitive Receptors

Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to air pollutants. Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare as well that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The project site is located in an industrial area. There are no residences or other sensitive properties located in proximity. The Otay Mesa campus itself would be the closest sensitive receptor to the construction areas.

Monitored Air Quality

The SDAPCD monitors air quality conditions at locations throughout the SDAB. For this analysis, data from the Otay Mesa Donovan Correctional Facility monitoring station located northeast of the site were used to characterize existing pollutant concentrations in the vicinity of the project site. A summary of the data recorded at the Donovan Correctional Facility monitoring station from 2015 through 2017 is presented in Table 3.

AIR QUALITY IMPACT ANALYSIS

Methodology and Significance Thresholds

Air quality modeling was performed in general accordance with the methodologies outlined in the SDAPCD 2009 RAQS to identify both construction and operational emissions associated with the proposed project. All emissions were calculated using the California Emissions

Table 3
Ambient Air Quality Data

Pollutant	2015	2016	2017
Ozone, ppm – First High 8-Hour Average (2015 Standard)	0.071	0.075	0.082
Number of days of above 2015 standard (>0.070 ppm)	1	4	6
Nitrogen Dioxide, ppm – First High National	61.0	67.0	74.0
Nitrogen Dioxide, ppm – First High State	61.0	67.0	74.0
Days above the State standard (>0.18 ppm)	0	0	0
Days above the national standard (>100 ppb)	0	0	0
Particulate Matter <10 microns, $\mu g/m^3$ First High Federal	136	79	68
Particulate Matter <10 microns, $\mu g/m^3$ First High State	136	79	69
Estimated number of days greater than national 24-hour standard (>150 $\mu g/m^3$)	0	0	0
Estimated number of days greater than state standard (>50 $\mu g/m^3$)	10	9	4
Particulate Matter <2.5 microns, $\mu g/m^3$ First High National	*	*	*
Particulate Matter <2.5 microns, $\mu g/m^3$ First High State	35.6	42.1	42.7
Number of samples of Federal exceedances (>12 $\mu g/m^3$)	*	*	*

Donovan Correctional Facility - 480 Alta Road, San Diego, CA
**Data insufficient to determine the value*
Source: California Air Resources Board, 2015, 2016, 2017 Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php

Estimator Model (CalEEMod) software version 2016.3.2 which incorporates current air emission data, planning methods and protocol approved by CARB.

Construction activities would require the use of equipment that would generate criteria air pollutant emissions. For modeling purposes, it was assumed that all construction equipment used would be diesel-powered. Construction emissions associated with development of the proposed project were quantified by estimating the types of equipment, including the number of individual pieces of equipment, that would be used on-site during each of the construction phases as well as off-site haul trips to remove demolition debris. Construction emissions are analyzed using the regional thresholds established by the SDAPCD and published under Rule 20-2.

Operational emissions include mobile source emissions, energy emissions and area source emissions. Mobile source emissions are generated by motor vehicle trips associated with operation of the project. Emissions attributable to energy use include electricity and natural gas consumption for space and water heating. Area source emissions are generated by landscape maintenance equipment, use of consumer products and painting. To determine whether a

regional air quality impact would occur, the increase in emissions would be compared with the SDAPCD recommended regional thresholds for operational emissions.

Thresholds of Significance. Based on California Environmental Quality Act (CEQA) Appendix G Significance Determination Thresholds, a project would have a significant air quality impact if it would:

a) *Conflict with or obstruct implementation of the applicable air quality plan;*
b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation;*
c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);*
d) *Expose sensitive receptors to substantial pollutant concentrations;*
e) *Create objectionable odors affecting a substantial number of people.*

A significant adverse air quality impact may occur when a project individually or cumulatively interferes with progress toward the attainment of the ozone standard by generating emissions that equal or exceed the established long-term quantitative thresholds for pollutants or exceed a state or federal ambient air quality standard for any criteria pollutant.

The SDAPCD does not provide quantitative thresholds for determining the significance of construction or mobile source-related projects. However, the SDAPCD does specify Air Quality Impact Analysis (AQIA) trigger levels for new or modified stationary sources (SDAPCD Rules 20.1 through 20.3) If these incremental levels are exceeded, an AQIA must be performed. Although these trigger levels do not generally apply to mobile sources or general land development projects, for comparative purposes, these levels may be used to evaluate the increased emissions from these projects. For CEQA purposes, the screening level thresholds can be used to demonstrate that a project's total emissions would not result in a significant impact to air quality. Because the AQIA screening thresholds do not include VOCs, the screening level for VOCs used in this analysis are from the South Coast Air Quality Management District (SCAQMD), which generally has stricter emissions thresholds than SDAPCD. The thresholds shown below are used in this analysis to determine whether the solar program has the potential to violate an air quality standard or contribute substantially to an existing or projected air quality violation:

- Carbon Monoxide (CO) - 550 pounds/day;
- Nitrogen Oxides (NOx) - 250 pounds/day;
- Particulate Matter (PM_{10}) - 100 pounds/day;
- Particulate Matter ($PM_{2.5}$) - 67 pounds/day;
- Sulfur Oxides (SOx) - 250 pounds/day; and
- Volatile Organic Compounds(VOCs)/Reactive Organic Gases(ROGs) - 75 pounds/day.

Construction Emissions

Project construction would generate temporary air pollutant emissions. These impacts are associated with fugitive dust (PM_{10} and $PM_{2.5}$) from soil disturbance and exhaust emissions (NO_x and CO) from heavy construction vehicles. For the purpose of estimating emissions, it was assumed that the improvements would be constructed consecutively over the course of an 14-month period beginning Fall 2019. As noted, construction would generally consist of demolition, site preparation/grading, building construction paving and application of architectural coatings (i.e., paint).

Site preparation and grading would involve the greatest concentration of heavy equipment use and the highest potential for fugitive dust emissions. The project would be required to comply with SDAPCD Rules 52 and 54 which identify measures to reduce fugitive dust and is required to be implemented at all construction sites located within the SDAB. Therefore, the following conditions, which are required to reduce fugitive dust in compliance with SDAPCD Rules 52 and 54, were included in CalEEMod for site preparation and grading phases of construction.

1. **Minimization of Disturbance.** Construction contractors should minimize the area disturbed by clearing, grading, earth moving, or excavation operations to prevent excessive amounts of dust.

2. **Soil Treatment.** Construction contractors should treat all graded and excavated material, exposed soil areas and active portions of the construction site, including unpaved on-site roadways to minimize fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. As referenced, watering would be implemented for dust control. Watering will be performed as often as necessary, and at least twice daily, preferably in the late morning and after work is done for the day. Note – it was assumed watering would occur two times daily for modeling purposes.

3. **Soil Stabilization.** Construction contractors should monitor all graded and/or excavated inactive areas of the construction site at least weekly for dust stabilization. Soil stabilization methods, such as water and roll compaction, and environmentally safe dust control materials shall be applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until landscape growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.

4. **No Grading During High Winds.** Construction contractors should stop all clearing, grading, earth moving, and excavation operations during periods of high winds (20 miles per hour or greater, as measured continuously over a one-hour period).

5. **Street Sweeping.** Construction contractors should sweep all on-site driveways and adjacent streets and roads at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

Construction is assumed to begin in Fall 2019 and be completed late-2020. Table 4 summarizes the estimated maximum daily emissions of pollutants occurring during the construction period. As shown in Table 4, construction of the proposed project would not exceed the SDAPCD regional construction emission thresholds for daily emissions. Thus, the project construction would not conflict with the SIP, RAQS or AQMP, violate an air quality standard or contribute to an existing or projected violation, result in a cumulatively considerable increase in ozone or particulate matter emissions or expose receptors to substantial pollutant concentrations (thresholds a-d).

Table 4
Estimated Maximum Mitigated Daily Construction Emissions

Construction Phase		Maximum Emissions (lbs/day)				
	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
2019 Maximum lbs/day	4.8	61.2	25.9	0.08	12.0	7.0
2020 Maximum lbs/day	39.7	22.6	19.7	0.04	1.9	1.2
SCAPCD Regional Thresholds	*75*	*250*	*550*	*250*	*100*	67
Threshold Exceeded	**No**	**No**	**No**	**No**	**No**	**No**

Construction-Related Toxic Air Contaminant Impacts

The greatest potential for toxic air contaminant emissions would be related to diesel particulate emissions associated with heavy equipment operations during construction of the proposed project. According to SCAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk". The California Office of Environmental Health Hazard Assessment (OEHHA) health risk guidance states that a residential receptor should be evaluated based on a 30-year exposure period. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. Given the short-term construction schedule and the fact that there are no sensitive residential properties located in proximity to the site, the proposed project would not result in a long-term (i.e., 30 or 70 year) exposure to a substantial source of toxic air contaminant emissions; and thus, would not be exposed to the related individual cancer risk. Therefore, no significant short-term toxic air contaminant impacts would occur during construction of the proposed project.

Construction-Related Odor Impacts

Potential sources of odor during construction activities include equipment exhaust and activities such as paving. The objectionable odors that may be produced during the construction

process would occur periodically and end when construction is completed. No significant impact related to odors would occur during construction of the proposed project per threshold (e) referenced above.

Long-Term Regional Impacts

Regional Pollutant Emissions

Table 5 summarizes emissions associated with operation of the proposed project. Operational emissions would be comprised of vehicle trips (mobile sources) to inspect and maintain the PV system. Operation of the project would not generate area emissions or emissions related to energy consumption. For modeling purpose, it was assumed that cumulatively, the projects would generate one vehicle trip daily over the course of a year. This method likely overestimates actual emissions; however, the approach is intended to provide comparative data for the purpose of CEQA compliance. As shown in Table 5, emissions associated with operation of the project would not exceed the SDAPCD thresholds for ROG, NO_X, CO, SO_X, PM_{10} or $PM_{2.5}$. Therefore, the project's regional air quality impacts (including impacts related to criteria pollutants, sensitive receptors and violations of air quality standards per threshold c-d) would be less than significant.

Table 5
Estimated Operational Emissions

	Estimated Emissions (lbs/day)					
	ROG	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project						
Area	1.8	0.01	0.03	0.0	0.01	0.01
Energy	0.07	0.7	0.6	0.01	0.05	0.05
Mobile	3.4	13.6	38.5	0.1	10.9	3.0
Maximum lbs/day	**5.3**	**14.4**	**39.1**	**0.11**	**11.0**	**3.0**
SCAPCD Thresholds	*75*	*250*	*550*	*250*	*100*	67
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

See Appendix for CalEEMod version. 2016.3.2 computer model output. Summer emissions shown.

Objectionable Odors

The project would be comprised of new classrooms and related support facilities. **No impact** would occur per threshold (e).

Local Carbon Monoxide Emissions

As previously discussed, carbon monoxide is a colorless, odorless, poisonous gas that may be found in high concentrations near areas of high traffic volumes. CO emissions are a function of

vehicle idling time, meteorological conditions, and traffic flow. The SDAB is in attainment of state and federal CO standards; thus, CO data is no longer collected and not all monitoring stations have CO data available. The maximum 8-hour average CO level recorded in 2012 (the last year data were recorded) at the San Diego 1110 Beardsley Street site (the site closest to the project area) was 1.81 parts per million (ppm). Concentrations were below the 9-ppm state and federal 8-hour standard.

Although CO is not a regional air quality concern in SDAB, elevated CO levels can occur at or near intersections that experience severe traffic congestion. A localized air quality impact is considered significant if the additional CO emissions resulting from the project create a "hot spot" where the California 1-hour standard of 20.0 ppm or the 8-hour standard of 9 ppm is exceeded. This can occur at severely congested intersections during cold winter temperatures. Screening for possible elevated CO levels is recommended for severely congested intersections experiencing levels of service E or F with project traffic where a significant project traffic impact may occur.

Because of more stringent requirements for cleaner vehicles, equipment, and fuels, CO levels across California have dropped substantially. Statewide, all air basins are attainment or maintenance areas for CO. Therefore, recent screening procedures for CO hotspots have been developed based on current methodologies. The Sacramento Metropolitan Air Quality Management District (SMAQMD) developed a screening threshold in 2011, which states that any project involving an intersection with 31,600 vehicles per hour or more will require detailed analysis. In 2010, the Bay Area Air Quality Management District developed a screening threshold that states that any project affecting an intersection with 44,000 vehicles per hour would require detailed analysis. This analysis conservatively assesses potential CO hot spots using the lower SMAQMD screening threshold of 31,600 vehicles per hour. Additionally, Sacramento and San Diego have the same federal and State CO attainment designations; and thus, experience similar concentrations of CO. Screening volumes are appropriate for evaluating CO impacts in the SDAB. This screening volume has also been utilized by the South Coast Air Quality Management District, which also has the same CO designation.

City of San Diego traffic counts (March 28, 2018) for the La Media/Airway Road intersection, the intersection closest to the project site, show average daily trips were 6,473 vehicles. Using City of San Diego trip generation rates for 2-year colleges (18/1,000 square feet), the project could conservatively generate up to 1,241 new daily trips. If all trips used the La Media/Airway Road intersection, the total would be approximately 7,713 daily trips. This is less than the 31,600 trip threshold. Based on these findings, receptors would not be exposed to substantial pollutant concentrations (threshold d) related to CO hotspots. No further evaluation with respect to CO hotspots is required.

SIP/AQMP/RAQS Consistency

As noted, the RAQS relies on information from CARB and SANDAG, including projected growth in the County, mobile, area and all other source emissions to project future emissions

and determine from those data, the strategies necessary for the reduction of stationary source emissions through regulatory controls. Projects that propose development that is consistent with the growth anticipated by the general plan is consistent with the SIP, AQMP and RAQS. The proposed project involves the construction and operation of new classroom and related facilities at the Southwestern Community College Otay Mesa Campus. The project would accommodate existing and new students; however, it would not induce growth or cause the local population to increase beyond what is planned within the region. The project would be consistent with the SIP, AQMP and RAQS and significance threshold (a - air quality plans) referenced above. Impacts related to this threshold would be less than significant.

GREENHOUSE GAS EMISSIONS

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and sulfur hexafluoride (SF_6) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2E), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a GWP of one. By contrast, methane (CH_4) has a GWP of 28, meaning its global warming effect is 28 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 2014).

Total U.S. GHG emissions were 6,587 MMT CO_2E in 2015 (U.S. EPA, April 2017). Total U.S. emissions decreased over 2014 levels primarily as a result of less fossil fuel combustion. However, emissions vary annually. For example, emissions increased by 3.2 percent from 2009 to 2010. The increase was due in part to (1) an increase in economic output resulting in greater energy consumption across all sectors; and (2) warmer summer conditions resulting in an increase in electricity demand for air conditioning (U.S. EPA, April 2012). In 2015, electricity production and transportation accounted for 29 percent and 27 percent of CO_2 emissions from fossil fuel combustion, respectively. The residential and commercial end-use sectors accounted for 22 percent

and 19 percent of CO_2 emissions from fossil fuel combustion, respectively, during 2010 (U.S. EPA, April 2012).

Based upon the California Air Resources Board (ARB) 2017 Scoping Plan (ARB, 2017), California produced 440.4 MMT CO_2E in 2015. The major source of GHG in California is transportation, contributing 37 percent of the state's total GHG emissions. The industrial sector is the second largest source, contributing 21 percent of the state's GHG emissions. California emissions result in part to its geographic size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. The ARB has projected statewide unregulated GHG emissions for the year 2020 is projected to be 509 MMT CO_2E (ARB, May 2014). These projections are based on Business As Usual (BAU) conditions and represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

California Regulations

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 states that by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent of 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report recommended various strategies that the state could pursue to reduce GHG emissions. These strategies could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture.

Assembly Bill 32 and CARB's Scoping Plan

To further the goals established in EO S-3-05, the Legislature passed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020. Under AB 32, CARB is responsible for and is recognized as having the expertise to carry out and develop the programs and requirements necessary to achieve the GHG emissions reduction mandate of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions from specified sources. This program is used to monitor and enforce compliance with established standards. CARB also is required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 authorized CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

In 2007, CARB approved a limit on the statewide GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 MMT CO_2E). CARB's adoption of this limit is in accordance with Health and Safety Code, Section 38550.

Further, in 2008, CARB adopted the Scoping Plan in accordance with Health and Safety Code, Section 38561. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions for various emission sources/sectors to 1990 levels by 2020. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction features by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. 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; and
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.

In the Scoping Plan (CARB 2008), CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5% from the otherwise projected 2020 emissions level (i.e., those emissions that would occur in 2020) absent GHG reducing laws and regulations (referred to as Business-As-Usual (BAU)). To calculate this percentage reduction, CARB assumed that all new electricity generation would be supplied by natural gas plants, no further regulatory action would impact vehicle fuel efficiency, and building energy efficiency codes would be held at 2005 standards.

In the 2011 Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (CARB 2011a), CARB revised its estimates of the projected 2020 emissions level in light of the economic recession and the availability of updated information about GHG reduction regulations. Based on the new economic data, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of 21.7% (down from 28.5%) from the BAU conditions. When the 2020 emissions level projection was updated to account for newly implemented regulatory measures, including Pavley I (model years 2009–2016) and the Renewables Portfolio Standard (RPS) (12% to 20%), CARB determined that

achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of 16% (down from 28.5%) from the BAU conditions.

In 2014, CARB adopted the First Update to the Climate Change Scoping Plan: Building on the Framework (First Update; CARB 2014). The stated purpose of the First Update is to "highlight California's success to date in reducing its GHG emissions and lay the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80% below 1990 levels by 2050" (CARB 2014). The First Update found that California is on track to meet the 2020 emissions reduction mandate established by AB 32 and noted that California could reduce emissions further by 2030 to levels needed to stay on track to reduce emissions to 80% below 1990 levels by 2050 if the state realizes the expected benefits of existing policy goals.

In conjunction with the First Update, CARB identified "six key focus areas comprising major components of the state's economy to evaluate and describe the larger transformative actions that will be needed to meet the state's more expansive emission reduction needs by 2050" (CARB 2014). Those six areas are (1) energy, (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure), (3) agriculture, (4) water, (5) waste management, and (6) natural and working lands. The First Update identifies key recommended actions for each sector that will facilitate achievement of EO S-3-05's 2050 reduction goal (CARB 2014).

Based on CARB's research efforts presented in the First Update, it has a "strong sense of the mix of technologies needed to reduce emissions through 2050" (CARB 2014). Those technologies include 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 GWPs identified by the IPCC. Using the recalculated 1990 emissions level (431 MMT CO_2E) and the revised 2020-emissions-level projection identified in the 2011 Final Supplement, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of approximately 15% (instead of 28.5% or 16%) from the BAU conditions (CARB 2014).

In January 2017, CARB released, *The 2017 Climate Change Scoping Plan Update (*Second Update; CARB 2017b), for public review and comment. This update proposes CARB's strategy for achieving the state's 2030 GHG target as established in Senate Bill (SB) 32 (discussed below), including continuing the Cap-and-Trade Program through 2030, and includes a new approach to reduce GHGs from refineries by 20%. The Second Update incorporates approaches to cutting short-lived climate pollutants (SLCPs) under the Short-Lived Climate Pollutant Reduction Strategy (a planning document that was adopted by CARB in March 2017), acknowledges the need for reducing emissions in agriculture, and highlights the work underway to ensure that California's natural and working lands increasingly sequester carbon. During development of the Second Update, CARB held a number of public workshops in the Natural and Working Lands, Agriculture, Energy, and Transportation sectors to inform development of the 2030

Scoping Plan Update (CARB 2016). The Second Update has not been considered by CARB's Governing Board at the time this analysis was prepared.

Executive Order S-01-07 was enacted on January 18, 2007. The order mandates that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.

Other regulations affecting state and local GHG planning and policy development are summarized as follows:

Assembly Bill 939 and Senate Bill 1374
Assembly Bill 939 (AB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004 suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills.

Senate Bill 1368
Senate Bill 1368 (SB 1368) is the companion Bill of AB 32 and was adopted September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007 and for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas-fired plant. Furthermore, the legislation states that all electricity provided to the State, including imported electricity, must be generated by plants that meet the standards set by California Public Utilities Commission (CPUC) and California Energy Commission (CEC).

Senate Bill 97
Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is an environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify and adopt those guidelines by January 1, 2010. Pursuant to the requirements of SB 97 as stated above, on December 30, 2009 the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The CEQA Guidelines Amendments changed sections of the CEQA Guidelines and incorporated GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010 and are summarized below:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.

- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.

- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.

- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."

- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.

- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Senate Bills 1078, 107, and X1-2 and Executive Orders S-14-08 and S-21-09
Senate Bill 1078 (SB 1078) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) changed the target date to 2010. Executive Order S-14-08 was signed on November 2008 and expands the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

California Code of Regulations (CCR) Title 24, Part 6
CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity

production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008 and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. All buildings for which an application for a building permit is submitted on or after July 1, 2014 must follow the 2013 standards. The 2013 commercial standards are estimated to be 30 percent more efficient than the 2008 standards; 2013 residential standards are at least 25 percent more efficient. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

Senate Bill 375

SB 375 (2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 required CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035. Regional metropolitan planning organizations are then responsible for preparing a Sustainable Communities Strategy (SCS) within their Regional Transportation Plan (RTP). The goal of the SCS is to establish a forecasted development pattern for the region that, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If a SCS is unable to achieve the GHG reduction target, a metropolitan planning organization 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 California Government Code, Section 65080(b)(2)(K), a sustainable communities strategy does not (1) regulate the use of land; (2) supersede the land use authority of cities and counties; or (3) 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 the San Diego Association of Governments (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. 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.

After SANDAG's 2050 RTP/SCS was adopted, a lawsuit was filed by the Cleveland National Forest Foundation and others. The matter is pending before the California Supreme Court (Case No. S223603) for determination of whether an Environmental Impact Report for a regional

transportation plan must include an analysis of the plan's consistency with the GHG reduction goals reflected in EO S-3-05 to comply with CEQA.

Although the Environmental Impact Report for SANDAG's 2050 RTP/SCS is pending before the California Supreme Court, in 2015, SANDAG adopted the next iteration of its RTP/SCS in accordance with statutorily mandated timelines, and no subsequent litigation challenge was filed. More specifically, in October 2015, SANDAG adopted San Diego Forward: The Regional Plan.
Like the 2050 RTP/SCS, this planning document 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 RTP/SCS would achieve CARB's 2020 and 2035 GHG emissions reduction targets for the region.

Senate Bill X7-7
Senate Bill X7-7 (SB X7-7), enacted on November 9, 2009, mandates water conservation targets and efficiency improvements for urban and agricultural water suppliers. SB X7-7 requires the Department of Water Resources (DWR) to develop a task force and technical panel to develop alternative best management practices for the water sector. Additionally, SB X7-7 required the DWR to develop criteria for baseline uses for residential, commercial, and industrial uses for both indoor and landscaped area uses. The DWR was also required to develop targets and regulations that achieve a statewide 20 percent reduction in water usage.

California Green Building Standards
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 establishes 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)). These standards are updated to consider and incorporate new energy efficient technologies and construction methods. 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 2016 Title 24 standards are the currently applicable building energy efficiency standards and became effective on January 1, 2017. In general, single-family homes built to the 2016 standards are anticipated to use approximately 28% less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards, and nonresidential

buildings built to the 2016 standards will use an estimated 5% less energy than those built to the 2013 standards (CEC 2015a).

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 "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 2016 standards became effective on January 1, 2017. The mandatory standards require the following (24 CCR Part 11):

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings;
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' Model Water Efficient Landscape Ordinance;
- Diversion of 65% of construction and demolition waste from landfills;
- Mandatory inspections of energy systems to ensure optimal working efficiency;
- Inclusion of electric vehicle charging stations or designated spaces capable of supporting future charging stations; and
- Low-pollutant-emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle board.

The CALGreen standards also include voluntary efficiency measures that are provided at two separate tiers and implemented at the discretion of local agencies and applicants. CALGreen's Tier 1 standards call for a 15% improvement in energy requirements, stricter water conservation, 65% diversion of construction and demolition waste, 10% recycled content in building materials, 20% permeable paving, 20% cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30% improvement in energy requirements, stricter water conservation, 75% diversion of construction and demolition waste, 15% recycled content in building materials, 30% permeable paving, 25% cement reduction, and cool/solar-reflective roofs (24 CCR Part 11).

The California Public Utilities Commission, CEC, and CARB also have a shared, established goal of achieving zero net energy (ZNE) for new construction in California. The key policy timelines include the following: (1) all new residential construction in California will be ZNE by 2020, and (2) all new commercial construction in California will be ZNE by 2030 (CPUC

2013).[2] As most recently defined by the CEC in its 2015 Integrated Energy Policy Report (CEC 2015b), a ZNE code building is "one where the value of the energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building" using the CEC's Time Dependent Valuation metric.

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. Performance of appliances must be certified through the CEC to demonstrate compliance with 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 for 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.

Executive Order 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 statewide 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 statewide GHG emissions to 80% below 1990 levels by 2050 as set forth in EO S-3-05. To facilitate achievement of this goal, EO B-30-15 calls for an update to CARB's Scoping Plan to express the 2030 target in terms of MMT CO2E. EO B-30-15 also calls for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets. EO B-30-15 does not require local agencies to take any action to meet the new interim GHG reduction target.

Senate Bill 32 and Assembly Bill 197

SB 32 and AB 197 (enacted in 2016) are companion bills that set new statewide GHG reduction targets, make changes to CARB's membership, increase legislative oversight of CARB's climate change–based activities, and expand dissemination of GHG and other air quality–related emissions data to enhance transparency and accountability. More specifically, 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 added two members of the Legislature to CARB as

[2] It is expected that achievement of the ZNE goal will occur through revisions to the Title 24 standards.

nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

Local Regulations and CEQA Requirements

As referenced, pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, but contain no suggested thresholds of significance for GHG emissions. Instead, lead agencies are given the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. The general approach to developing a Threshold of Significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move the state towards climate stabilization. If a project would generate GHG emissions above the threshold level, its contribution to cumulative impacts would be considered significant. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted quantitative significance thresholds for GHGs. However, in March 2013 the Bay Area's thresholds were overruled by the Alameda County Superior Court (*California Building Industry Association v. Bay Area Air Quality Management District*), on the basis that adoption of the thresholds constitutes a "project" under CEQA, but did not receive the appropriate environmental review. As a result, BAAQMD has elected to not recommend specific GHG thresholds for use in CEQA documents.

The South Coast Air Quality Management District (SCAQMD) threshold, which was adopted in December 2008, considers emissions of over 10,000 metric tons CO2E /year to be significant. However, the SCAQMD's threshold applies only to stationary sources and is expressly intended to apply only when the SCAQMD is the CEQA lead agency. Although not formally adopted, the SCAQMD has developed a draft quantitative threshold for all land use types of 3,000 metric tons CO_2E /year (SCAQMD, September 2010). Note that lead agencies retain the responsibility to determine significance on a case-by-case basis for each specific project.

City of San Diego Climate Action Plan

On January 29, 2002, the City Council unanimously approved the San Diego Sustainable Community Program. In 2005, the City released a Climate Protection Action Plan. This plan includes many of the recommendations provided by the Ad Hoc Advisory Committee and City staff (City of San Diego 2005). The Climate Protection Action Plan evaluated citywide GHG emissions; however, the Climate Protection Action Plan did not recommend or require specific strategies or measures for projects within the City to reduce emissions (City of San Diego 2005).

In December 2015, the City adopted its Final CAP (City of San Diego 2015a). A Program Environmental Impact Report was prepared for the City's Draft CAP, which was certified in December 2015 (City of San Diego 2015b). With implementation of the CAP, the City intends to reduce emissions 15% below the baseline, to approximately 11.1 MMT CO_2E, by 2020; 40% below the baseline, to approximately 7.8 MMT CO_2E, by 2030; and 50% below the baseline, to approximately 6.5 MMT CO_2E, by 2035. The 2015 CAP demonstrates that the City acknowledges the existing and potential impacts of a changing climate and is committed to keeping it in the forefront of decision making. Successful implementation of the CAP will prepare for anticipated climate change impacts in the coming decades, help the State of California achieve its reduction target by contributing the City's fair share of GHG reductions and have a positive impact on the regional economy.

The CAP meets the requirements set forth in CEQA Guidelines, Section 15183.5, whereby a lead agency (e.g., the City) may analyze and mitigate the significant effects of GHG emissions at a programmatic level, such as in a general plan, a long-range development plan, or a separate plan, to reduce GHG emissions. The CAP Consistency Checklist (City of San Diego 2017a), which was adopted by the City Council on July 12, 2016, and subsequently updated February 2017, is intended to provide a streamlined review process for the GHG emissions analysis of proposed new development projects that are subject to discretionary review and trigger environmental review pursuant to CEQA.

While the Southwestern Community College District Otay Mesa Campus is located in the City of San Diego, the District is a lead agency as defined under CEQA; and thus, is able to establish thresholds with respect to compliance with applicable rules and regulations affecting environmental resources. The Southwester Community College District does not have an approved CAP. Thresholds of significance for determining GHG related impacts are described below.

CLIMATE CHANGE IMPACT ANALYSIS

Thresholds of Significance

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions in March 2010. These guidelines are used in evaluating the cumulative significance of GHG emissions from the proposed project. According to the adopted CEQA Guidelines, impacts related to GHG emissions from the proposed project would be significant if the project would:

- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or*
- *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence on climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).

Thus, for the purpose of demonstrating consistency with local efforts to reduce GHG emissions, the project is evaluated per the County of San Diego screening threshold of 900 metric tons per year of GHG emissions. Projects that generate less than 900 metric tons of CO2E annually, are not considered large enough to cumulatively contribute to global climate change.

Methodology

GHG emissions associated with construction and operation of the proposed project and existing development have been estimated using California Emissions Estimator Model (CalEEMod) version 2016.3.2.

Construction Emissions

Construction of the proposed project would generate temporary GHG emissions primarily associated with the operation of construction equipment and truck trips. Site preparation and grading typically generate the greatest emission quantities because the use of heavy equipment is greatest during this phase of construction. Emissions associated with the construction period were estimated based on the projected maximum amount of equipment that would be used onsite at one time. Air districts such as the SCAQMD have recommended amortizing construction-related emissions over a 30-year period to calculate annual emissions. Complete CalEEMod results and assumptions can be viewed in the Appendix.

Operational Emissions

Default values for various land uses in CalEEMod version 2016.3.2 are based on the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. CalEEMod provides operational emissions of CO_2, N_2O and CH_4. This methodology has been subjected to peer review by numerous public and private stakeholders, and in particular by the CEC; and therefore, is considered reasonable and reliable for use in GHG impact analysis pursuant to CEQA. It is also recommended by CAPCOA (January 2008).

Emissions associated with area sources (i.e., consumer products, landscape maintenance, and architectural coating) were calculated in CalEEMod based on standard emission rates from CARB, USEPA, and district supplied emission factor values (CalEEMod User Guide, 2016). Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste

(CalEEMod User Guide, 2016). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California. Emissions from mobile sources were quantified assuming an aggregate total of two daily trips for the project.

Estimate of GHG Emissions

Construction Emissions. Construction activities generate GHG emission though the combustion of gasoline and diesel fuels in the engines of on- and off-road construction equipment and commuting vehicles used by construction workers. Every phase of the construction process, including demolition, grading, paving, and building, emits GHGs in volumes proportional to the quantity and type of construction equipment used. GHG emissions associated with each phase of project construction are calculated by multiplying the total fuel consumed by the construction equipment and worker trips by applicable emission factors. Default values provided in CalEEMod 2016.3.2 are typically used in the absence of project-specific construction information

Construction emissions are calculated for each phase of construction based on the construction equipment and other factors determined as needed to complete construction by the target completion year. As such, each year has varying quantities of GHG emissions. As recommended by the South Coast Air Quality Management District (SCAQMD and the Association of Environmental Professionals (2010), total construction GHG emissions are amortized over 30 years and added to operational GHG emissions (SCAQMD 2009). The project construction is modeled assuming construction would begin in Fall 2019 and be completed in late 2020. CalEEMod defaults for construction phasing equipment, worker trips, and vendor trips were used.

Based on CalEEMod results, construction activity for the project would generate an estimated 504 metric tons of carbon dioxide equivalent (CO_2E), as shown in Table 6. Amortized over a 30-year period (the assumed life of the project), construction of the proposed project would generate 16.8 metric tons of CO_2E per year.

Operational Indirect and Stationary Direct Emissions

Long-term emissions relate to energy use, solid waste, water use, and transportation. Each source is discussed below and includes the emissions associated with the anticipated emissions that would result from the proposed project.

Table 6
Estimated Construction Related Greenhouse Gas Emissions

Year	Annual Emissions (metric tons CO_2E)
2019	127
2020	377
Total	**504**
Amortized over 30 years	**16.8 metric tons per year**

See Appendix for CalEEMod software program output for new construction.

Energy Use. GHGs are emitted where electricity and natural gas are used as energy sources. GHGs are generated during the generation of electricity from fossil fuels off-site in power plants. These emissions are considered indirect but are calculated in association with a building's operation. Emissions were only calculated for the direct combustion of natural gas. Building energy use is typically divided into energy consumed by the built environment and energy consumed by uses that are independent of the construction of the building such as plug-in appliances. In California, Title 24 governs energy consumed by the built environment, mechanical systems, and some types of fixed lighting. As shown in Table 7, the overall net increase in energy use (i.e., natural gas and electricity) at the project site would result in 370 metric tons of CO_2E per year.

Table 7
Estimated Annual Energy-Related Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Proposed Project	
Electricity	226 metric tons
Natural Gas	144 metric tons
Total	**370 metric tons**

See Appendix for CalEEMod software program output (demolition and new construction).

Water Use Emissions. The amount of water used and wastewater generated by a project has indirect GHG emissions associated with it. These emissions are a result of the energy used to supply, distribute, and treat the water and wastewater. In addition to the indirect GHG emissions associated with energy use, wastewater treatment can directly emit both CH_4 and N_2O. GHG emissions associated with supplying and treating the water and wastewater are calculated for this project based on the indoor and outdoor water use consumption data for each land use subtype. Based on on information in the Pacific Institute's *Waste Not, Want Not: The Potential for Urban Water Conservation in California* 2003 (as cited in CAPCOA, 2013), a

percentage of total water consumption was dedicated to landscape irrigation. Water demand was conservatively estiamted to generate approximately 33 MT CO_2E annually.

Solid Waste Emissions. The disposal of solid waste produces GHG emissions from anaerobic decomposition in landfills, incineration, and transportation of waste. To calculate the GHG emissions generated by solid waste disposal, the total volume of solid waste was calculated using waste disposal rates identified by California Department of Resources Recycling and Recovery. The methods for quantifying GHG emissions from solid waste are based on the Intergovernmental Panel on Climate Change method, using the degradable organic content of waste. GHG emissions associated with the project's waste disposal were calculated using these parameters.

For solid waste generated onsite, it was assumed that the project would be involved in a municipal recycling program that would achieve a 75% diversion rate, as required by AB 341. The CalEEMod results indicate that the project would result in approximately 12 metric tons of CO_2E per year associated with solid waste disposed within landfills. Assuming 75% of the solid waste is recycled, CO_2E emissions would be 12 MT annually.

Transportation Emissions. Mobile source GHG emissions were estimated assuming 2 daily trips for inspection and maintenance purposes. Table 9 shows the estimated mobile emissions of GHGs for the project based on the estimated annual VMT of 4,000,064. As shown in Table 9, the project would generate approximately 1,763 metric tons of CO_2E associated with new vehicle trips.

Table 8
Estimated Annual
Solid Waste and Water Use Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Water	33 metric tons
Solid Waste	12 metric tons
Total Water and Solid Waste	**45 metric tons**

See Appendix for CalEEMod software program output (demolition and new construction).
[1]Based on a 75% diversion rate, as required by the California Integrated Waste Management Act (AB 341).

Combined Construction, Stationary and Mobile Source Emissions

Table 10 combines the net new construction, operational, and mobile GHG emissions associated with the proposed project. As discussed above, temporary emissions associated with

Table 9
Estimated Annual Mobile Emissions of Greenhouse Gases

Emission Source	Annual Emissions (CO_2E)
Proposed Project	
Mobile Emissions (CO_2 & CH_4)	1,681 metric tons
Mobile Emissions (N_2O) [1]	82 metric tons
Total	**1,763 metric tons**

See Appendix for calculations.

construction activity (approximately 504 metric tons CO_2E) are amortized over 30 years (the anticipated life of the project). The combined annual emissions is conservatively estimated to be approximately 2,195 metric tons per year in CO_2E. This total represents less than 0.001% of California's total 2015 emissions of 440.4 million metric tons. The majority (80%) of the project's GHG emissions are associated with the vehicle trips.

Table 10
Combined Annual Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Construction	16.8 metric tons
Operational	
Energy	370 metric tons
Solid Waste	12 metric tons
Water	33 metric tons
Mobile	1,763 metric tons
Total	**2,195 metric tons**

See Appendix for CalEEMod software program output (demolition and new construction).

GHG Cumulative Significance. As noted above, the Southwestern Community College District does not have adopted GHG emissions thresholds that apply to land use projects or an approved CAP. Therefore, the proposed project is evaluated based on the SCAQMD's recommended/preferred option threshold of 3,000 metric tons CO2E per year for all land use types referenced above. Project-related annual GHG emissions would not exceed the threshold of 3,000 metric tons per year; therefore, no measures are required to reduce GHG emissions. Impacts related to GHG emissions would be less than significant CEQA thresholds. Thus, construction and operation of the Phase I campus expansion project would not have a significant or adverse effect on global climate change. Impacts would be less than significant (thresholds a and b).

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Appendix A

CalEEMod Air Quality and Greenhouse Gas Emissions Model Results – Summer/Annual, and N_2O from Mobile Emissions Sources

Southwestern Community College Phase I

San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	18.92	1000sqft	0.43	18,920.00	0
Junior College (2Yr)	4.65	1000sqft	0.11	4,650.00	0
Junior College (2Yr)	50.00	1000sqft	1.15	50,000.00	0
Parking Lot	258.00	Space	2.32	103,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Grading - Phase I west side improvements would disturb approximatey 4 acres for preparation
Phase I east side improvements would disturb 5 acres for grading

Architectural Coating - Assumes 100 g/L of VOC for non-flat coatings per Rule 67.0.1 Table 1

Area Coating - Assumes non-residential coating would be 100 g/L VOC per SDAPCD Rule 67.0.1 Table 1

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	250	100
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblGrading	AcresOfGrading	4.00	9.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	670.00
tblGrading	MaterialImported	0.00	1,410.00

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					
2019	4.8571	61.2414	25.9916	0.0808	20.0296	2.4504	22.4800	10.3194	2.2565	12.5759	0.0000	8,423.5469	8,423.5469	1.5949	0.0000	8,463.4204
2020	39.7802	22.6390	19.7792	0.0411	0.8042	1.1373	1.9415	0.2178	1.0696	1.2873	0.0000	4,029.4121	4,029.4121	0.7044	0.0000	4,047.0217
Maximum	**39.7802**	**61.2414**	**25.9916**	**0.0808**	**20.0296**	**2.4504**	**22.4800**	**10.3194**	**2.2565**	**12.5759**	**0.0000**	**8,423.5469**	**8,423.5469**	**1.5949**	**0.0000**	**8,463.4204**

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					
2019	4.8571	61.2414	25.9916	0.0808	9.5944	2.4504	12.0448	4.8023	2.2565	7.0587	0.0000	8,423.5469	8,423.5469	1.5949	0.0000	8,463.4204
2020	39.7802	22.6390	19.7792	0.0411	0.8042	1.1373	1.9415	0.2178	1.0696	1.2873	0.0000	4,029.4121	4,029.4121	0.7044	0.0000	4,047.0217
Maximum	**39.7802**	**61.2414**	**25.9916**	**0.0808**	**9.5944**	**2.4504**	**12.0448**	**4.8023**	**2.2565**	**7.0587**	**0.0000**	**8,423.5469**	**8,423.5469**	**1.5949**	**0.0000**	**8,463.4204**

	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**	**50.09**	**0.00**	**42.73**	**52.36**	**0.00**	**39.80**	**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	1.8089	3.1000e-004	0.0341	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004		0.0726	0.0726	1.9000e-004		0.0774
Energy	0.0790	0.7181	0.6032	4.3100e-003		0.0546	0.0546		0.0546	0.0546		861.7353	861.7353	0.0165	0.0158	866.8562
Mobile	3.6841	14.8371	41.2823	0.1345	10.8914	0.1298	11.0212	2.9112	0.1218	3.0329		13,646.4969	13,646.4969	0.7268		13,664.6678
Total	**5.5720**	**15.5556**	**41.9196**	**0.1388**	**10.8914**	**0.1845**	**11.0759**	**2.9112**	**0.1765**	**3.0876**		**14,508.3048**	**14,508.3048**	**0.7435**	**0.0158**	**14,531.6014**

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	1.8089	3.1000e-004	0.0341	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004		0.0726	0.0726	1.9000e-004		0.0774
Energy	0.0790	0.7181	0.6032	4.3100e-003		0.0546	0.0546		0.0546	0.0546		861.7353	861.7353	0.0165	0.0158	866.8562
Mobile	3.6841	14.8371	41.2823	0.1345	10.8914	0.1298	11.0212	2.9112	0.1218	3.0329		13,646.4969	13,646.4969	0.7268		13,664.6678
Total	**5.5720**	**15.5556**	**41.9196**	**0.1388**	**10.8914**	**0.1845**	**11.0759**	**2.9112**	**0.1765**	**3.0876**		**14,508.3048**	**14,508.3048**	**0.7435**	**0.0158**	**14,531.6014**

	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	10/1/2019	10/28/2019	5	20	
2	Site Preparation	Site Preparation	10/29/2019	11/4/2019	5	5	
3	Grading	Grading	11/5/2019	11/14/2019	5	8	
4	Building Construction	Building Construction	11/15/2019	10/1/2020	5	230	
5	Paving	Paving	10/2/2020	10/27/2020	5	18	
6	Architectural Coating	Architectural Coating	10/28/2020	11/20/2020	5	18	

Acres of Grading (Site Preparation Phase): 4

Acres of Grading (Grading Phase): 9

Acres of Paving: 2.32

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 110,355; Non-Residential Outdoor: 36,785; Striped Parking Area: 6,192 (Architectural Coating – sqft)

OffRoad Equipment

Southwestern Community College Phase I - San Diego County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	260.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	74.00	29.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**		**1.7949**	**1.7949**		**1.6697**	**1.6697**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0589	0.0411	0.4641	1.3100e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		130.5300	130.5300	4.1700e-003		130.6342
Total	**0.0589**	**0.0411**	**0.4641**	**1.3100e-003**	**0.1232**	**8.8000e-004**	**0.1241**	**0.0327**	**8.1000e-004**	**0.0335**		**130.5300**	**130.5300**	**4.1700e-003**		**130.6342**

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	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**		**1.7949**	**1.7949**		**1.6697**	**1.6697**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0589	0.0411	0.4641	1.3100e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		130.5300	130.5300	4.1700e-003		130.6342
Total	**0.0589**	**0.0411**	**0.4641**	**1.3100e-003**	**0.1232**	**8.8000e-004**	**0.1241**	**0.0327**	**8.1000e-004**	**0.0335**		**130.5300**	**130.5300**	**4.1700e-003**		**130.6342**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.9731	0.0000	18.9731	10.0311	0.0000	10.0311			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.9731**	**2.3904**	**21.3635**	**10.0311**	**2.1991**	**12.2303**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4514	15.6194	3.3717	0.0413	0.9087	0.0589	0.9676	0.2490	0.0564	0.3054		4,500.4581	4,500.4581	0.3983		4,510.4149
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	0.0707	0.0493	0.5569	1.5700e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		156.6359	156.6359	5.0000e-003		156.7610
Total	**0.5221**	**15.6687**	**3.9286**	**0.0428**	**1.0565**	**0.0600**	**1.1165**	**0.2882**	**0.0574**	**0.3456**		**4,657.0940**	**4,657.0940**	**0.4033**		**4,667.1758**

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					8.5379	0.0000	8.5379	4.5140	0.0000	4.5140			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**8.5379**	**2.3904**	**10.9283**	**4.5140**	**2.1991**	**6.7131**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4514	15.6194	3.3717	0.0413	0.9087	0.0589	0.9676	0.2490	0.0564	0.3054		4,500.4581	4,500.4581	0.3983		4,510.4149
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	0.0707	0.0493	0.5569	1.5700e-003	0.1479	1.0500e-003	0.1489	0.0392	9.7000e-004	0.0402		156.6359	156.6359	5.0000e-003		156.7610
Total	**0.5221**	**15.6687**	**3.9286**	**0.0428**	**1.0565**	**0.0600**	**1.1165**	**0.2882**	**0.0574**	**0.3456**		**4,657.0940**	**4,657.0940**	**0.4033**		**4,667.1758**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.2152	0.0000	7.2152	3.4391	0.0000	3.4391			0.0000			0.0000
Off-Road	2.5805	28.3480	16.2934	0.0297		1.3974	1.3974		1.2856	1.2856		2,936.8068	2,936.8068	0.9292		2,960.0361
Total	**2.5805**	**28.3480**	**16.2934**	**0.0297**	**7.2152**	**1.3974**	**8.6125**	**3.4391**	**1.2856**	**4.7246**		**2,936.8068**	**2,936.8068**	**0.9292**		**2,960.0361**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0589	0.0411	0.4641	1.3100e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		130.5300	130.5300	4.1700e-003		130.6342
Total	**0.0589**	**0.0411**	**0.4641**	**1.3100e-003**	**0.1232**	**8.8000e-004**	**0.1241**	**0.0327**	**8.1000e-004**	**0.0335**		**130.5300**	**130.5300**	**4.1700e-003**		**130.6342**

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					3.2468	0.0000	3.2468	1.5476	0.0000	1.5476			0.0000			0.0000
Off-Road	2.5805	28.3480	16.2934	0.0297		1.3974	1.3974		1.2856	1.2856	0.0000	2,936.8068	2,936.8068	0.9292		2,960.0361
Total	**2.5805**	**28.3480**	**16.2934**	**0.0297**	**3.2468**	**1.3974**	**4.6442**	**1.5476**	**1.2856**	**2.8331**	**0.0000**	**2,936.8068**	**2,936.8068**	**0.9292**		**2,960.0361**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0589	0.0411	0.4641	1.3100e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		130.5300	130.5300	4.1700e-003		130.6342
Total	**0.0589**	**0.0411**	**0.4641**	**1.3100e-003**	**0.1232**	**8.8000e-004**	**0.1241**	**0.0327**	**8.1000e-004**	**0.0335**		**130.5300**	**130.5300**	**4.1700e-003**		**130.6342**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.1335	3.5956	0.9283	8.0100e-003	0.1963	0.0250	0.2213	0.0565	0.0239	0.0804		858.4482	858.4482	0.0663		860.1052
Worker	0.2906	0.2028	2.2897	6.4600e-003	0.6079	4.3300e-003	0.6122	0.1612	3.9900e-003	0.1652		643.9477	643.9477	0.0206		644.4618
Total	**0.4240**	**3.7984**	**3.2179**	**0.0145**	**0.8042**	**0.0293**	**0.8336**	**0.2178**	**0.0279**	**0.2457**		**1,502.3960**	**1,502.3960**	**0.0868**		**1,504.5670**

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	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.1335	3.5956	0.9283	8.0100e-003	0.1963	0.0250	0.2213	0.0565	0.0239	0.0804		858.4482	858.4482	0.0663		860.1052
Worker	0.2906	0.2028	2.2897	6.4600e-003	0.6079	4.3300e-003	0.6122	0.1612	3.9900e-003	0.1652		643.9477	643.9477	0.0206		644.4618
Total	**0.4240**	**3.7984**	**3.2179**	**0.0145**	**0.8042**	**0.0293**	**0.8336**	**0.2178**	**0.0279**	**0.2457**		**1,502.3960**	**1,502.3960**	**0.0868**		**1,504.5670**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.1084	3.2700	0.8331	7.9400e-003	0.1963	0.0160	0.2123	0.0565	0.0153	0.0718		852.7162	852.7162	0.0629		854.2889
Worker	0.2716	0.1830	2.0976	6.2600e-003	0.6079	4.2700e-003	0.6122	0.1612	3.9300e-003	0.1652		623.6328	623.6328	0.0186		624.0984
Total	**0.3799**	**3.4530**	**2.9307**	**0.0142**	**0.8042**	**0.0203**	**0.8245**	**0.2178**	**0.0192**	**0.2370**		**1,476.3491**	**1,476.3491**	**0.0815**		**1,478.3872**

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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.1084	3.2700	0.8331	7.9400e-003	0.1963	0.0160	0.2123	0.0565	0.0153	0.0718		852.7162	852.7162	0.0629		854.2889
Worker	0.2716	0.1830	2.0976	6.2600e-003	0.6079	4.2700e-003	0.6122	0.1612	3.9300e-003	0.1652		623.6328	623.6328	0.0186		624.0984
Total	**0.3799**	**3.4530**	**2.9307**	**0.0142**	**0.8042**	**0.0203**	**0.8245**	**0.2178**	**0.0192**	**0.2370**		**1,476.3491**	**1,476.3491**	**0.0815**		**1,478.3872**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1837	11.8015	12.2823	0.0189		0.6509	0.6509		0.6005	0.6005		1,804.7070	1,804.7070	0.5670		1,818.8830
Paving	0.3377					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5214**	**11.8015**	**12.2823**	**0.0189**		**0.6509**	**0.6509**		**0.6005**	**0.6005**		**1,804.7070**	**1,804.7070**	**0.5670**		**1,818.8830**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0734	0.0495	0.5669	1.6900e-003	0.1643	1.1500e-003	0.1655	0.0436	1.0600e-003	0.0446		168.5494	168.5494	5.0300e-003		168.6752
Total	**0.0734**	**0.0495**	**0.5669**	**1.6900e-003**	**0.1643**	**1.1500e-003**	**0.1655**	**0.0436**	**1.0600e-003**	**0.0446**		**168.5494**	**168.5494**	**5.0300e-003**		**168.6752**

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	1.1837	11.8015	12.2823	0.0189		0.6509	0.6509		0.6005	0.6005	0.0000	1,804.7070	1,804.7070	0.5670		1,818.8830
Paving	0.3377					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5214**	**11.8015**	**12.2823**	**0.0189**		**0.6509**	**0.6509**		**0.6005**	**0.6005**	**0.0000**	**1,804.7070**	**1,804.7070**	**0.5670**		**1,818.8830**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0734	0.0495	0.5669	1.6900e-003	0.1643	1.1500e-003	0.1655	0.0436	1.0600e-003	0.0446		168.5494	168.5494	5.0300e-003		168.6752
Total	**0.0734**	**0.0495**	**0.5669**	**1.6900e-003**	**0.1643**	**1.1500e-003**	**0.1655**	**0.0436**	**1.0600e-003**	**0.0446**		**168.5494**	**168.5494**	**5.0300e-003**		**168.6752**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	39.4830					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**39.7252**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0550	0.0371	0.4252	1.2700e-003	0.1232	8.6000e-004	0.1241	0.0327	8.0000e-004	0.0335		126.4121	126.4121	3.7700e-003		126.5064
Total	**0.0550**	**0.0371**	**0.4252**	**1.2700e-003**	**0.1232**	**8.6000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**126.4121**	**126.4121**	**3.7700e-003**		**126.5064**

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	39.4830					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**39.7252**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0550	0.0371	0.4252	1.2700e-003	0.1232	8.6000e-004	0.1241	0.0327	8.0000e-004	0.0335		126.4121	126.4121	3.7700e-003		126.5064
Total	**0.0550**	**0.0371**	**0.4252**	**1.2700e-003**	**0.1232**	**8.6000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**126.4121**	**126.4121**	**3.7700e-003**		**126.5064**

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	3.6841	14.8371	41.2823	0.1345	10.8914	0.1298	11.0212	2.9112	0.1218	3.0329		13,646.4969	13,646.4969	0.7268		13,664.6678
Unmitigated	3.6841	14.8371	41.2823	0.1345	10.8914	0.1298	11.0212	2.9112	0.1218	3.0329		13,646.4969	13,646.4969	0.7268		13,664.6678

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	520.11	212.47	22.89	1,028,846	1,028,846
Junior College (2Yr)	127.83	52.22	5.63	252,861	252,861
Junior College (2Yr)	1,374.50	561.50	60.50	2,718,937	2,718,937
Parking Lot	0.00	0.00	0.00		
Total	2,022.44	826.19	89.02	4,000,644	4,000,644

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
Junior College (2Yr)	9.50	7.30	7.30	6.40	88.60	5.00	92	7	1
Junior College (2Yr)	9.50	7.30	7.30	6.40	88.60	5.00	92	7	1
Junior College (2Yr)	9.50	7.30	7.30	6.40	88.60	5.00	92	7	1
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
Junior College (2Yr)	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
Parking Lot	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271

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	0.0790	0.7181	0.6032	4.3100e-003		0.0546	0.0546		0.0546	0.0546		861.7353	861.7353	0.0165	0.0158	866.8562
NaturalGas Unmitigated	0.0790	0.7181	0.6032	4.3100e-003		0.0546	0.0546		0.0546	0.0546		861.7353	861.7353	0.0165	0.0158	866.8562

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					
Junior College (2Yr)	462.962	4.9900e-003	0.0454	0.0381	2.7000e-004		3.4500e-003	3.4500e-003		3.4500e-003	3.4500e-003		54.4661	54.4661	1.0400e-003	1.0000e-003	54.7897
Junior College (2Yr)	4978.08	0.0537	0.4881	0.4100	2.9300e-003		0.0371	0.0371		0.0371	0.0371		585.6567	585.6567	0.0112	0.0107	589.1370
Junior College (2Yr)	1883.71	0.0203	0.1847	0.1551	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6125	221.6125	4.2500e-003	4.0600e-003	222.9294
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		**0.0790**	**0.7181**	**0.6032**	**4.3100e-003**		**0.0546**	**0.0546**		**0.0546**	**0.0546**		**861.7353**	**861.7353**	**0.0165**	**0.0158**	**866.8562**

5.2 Energy by Land Use - NaturalGas

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					
Junior College (2Yr)	0.462962	4.9900e-003	0.0454	0.0381	2.7000e-004		3.4500e-003	3.4500e-003		3.4500e-003	3.4500e-003		54.4661	54.4661	1.0400e-003	1.0000e-003	54.7897
Junior College (2Yr)	1.88371	0.0203	0.1847	0.1551	1.1100e-003		0.0140	0.0140		0.0140	0.0140		221.6125	221.6125	4.2500e-003	4.0600e-003	222.9294
Junior College (2Yr)	4.97808	0.0537	0.4881	0.4100	2.9300e-003		0.0371	0.0371		0.0371	0.0371		585.6567	585.6567	0.0112	0.0107	589.1370
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		**0.0790**	**0.7181**	**0.6032**	**4.3100e-003**		**0.0546**	**0.0546**		**0.0546**	**0.0546**		**861.7353**	**861.7353**	**0.0165**	**0.0158**	**866.8562**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	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	1.8089	3.1000e-004	0.0341	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004		0.0726	0.0726	1.9000e-004		0.0774
Unmitigated	1.8089	3.1000e-004	0.0341	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004		0.0726	0.0726	1.9000e-004		0.0774

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	0.1947					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6110					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.2100e-003	3.1000e-004	0.0341	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004		0.0726	0.0726	1.9000e-004		0.0774
Total	**1.8089**	**3.1000e-004**	**0.0341**	**0.0000**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**		**0.0726**	**0.0726**	**1.9000e-004**		**0.0774**

6.2 Area by SubCategory

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	0.1947					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.6110					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.2100e-003	3.1000e-004	0.0341	0.0000		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004		0.0726	0.0726	1.9000e-004		0.0774
Total	**1.8089**	**3.1000e-004**	**0.0341**	**0.0000**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**		**0.0726**	**0.0726**	**1.9000e-004**		**0.0774**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Southwestern Community College Phase I

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	18.92	1000sqft	0.43	18,920.00	0
Junior College (2Yr)	4.65	1000sqft	0.11	4,650.00	0
Junior College (2Yr)	50.00	1000sqft	1.15	50,000.00	0
Parking Lot	258.00	Space	2.32	103,200.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Grading - Phase I west side improvements would disturb approximatey 4 acres for preparation
Phase I east side improvements would disturb 5 acres for grading

Architectural Coating - Assumes 100 g/L of VOC for non-flat coatings per Rule 67.0.1 Table 1

Area Coating - Assumes non-residential coating would be 100 g/L VOC per SDAPCD Rule 67.0.1 Table 1

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	250	100
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblGrading	AcresOfGrading	4.00	9.00
tblGrading	AcresOfGrading	0.00	4.00
tblGrading	MaterialExported	0.00	670.00
tblGrading	MaterialImported	0.00	1,410.00

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					
2019	0.1045	1.0373	0.6922	1.4000e-003	0.0935	0.0515	0.1450	0.0435	0.0480	0.0915	0.0000	126.5128	126.5128	0.0275	0.0000	127.1991
2020	0.6189	2.3575	2.0766	4.2300e-003	0.0799	0.1189	0.1989	0.0217	0.1118	0.1335	0.0000	375.6601	375.6601	0.0679	0.0000	377.3576
Maximum	**0.6189**	**2.3575**	**2.0766**	**4.2300e-003**	**0.0935**	**0.1189**	**0.1989**	**0.0435**	**0.1118**	**0.1335**	**0.0000**	**375.6601**	**375.6601**	**0.0679**	**0.0000**	**377.3576**

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					
2019	0.1045	1.0373	0.6922	1.4000e-003	0.0516	0.0515	0.1030	0.0222	0.0480	0.0701	0.0000	126.5127	126.5127	0.0275	0.0000	127.1990
2020	0.6189	2.3575	2.0766	4.2300e-003	0.0799	0.1189	0.1989	0.0217	0.1118	0.1335	0.0000	375.6599	375.6599	0.0679	0.0000	377.3573
Maximum	**0.6189**	**2.3575**	**2.0766**	**4.2300e-003**	**0.0799**	**0.1189**	**0.1989**	**0.0222**	**0.1118**	**0.1335**	**0.0000**	**375.6599**	**375.6599**	**0.0679**	**0.0000**	**377.3573**

	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**	**24.19**	**0.00**	**12.20**	**32.77**	**0.00**	**9.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-1-2019	12-31-2019	1.1362	1.1362
2	1-1-2020	3-31-2020	0.8190	0.8190
3	4-1-2020	6-30-2020	0.8170	0.8170
4	7-1-2020	9-30-2020	0.8260	0.8260
		Highest	1.1362	1.1362

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	0.3298	3.0000e-005	3.0700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.9200e-003	5.9200e-003	2.0000e-005	0.0000	6.3200e-003
Energy	0.0144	0.1311	0.1101	7.9000e-004		9.9600e-003	9.9600e-003		9.9600e-003	9.9600e-003	0.0000	367.9790	367.9790	0.0118	4.4900e-003	369.6126
Mobile	0.4949	2.1706	5.7239	0.0182	1.5078	0.0184	1.5262	0.4038	0.0173	0.4211	0.0000	1,679.6721	1,679.6721	0.0930	0.0000	1,681.9963
Waste						0.0000	0.0000		0.0000	0.0000	19.4141	0.0000	19.4141	1.1473	0.0000	48.0975
Water						0.0000	0.0000		0.0000	0.0000	1.1448	35.8486	36.9935	0.1190	3.0700e-003	40.8855
Total	**0.8392**	**2.3017**	**5.8370**	**0.0190**	**1.5078**	**0.0284**	**1.5362**	**0.4038**	**0.0273**	**0.4311**	**20.5589**	**2,083.5056**	**2,104.0645**	**1.3712**	**7.5600e-003**	**2,140.5983**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3298	3.0000e-005	3.0700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.9200e-003	5.9200e-003	2.0000e-005	0.0000	6.3200e-003
Energy	0.0144	0.1311	0.1101	7.9000e-004		9.9600e-003	9.9600e-003		9.9600e-003	9.9600e-003	0.0000	367.9790	367.9790	0.0118	4.4900e-003	369.6126
Mobile	0.4949	2.1706	5.7239	0.0182	1.5078	0.0184	1.5262	0.4038	0.0173	0.4211	0.0000	1,679.6721	1,679.6721	0.0930	0.0000	1,681.9963
Waste						0.0000	0.0000		0.0000	0.0000	4.8535	0.0000	4.8535	0.2868	0.0000	12.0244
Water						0.0000	0.0000		0.0000	0.0000	0.9159	28.6789	29.5948	0.0952	2.4600e-003	32.7084
Total	**0.8392**	**2.3017**	**5.8370**	**0.0190**	**1.5078**	**0.0284**	**1.5362**	**0.4038**	**0.0273**	**0.4311**	**5.7694**	**2,076.3359**	**2,082.1053**	**0.4868**	**6.9500e-003**	**2,096.3481**

	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**	**71.94**	**0.34**	**1.04**	**64.49**	**8.07**	**2.07**

3.0 Construction Detail

Construction Phase

Southwestern Community College Phase I - San Diego County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/1/2019	10/28/2019	5	20	
2	Site Preparation	Site Preparation	10/29/2019	11/4/2019	5	5	
3	Grading	Grading	11/5/2019	11/14/2019	5	8	
4	Building Construction	Building Construction	11/15/2019	10/1/2020	5	230	
5	Paving	Paving	10/2/2020	10/27/2020	5	18	
6	Architectural Coating	Architectural Coating	10/28/2020	11/20/2020	5	18	

Acres of Grading (Site Preparation Phase): 4

Acres of Grading (Grading Phase): 9

Acres of Paving: 2.32

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 110,355; Non-Residential Outdoor: 36,785; Striped Parking Area: 6,192 (Architectural Coating – sqft)

OffRoad Equipment

Southwestern Community College Phase I - San Diego County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	260.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	74.00	29.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**		**0.0180**	**0.0180**		**0.0167**	**0.0167**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	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	5.9000e-004	4.5000e-004	4.3900e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1227	1.1227	4.0000e-005	0.0000	1.1237
Total	**5.9000e-004**	**4.5000e-004**	**4.3900e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1227**	**1.1227**	**4.0000e-005**	**0.0000**	**1.1237**

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	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**		**0.0180**	**0.0180**		**0.0167**	**0.0167**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	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	5.9000e-004	4.5000e-004	4.3900e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1227	1.1227	4.0000e-005	0.0000	1.1237
Total	**5.9000e-004**	**4.5000e-004**	**4.3900e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1227**	**1.1227**	**4.0000e-005**	**0.0000**	**1.1237**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0474	0.0000	0.0474	0.0251	0.0000	0.0251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0108	0.1139	0.0552	9.0000e-005		5.9800e-003	5.9800e-003		5.5000e-003	5.5000e-003	0.0000	8.5422	8.5422	2.7000e-003	0.0000	8.6097
Total	**0.0108**	**0.1139**	**0.0552**	**9.0000e-005**	**0.0474**	**5.9800e-003**	**0.0534**	**0.0251**	**5.5000e-003**	**0.0306**	**0.0000**	**8.5422**	**8.5422**	**2.7000e-003**	**0.0000**	**8.6097**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1400e-003	0.0398	8.6900e-003	1.0000e-004	2.2200e-003	1.5000e-004	2.3700e-003	6.1000e-004	1.4000e-004	7.5000e-004	0.0000	10.1347	10.1347	9.2000e-004	0.0000	10.1577
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	1.8000e-004	1.4000e-004	1.3200e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3368	0.3368	1.0000e-005	0.0000	0.3371
Total	**1.3200e-003**	**0.0400**	**0.0100**	**1.0000e-004**	**2.5800e-003**	**1.5000e-004**	**2.7300e-003**	**7.1000e-004**	**1.4000e-004**	**8.5000e-004**	**0.0000**	**10.4716**	**10.4716**	**9.3000e-004**	**0.0000**	**10.4948**

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					0.0213	0.0000	0.0213	0.0113	0.0000	0.0113	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0108	0.1139	0.0552	9.0000e-005		5.9800e-003	5.9800e-003		5.5000e-003	5.5000e-003	0.0000	8.5422	8.5422	2.7000e-003	0.0000	8.6097
Total	**0.0108**	**0.1139**	**0.0552**	**9.0000e-005**	**0.0213**	**5.9800e-003**	**0.0273**	**0.0113**	**5.5000e-003**	**0.0168**	**0.0000**	**8.5422**	**8.5422**	**2.7000e-003**	**0.0000**	**8.6097**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1400e-003	0.0398	8.6900e-003	1.0000e-004	2.2200e-003	1.5000e-004	2.3700e-003	6.1000e-004	1.4000e-004	7.5000e-004	0.0000	10.1347	10.1347	9.2000e-004	0.0000	10.1577
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	1.8000e-004	1.4000e-004	1.3200e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3368	0.3368	1.0000e-005	0.0000	0.3371
Total	**1.3200e-003**	**0.0400**	**0.0100**	**1.0000e-004**	**2.5800e-003**	**1.5000e-004**	**2.7300e-003**	**7.1000e-004**	**1.4000e-004**	**8.5000e-004**	**0.0000**	**10.4716**	**10.4716**	**9.3000e-004**	**0.0000**	**10.4948**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0289	0.0000	0.0289	0.0138	0.0000	0.0138	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0103	0.1134	0.0652	1.2000e-004		5.5900e-003	5.5900e-003		5.1400e-003	5.1400e-003	0.0000	10.6569	10.6569	3.3700e-003	0.0000	10.7412
Total	**0.0103**	**0.1134**	**0.0652**	**1.2000e-004**	**0.0289**	**5.5900e-003**	**0.0345**	**0.0138**	**5.1400e-003**	**0.0189**	**0.0000**	**10.6569**	**10.6569**	**3.3700e-003**	**0.0000**	**10.7412**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	1.8000e-004	1.7600e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4491	0.4491	1.0000e-005	0.0000	0.4495
Total	**2.4000e-004**	**1.8000e-004**	**1.7600e-003**	**0.0000**	**4.8000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4491**	**0.4491**	**1.0000e-005**	**0.0000**	**0.4495**

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					0.0130	0.0000	0.0130	6.1900e-003	0.0000	6.1900e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0103	0.1134	0.0652	1.2000e-004		5.5900e-003	5.5900e-003		5.1400e-003	5.1400e-003	0.0000	10.6569	10.6569	3.3700e-003	0.0000	10.7412
Total	**0.0103**	**0.1134**	**0.0652**	**1.2000e-004**	**0.0130**	**5.5900e-003**	**0.0186**	**6.1900e-003**	**5.1400e-003**	**0.0113**	**0.0000**	**10.6569**	**10.6569**	**3.3700e-003**	**0.0000**	**10.7412**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	1.8000e-004	1.7600e-003	0.0000	4.8000e-004	0.0000	4.8000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4491	0.4491	1.0000e-005	0.0000	0.4495
Total	**2.4000e-004**	**1.8000e-004**	**1.7600e-003**	**0.0000**	**4.8000e-004**	**0.0000**	**4.8000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4491**	**0.4491**	**1.0000e-005**	**0.0000**	**0.4495**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0390	0.3478	0.2832	4.4000e-004		0.0213	0.0213		0.0200	0.0200	0.0000	38.7922	38.7922	9.4500e-003	0.0000	39.0285
Total	**0.0390**	**0.3478**	**0.2832**	**4.4000e-004**		**0.0213**	**0.0213**		**0.0200**	**0.0200**	**0.0000**	**38.7922**	**38.7922**	**9.4500e-003**	**0.0000**	**39.0285**

3.5 Building Construction - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2400e-003	0.0601	0.0161	1.3000e-004	3.1800e-003	4.2000e-004	3.5900e-003	9.2000e-004	4.0000e-004	1.3100e-003	0.0000	12.7127	12.7127	1.0200e-003	0.0000	12.7382
Worker	4.8100e-003	3.6900e-003	0.0357	1.0000e-004	9.7900e-003	7.0000e-005	9.8600e-003	2.6000e-003	7.0000e-005	2.6700e-003	0.0000	9.1391	9.1391	2.9000e-004	0.0000	9.1465
Total	**7.0500e-003**	**0.0638**	**0.0519**	**2.3000e-004**	**0.0130**	**4.9000e-004**	**0.0135**	**3.5200e-003**	**4.7000e-004**	**3.9800e-003**	**0.0000**	**21.8518**	**21.8518**	**1.3100e-003**	**0.0000**	**21.8847**

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	0.0390	0.3478	0.2832	4.4000e-004		0.0213	0.0213		0.0200	0.0200	0.0000	38.7922	38.7922	9.4500e-003	0.0000	39.0284
Total	**0.0390**	**0.3478**	**0.2832**	**4.4000e-004**		**0.0213**	**0.0213**		**0.0200**	**0.0200**	**0.0000**	**38.7922**	**38.7922**	**9.4500e-003**	**0.0000**	**39.0284**

3.5 Building Construction - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.2400e-003	0.0601	0.0161	1.3000e-004	3.1800e-003	4.2000e-004	3.5900e-003	9.2000e-004	4.0000e-004	1.3100e-003	0.0000	12.7127	12.7127	1.0200e-003	0.0000	12.7382
Worker	4.8100e-003	3.6900e-003	0.0357	1.0000e-004	9.7900e-003	7.0000e-005	9.8600e-003	2.6000e-003	7.0000e-005	2.6700e-003	0.0000	9.1391	9.1391	2.9000e-004	0.0000	9.1465
Total	**7.0500e-003**	**0.0638**	**0.0519**	**2.3000e-004**	**0.0130**	**4.9000e-004**	**0.0135**	**3.5200e-003**	**4.7000e-004**	**3.9800e-003**	**0.0000**	**21.8518**	**21.8518**	**1.3100e-003**	**0.0000**	**21.8847**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2088	1.8898	1.6596	2.6500e-003		0.1100	0.1100		0.1035	0.1035	0.0000	228.1358	228.1358	0.0557	0.0000	229.5273
Total	**0.2088**	**1.8898**	**1.6596**	**2.6500e-003**		**0.1100**	**0.1100**		**0.1035**	**0.1035**	**0.0000**	**228.1358**	**228.1358**	**0.0557**	**0.0000**	**229.5273**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0109	0.3256	0.0865	7.7000e-004	0.0190	1.5900e-003	0.0206	5.4700e-003	1.5200e-003	6.9900e-003	0.0000	75.3720	75.3720	5.7800e-003	0.0000	75.5165
Worker	0.0269	0.0199	0.1951	5.8000e-004	0.0585	4.2000e-004	0.0589	0.0155	3.9000e-004	0.0159	0.0000	52.8362	52.8362	1.5900e-003	0.0000	52.8758
Total	**0.0378**	**0.3455**	**0.2816**	**1.3500e-003**	**0.0774**	**2.0100e-003**	**0.0794**	**0.0210**	**1.9100e-003**	**0.0229**	**0.0000**	**128.2082**	**128.2082**	**7.3700e-003**	**0.0000**	**128.3923**

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	0.2088	1.8898	1.6596	2.6500e-003		0.1100	0.1100		0.1035	0.1035	0.0000	228.1356	228.1356	0.0557	0.0000	229.5270
Total	**0.2088**	**1.8898**	**1.6596**	**2.6500e-003**		**0.1100**	**0.1100**		**0.1035**	**0.1035**	**0.0000**	**228.1356**	**228.1356**	**0.0557**	**0.0000**	**229.5270**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0109	0.3256	0.0865	7.7000e-004	0.0190	1.5900e-003	0.0206	5.4700e-003	1.5200e-003	6.9900e-003	0.0000	75.3720	75.3720	5.7800e-003	0.0000	75.5165
Worker	0.0269	0.0199	0.1951	5.8000e-004	0.0585	4.2000e-004	0.0589	0.0155	3.9000e-004	0.0159	0.0000	52.8362	52.8362	1.5900e-003	0.0000	52.8758
Total	**0.0378**	**0.3455**	**0.2816**	**1.3500e-003**	**0.0774**	**2.0100e-003**	**0.0794**	**0.0210**	**1.9100e-003**	**0.0229**	**0.0000**	**128.2082**	**128.2082**	**7.3700e-003**	**0.0000**	**128.3923**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0107	0.1062	0.1105	1.7000e-004		5.8600e-003	5.8600e-003		5.4000e-003	5.4000e-003	0.0000	14.7348	14.7348	4.6300e-003	0.0000	14.8506
Paving	3.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0137**	**0.1062**	**0.1105**	**1.7000e-004**		**5.8600e-003**	**5.8600e-003**		**5.4000e-003**	**5.4000e-003**	**0.0000**	**14.7348**	**14.7348**	**4.6300e-003**	**0.0000**	**14.8506**

3.6 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.9000e-004	4.8200e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3048	1.3048	4.0000e-005	0.0000	1.3058
Total	**6.6000e-004**	**4.9000e-004**	**4.8200e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3048**	**1.3048**	**4.0000e-005**	**0.0000**	**1.3058**

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	0.0107	0.1062	0.1105	1.7000e-004		5.8600e-003	5.8600e-003		5.4000e-003	5.4000e-003	0.0000	14.7348	14.7348	4.6300e-003	0.0000	14.8506
Paving	3.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0137**	**0.1062**	**0.1105**	**1.7000e-004**		**5.8600e-003**	**5.8600e-003**		**5.4000e-003**	**5.4000e-003**	**0.0000**	**14.7348**	**14.7348**	**4.6300e-003**	**0.0000**	**14.8506**

3.6 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6000e-004	4.9000e-004	4.8200e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.3048	1.3048	4.0000e-005	0.0000	1.3058
Total	**6.6000e-004**	**4.9000e-004**	**4.8200e-003**	**1.0000e-005**	**1.4400e-003**	**1.0000e-005**	**1.4500e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.3048**	**1.3048**	**4.0000e-005**	**0.0000**	**1.3058**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3554					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1800e-003	0.0152	0.0165	3.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	2.2979	2.2979	1.8000e-004	0.0000	2.3024
Total	**0.3575**	**0.0152**	**0.0165**	**3.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**2.2979**	**2.2979**	**1.8000e-004**	**0.0000**	**2.3024**

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.7000e-004	3.6100e-003	1.0000e-005	1.0800e-003	1.0000e-005	1.0900e-003	2.9000e-004	1.0000e-005	2.9000e-004	0.0000	0.9786	0.9786	3.0000e-005	0.0000	0.9793
Total	**5.0000e-004**	**3.7000e-004**	**3.6100e-003**	**1.0000e-005**	**1.0800e-003**	**1.0000e-005**	**1.0900e-003**	**2.9000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.9786**	**0.9786**	**3.0000e-005**	**0.0000**	**0.9793**

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	0.3554					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1800e-003	0.0152	0.0165	3.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	2.2979	2.2979	1.8000e-004	0.0000	2.3024
Total	**0.3575**	**0.0152**	**0.0165**	**3.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**2.2979**	**2.2979**	**1.8000e-004**	**0.0000**	**2.3024**

3.7 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.7000e-004	3.6100e-003	1.0000e-005	1.0800e-003	1.0000e-005	1.0900e-003	2.9000e-004	1.0000e-005	2.9000e-004	0.0000	0.9786	0.9786	3.0000e-005	0.0000	0.9793
Total	**5.0000e-004**	**3.7000e-004**	**3.6100e-003**	**1.0000e-005**	**1.0800e-003**	**1.0000e-005**	**1.0900e-003**	**2.9000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**0.9786**	**0.9786**	**3.0000e-005**	**0.0000**	**0.9793**

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	0.4949	2.1706	5.7239	0.0182	1.5078	0.0184	1.5262	0.4038	0.0173	0.4211	0.0000	1,679.6721	1,679.6721	0.0930	0.0000	1,681.9963
Unmitigated	0.4949	2.1706	5.7239	0.0182	1.5078	0.0184	1.5262	0.4038	0.0173	0.4211	0.0000	1,679.6721	1,679.6721	0.0930	0.0000	1,681.9963

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	520.11	212.47	22.89	1,028,846	1,028,846
Junior College (2Yr)	127.83	52.22	5.63	252,861	252,861
Junior College (2Yr)	1,374.50	561.50	60.50	2,718,937	2,718,937
Parking Lot	0.00	0.00	0.00		
Total	2,022.44	826.19	89.02	4,000,644	4,000,644

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
Junior College (2Yr)	9.50	7.30	7.30	6.40	88.60	5.00	92	7	1
Junior College (2Yr)	9.50	7.30	7.30	6.40	88.60	5.00	92	7	1
Junior College (2Yr)	9.50	7.30	7.30	6.40	88.60	5.00	92	7	1
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
Junior College (2Yr)	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271
Parking Lot	0.588316	0.042913	0.184449	0.110793	0.017294	0.005558	0.015534	0.023021	0.001902	0.002024	0.006181	0.000745	0.001271

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	225.3090	225.3090	9.0700e-003	1.8800e-003	226.0949
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	225.3090	225.3090	9.0700e-003	1.8800e-003	226.0949
NaturalGas Mitigated	0.0144	0.1311	0.1101	7.9000e-004		9.9600e-003	9.9600e-003		9.9600e-003	9.9600e-003	0.0000	142.6700	142.6700	2.7300e-003	2.6200e-003	143.5178
NaturalGas Unmitigated	0.0144	0.1311	0.1101	7.9000e-004		9.9600e-003	9.9600e-003		9.9600e-003	9.9600e-003	0.0000	142.6700	142.6700	2.7300e-003	2.6200e-003	143.5178

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					
Junior College (2Yr)	687553	3.7100e-003	0.0337	0.0283	2.0000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	36.6904	36.6904	7.0000e-004	6.7000e-004	36.9085
Junior College (2Yr)	1.817e+006	9.8000e-003	0.0891	0.0748	5.3000e-004		6.7700e-003	6.7700e-003		6.7700e-003	6.7700e-003	0.0000	96.9620	96.9620	1.8600e-003	1.7800e-003	97.5382
Junior College (2Yr)	168981	9.1000e-004	8.2800e-003	6.9600e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0175	9.0175	1.7000e-004	1.7000e-004	9.0711
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		**0.0144**	**0.1311**	**0.1101**	**7.8000e-004**		**9.9600e-003**	**9.9600e-003**		**9.9600e-003**	**9.9600e-003**	**0.0000**	**142.6700**	**142.6700**	**2.7300e-003**	**2.6200e-003**	**143.5178**

5.2 Energy by Land Use - NaturalGas

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					
Junior College (2Yr)	1.817e+006	9.8000e-003	0.0891	0.0748	5.3000e-004		6.7700e-003	6.7700e-003		6.7700e-003	6.7700e-003	0.0000	96.9620	96.9620	1.8600e-003	1.7800e-003	97.5382
Junior College (2Yr)	168981	9.1000e-004	8.2800e-003	6.9600e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0175	9.0175	1.7000e-004	1.7000e-004	9.0711
Junior College (2Yr)	687553	3.7100e-003	0.0337	0.0283	2.0000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	36.6904	36.6904	7.0000e-004	6.7000e-004	36.9085
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		**0.0144**	**0.1311**	**0.1101**	**7.8000e-004**		**9.9600e-003**	**9.9600e-003**		**9.9600e-003**	**9.9600e-003**	**0.0000**	**142.6700**	**142.6700**	**2.7300e-003**	**2.6200e-003**	**143.5178**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	168010	54.9070	2.2100e-003	4.6000e-004	55.0985
Junior College (2Yr)	41292	13.4946	5.4000e-004	1.1000e-004	13.5417
Junior College (2Yr)	444000	145.1031	5.8400e-003	1.2100e-003	145.6092
Parking Lot	36120	11.8043	4.8000e-004	1.0000e-004	11.8455
Total		**225.3090**	**9.0700e-003**	**1.8800e-003**	**226.0949**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	168010	54.9070	2.2100e-003	4.6000e-004	55.0985
Junior College (2Yr)	41292	13.4946	5.4000e-004	1.1000e-004	13.5417
Junior College (2Yr)	444000	145.1031	5.8400e-003	1.2100e-003	145.6092
Parking Lot	36120	11.8043	4.8000e-004	1.0000e-004	11.8455
Total		**225.3090**	**9.0700e-003**	**1.8800e-003**	**226.0949**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	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	0.3298	3.0000e-005	3.0700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.9200e-003	5.9200e-003	2.0000e-005	0.0000	6.3200e-003
Unmitigated	0.3298	3.0000e-005	3.0700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.9200e-003	5.9200e-003	2.0000e-005	0.0000	6.3200e-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	0.0355					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2940					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9000e-004	3.0000e-005	3.0700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.9200e-003	5.9200e-003	2.0000e-005	0.0000	6.3200e-003
Total	**0.3298**	**3.0000e-005**	**3.0700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**5.9200e-003**	**5.9200e-003**	**2.0000e-005**	**0.0000**	**6.3200e-003**

6.2 Area by SubCategory

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	0.0355					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2940					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9000e-004	3.0000e-005	3.0700e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.9200e-003	5.9200e-003	2.0000e-005	0.0000	6.3200e-003
Total	**0.3298**	**3.0000e-005**	**3.0700e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**5.9200e-003**	**5.9200e-003**	**2.0000e-005**	**0.0000**	**6.3200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	29.5948	0.0952	2.4600e-003	32.7084
Unmitigated	36.9935	0.1190	3.0700e-003	40.8855

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	3.60854 / 5.64412	36.9935	0.1190	3.0700e-003	40.8855
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**36.9935**	**0.1190**	**3.0700e-003**	**40.8855**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	2.88683 / 4.5153	29.5948	0.0952	2.4600e-003	32.7084
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**29.5948**	**0.0952**	**2.4600e-003**	**32.7084**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	4.8535	0.2868	0.0000	12.0244
Unmitigated	19.4141	1.1473	0.0000	48.0975

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	95.64	19.4141	1.1473	0.0000	48.0975
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**19.4141**	**1.1473**	**0.0000**	**48.0975**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	23.91	4.8535	0.2868	0.0000	12.0244
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**4.8535**	**0.2868**	**0.0000**	**12.0244**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Greenhouse Gas Emission Worksheet

N20 Mobile Emissions Southwester Community College Expansion

From URBEMIS 2015 Vehicle Fleet Mix Output:

Annual VMT: 4,000,644

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)*	CH4 Emission (g/mile)**	N2O Emission Factor (g/mile)*	N2O Emission (g/mile)**
Light Auto	53.3%	0.04	0.02132	0.04	0.02132
Light Truck < 3750 lbs	4.0%	0.05	0.002	0.06	0.0024
Light Truck 3751-5750 lbs	18.3%	0.05	0.00915	0.06	0.01098
Med Truck 5751-8500 lbs	12.6%	0.12	0.01512	0.2	0.0252
Lite-Heavy Truck 8501-10,000 lbs	1.8%	0.12	0.00216	0.2	0.0036
Lite-Heavy Truck 10,001-14,000 lbs	0.5%	0.09	0.00045	0.125	0.000625
Med-Heavy Truck 14,001-33,000 lbs	1.7%	0.06	0.00102	0.05	0.00085
Heavy-Heavy Truck 33,001-60,000 lbs	6.2%	0.06	0.00372	0.05	0.0031
Other Bus	0.1%	0.06	0.00006	0.05	0.00005
Urban Bus	0.1%	0.06	0.00006	0.05	0.00005
Motorcycle	0.4%	0.09	0.00036	0.01	0.00004
School Bus	0.9%	0.06	0.00054	0.05	0.00045
Motor Home	0.1%	0.09	0.00009	0.125	0.000125
Total	**100.0%**		**0.05605**		**0.06879**

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)

CH4	25	GWP
N2O	298	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.2752	metric tons N2O	**82.01**	metric tons CO2e
	Project Total:		***82.01 metric tons CO2e***	

References

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.

** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

*** From URBEMIS 2007 results for mobile sources

B Geotechnical Investigation

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GEOTECHNICAL INVESTIGATION

May 31, 2018

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Otay Mesa Campus Improvements
8100 Gigantic Street
San Diego, CA

Project No.: 226817-0000290.07

NV5 West, Inc.
15092 Avenue of Science, Suite 200
San Diego, CA 92128

Mr. Rob DePew
Southwestern College
900 Otay Lakes Road
Chula Vista, CA 91910

May 31, 2018
Project No.: 226817-0000290.07

Subject: Geotechnical Investigation Report

Project: Southwestern College Higher Education Center
Otay Mesa Campus Improvements
8100 Gigantic Street
San Diego, California

Dear Mr. DePew:

This report presents the results of NV5 West, Inc.'s (NV5) geotechnical investigation for the Southwestern College Higher Education Center at Otay Mesa located in San Diego, California. Based on the information obtained during this investigation, it is NV5's opinion that the site is suitable for the development, provided that the pertinent recommendations contained in this report are incorporated into the design and construction of the project.

Based on the observed existing subsurface soil conditions and anticipated structural loads, it is recommended that the proposed buildings be supported on foundations designed to mitigate the high expansion potential of soils.

NV5 appreciates the opportunity to provide this geotechnical engineering service for this project and looks forward to continuing its role as your geotechnical engineering consultant.

Respectfully submitted,

NV5 West, Inc.

REGISTERED GEOLOGIST GENE CUSTENBORDER No. 1319 CERTIFIED ENGINEERING GEOLOGIST 04-11-30-18 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER CARLOS V. AMANTE GE 2724 Expires 6/30/2018 GEOTECHNICAL STATE OF CALIFORNIA

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1.0 INTRODUCTION

This report presents the results of the geotechnical engineering investigation for the Southwestern College Higher Education Center at Otay Mesa located in San Diego, California. The approximate location of the project site is presented on *Figure 1, Site Location Map*. The purpose of this study was to evaluate the subsurface soil conditions at the site and to provide recommendations for the design and construction of the project. This report summarizes the data collected and presents NV5's findings, conclusions and recommendations.

This report has been prepared for the exclusive use of the client and their consultants in the design of the proposed new structures. In particular, it should be noted that this report has not been prepared from the perspective of a construction bid preparation instrument and should be considered by prospective construction bidders only as a source of general information subject to interpretation and refinement by their own expertise and experience, particularly with regard to construction feasibility. Contract requirements as set forth by the project plans and specifications will supersede any general observations and specific recommendations presented in this report.

2.0 SCOPE OF SERVICES

NV5's scope of services for this project included the following tasks:

- Review of preliminary project sketches, geotechnical maps and literature pertaining to the vicinity.
- Research and review of City of San Diego Engineering and Development Department records regarding previous geotechnical studies at the site.
- A site reconnaissance to observe the general surficial site conditions and to select boring locations.
- Coordination with entities having an interest in the field exploration activities including the Southwestern College staff, the exploration subcontractor (Baja Exploration Drilling) and Underground Service Alert.
- Conducting a subsurface investigation, which included the drilling, logging, and sampling of ten (10) exploratory borings located within the project site to a maximum depth of 16 feet below ground surface (bgs).
- Conducting two (2) percolation tests at the project site to evaluate infiltration characteristics.
- Performing laboratory testing on selected representative bulk and relatively undisturbed soil samples obtained during the field exploration program to evaluate their pertinent geotechnical engineering properties.
- Performing an assessment of general seismic conditions and geologic hazards affecting the site area and their possible impact on the subject project.
- Engineering evaluation of the geotechnical data collected to develop geotechnical recommendations for the design and construction of the proposed development. Specifically the following items were addressed:

- Evaluation of general subsurface conditions and description of types, distribution, and engineering characteristics of subsurface materials.
- General recommendations for earthwork, including site preparation, excavation, site drainage, and the placement of compacted fill.
- Recommendations for temporary excavation and shoring.
- Evaluation of project feasibility and suitability of on-site soils for foundation support.
- Recommendations for design of suitable foundation systems including allowable bearing capacity, lateral resistance, settlement estimates, slab-on-grade construction.
- Recommendations for retaining walls and waterproofing.
- Determination of seismic design parameters.
- Recommendations for subgrade preparation within proposed exterior flatwork and pavement areas including flexible and rigid pavement sections.

- Preparation of this report, including reference maps and graphics, summarizing the data collected and presenting NV5's findings, conclusions, and geotechnical recommendations for the design and construction of the proposed development.

3.0 PROJECT AND SITE DESCRIPTION

Based on preliminary project information, including a concept sketch provided by Gensler Architects, it is understood that the proposed development will include construction of four new structures including three fire training buildings and an Auto Technology building with an associated parking lot. The project will require demolition of a portion of the existing west parking lot, and improvements to the existing outdoor training area. Other associated improvements will include underground utilities, flatwork and landscaping. Based on experience with similar projects, the maximum anticipated wall and column loads will be about 2 to 3 kips per lineal foot and 120 kips, respectively. Tolerable total and differential static settlements of 1 inch and 0.5 inch in 40 feet, respectively, were assumed for preliminary design purposes.

The project site encompasses a total area of approximately 25,000 square feet on the east and west sides of the existing Southwestern College Higher Education Center Otay Mesa Campus located in San Diego, California. The site is bounded on the south by Gigantic Street, on the east by La Media Road, on the west by an existing warehouse building, and on the north by the State Route 905 (Otay Mesa Freeway).

The project site is relatively level with a slight gradient downward to the southeast. The western portion of the site is currently used as a parking lot and an outdoor training area with a track. The eastern portion of the site is a relatively level open field covered in light vegetation. Site elevations range from a high of approximately 491 feet above mean sea level (MSL) near the northwest corner of the site to a low of roughly 486 feet MSL near the southeastern corner. The site location, with respect to the surrounding roadways, development and other features is shown on the attached *Figure 1, Site Location Map*.

4.0 FIELD EXPLORATION PROGRAM

Before starting the field exploration program, a field reconnaissance was conducted to observe site conditions and mark out the locations for the planned subsurface explorations. As required by law, Underground Service Alert was notified of the locations of the exploratory borings prior to drilling. In addition, NV5 coordinated the drilling schedule with the Southwestern College staff.

4.1 EXPLORATORY DRILLING

The subsurface conditions at the project site were explored on April 12 and 13, 2018 by drilling, logging, and sampling ten (10) exploratory borings (B-1 through B-10). Additionally, two (2) percolation test borings were conducted at a depth of approximately 5 feet below the existing ground surface. The approximate locations of the borings and percolation test holes are shown on *Figure 2, Geotechnical Boring Location Map*.

The borings were drilled with an 8-inch diameter hollow-stem auger drill rig until practical refusal which occurred at a maximum depth of approximately 16 feet below ground surface (bgs). The encountered soils in the borings were visually examined, classified, and logged by an NV5 geologist in general accordance with the Unified Soil Classification System. The logs of the exploratory borings are presented in *Appendix A*. Bulk and relatively undisturbed drive samples of the soils encountered in the borings were obtained in the field during the subsurface evaluation. The samples were tagged in the field and transported to NV5's laboratory for observation and testing. Subsequent to logging and sampling, the exploratory borings were backfilled and the pavement was patched with cold-mix asphalt. The drive samples were obtained using the California Modified (CAL) and Standard Penetration Test (SPT) split-barrel samplers, as described below.

California Modified Split-Spoon (CAL) Sampler

The split-barrel sampler was driven with a 140-pound hammer allowed to drop freely 30 inches in general accordance with ASTM D1587. The number of blows for the last two of three 6-inch intervals were recorded during sampling and are presented in the logs of borings. The sampler has external and internal diameters of approximately 3.0 and 2.4 inches, respectively, and the inside of the sampler is lined with 1-inch-long brass rings. The relatively undisturbed soil samples within the rings were removed, sealed and transported to the laboratory for observation and testing.

Standard Penetration Test (SPT) Sampler

A split-barrel sampler was driven with a 140-pound hammer allowed to drop freely 30 inches in general accordance with ASTM D1586. The numbers of blows for the last two of three 6-inch intervals were recorded during sampling and are presented in the logs of borings (i.e., SPT N-value). The sampler has external and internal diameters of 2.0 and 1.375 inches, respectively. The soil samples obtained in the interior of the barrel were measured, removed, sealed and transported to the laboratory for observation and testing.

4.2 FIELD PERCOLATION TESTING

On April 17, 2018, two (2) percolation tests were performed at the project site to evaluate the infiltration characteristics of the onsite soils to obtain information regarding the feasibility of storm water runoff infiltration. Percolation tests were performed in two (2) borings (P-1 and P-2). The percolation tests were conducted in the 8-inch diameter borings drilled using a truck-mounted, hollow-stem auger drill rig to a depth of approximately 5 feet. The percolation tests were performed in general accordance with the *San Diego County Department of Environmental Health Percolation Test Procedure*. The approximate locations of the percolation tests are presented on *Figure 2*.

Water level measurements were taken at selected time intervals for each percolation test location. The results of the percolation tests are presented in the following Table 1.

Table 1 - Percolation Test Results

Percolation Test Location	Depth Below Ground Surface	Soil Description	Measured Infiltration Rate (min/inch)
P-1	5 feet	Brown sandy CLAY (CL)	250
P-2	5 feet	Brown sandy CLAY (CL)	500

As indicated in the above table, the infiltration rate was variable. The percolation data suggests that the subsurface materials are not suitable for infiltration of storm water runoff purposes. The in-situ infiltration characteristics of the subsurface materials are primarily a function of the amount of fines (i.e., silt and clay size), the relative density, and other anomalies associated with the placement of fill or natural depositional/weathering processes (e.g., compaction/lamination, smearing, cementation). NV5 recommends that the design civil engineer develop and apply an appropriate reduction factor to the percolation rates based on final design plans.

5.0 LABORATORY TESTING

Laboratory testing was performed on selected representative bulk and relatively undisturbed soil samples obtained from the exploratory borings, to aid in the material classifications and to evaluate engineering properties of the materials encountered (see *Appendix B*). The following tests were performed:

- In-situ density and moisture content (ASTM D2937 and ASTM D2216);
- Particle size analyses and No. 200-wash (ASTM D422 and ASTM D1140);
- Atterberg Limits (ASTM D4318);
- Direct shear (ASTM D3080);
- R-Value tests (ASTM D2844);
- Corrosivity test series, including sulfate content, chloride content, pH-value, and resistivity (CTM 417, 422, and 532/643);
- Expansion index (ASTM D4829);
- Maximum dry density test (ASTM D1557 and ASTM D698); and
- Pocket Penetrometer Test (ASTM WK27337).

Testing was performed in general accordance with applicable ASTM standards and California Test Methods (CTM). A summary of the laboratory testing program and the laboratory test results are presented in *Appendix B, Laboratory Test Results*.

6.0 GEOLOGY

6.1 GEOLOGIC SETTING

The project site is located in southwest San Diego County within the coastal section of the Peninsular Ranges geomorphic province. This province is characterized by northwest-trending mountain ranges bordered by relatively straight-sided, sediment-floored valleys. The northwest trend is also reflected in the direction of the dominant geologic structural features, which consist of northwest-trending faults and fault zones. Two major northwest-trending fault zones traverse the San Diego metropolitan and the inland county areas: the Rose Canyon fault zone roughly 10 miles to the west and the Elsinore fault zone roughly 43 miles to the east. These fault zones traverse the San Diego area in a predominant north to north-northwest direction.

Typical stratigraphy of the project area includes Mesozoic (between approximately 250 and 65 million years old) igneous intrusive and metamorphic rocks, Cenozoic (less than 65 million years old) sedimentary units, and Quaternary (less than approximately 2 million years old) sedimentary deposits (M.P. Kennedy and S.S. Tan, 2002).

6.2 GEOLOGIC MATERIALS

The geologic strata encountered during the subsurface exploration consisted of well consolidated Quaternary very old alluvial flood plain deposits (map symbol Qvoa, as mapped by M.P. Kennedy and S.S. Tan, 2002). The project site lies south of an adjacent meandering stream channel. Detailed descriptions of the earth materials encountered are presented in *Appendix A, Exploratory Boring Logs*. Generalized descriptions of the units encountered in the field exploration are provided below.

As encountered in the borings, very old alluvial deposits ranged from brown to reddish-brown, dry to moist, dense to very dense clayey sand and firm sandy clay, to clayey and sandy gravel with large cobbles. All of the borings reached refusal between the depth of 11 to 16 feet below the existing ground surface The regional site geology is presented on *Figure 3, Regional Geologic Map.*

6.3 GROUNDWATER

Indications of static, near-surface groundwater table were not observed or encountered during the subsurface exploration to the total depth explored. Review of the State of California's GeoTracker website indicates that the static groundwater table is on the order of 180 feet below the existing ground surface in the site vicinity. It is anticipated that groundwater will not be a constraint during construction. However, experience indicates that near-surface groundwater conditions or localized seepage zones can develop in areas where no such groundwater conditions previously existed, especially in areas where a substantial increase in surface water infiltration results from landscape irrigation, agricultural activity, artificial recharge, storage facility leaks, or unusually heavy precipitation. Seasonal variations in the groundwater levels should be anticipated.

6.4 FAULTS

The numerous faults in southern California include active, potentially active, and inactive faults. As used in this report, the definitions of fault terms are based on those developed for the Alquist-Priolo Special Studies Zones Act of 1972 and published by the California Division of Mines and Geology (Hart and Bryant, 1997).

Active faults are defined as those that have experienced surface displacement within Holocene time (approximately the last 11,000 years) and/or have been included within any of the state-designated *Earthquake Fault Zones* (previously known as Alquist-Priolo Special Studies Zones). Faults are considered potentially active if they exhibit evidence of surface displacement since the beginning of Quaternary time (approximately two million years ago) but not since the beginning of Holocene time. Inactive faults are those that have not had surface movement since the beginning of Quaternary time.

The site is not mapped within a State-designated *Earthquake Fault Zone*, and active faults have not been mapped on the site. Furthermore, evidence of active faulting at the site was not observed during the investigation.

The closest known active fault to the site is the Rose Canyon fault located approximately 10.4 miles west of the site. Other important active faults that could affect the San Diego area and their distance to the site are included in the following Table 2. *Figure 4, Regional Fault Map*, depicts the site in relation to known active faults in the region.

Table 2 - Distance From the Site to Major Active Faults

Fault	Distance From the Site
Newport-Inglewood/Rose Canyon	10.4 miles
Coronado Bank (Palos Verdes Section)	17.3 miles
Elsinore (Julian Section)	42.5 miles
Earthquake Valley	47 miles
San Jacinto	63 miles
San Andreas	90 miles

The potentially active La Nacion and San Ysidro faults are located approximately 3.8 miles west of the site. Earthquakes are less likely to occur on potentially active faults. Therefore, the La Nacion and San Ysidro faults are not considered to be as significant a seismic hazard compared to the active faults in the region.

7.0 SEISMIC AND GEOTECHNICAL HAZARDS

The findings of NV5's seismic and geotechnical hazards evaluation for the proposed project are summarized in the following sections.

7.1 FAULT RUPTURE

The site is not located within an Earthquake Fault Zone delineated by the State of California for the hazard of fault surface rupture. The surface traces of any active or potentially active faults are not

known to pass directly through, or to project toward the site. Therefore, the potential for surface rupture due to faulting occurring beneath the site during the design life of the proposed structures is considered low.

7.2 SEISMIC SHAKING

The project site is located in an area of California considered a seismically active area, and as such, the seismic hazard most likely to impact the site is ground shaking resulting from an earthquake along one of the known active faults in the region.

Seismic parameters based on the 2016 California Building Code (CBC) and using the USGS Seismic Design Parameter online tool (https://earthquake.usgs.gov/designmaps/us/application.php) are provided in Table 3 below are based on site latitude = 32.562775 degrees North and longitude = 116.969877 degrees West. NV5 should be contacted to provide revisions to these parameters if other codes are specified.

The earthquake hazard level of the Maximum Considered Earthquake (MCE) is defined in ASCE 7-10 as the ground motion having a probability of exceedance of 2 percent in 50 years. The preliminary seismic design parameters for the project site are presented in the following table.

Table 3 - Recommended 2016 CBC Seismic Design Parameters

Design Parameter	Recommended Value	Reference
Site Class	D	CBC Section 1613.3.2
Mapped Spectral Accelerations for short periods, S_S	0.825g	CBC Section 1613.2.1
Mapped Spectral Accelerations for 1-sec period, S_1	0.315g	CBC Section 1613.2.1
Short-Period Site Coefficient, F_a	1.170	CBC Table 1613.3.1
Long-Period Site Coefficient, F_v	1.770	CBC Table 1613.3.1
(1) MCE_R (5% damped) spectral response acceleration for short periods adjusted for site class, S_{MS}	0.965g	CBC Section 1613.3.3
(1) MCE_R (5% damped) spectral response acceleration at 1-second period adjusted for site class, S_{M1}	0.558g	CBC Section 1613.3.3
Design spectral response acceleration (5% damped) at short periods, S_{DS}	0.643g	CBC Section 1613.3.4
Design spectral response acceleration (5% damped) at 1-second period, S_{D1}	0.372g	CBC Section 1613.3.4
Seismic Design Category	D	CBC Section 1613.3.5
(2) MCE_G Peak Ground Acceleration adjusted for site class effects, PGA_M	0.381g	ASCE 7-10 Section 11.8.3

(1) MCE_R = Risk-adjusted Maximum Considered Earthquake
(2) MCE_G = Geometric-mean Maximum Considered Earthquake

7.3 LIQUEFACTION AND SEISMICALLY-INDUCED SETTLEMENT

Liquefaction of soils can be caused by ground shaking during earthquakes. Research and historical data indicate that loose, relatively clean granular soils are susceptible to liquefaction and dynamic settlement, whereas the stability of the majority of clayey silts, silty clays and clays is not adversely affected by ground shaking. Liquefaction is generally known to occur in saturated cohesionless soils at depths shallower than approximately 50 feet. Dynamic settlement due to earthquake shaking can occur in both dry and saturated sands.

The site appears to be underlain predominantly by indurated clay-rich and dense/stiff, natural deposits which are not considered to be susceptible to liquefaction. Therefore, the potential for liquefaction and associated ground deformation occurring beneath the structural site areas is considered low.

Seismic settlement is often caused when loose to medium-dense granular soils are densified during ground shaking. Some of the near-surface soils encountered in the exploratory borings at the foundation levels of the structure are considered to be susceptible to seismic settlement. Mitigative measures (removal and recompaction) are provided in the grading and earthwork recommendation section of this report so that the potential damage to structures due to seismic settlement is considered to be low.

7.4 LANDSLIDES AND SLOPE INSTABILITY

The project area is relatively flat ground with no steep adjacent slopes. There are no known landslides on or near the project site, and the site is not located in the path of any known landslides. It is NV5's opinion that the potential damage to the proposed project due to landsliding or slope instability is considered very low. In addition, the onsite materials are not known to be prone to slope instability in properly engineered slopes.

The site is underlain by dense natural materials which are not considered susceptible to failure due to lateral spreading. Therefore, the potential for lateral spreading causing a catastrophic collapse of the proposed structures is considered low.

7.5 SUBSIDENCE

The site is not located in an area of known ground subsidence due to the withdrawal of subsurface fluids. Accordingly, the potential for subsidence occurring at the site due to the withdrawal of oil, gas, or water is considered to be low.

7.6 TSUNAMIS, INUNDATION SEICHE, AND FLOODING

The site is located at an elevation over approximately 486 feet above MSL. Its lowest point is located approximately eight miles from the shoreline of San Diego Bay and nine miles from the Pacific Ocean coastline. The site is not located downslope of any large body of water that could affect the site in the event of an earthquake-induced failure or seiche (oscillation in a body of water due to earthquake shaking). Therefore, the potential for damaging tsunamis (seismic sea waves) or seiche is considered low.

Based on a review of Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM), the site is not located within a 500-year floodplain. Site elevations are higher than elevations of the closest mapped floodway, located approximately two miles northeast of the site. Based on the map review, the potential for significant flooding of the site is considered to be very low. Site drainage should be addressed by the project civil engineer in accordance with the recommendations in Section 9.11 of this report.

7.7 EXPANSIVE SOILS

The project site is underlain predominantly by clayey sands and sandy clays with fine to coarse grained sand. These materials are generally considered to have medium to high expansion potential. These materials are generally considered unsuitable for use as backfill for retaining walls or pipe bedding. Since site grading will redistribute on-site soils, potential expansive soil properties should be verified at the completion of rough grading.

8.0 CONCLUSIONS AND DESIGN RECOMMENDATIONS

8.1 GENERAL

Based on the available geologic data, known active or potentially active faults with the potential for surface fault rupture are not known to exist beneath the site or trend toward the site. Accordingly, the potential for surface rupture at the site due to faulting is considered low during the design life of the proposed structure. Although the site could be subjected to strong ground shaking in the event of an earthquake, this hazard is common in southern California and the effects of ground shaking can be mitigated if the structure is designed and constructed in conformance with current building codes and engineering practices.

The near-surface natural soils have and expansion potential that ranges from medium to high and therefore considered to be unsuitable for support of the proposed development in their present condition. To provide a uniform support for the new structure and surface improvements, we recommended that these materials be overexcavated and recompacted.

Based on the results of field exploration, laboratory testing, and engineering evaluation and analyses, the proposed construction is considered geotechnically feasible, provided the recommendations contained herein are incorporated into the project plans and specifications and implemented during construction.

8.2 GRADING AND EARTHWORK

Site grading should be performed in accordance with the following recommendations and the *Typical Earthwork Guidelines* provided in *Appendix C*. In the event of conflict, the recommendations presented herein supersede those of *Appendix C*.

- Clearing and Grubbing - Prior to grading, the project area should be cleared of significant surface vegetation, demolition rubble, trash, pavement, debris, etc. Any buried organic debris or other unsuitable contaminated material encountered during subsequent excavation and grading work should also be removed. Removed material and debris should be properly

disposed of offsite. Holes resulting from removal of buried obstruction which extend below finished site grades should be filled with properly compacted soils.

- Site Grading – Areas to receive surface improvements or fill soils should be treated as follows:
    - Building Pad - Prior to fill placement, the soft to loose near-surface soils should be removed to a depth of approximately 4 feet, moisture conditioned, and uniformly recompacted to at least 90 percent of the soils' maximum dry density (based on ASTM D1557). Excavation should extend laterally a distance of at least 5 feet outside perimeter footings

    - Paved Areas, Flatwork and Trash Enclosures - Excavate to a depth of at least 1 foot below the proposed subgrade elevation, moisture condition, and uniformly recompact to at least 90 percent of the soils maximum dry density (based on ASTM D1557). This treatment should extend a horizontal distance of at least 1 foot beyond the outside perimeter.

    - Excavatability – Based on the subsurface exploration, it is anticipated that the on-site soils can be excavated by modern conventional heavy-duty excavating equipment in good operating conditions.

    - Structural Fill Placement - Areas to receive fill and/or surface improvements should be scarified to a minimum depth of 6 inches, brought to near-optimum moisture conditions, and compacted to at least 90 percent relative compaction, based on laboratory standard ASTM D1557. Fill soils should be brought to near-optimum moisture conditions and compacted in uniform lifts to at least 90 percent relative compaction (ASTM D1557). Rocks with a maximum dimension greater than 4 inches should not be placed in the upper 3 feet of pad grade.

      The optimum lift thickness to produce a uniformly compacted fill will depend on the size and type of construction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in loose thickness. Placement and compaction of fill should be observed and tested by the geotechnical consultant.

    - Graded Slopes – Graded slopes should be constructed at a gradient of 2:1 (H:V) or flatter. To reduce the potential for surface runoff over slope faces, cut slopes should be provided with brow ditches and berms should be constructed at the top of fill slopes.

    - Import Soils - Import soils should be sampled and tested for suitability by NV5 prior to delivery to the site. Imported fill materials should consist of clean granular soils free from vegetation, debris, or rocks larger than 3 inches in maximum dimension. The Expansion Index value should not exceed a maximum of 20 (i.e., essentially non-expansive).

8.3 TEMPORARY EXCAVATIONS

Temporary, shallow excavations with vertical side slopes less than 4 feet high will generally be stable, although there is a potential for localized sloughing. In these soil types, vertical excavations greater than 4 feet high should not be attempted without proper shoring to prevent local instabilities. Shoring may be accomplished with hydraulic shores and trench plates, and/or trench boxes, soldier piles and

lagging. The actual method of a shoring system should be provided and by a contractor experienced in installing temporary shoring under similar soil conditions and designed by an experienced licensed professional. If soldier piles and lagging are to be used, we should be contacted for additional recommendations.

All trench excavations and access pits should be shored in accordance with Cal-OSHA regulations. For planning purposes, the native soil materials may be considered as Type A, as defined in the current Cal-OSHA soil classification.

The excavation support system should be designed to resist lateral earth pressures of the soil and hydrostatic pressures. It is common practice for an experienced contractor to design and install shoring structure. The preliminary shoring design parameters are provided as follows for reference. The final design of the temporary shoring should be reviewed by the project geotechnical engineer.

For the design of a cantilever soldier piles and lagging shoring system the structure should be designed to resist the lateral earth, water, and surcharge loadings. For the subsurface conditions at this site, the unfactored earth pressure distribution (p in psf) can be calculated as follows:

$$\boldsymbol{P = K.\gamma.H + Surcharge}\ \mathbf{1}$$

Where:

- H= height of the excavation
- ϒ = soil unit weight, where for above water ground is 120 pcf, and for below water level is γ´=58 pcf
- K_0=0.5 at-rest earth pressures should be assumed for the geotechnical design, where the wall support does not allow lateral displacement
- K_a=0.3 active earth pressure should be assumed for the geotechnical design, where the wall support allow for lateral yielding
- Surcharge 1: The surcharge for typical construction activities, a minimum of 2 feet equivalent soil surcharge is recommended
- Hydrostatic pressures acting below the groundwater table should be considered in shoring designs.

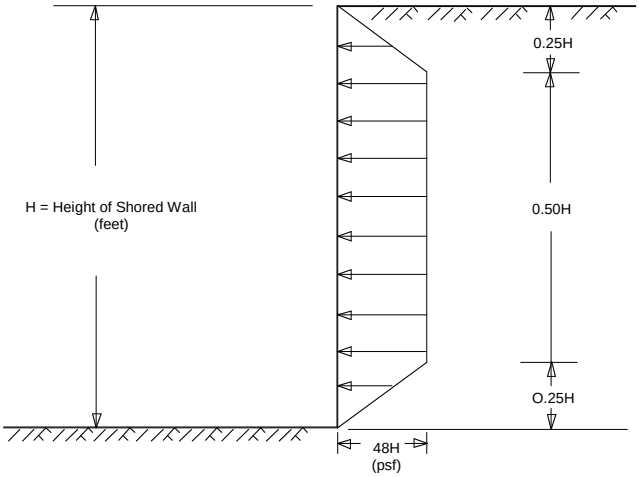
Stockpiled (excavated) materials should be placed no closer to the edge of a trench excavation than a distance defined by a line drawn upward from the bottom of the trench at an inclination of 1(H): 1(V), but no closer than 4 feet. All trench excavations should be made in accordance with Cal-OSHA requirements.

8.4 TEMPORARY SHORING

Although not anticipated, in the event of possible applicability temporary shoring systems should be designed based on the recommendations below. For vertical excavations less than about 15 feet in height, cantilevered shoring may be used. Cantilevered shoring may also be used for deeper excavations; however, the total deflection at the top of the wall should not exceed one-inch. Therefore, shoring of excavations deeper than about 15 feet may need to be accomplished with the aid of tied back earth anchors.

The actual shoring design should be provided by a registered civil engineer in the State of California experienced in the design and construction of shoring under similar conditions. Once the final excavation and shoring plans are complete, the plans and the design should be reviewed by NV5 for conformance with the design intent and geotechnical recommendations. The shoring system should further satisfy requirements of Cal-OSHA.

For design of cantilevered temporary shoring, a triangular distribution of lateral earth pressure may be used. It may be assumed that the subgrade soils, with a level surface behind the cantilevered shoring, will exert an equivalent fluid pressure of 40 pcf. Tied-back or braced shoring should be designed to resist a trapezoidal distribution of lateral earth pressure. The recommended pressure distribution, for the case where the grade is level behind the shoring, is illustrated in the following diagram with the maximum pressure equal to 48H in psf, where H is the height of the shored wall in feet.



Any surcharge (live, including traffic, or dead load) located within a 1:1 (H:V) plane drawn upward from the base of the shored excavation should be added to the lateral earth pressures. The vertical loads imposed by existing structures, if any, should be determined by the structural engineer. The lateral load contribution of a uniform surcharge load located across the 1:1 (H:V) zone behind the excavation may be calculated in accordance with *Figure 5, Lateral Surcharge Loads*. Lateral load contributions of surcharges located at a distance behind the shored wall should be provided by NV5 once the load configurations and layouts are known. As a minimum, a 2-ft equivalent soil surcharge is recommended to account for nominal construction loads.

8.5 DEWATERING

Groundwater was not encountered in any of the borings drilled for this project. Therefore, dewatering is not anticipated during the proposed construction. However, any cases of localized seepage or heavy precipitation should be monitored during construction. If necessary, dewatering may be achieved by means of excavating a series of shallow trenches directed by gradient (i.e., gravity) to sumps with pumps. In any case, the actual means and methods of any dewatering scheme should be established by a contractor with local experience. It is important to note that temporary dewatering, if necessary, will require a permit and plan that complies with RWQCB regulations. If excessive water is encountered, NV5 should be contacted to provide additional recommendations for temporary

construction dewatering. Based on the subsurface exploration the onsite soils maybe considered to be relatively permeable.

8.6 FOUNDATIONS

It is anticipated that the primary mechanisms for differential movement of building foundations at the subject site will be shrinkage and swelling of expansive soils. Preliminary laboratory tests indicate that the expansion classification of the near-surface soils at the site varies from medium to high when tested in accordance with ASTM D4829. Therefore, we recommend the use of either post-tensioned slabs and foundations, or reinforced foundations and slabs with grade beams at the subject site to mitigate the effects of expansive soils. Due to the preliminary nature of the expansion tests performed for this study, we recommend additional testing be performed near the completion of rough grading to verify the test results and recommended foundation design criteria.

It is recommended that the design provide for a stiff floor slab, which minimizes the amount of deflection imposed on the structure. A foundation design engineer experienced in the field of slab design should undertake the design of the slabs and foundations. The slab designer should provide estimates of the anticipated deflection to the design architect and structural engineer for use in the design of the structure. If the anticipated design deflection exceeds that which the design architect and or structural engineer can accommodate, then the slab should be re-designed by the slab designer to reduce the total deflection. If necessary, recommendations for alternative types of foundations may be developed by the geotechnical engineer.

8.6.1 Post-Tensioned Slab Foundations

It is the responsibility of the slab designer to select the methodology utilized in the slab design. If the post-tensioned slabs are designed in accordance with Section 1808.6.2 of the CBC and the Post-Tensioning Institute's (PTI) design procedure, the following preliminary geotechnical design parameters may be utilized:

- Allowable Soil Bearing Capacity = 1,500 psf
- Edge Moisture Variation Distance (Em):
  - Edge Lift = 4.5 feet
  - Center Lift = 5.5 feet
- Differential Soil Movements (Ym):
  - Edge Lift = 1.50 inches
  - Center Lift = 3.0 inches

The allowable soil bearing value represents an allowable net increase in existing soil pressure for perimeter footings with a minimum width of 12 inches and a minimum depth of 24 inches below the lowest adjacent grade. Foundation embedment should be measured from the lowest adjacent grade within 5 feet of the structure.

The allowable bearing capacity may be increased by one-third (1/3) for considerations of short-term wind or seismic loads, and may be increased by 20 percent for each additional foot of depth to a maximum value of 2,500 psf. Internal footings may be embedded a minimum of 12 inches below lowest adjacent grade.

8.6.2 Stiffened Reinforced Concrete Slab-on-Grade

Alternatively, a stiffened reinforced concrete slab-on-grade with continuous footings along the perimeter and internal grade beams may be utilized to support the proposed residence. Stiffened reinforced concrete slabs-on-grade should be designed in accordance with Section 1808A.6.2 of the 2016 California Building Code which recommends the *CRSI/WRI Slab-on-ground Foundation Manual* using a design soil plasticity index (PI) of 35, allowable soil bearing capacity of 1,500 pounds per square foot (psf), and a modulus of subgrade reaction of 100 pounds per cubic inch (pci).

The slab should have a minimum thickness of 6 inches and should be designed with concrete having a minimum compressive strength of 4,000 pounds per square inch (psi). The slab should be continuously reinforced with No. 5 reinforcing bars placed in both directions at a maximum spacing of 18 inches on center. The slab should be underlain by a 2-inch thick layer of clean sand overlying a polyethylene vapor retarder, 10-mil or thicker. The vapor retarder should be underlain by a 2-inch thick layer of clean sand. The vapor retarder is recommended in areas where moisture-sensitive floor covering are anticipated.

Engineered fill underlying the slab should be moisture-conditioned and compacted in accordance with the recommendations presented in this report prior to placement of concrete. Concrete contraction joints should be constructed at intervals designed by the structural engineer to help reduce cracking of the slab. Slabs designed for exterior surface improvements should be a minimum 4 inches thick. In areas abutting landscape areas, the edge of the slab should be deepened to approximately 8 inches below the adjacent finish subgrade.

All foundation elements should be interconnected with internal grade beams. Spread or isolated foundations should not be allowed. Internal grade beams should extend a minimum of 18 inches below the top of the slab and should have a minimum width of 12 inches. Alternatively, the slab may be thickened to provide an equivalent section equal in stiffness as determined by the structural design engineer.

The footings should extend to a minimum depth of 18 inches below lowest adjacent grade. Footings should be continuously reinforced with a minimum of two No. 5 reinforcing bars placed within 3 inches from the bottom of the footing and two No. 5 reinforcing bars placed within 3 inches from the top of the footing.

Internal grade beams should be placed at a maximum spacing of 30 feet on center and should be arranged to divide the structure into squares or rectangles in accordance with the requirements of the CBC.

8.6.3 Lateral Load Resistance

Lateral loads may be resisted by friction and by the passive resistance of the supporting soils. A coefficient of friction of 0.30 may be used between foundations and the properly compacted fill soils. In the event that a vapor barrier is extended below the footings, a reduced coefficient of friction of 0.10 should be used in the affected areas. The passive resistance of the natural soil should be assumed to be equal to the pressure developed by a fluid with a density of 260 pounds per cubic foot (pcf) to a maximum value of 3,000 psf. Passive resistance should be neglected in the upper six (6) inches unless the surface is contained by a pavement or a slab.

A one-third (1/3) increase in the passive resistance value may be used for wind or seismic loads. The passive resistance may be combined with the frictional resistance provided the passive resistance component does not exceed one-half (1/2) of the total lateral resistance.

8.6.4 Foundation Observation

To verify the presence of satisfactory materials at design elevations, footing excavations should be observed to be clean of loosened soil and debris before placing steel or concrete and probed for soft areas. If soft or loose soils or unsatisfactory materials are encountered, these materials should be removed and may be replaced with a two-sack, sand-cement slurry or structural concrete. Footing excavations should be deepened as necessary to extend into satisfactory bearing materials; however, NV5 should be notified to approve the proposed change.

8.7 EXTERIOR CONCRETE SLABS ON GRADE

Exterior concrete flatwork should have a minimum concrete thickness of 4 inches. Concrete slabs should be supported on at least 4 inches of Class 2 aggregate base compacted to at least 95 percent of the maximum dry density. The upper 12 inches of subgrade soil located below the aggregate base should be moisture-conditioned within 2 percent over the optimum moisture content, and recompacted to a minimum of 90 percent relative compaction (ASTM D1557).

The driveway slab areas and connecting sidewalks should have a minimum concrete thickness of 6 inches. The driveway concrete slab should be underlain by at least 6 inches of Class 2 aggregate base compacted to at least 95 percent of the maximum dry density. The upper 12 inches of subgrade soil located below the aggregate base should be reconditioned to achieve a moisture content within 2 percent over the optimum moisture content, and recompacted to a minimum of 95 percent relative compaction (ASTM D1557).

For exterior concrete flatwork, we recommended that narrow strip concrete slabs, such as sidewalks, be reinforced with at least No. 3 reinforcing bars placed longitudinally at 36 inches on-center. Wide exterior slabs should be reinforced with at least No. 3 reinforcing bars placed 36 inches on-center, each way. The reinforcement should be extended through the control joints to reduce the potential for differential movement. Control joints should be constructed in accordance with recommendations from the structural engineer or architect.

8.8 UTILITY TRENCH BACKFILL

All subsurface utility trench backfill, including water, gas, storm drain, sewer, irrigation, telecommunication, and electrical lines should be mechanically compacted. Water jetting should not be used for compaction. The material within the pipe zone (i.e. 6 inches below to 12 inches above pipe) should consist of free-draining sand or small gravel with a minimum sand equivalent of 30. There should be sufficient clearance along the side of the utility pipe or line to allow for compaction equipment. The pipe bedding shall be compacted under the haunches and alongside the pipe.

8.9 RETAINING WALLS

Retaining walls should be designed in accordance with the following recommendations and design parameters presented herein.

- Bearing Capacity - The proposed wall may be supported on continuous footings bearing on dense natural soils or properly compacted fill soils at a minimum depth of 18 inches beneath the lowest adjacent grade. At this depth, footings may be designed for an allowable soil-bearing value of 1,500 psf. This value may be increased by one-third for loads of short duration, such as wind or seismic forces.

- Lateral Earth Pressures - Based on laboratory test results and encountered soil conditions, the recommended lateral earth pressures for preliminary design of flexible retaining walls supported on shallow foundations are summarized in the table below.

Table 4 - Recommended Lateral Earth Pressures

Parameter	Recommended Values				
	Level Backfill	5H:1V Slope	4H:1V Slope	3H:1V Slope	2H:1V Slope
Static Active Earth Pressure (P_a)	40H	46H	48H	51H	64H
Static At-Rest Earth Pressure (P_o)	60H	72H	75H	79H	87H
Seismic Earth Pressure (P_e)	17H	20H	20H	22H	27H
Coefficient of Friction (μ) for Lateral Resistance of Footing	0.30	N/A	N/A	N/A	N/A
Passive Earth Pressure (P_p) for Lateral Resistance of Footing	260H	N/A	N/A	N/A	N/A

Notes:
1. All values of height (H) are in feet (ft) and pressure (P) in pounds per square feet (psf).
2. Seismic earth pressure (P_e) is in addition to the static active or at-rest pressure, P_a and P_o which should be distributed as an inverted triangle along the wall height and the resultant of this pressure is an increment of force which should be applied to the back of the wall in the upper one-third (1/3) of the wall height and may also be applied as a reduction of force to the front of the wall in the upper one-third (1/3) of the footing depth.
3. The above pressure values do not include hydrostatic pressures that might be caused by groundwater or water trapped behind the structure.
4. The pressures listed in the table were based on the assumption that backfill soils will be compacted to 90 percent of maximum dry density (per ASTM D1557).
5. The coefficient of friction (μ) should be applied to dead normal (buoyant) loads when evaluating the sliding frictional resistance.
6. A resistance factor of 0.5 has been applied to the passive earth pressure and may be combined with the sliding frictional resistance using a resistance factor of 0.80. Neglect the upper 6 inches for passive pressure unless the surface is contained by a pavement or a slab. The passive earth pressure should not exceed a maximum value of 3,000 psf.
7. In addition to the above-mentioned pressures, retaining walls must be designed to resist horizontal pressures that may be generated by surcharge loads applied at the ground surface such as from uniform loads or vehicle loads. Figure 5 may be used to evaluate these surcharge loads.

- Drainage and Waterproofing - Retaining walls should be properly drained, and if desired, appropriately waterproofed. Adequate backfill drainage is essential to provide a free-drained backfill condition and to reduce the potential for the development of hydrostatic pressure buildup behind walls. Drainage behind the retaining walls may be provided with geosynthetic drainage composite such as TerraDrain, MiraDrain, or equivalent, placed continuously along

the back of the wall and connected to a 4-inch-diameter perforated pipe. The pipe should be sloped at least 2 percent and surrounded by 3 cubic feet per foot of ¾-inch crushed rock wrapped in suitable non-woven filter fabric (Mirafi 140N or equivalent) or Caltrans Class 2 permeable granular filter materials without filter fabric. The crushed rock should meet the requirements defined in Section 200-1.2 of the latest edition of the Standard Specification for Public Works Construction (Greenbook). These drains should be connected to an adequate discharge system.

In lieu of a perforated drainage pipe and connection to an existing drainage system, weep holes or open vertical masonry joints may be provided in the lowest row of block exposed to the air to reduce the buildup of hydrostatic pressure behind the wall. Weep holes should be a minimum of three inches in diameter and provided at intervals of at least every six feet along the wall. Open vertical masonry joints should be provided at a minimum of 32-inch intervals. A continuous gravel fill, a minimum of one cubic foot per foot should be placed behind the weep holes or open masonry joints. The gravel should be wrapped in filter fabric (Mirafi 140N or equivalent). To prevent efflorescence at the face of the wall, the wall may also be appropriately waterproofed. Waterproofing treatments and alternative, suitable wall drainage products are available commercially. Design of waterproofing and its protection during construction should be addressed by the project design professional.

- Retaining Wall Backfill Compaction - Retaining wall backfill material should be non-expansive (E.I. of 20 or less) and free draining. Backfill should be brought to near-optimum moisture conditions and compacted by mechanical means to at least 90 percent relative compaction (ASTM D1557). Care should be taken when using compaction equipment in close proximity to retaining walls so that the walls are not damaged by excessive loading.

8.10 PAVEMENTS

Design of asphalt concrete pavement sections depends primarily on support characteristics (strength) of soil beneath the pavement section and on cumulative traffic loads within the service life of the pavement. Strength of the pavement subgrade is represented by R-value test data. R-value tests were performed on representative samples of the near-surface soil. The results yielded R-values ranging from 6 to 11. A summary of the test is included in *Appendix B*.

Traffic loads within service life of a pavement are represented by a Traffic Index (TI), which is calculated based on anticipated traffic loads and on the projected number of load repetitions during the design life of the pavement. The design TI value should be verified by the project Civil/Traffic Engineer prior to construction.

Preliminary pavement section recommendations were developed using a design R-value of 6 and Traffic Index (TI) values assumed for light auto parking and drive lanes and fire lanes. Based on these design parameters, analysis in accordance with California Department of Transportation (Caltrans) Highway Design Manual, and assuming compliance with site preparation recommendations, NV5 recommends the flexible and rigid structural pavement sections presented in Table 5.

Table 5 - Recommended Pavement Sections (Design R-value=6)

Location	Flexible Pavement (inches)		Rigid Pavement (inches)	
	Hot-Mix Asphalt (HMA)	Aggregate Base (AB)	Jointed Plain Portland Cement Concrete (JPCP)	Aggregate Base (AB)
Light Auto Parking and Drive Lanes (TI=5-6)	4.0	12.0	6.0	6.0
Fire Lanes (TI=7-8)	8.0	12.0	6.0	12.0

Assuming that the near-surface on-site soils will be thoroughly mixed and compacted during grading operations, it is recommended that R-value testing be performed on representative soil samples after rough grading operations on the upper 2 feet to confirm applicability of the above pavement sections. If the paved areas are to be used during construction, or if the type and frequency of traffic is greater than assumed in the design, the pavement section should be re-evaluated for the anticipated traffic.

The upper 12 inches of subgrade soils should be compacted to a minimum dry density of 95 percent of the materials maximum density as determined by the ASTM D1557 test procedure. The aggregate base should conform to Class II aggregate base in accordance with Section 400.2.3 of the 2009 Regional Supplement to Greenbook Standard Specifications for Public Works Construction. The base course should also be compacted to a minimum dry density of 95 percent. Field and lab testing should be used to check compaction, aggregate gradation, and compacted thickness.

The asphalt pavement should be compacted to 95 percent of the unit weight as tested in accordance with the Hveem procedure (ASTM D1560). The maximum lift thickness should be 4.0 inches. The asphalt material shall conform to Type III, Class B2 or B3 of the Standard Specifications for Public Works Construction and the supplement. An approved mix design should be submitted 30 days prior to placement. The mix design should include proportions of materials, maximum density and required lay-down temperature range. Field and lab testing should be used to verify oil content, aggregate gradation, compaction, compacted thickness, and lay-down temperature.

Control joints are required for the Portland cement concrete pavement at a maximum of 15 feet spacing each way and should be constructed immediately after concrete finishing.

The performance of pavements is highly dependent upon providing positive surface drainage away from the edge of the pavement. The ponding of water on or adjacent to pavement areas will likely cause failure of the subgrade and resultant pavement distress. Where planters are proposed, the perimeter curb should extend at least 6 inches below the subgrade elevation of the adjacent pavement. In addition, experience indicates that even with these provisions, a saturated subgrade condition can develop as a result of increased irrigation, landscaping and surface runoff. A subdrainage system should be considered along the perimeter of pavement subgrade areas to reduce the potential of this condition developing. The subdrain system should be designed to intercept irrigation water and surface runoff prior to entry into the pavement subgrade and carry the water to a suitable outlet.

8.11 CORROSION POTENTIAL

The corrosion characteristics of on-site soils should be considered in the design of any buried or grade supported structures in contact with the soils in accordance with *Caltrans Corrosion Guidelines.*

Caltrans' Corrosion Guidelines (version 2.0, 2012) define corrosive soils as, "*Chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater, or the pH is 5.5 or less*". Minimum resistivity in soil or water is considered an indicator parameter and is not used to define a corrosive soil environment. Caltrans' Guidelines state that a "*minimum resistivity value for soil and/or water less than 1000 Ohm-cm indicates the presence of high quantities of soluble salts and a higher propensity for corrosion*".

Representative samples of the site soils obtained from the borings were tested to evaluate the corrosion potential. The tests include pH, electrical resistivity, and soluble chloride and sulfate concentrations. Results of the corrosivity tests performed are summarized in the table below and presented in *Appendix B – Laboratory Testing.*

Table 6 - Corrosivity Test Results

Test Location	Depth (feet)	pH	Electrical Resistivity (Ohm-cm)	Soluble Sulfate Content (ppm)	Soluble Chloride Content (ppm)
B-3	3 - 5	8.1	320	690	470
B-4	8 - 10	8.3	240	390	1120
B-8	2 - 3.5	8.1	390	290	540
B-10	7 - 9	7.5	170	750	2670

Based on experience and the *Caltrans Corrosion Guidelines* dated January 2015, the chloride content is considered to have a high corrosion potential to steel, and the sulfate content is considered to have a moderate corrosion potential to concrete.

Due to moderate sulfate concentration, we recommend a Type II cement, maximum water-cement ratio of 0.50, and a minimum compressive strength of 4,000 psi for proposed concrete substructures.

Any imported soils should be evaluated for corrosion characteristics if they will be in contact with buried or at-grade structures and appropriate mitigation measures should be included in the structure design. It is recommended that a corrosion specialist be contacted to determine if mitigation measures are necessary.

8.12 SLOPE STABILITY AND MAINTENANCE

It should be noted that all slopes (natural, cut, fill or otherwise) are subject to downhill "creep" to some degree, as well as possible surficial deterioration due to normal weathering. This general observation is made in order to emphasize the importance of slope maintenance, and is not intended to suggest a particularly unusual or compelling adverse condition.

Uninterrupted runoff over the top and down exposed slopes should not be allowed and can be controlled by installation and proper maintenance of top-of-slope berms, intermediate slope terrace

drains, down-drains, etc. Paved slope drains should be periodically cleared of any significant runoff sediments, debris, vegetation, over-gown, etc. in order to maintain proper performance.

8.13 DRAINAGE CONTROL

Although not all of the recommendations may be applicable to this project, the intent of this section is to provide general information regarding the control of surface water. The control of surface water is essential to the satisfactory performance of the building and site improvements. Surface water should be controlled so that conditions of uniform moisture are maintained beneath the structure, even during periods of heavy rainfall. The following recommendations are considered minimal.

- Berms, drainage swales, catch basins, and storm water drainage pipe should be installed along all existing top-of-slope areas within the project limits, as a minimum erosion control measure.
- Ponding and areas of low flow gradients should be avoided.
- If bare soil within 5 feet of the structure is not avoidable, then a gradient of 5 percent or more should be provided sloping away from the improvement. Corresponding paved surfaces should be provided with a gradient of at least 1 percent.
- The remainder of the unpaved areas should be provided with a drainage gradient of at least 2 percent.
- Positive drainage devices, such as graded swales, paved ditches, and/or catch basins should be employed to accumulate and to convey water to appropriate discharge points.
- Concrete walks and flatwork should not obstruct the free flow of surface water.
- Brick flatwork should be sealed by mortar or be placed over an impermeable membrane.
- Area drains should be recessed below grade to allow free flow of water into the basin.
- Enclosed raised planters should be sealed at the bottom and provided with an ample flow gradient to a drainage device. Recessed planters and landscaped areas should be provided with area inlet and subsurface drain pipes.
- Planters should not be located adjacent to the structure wherever possible. If planters are to be located adjacent to the structure, the planters should be positively sealed, should incorporate a subdrain, and should be provided with free discharge capacity to a drainage device.
- Planting areas at grade should be provided with positive drainage. Wherever possible, the grade of exposed soil areas should be established above adjacent paved grades. Drainage devices and curbing should be provided to prevent runoff from adjacent pavement or walks into planted areas.
- Gutter and downspout systems should be provided to capture discharge from roof areas. The accumulated roof water should be conveyed to off-site disposal areas by a pipe or concrete swale system.
- Landscape watering should be performed judiciously to preclude either soaking or desiccation of soils. The watering should be such that it just sustains plant growth without excessive

watering. Sprinkler systems should be checked periodically to detect leakage and they should be turned off during the rainy season.

9.0 DESIGN REVIEW AND CONSTRUCTION MONITORING

Geotechnical review of plans and specifications is of paramount importance in engineering practice. The poor performance of many structures has been attributed to inadequate geotechnical review of construction documents. Additionally, observation and testing of the subgrade will be important to the performance of the proposed improvements. The following sections present recommendations relative to the review of construction documents and the monitoring of construction activities.

9.1 PLANS AND SPECIFICATIONS

The design plans and specifications should be reviewed and approved by NV5 prior to bidding and construction, as the geotechnical recommendations may need to be reevaluated in the light of the actual design configuration. This review is necessary to evaluate whether the recommendations contained in this report and future reports have been properly incorporated into the project plans and specifications.

9.2 CONSTRUCTION MONITORING

Site preparation, removal of unsuitable soils, assessment of imported fill materials, fill placement, and other earthwork operations should be observed and tested. The substrata exposed during the construction may differ from that encountered in the test borings. Continuous observation by a representative of NV5 during construction allows for evaluation of the soil/rock conditions as they are encountered, and allows the opportunity to recommend appropriate revisions where necessary.

10.0 LIMITATIONS

The recommendations and opinions expressed in this report are based on NV5's review of background documents and on information obtained from field explorations. It should be noted that this study did not evaluate the possible presence of hazardous materials on any portion of the site.

Due to the limited nature of the field explorations, conditions not observed and described in this report may be present on the site. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation and laboratory testing can be performed upon request. It should be understood that conditions different from those anticipated in this report may be encountered during grading operations, e.g., the extent of removal of unsuitable soil, and that additional effort may be required to mitigate them.

Site conditions, including ground-water level, can change with time as a result of natural processes or the activities of man at the subject site or at nearby sites. Changes to the applicable laws, regulations, codes, and standards of practice may occur as a result of government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which NV5 has no control.

NV5's recommendations for this site are, to a high degree, dependent upon appropriate quality control of subgrade preparation, fill placement, and foundation construction. Accordingly, the recommendations are made contingent upon the opportunity for NV5 to observe grading operations and foundation excavations for the proposed construction. If parties other than NV5 are engaged to provide such services, such parties must be notified that they will be required to assume complete responsibility as the geotechnical engineer of record for the geotechnical phase of the project by concurring with the recommendations in this report and/or by providing alternative recommendations.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. NV5 should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

NV5 has endeavored to perform its evaluation using the degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical professionals with experience in this area in similar soil conditions. No other warranty, either expressed or implied, is made as to the conclusions and recommendations contained in this report.

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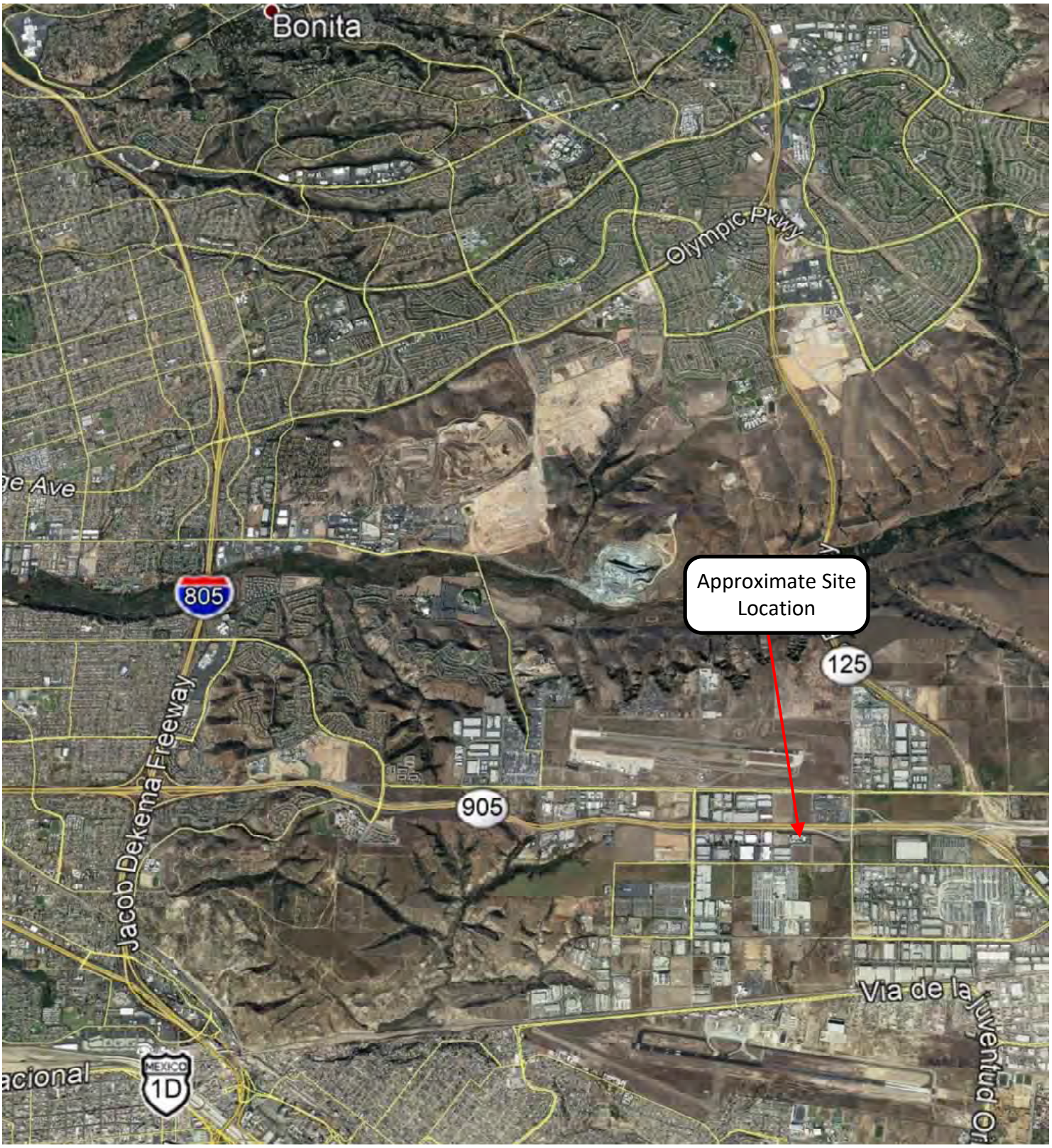
FIGURES



Reference: Google Earth 2018

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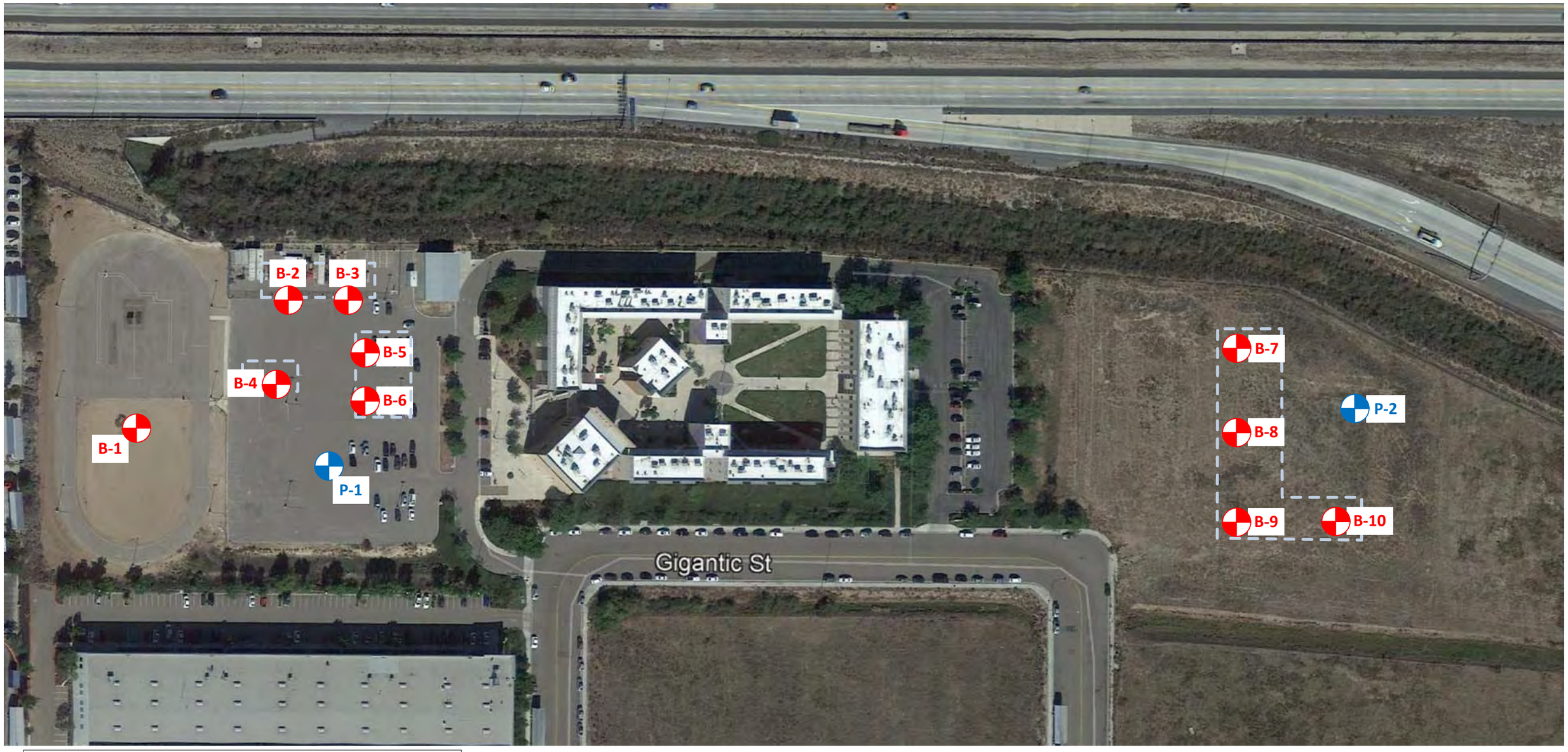
Drawn: **SB**
Date: **April 2018**

Site Location Map
Southwestern College – Otay Mesa Campus
San Diego, CA

Figure 1



Legend:

B-10	Approximate location of geotechnical boring
P-2	Approximate location of percolation test
	Approximate location of new site facility

0 100 200-ft

N

Source: Google Earth 2018

For Schematic Use Only-Not a Construction Drawing

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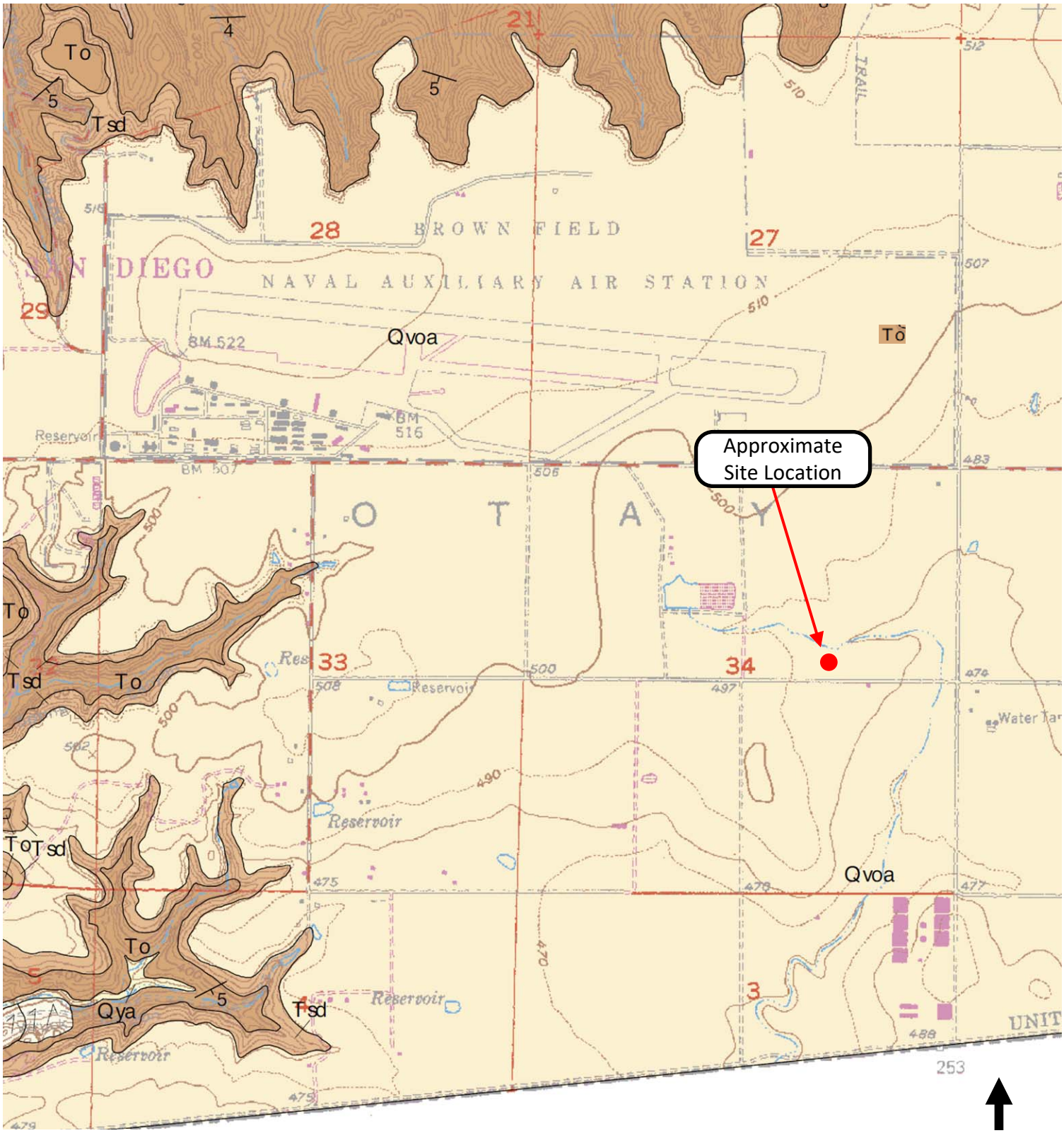
Geotechnical Boring Location Map
Southwestern College – Otay Mesa Campus
San Diego, CA

Figure 2



Qya	Holocence alluvial deposits; unconsolidated to poorly consolidated silt, clay, sand and gravel. Includes modern active sedmients along small drainage channels.
Qvoa	Alluvial deposits (middle to early Pleistocene); well consolidated, poorly sorted flood plain deposits consisting of gravel, sand, silt and clay.
Tsd	San Diego Formation (Pliocene); poorly indurated, fine- to medium-grained sandstone, typically yellowish light brown.
To	Otay Formation (Oligocene to Miocene); poorly indurated massive light-colored sandstone, siltstone and claystone, interbedded with bentonite lenses.

Reference: Kennedy, M.P. and Tan, S.S., 2002, Geologic Map of the Otay Mesa 7.5' Quadrangle, San Diego County, California: A Digital Database, Department of Conservation, California Geological Survey, scale 1:24,000.

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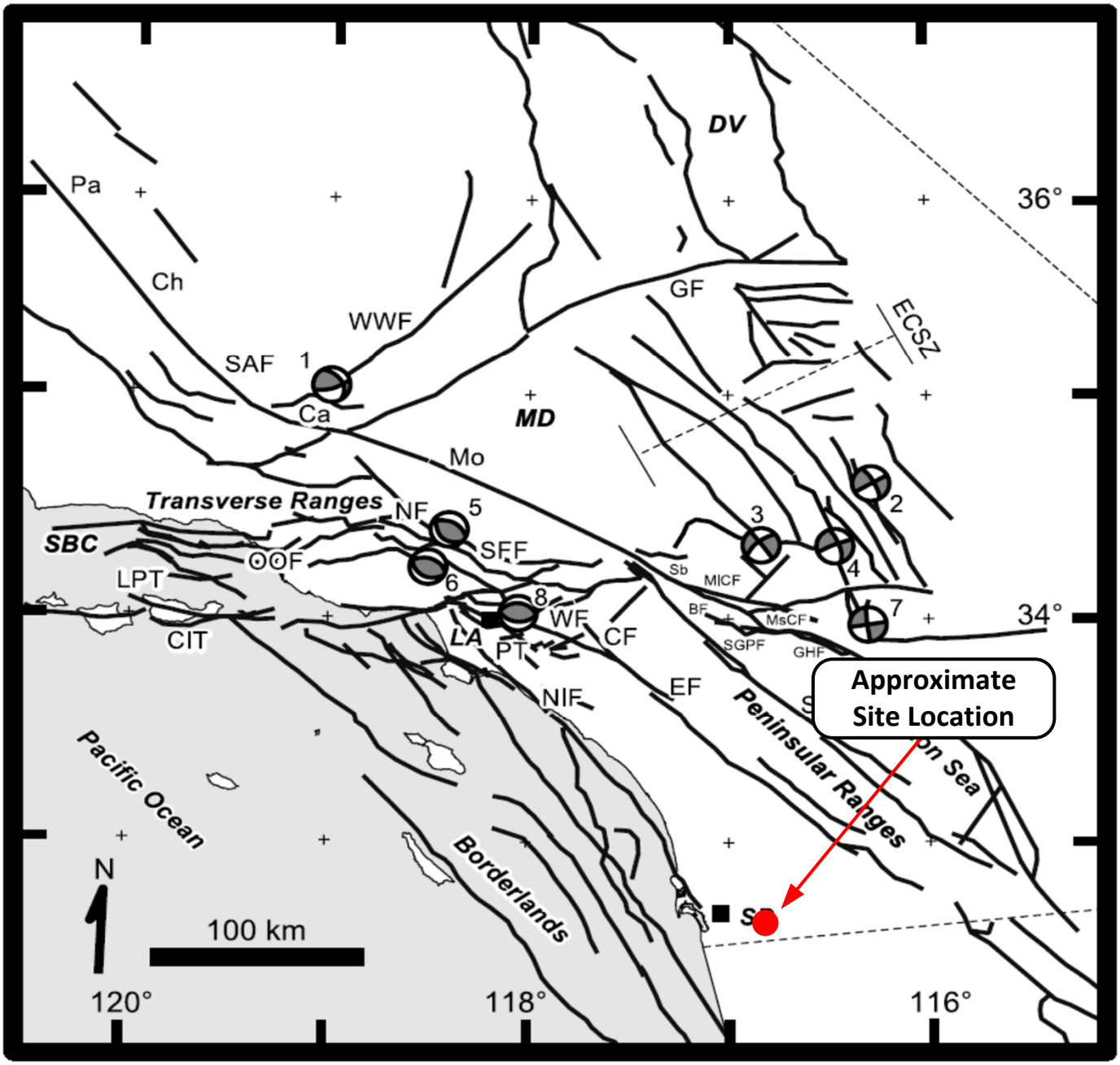
Project No: **226817-0000290.07**
Drawn: **SB**
Date: **April 2018**

Regional Geologic Map
Southwestern College – Otay Mesa Campus
San Diego, CA

Figure 3



Map of southern California showing the geographic regions, faults and focal mechanisms of the more significant earthquakes. **Regions:** Death Valley, DV; Mojave Desert MD; Los Angeles, LA; Santa Barbara Channel, SBC; and San Diego, SD. **Indicated Faults:** Banning fault, BF; Channel Island thrust, CIT; Chino fault, CF; Eastern California Shear Zone, ECSZ; Elsinore fault, EF; Garlock fault, GF; Garnet Hill fault, GHF; Lower Pitas Point thrust, LPT; Mill Creek fault, MICF; Mission Creek fault, MsCF; Northridge fault, NF; Newport Inglewood fault, NIF; offshore Oak Ridge fault, OOF; Puente Hills thrust, PT; San Andreas fault (sections: Parkfield, Pa; Cholame, Ch; Carrizo; Ca; Mojave, Mo; San Bernardino, Sb; and Coachella, Co); San Fernando fault, SFF; San Gorgonio Pass fault, SGPF; San Jacinto fault, SJF; Whittier fault, WF; and White Wolf fault, WWF. **Earthquake Focal Mechanisms:** 1952 Kern County, 1; 1999 Hector Mine, 2; 1992 Big Bear, 3; 1992 Landers, 4; 1971 San Fernando, 5; 1994 Northridge, 6; 1992 Joshua Tree, 7; and 1987 Whittier Narrows, 8.

Reference: Plesch, Anndreas et. al., 2007, Community Fault Model (CFM) for Southern California; in the *Bulletin of the Seismological Society of America*, Vol. 97, No. 6. pp. 1793-1802, dated December.

For Schematic Use Only-Not a Construction Drawing

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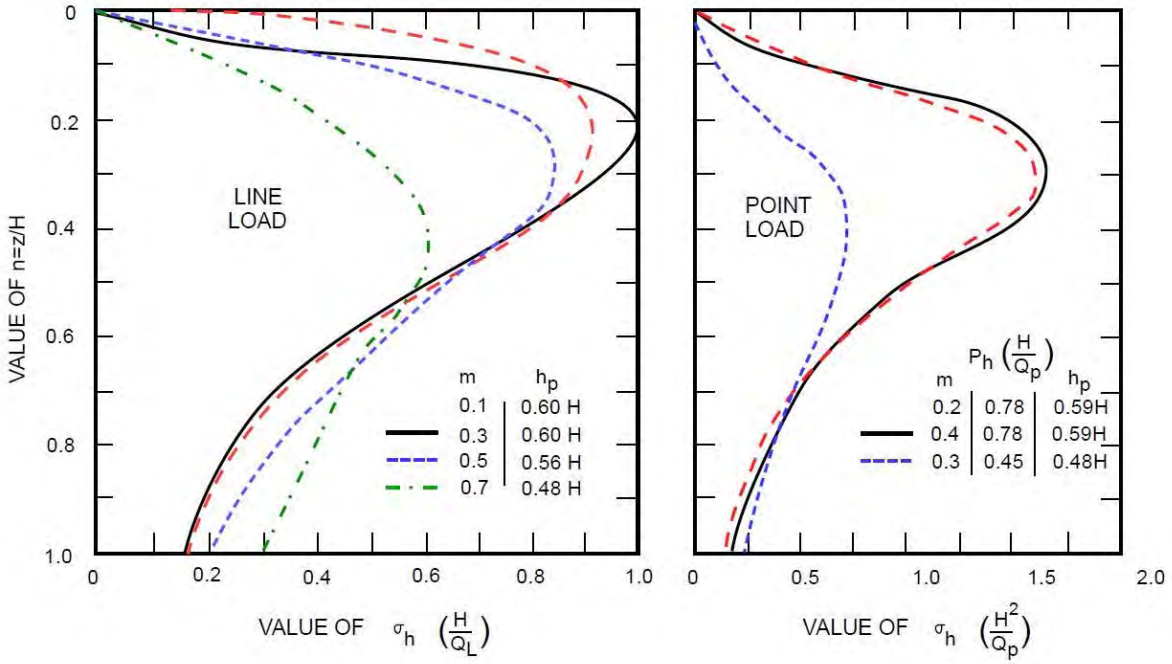
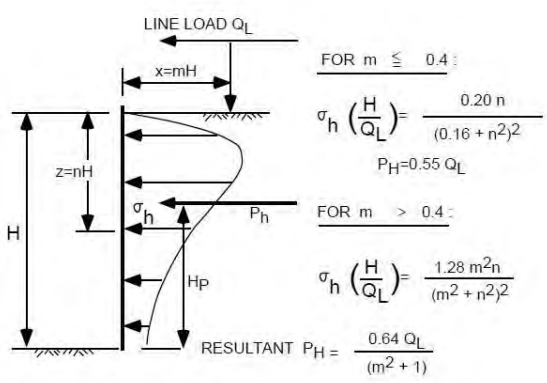
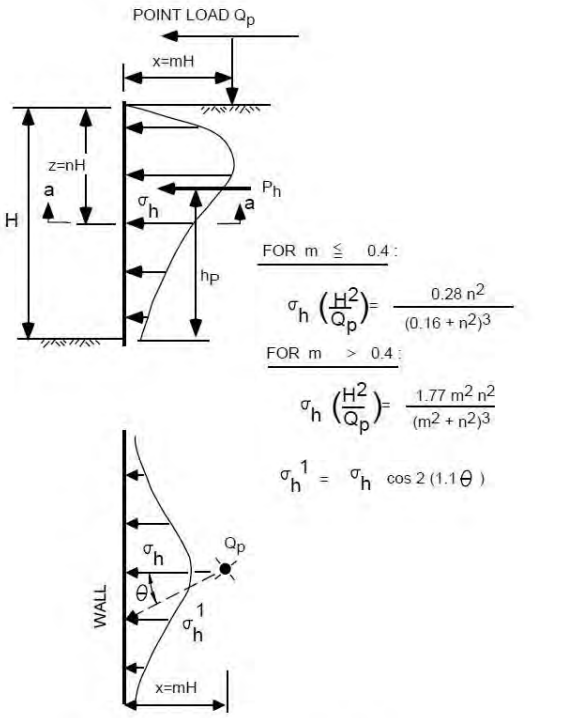
Drawn: **SB**
Date: **April 2018**

Regional Fault Map
Southwestern College – Otay Mesa Campus
San Diego, CA
Figure 4





PRESSURE FROM LINE LOAD Q_L
(BOUSSINESQ EQUATION MODIFIED BY EXPERIMENT)



SECTION a ~a
PRESSURE FROM POINT LOAD Q_p
(BOUSSINESQ EQUATION MODIFIED BY EXPERIMENT)

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Date: **April 2018**

Lateral Surcharge Loads

Southwestern College - Otay Mesa Campus
San Diego, CA

Figure 5

APPENDIX A

Exploratory Boring Logs

EXPLORATORY BORING LOGS

Bulk and relatively undisturbed drive samples were obtained in the field during our subsurface evaluation. The samples were tagged in the field and transported to our laboratory for observation and testing. The drive samples were obtained using the Standard Penetration Test (SPT) samplers as described below.

California Modified Split Spoon Sampler

The split barrel drive sampler is driven with a 140-pound hammer allowed to drop freely 30 inches in general accordance with ASTM D1587. The number of blows per foot recorded during sampling is presented in the logs of exploratory borings. The sampler has external and internal diameters of approximately 3.0 and 2.4 inches, respectively, and the inside of the sampler is lined with 1-inch-long brass rings. The relatively undisturbed soil sample within the rings is removed, sealed, and transported to the laboratory for observation and testing.

Standard Penetration Test (SPT) Sampler

The split barrel sampler is driven with a 140-pound hammer allowed to drop freely 30 inches in general accordance with ASTM D1586. The number of blows per foot recorded during sampling is presented in the logs of exploratory borings. The sampler has external and internal diameters of 2.0 and 1.5 inches, respectively. The soil sample obtained in the interior of the barrel is measured, removed, sealed and transported to the laboratory for observation and testing.

NV5 BEYOND ENGINEERING

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-1
Sheet 1 of 1

Date(s) Drilled	April 12, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	491 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	Outdoor training area (Track)	Lat., - Long.:	32.562900º, -116.970700º (WGS84)

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	MATERIAL DESCRIPTION	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
					This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.			
0					ALLUVIUM:			
1			BAG 1	CL	Sandy Lean CLAY (CL): reddish-brown to brown, moist, soft to firm, fine to coarse grained sand with gravel			AL, CP, RV
2								
3								
4								
5		5 8 10	SPT 1	SC	Clayey SAND (SC): light brown, moist, medium dense, fine to coarse grained sand with gravel	14.7		
			BAG 2	GC	Sandy Clayey GRAVEL (GC): dark brown, moist, very dense, fine to coarse grained sand with gravel and cobbles			
10		50 / 5"	CAL 1	GC	Very dense.	3.7		PP = 3.0 tsf
					Boring terminated at a depth of 12' below ground surface Refusal at a depth of 12' in cobbles Groundwater not encountered Backfilled with soil cuttings			
15								
20								
25								
30								

AL=Atterberg Limits; CP = Compaction Test;
PP=Pocket Penetrometer; RV=R-value

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

NV5 BEYOND ENGINEERING

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-2

Sheet 1 of 1

Date(s) Drilled	April 12, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	490 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	West parking lot	Lat., - Long.:	32.563341º, -116.970038º (WGS84)

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	MATERIAL DESCRIPTION	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0					4" of Asphaltic Concrete (AC) over 5" of Aggregate Base (AB)			
1				CL	ALLUVIUM:			
2					Sandy Lean CLAY (CL): reddish-brown to dark-brown, moist, soft to firm, fine to coarse grained sand with gravel			
3			BAG 1	CL		10.3		EI=77
4								
5		18	CAL 1	CL	Hard			CAL 1 - Poor recovery
		21				16.3		PP=1.0 tsf
		23						
		8	CAL 2	CL	Firm			CAL 2 - Driven after CAL 1
		10				14.0	115.1	PP=4.5 tsf
		16						
			BAG 2	CL				
10		12	SPT 1	GC	Sandy Clayey GRAVEL (GC): reddish-brown to dark-brown, moist, very dense, fine to coarse grained with gravel and cobbles	7.4		
		23						
		50						
15					Boring terminated at a depth of 14' below ground surface Refusal at a depth of 14' in cobbles Groundwater not encountered Backfilled with soil cuttings, asphalt surface patched			
20								
25								
30								

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

EI = Expansion Index; PP=Pocket Penetrometer

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

NV5 BEYOND ENGINEERING

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-3

Sheet 1 of 1

Date(s) Drilled	April 12, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	490 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	West parking lot	Lat., - Long.:	32.563343º, -116.969796º (WGS84)

MATERIAL DESCRIPTION

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	Material Description	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0					4" of Asphaltic Concrete (AC) over 5" of Aggregate Base (AB)			
1				CL	ALLUVIUM: Sandy Lean CLAY (CL): reddish-brown to dark-brown, moist, soft to firm, fine to coarse grained sand with gravel			
2								
3			BAG 1	CL				CO
4								
5		3	CAL 1	CL	Firm			
		9				11.6	105.2	PP=4.5 tsf
		18						
		8	SPT 1	CL	Hard	8.7		
		13						
		17		SW	Well-graded SAND (SW) with gravel: reddish-brown, moist, medium dense fine to coarse grained sand			
10		50 / 6"	CAL 2	CL	Sandy Lean CLAY (CL): dark-brown, moist, very hard, fine to coarse grained sand with gravel	9.7	135.6	PP=4.5 tsf
			BAG 3	GC	Sandy Clayey GRAVEL (GC): dark-brown, moist, very dense, fine to coarse grained with gravel and cobbles			Increasing gravel at 11'
					Boring terminated at a depth of 13' below ground surface Refusal at a depth of 13' in cobbles Groundwater not encountered Backfilled with soil cuttings, asphalt surface patched			
15								
20								
25								
30								

CO=Corrosivity; PP=Pocket Penetrometer

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

NV5 BEYOND ENGINEERING	Project: **Southwestern College - Otay Mesa Campus** Project Location: San Diego, CA Project Number: 226817-0000290.07	**Boring B-4** Sheet 1 of 1

Date(s) Drilled	April 12, 2018	Logged By	Sean Burford	Checked By	Sean Roy PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	489 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	West parking lot	Lat., - Long.:	32.563052º, -116.970079º (WGS84)

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	MATERIAL DESCRIPTION	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
					This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.			
0					4" of Asphaltic Concrete (AC) over 5" of Aggregate Base (AB)			
1				CL	ALLUVIUM: Sandy Lean CLAY (CL): reddish-brown to dark-brown, moist, soft to firm, fine to coarse grained sand with gravel			
2								
3			BAG 1	CL		10.6		EI=81 AL
4								
5		6 8 10	SPT 1	CL	Hard	15.5		
			BAG 2	CL				CO
10		26 50 / 2"	CAL 1		Very hard			CAL 1 - No recovery
			BAG 3	GC	Sandy Clayey GRAVEL (GC): dark-brown, moist, very dense, fine to coarse grained with gravel and cobbles			
15					Boring terminated at a depth of 14' below ground surface Refusal at a depth of 14' in cobbles Groundwater not encountered Backfilled with soil cuttings, asphalt surface patched			
20								
25								
30								

AL=Atterberg Limits; CO=Corrosivity; EI=Expansion Index

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-5

Sheet 1 of 1

Date(s) Drilled	April 12, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	489 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	West parking lot	Lat., - Long.:	32.563018º, -116.969732º (WGS84)

MATERIAL DESCRIPTION

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	Material Description	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0					4" of Asphaltic Concrete (AC) over 5" of Aggregate Base (AB)			
1			BAG 1	SC	ALLUVIUM: Clayey SAND (SC): reddish-brown, moist, loose to medium dense, fine to coarse grained sand with gravel			AL, RV, SA
2								
3								
4								
5		10 21 19	CAL 1	SC	Medium dense	12.5	108.5	PP=4.0 tsf, DS
				CL	Sandy Lean CLAY (CL): dark-brown, moist, hard, fine to coarse grained sand with gravel			
			BAG 2	CL				
10		50 / 1"	SPT 1	GC	Sandy Clayey GRAVEL (GC): dark brown, moist, very dense, fine to coarse grained sand with gravel and cobbles			SPT 1 - No recovery
					Boring terminated at a depth of 11' below ground surface Refusal at a depth of 11' in cobbles Groundwater not encountered Backfilled with soil cuttings, asphalt surface patched			
15								
20								
25								
30								

AL=Atterberg Limits; DS= Direct Shear; PP=Pocket Penetrometer; RV=R-value; SA = Sieve Analysis

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

NV5 BEYOND ENGINEERING	Project: **Southwestern College - Otay Mesa Campus** Project Location: San Diego, CA Project Number: 226817-0000290.07	**Boring B-6** Sheet 1 of 1

Date(s) Drilled	April 12, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	490 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	West parking lot	Lat., - Long.:	32.563158º, -116.969726º (WGS84)

MATERIAL DESCRIPTION

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	Material Description	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0					4" of Asphaltic Concrete (AC) over 5" of Aggregate Base (AB)			
1				SC	ALLUVIUM:			
2					Clayey SAND (SC): reddish-brown, moist, loose to medium dense, fine to coarse grained sand with gravel			
3			BAG 1	CL	Sandy Lean CLAY (CL): dark-brown, moist, hard, fine to coarse grained sand with gravel			
4								
5		5 6 8	SPT 1	CL	Firm	15.1		
			BAG 2	CL				
10		50 / 5"	CAL 1	CL	Very hard	14.5	113.9	PP=4.25 tsf
				GC	Sandy Clayey GRAVEL (GC): dark brown, moist, very dense, fine to coarse grained sand with gravel and cobbles			
15					Boring terminated at a depth of 13' below ground surface Refusal at a depth of 13' in cobbles Groundwater not encountered Backfilled with soil cuttings, asphalt surface patched			
20								
25								
30								

PP=Pocket Penetrometer

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

NV5 BEYOND ENGINEERING

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-7

Sheet 1 of 1

Date(s) Drilled	April 13, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	488 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	Field - East	Lat., - Long.:	32.563181º, -116.966183º (WGS84)

MATERIAL DESCRIPTION

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	Material Description	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0					ALLUVIUM:			
1	Bulk		BAG 1	CL	Sandy Lean CLAY (CL): brown, moist, soft to firm, fine to coarse grained sand with gravel			AL, CP, RV
2								
3								
4								
5	Cal. Mod.	5 9 13	CAL 1	CL	Firm			
	Bulk		BAG 2	CL		14.2	110.2	EI=130
10	SPT	6 9 20	SPT 1	CL	Hard	14.4		
	Bulk		BAG 3	GC	Sandy Clayey GRAVEL (GC): reddish-brown, moist, very dense, fine to coarse grained sand with gravel and cobbles			
15	Cal. Mod.	50 / 2"	CAL 2	GC	Very dense	6.1		PP=4.5 tsf
					Boring terminated at a depth of 16' below ground surface Refusal at a depth of 16' in cobbles Groundwater not encountered Backfilled with soil cuttings			
20								
25								
30								

AL=Atterberg Limits; CP=Compaction Test;
EI=Expansion Index; PP=Pocket Penetrometer; RV=R-value

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

NV5 BEYOND ENGINEERING

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-8

Sheet 1 of 1

Date(s) Drilled	April 13, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	487 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	Field - East	Lat., - Long.:	32.562888º, -116.966189º (WGS84)

MATERIAL DESCRIPTION

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	Material Description	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0				CL	ALLUVIUM: Sandy Lean CLAY (CL): brown, moist, soft to firm, fine to coarse grained sand with gravel			
2			BAG 1	CL		10.1		EI=76 CO
3				GC	Clayey GRAVEL (GC): light-brown, dry, dense, fine to coarse grained sand with gravel			Dry zone from 3-4'
4			BAG 2					
5		4 11 10	SPT 1	CL	Sandy Lean CLAY (CL): brown to reddish-brown, moist, hard, fine to coarse grained sand with gravel	12.4		
			BAG 3	CL				
10		10 18 23	CAL 1	CL	Hard	9.6	111.4	PP=4.5 tsf
				GC	Sandy Clayey GRAVEL (GC): reddish-brown, moist, very dense, fine to coarse grained sand with gravel and cobbles			
					Boring terminated at a depth of 13' below ground surface Refusal at a depth of 13' in cobbles Groundwater not encountered Backfilled with soil cuttings			
15								
20								
25								
30								

CO=Corrosivity; EI=Expansion Index; PP=Pocket Penetrometer

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-9

Sheet 1 of 1

Date(s) Drilled	April 13, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	487 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	Field - East	Lat., Long.:	32.562592º, -116.966173º (WGS84)

MATERIAL DESCRIPTION

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	Material Description	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0					ALLUVIUM:			
1			BAG 1	CL	Sandy Lean CLAY (CL): brown, moist, soft to firm, fine to coarse grained sand with gravel			AL, RV
2								
3								
4								
5		8 18 23	CAL 1	CL	Hard	12.6	115.1	PP=4.5 tsf
			BAG 2	CL				
10		17 40 55	SPT 1	SC	Clayey SAND (SC): reddish-brown, moist, very dense, fine to coarse grained sand with gravel	13.2		
				GC	Sandy Clayey GRAVEL (GC): reddish-brown, moist, very dense, fine to coarse grained sand with gravel and cobbles			
15					Boring terminated at a depth of 13' below ground surface Refusal at a depth of 13' in cobbles Groundwater not encountered Backfilled with soil cuttings			
20								
25								
30								

AL=Atterberg Limits; PP=Pocket Penetrometer; RV=R-value

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

NV5 BEYOND ENGINEERING

Project: **Southwestern College - Otay Mesa Campus**
Project Location: San Diego, CA
Project Number: 226817-0000290.07

Boring B-10

Sheet 1 of 1

Date(s) Drilled	April 13, 2018	Logged By	Sean Burford	Checked By	Sean Roy, PG 8765
Drilling Method	Hollow Stem Auger	Boring Diameter	8 inches	Approximate Surface Elevation	487 feet above mean sea level
Drilling Contractor	Baja Exploration	Sampling Method	Cal-Mod./SPT	Hammer Data	140 pounds, automatic, ER=67.9%
Drill Rig Type:	CME 95	Location:	Field - East	Lat., - Long.:	32.562585º, -116.965783º (WGS84)

MATERIAL DESCRIPTION

This log is an integral part of the accompanying report and must be used together with the report for relevant interpretation. The descriptions contained hereon apply only at this boring location and at the time of excavation. Subsurface data are a simplified summary of actual conditions encountered and may vary at other locations and with the passage of time.

Depth (ft)	Sample Type	Blows / 6 in. (N)	Sample ID	USCS Class.	Material Description	Moisture Content %	Dry Weight (pcf)	Other Tests and Remarks
0					ALLUVIUM:			
1				CL	Sandy Lean CLAY (CL): brown, moist, soft to firm, fine to coarse grained sand with gravel			
2			BAG 1	CL				
3								
4								
5		8	CAL 1	CL	Hard			
		14				13.2	104.1	PP=4.5 tsf
		23						
			BAG 2					CO
			BAG 3	CL	Some cobbles			
10		50 / 1"	SPT 1	GC	Sandy Clayey GRAVEL (GC): reddish-brown, moist, very dense, fine to coarse grained sand with gravel and cobbles	4.3		
					Boring terminated at a depth of 12' below ground surface Refusal at a depth of 12' in cobbles Groundwater not encountered Backfilled with soil cuttings			
15								
20								
25								
30								

CO=Corrosivity; PP=Pocket Penetrometer

Sample Type: Cal. Mod. | SPT | Bulk | Other | No Recovery

APPENDIX B

Laboratory Test Results

LABORATORY TEST RESULTS

In-situ Moisture and Density Tests

The in-situ moisture contents and dry densities of selected samples obtained from the test borings were evaluated in general accordance with the latest version of D2216 and D2937 laboratory test methods. The method involves obtaining the moist weight of the sample and then drying the sample to obtain is dry weight. The moisture content is calculated by taking the difference between the wet and dry weights, dividing it by the dry weight of the sample and expressing the result as a percentage. The results of the in-situ moisture content and density tests are presented in the following table and on the logs of exploratory borings in Appendix A.

RESULTS OF MOISTURE CONTENT AND DENSITY TESTS
(ASTM D2216)

Sample Location	Moisture Content (percent)	Dry Density (pounds per cubic foot)
Boring 1 @ 5 - 6.5 feet	14.7	density not determined
Boring 1 @ 10 - 10.5 feet	3.7	density not determined
Boring 2 @ 5.5 - 6 feet	16.3	density not determined
Boring 2 @ 6.5 - 7 feet	14.0	115.1
Boring 2 @ 10 – 11.5 feet	7.4	density not determined
Boring 3 @ 5.5 – 6 feet	11.6	105.2
Boring 3 @ 8 - 9.5 feet	8.7	density not determined
Boring 3 @ 10 - 10.5 feet	9.7	135.6
Boring 4 @ 5 – 6.5 feet	15.5	density not determined
Boring 5 @ 5.5 - 6 feet	12.5	108.5
Boring 6 @ 5 – 6 feet	15.1	density not determined
Boring 6 @ 10.5 - 11 feet	14.5	113.9
Boring 7 @ 5.5 – 6 feet	11.9	110.2
Boring 7 @ 10 – 11.5 feet	14.4	density not determined
Boring 7 @ 15 – 15.5 feet	6.1	density not determined
Boring 8 @ 5 - 6.5 feet	12.4	density not determined
Boring 8 @ 10 - 10.5 feet	9.6	111.4
Boring 9 @ 5.5 - 6 feet	12.6	115.1
Boring 9 @ 10 - 11.5 feet	6.4	density not determined

Sample Location	Moisture Content (percent)	Dry Density (pounds per cubic foot)
Boring 10 @ 5.5 - 6 feet	13.2	104.1
Boring 10 @ 10 - 11 feet	4.3	density not determined

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System. Soil classifications are indicated on the logs of the exploratory borings in Appendix A.

Particle-size Distribution Tests

An evaluation of the grain-size distribution of selected soil samples was performed in general accordance with the latest version of ASTM D-422 (including –200 wash). These test results were utilized in evaluating the soil classifications in accordance with the Unified Soil Classification System. Particle size distribution test results are presented on the laboratory test sheets attached in this appendix.

Direct shear

A direct shear test was performed on a representative undisturbed sample in accordance with ASTM D3080 to evaluate the shear strength characteristics of the on-site materials. The test method consists of placing the soil sample in the direct shear device, applying a series of normal stresses, and then shearing the sample at the constant rate of shearing deformation. The shearing force and horizontal displacements are measured and recorded as the soil specimen is sheared. The shearing is continued well beyond the point of maximum stress until the stress reaches a constant or residual value. The results of the tests are presented in the following table and attached in this appendix.

RESULTS OF DIRECT SHEAR TEST
(ASTM D3080)

Location	Peak Friction (degrees)	Ultimate Friction (degrees)	Peak Cohesion (psf)	Ultimate Cohesion (psf)	Notes
Boring 5 @ 5.5 - 6 feet	25	26	410	302	undisturbed

Resistivity "R" values test

A sand equivalent test was performed on a sample of the on-site soils. The test was performed in General accordance with California Test Method 301/ ASTM D2844. The result of the test is presented below and attached in this appendix.

Location	B1 @ 1 – 3 ft	B5 @ 1 – 3 ft	B7 @ 1 – 3 ft	B9 @ 1 – 3 ft
"R" Value	11	19	6	8

Soil Corrosivity Tests

Soluble sulfate, chloride, resistively and pH tests were performed in accordance with California Test Methods 643, 417 and 422 to assess the degree of corrosivity of the subgrade soils with regard to concrete and normal grade steel.

RESULTS OF CORROSIVITY TESTS
(CTM 417, CTM 422)

Sample Location	B-3 @3 - 5 ft	B-4 @8 - 10 ft	B-8 @2 - 3.5 ft	B-10 @7 - 9 ft
pH	8.1	8.3	8.1	7.5
Electrical Resistivity (Ohm-cm)	320	240	390	170
Soluble Sulfates (ppm)	690	390	290	750
Soluble Chlorides (ppm)	470	1120	540	2670

Atterberg Limits

Several Atterberg limits tests were performed in accordance with ASTM D4318. This test was useful in classification of the soil. Test results are attached in this appendix.

Expansion Index Tests

An expansion index test was performed on a sample of the on-site soils. The test was performed in general accordance with ASTM D4829. The result of the test is presented below and attached in this appendix.

Location	B2 @ 3' - 5'	B4 @ 3'-5'	B7 @ 8'-10'	B8 @ 2'-3.5'
Material Type	Reddish Brown Sandy Lean CLAY (CL)	Brown Sandy Lean CLAY (CL)	Brown Sandy CLAY (CL)	Brown Sandy Lean CLAY (CL)
Source	Native	Native	Native	Native
Initial Moisture Content, %	10.3	10.6	14.2	10.1
Final Moisture Content, %	27.9	29.5	36.7	22.8
Dry Density, pcf	103.9	102.2	95.8	115.2
Saturation, %	45	44	51	46
Expansion Index	77	81	130	76
Potential Expansion	MEDIUM	MEDIUM	HIGH	MEDIUM

Maximum Dry Density Test

A maximum dry density test was performed on a sample of the on-site soils. The test was performed in general accordance with ASTM D1557. The result of the test is attached in this appendix.

Natural Moisture & Density Report

(ASTM D2216 & ASTM D2937)

Date:	May 08, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688	Lab Number:	115847-115877
	Chula Vista, CA 91910		
Project:	Otay Mesa - Geotechnical Investigation		
Project Add:	Chula Vista, CA		
Sampled By:	Sean Burford		
Date Sampled	4/12/2018		
Date Rcvd:	4/12/2018		

Lab Number	115847	115848	115850	115851	115852
Exploration No.	B1	B1	B2	B2	B2
Depth, ft.	5-6.5	10-10.5	5.5-6	6.5-7	10-11.5
Moisture Content, %	14.7	3.7	16.3	14.0	7.4
Penetrometer Tons/Ft^2	-	3.0	4.0	4.5	-
Dry Density, pcf	-	-	-	115.1	-

Lab Number	115854	115855	115856	115858	115861
Exploration No.	B3	B3	B3	B4	B5
Depth, ft.	5.5-6	8.-9.5	10-10.5	5-6.5	5.5-6
Moisture Content, %	11.6	8.7	9.7	15.5	12.5
Penetrometer Tons/Ft^2	4.5	-	4.5	-	4.0
Dry Density, pcf	105.2	-	135.6	-	108.5

Lab Number	115862	115863	115865	115867	115868
Exploration No.	B6	B6	B7	B7	B7
Depth, ft.	5-6	10.5-11	5.5-6	10-11.5	15-15.5
Moisture Content, %	15.1	14.5	11.9	14.4	6.1
Penetrometer Tons/Ft^2	-	4.25	4.5	-	4.5
Dry Density, pcf	-	113.9	110.2	-	-

Lab Number	115870	115871	115873	115874	115875
Exploration No.	B8	B8	B9	B9	B10
Depth, ft.	5-6.5	10-10.5	5.5-6	10-11.5	5.5-6
Moisture Content, %	12.4	9.6	12.6	6.4	13.2
Penetrometer Tons/Ft^2	-	4.5	4.5	-	4.5
Dry Density, pcf	-	111.4	115.1		104.1

Lab Number	115877				
Exploration No.	B10				
Depth, ft.	10-11				
Moisture Content, %	4.3				
Penetrometer Tons/Ft^2	-				
Dry Density, pcf	-				

Respectfully Submitted,
NV5 West, Inc.

Reviewed by: 

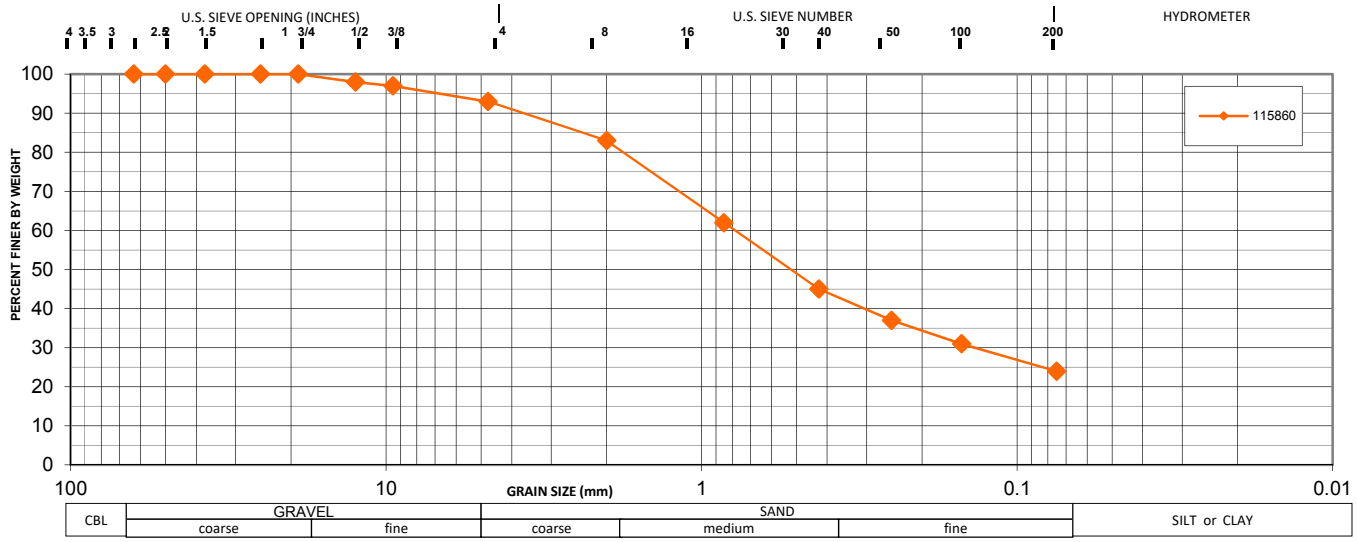
Sammy Daghighi, PE
Senior Engineering Manager

REPORT OF SIEVE ANALYSIS TEST

ASTM D422 - Soil

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115860
Project :	Otay Mesa - Geotechnical Investigation		
Project Address:	Chula Vista, CA		

	115860
Material	Silty Clayey SAND (SM) w/Gravel
Material Source	Native
Color	Yellow Brown
Sample Location	B5 @ 1'-3'
Date Sampled	4/12/2018
Date Submitted	4/12/2018
Sampled By	Sean Burford
Date Tested	5/1/2018
Tested By	Edwin Ocampo



Sample ID:	115860					
Sieve Size	% Passing					
63mm (2 1/2")	100					
50mm (2")	100					
37 5mm (1 1/2")	100					
25mm (1")	100					
19mm (3/4")	100					
12 5mm (1/2")	98					
9.5mm (3/8")	97					
4.75mm (#4)	93					
2mm (#10)	83					
850µm (#20)	62					
425µm (#40)	45					
250µm (#60)	37					
150 µm (#100)	31					
75 um (#200) washµ	24					
Fineness Modulus	1.9					
Shape (sand & gravel)	N.R.					
Hardness (sand & gravel)	N.R.					
Specific Gravity	2.65					
Coef. of Curvature (C_C)	10.7					
Coef. of Uniformity (C_U)	690.8					
% Gravel	7					
% Sand	69					
% Fines	24.0					
USCS Class:	SM					

Notes: *Hardness: H&D = Hard & Durable; W&F = Weathered & Friable*
N.R.: Not Recorded; N/A: Not Available.

Respectfully Submitted,
NV5 West, Inc.

Sammy Daghighi, PE
Senior Engineering Manager

DIRECT SHEAR TEST (ASTM D3080)

Project No.	**226817-0000290.07**	Date:	**5/8/2018**
Client:	**Southwestern Community College District**	Report No.:	**6026**
Proj. Name:	**Otay Mesa - Geotechnical Investigation**	Lab No.:	**115861**
Location:	**Chula Vista, CA**	Date Rcvd:	**4/12/2018**
Sample date:	**4/12/2018** Sample Location: **5.5'-6'** Boring No. **B5**	Test Date:	**4/20/2018**

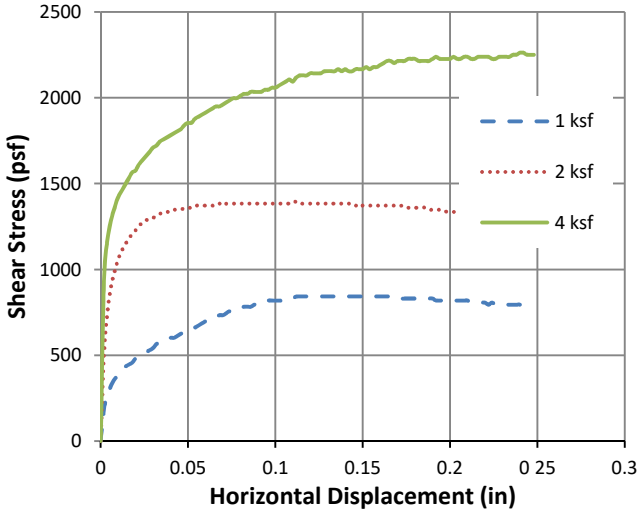
TEST DATA:

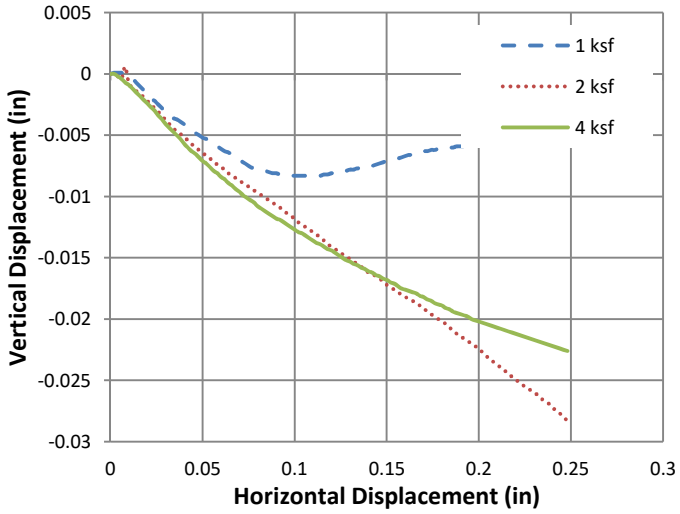
	Sample ID:	1 ksf	2 ksf	4 ksf
Initial	Water Content (%)	12.5	12.5	12.5
	Dry Density	105.4	108.9	111.7
	Saturation (%)	60.3	66.3	71.9
Final	Water Content (%)	20.9	23.4	20.4
	Dry Density	107.1	105.7	109.4
	Saturation (%)	105.2	113.9	110.1
Normal Stress (psf)		1000	2000	4000
Ultimate Shear Stress (psf)		783	1288	2251
Peak Shear Stress (psf)		843	1397	2263

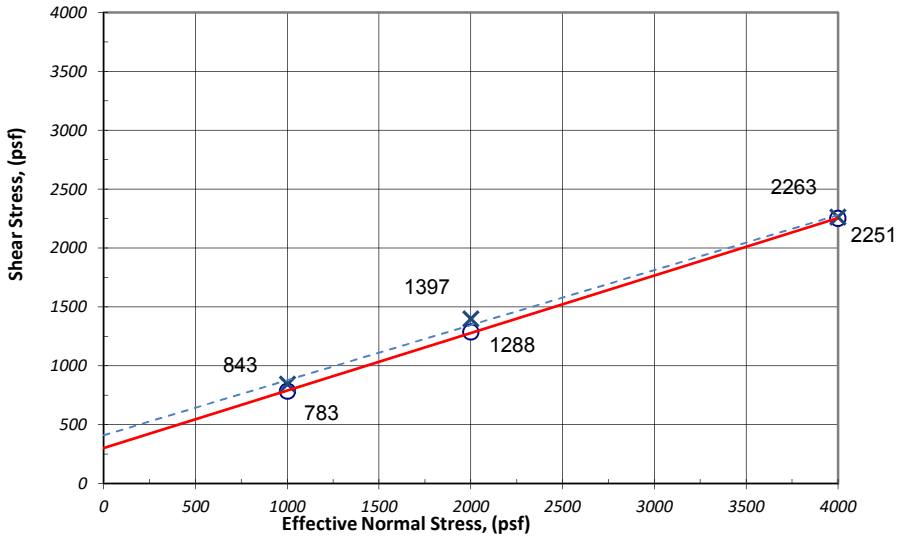
Sample Type: Undisturbed Sample

Description: Sandy CLAY (CL) w/ Gravel

Color: Brown







Peak Cohesion, C'(psf): **410**	Ultimate Cohesion, C'(psf): **302**
Peak Friction,Φ' (deg): **25**	Ultimate Friction,Φ' (deg): **26**

NV5
15092 Avenue of Science, Ste 200
San Diego CA 92128
p. 858 385 0500 f. 858 715 5810

Respectfully Submitted,
NV5 West, Inc.

Sammy Daghighi, PE
Senior Engineering Manager

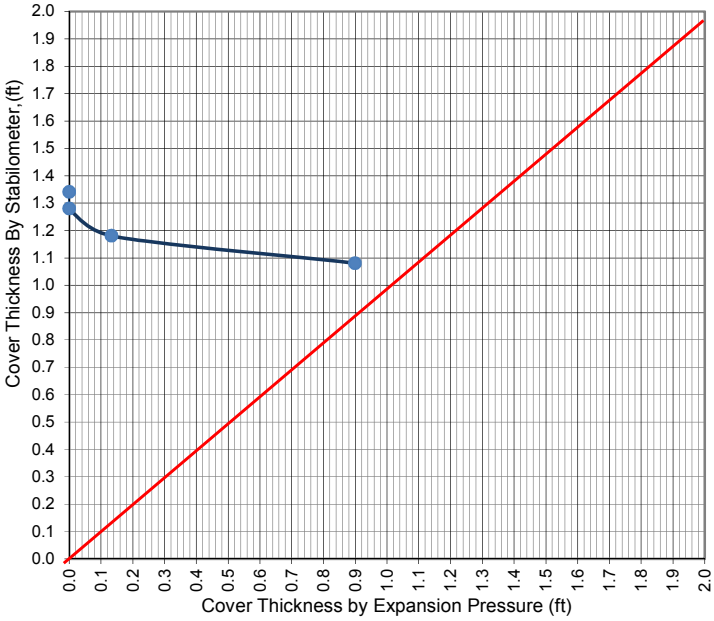
RESISTANCE "R" VALUE TEST

(CTM301 Caltrans / ASTM D2844)

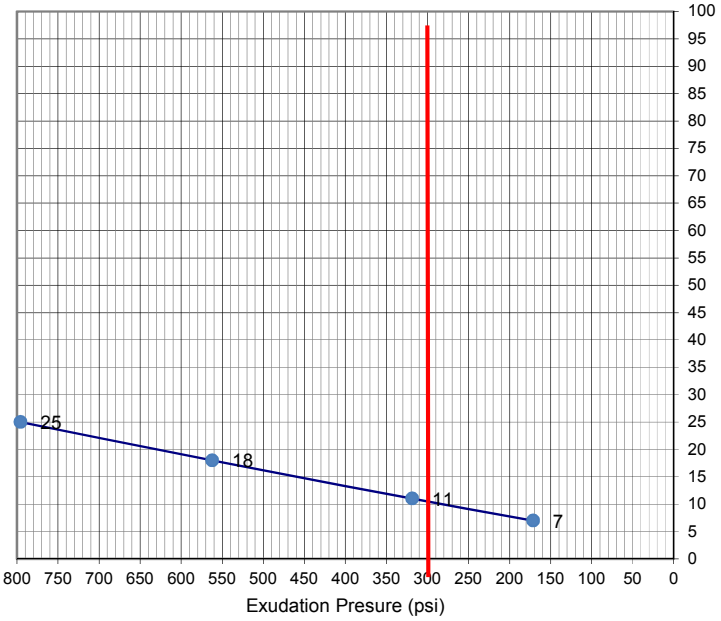
Date:	5/8/2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115846
Project :	Otay Mesa - Geotechnical Investigation		
Project Address :	Chula Vista, CA		

Material:	Tan Silty CLAY (CL)
Material Source:	Native
Location:	B1 @ 1'-3'
Sampled By:	Sean Burford
Date Sampled:	4/12/2018
Date Received:	4/12/2018

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



TEST SPECIMEN	A	B	C	D
COMP. FOOT PRESSURE, psi	200	130	90	60
INITIAL MOISTURE %	7.3	7.3	7.3	7.3
MOISTURE @ COMPACTION %	13.6	15.4	17.2	19.0
DRY DENSITY, pcf	119.5	115.3	111.2	108.1
EXUDATION PRESSURE, psi	796	562	318	171
STABILOMETER VALUE 'R'	25	18	11	7

R-VALUE BY EXUDATION	11
R-VALUE BY EXPANSION	0
R-VALUE AT EQUILIBRIUM	**11**

Respectfully Submitted,

NV5 West, Inc.

Sammy Daghighi,PE
Senior Engineering Manager

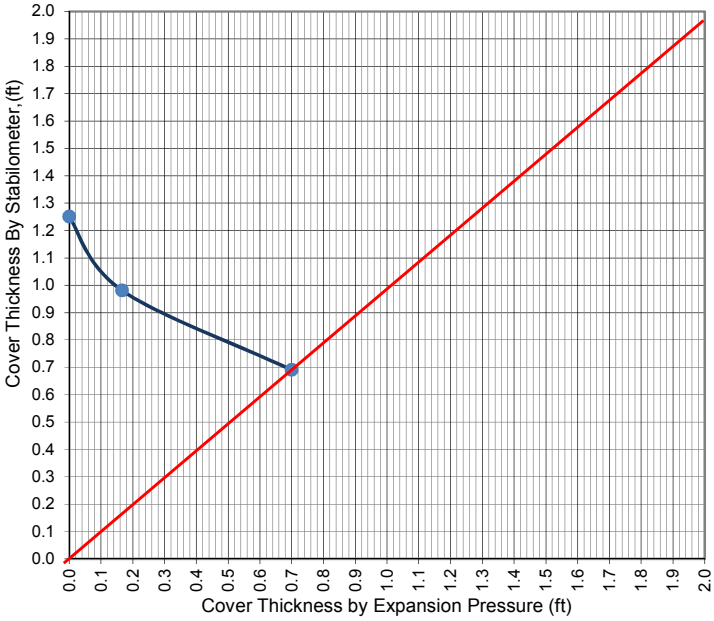
RESISTANCE "R" VALUE TEST

(CTM301 Caltrans / ASTM D2844)

Date:	5/8/2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115860
Project :	Otay Mesa - Geotechnical Investigation		
Project Address :	Chula Vista, CA		

Material:	Yellow Brown Silty Clayey SAND (SM) w/Gravel
Material Source:	Native
Location:	B5 @ 1'-3'
Sampled By:	Sean Burford
Date Sampled:	4/12/2018
Date Received:	4/12/2018

EXPANSION PRESSURE CHART



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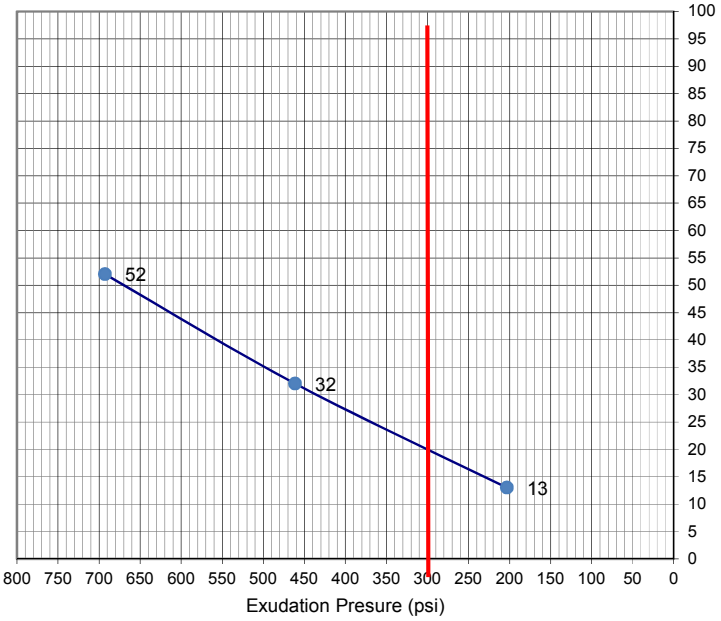


TEST SPECIMEN	A	B	C	D
COMP. FOOT PRESSURE, psi	350	230	100	
INITIAL MOISTURE %	4.1	4.1	4.1	
MOISTURE @ COMPACTION %	9.3	10.1	11.9	
DRY DENSITY, pcf	128.4	128.1	124.3	
EXUDATION PRESSURE, psi	693	461	203	
STABILOMETER VALUE 'R'	52	32	13	

R-VALUE BY EXUDATION	19
R-VALUE BY EXPANSION	52
R-VALUE AT EQUILIBRIUM	**19**

Respectfully Submitted,

NV5 West, Inc.

Sammy Daghighi,PE
Senior Engineering Manager

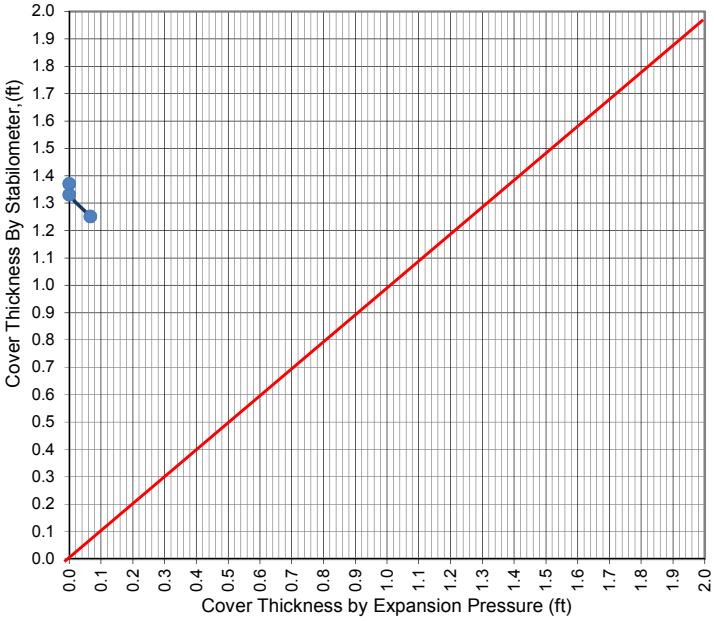
RESISTANCE "R" VALUE TEST

(CTM301 Caltrans / ASTM D2844)

Date:	5/10/2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115864
Project :	Otay Mesa - Geotechnical Investigation		
Project Address :	Chula Vista, CA		

Material:	Brown Silty CLAY (CL)
Material Source:	Native
Location:	B7 @ 1'-3'
Sampled By:	Sean Burford
Date Sampled:	4/12/2018
Date Received:	4/12/2018

EXPANSION PRESSURE CHART



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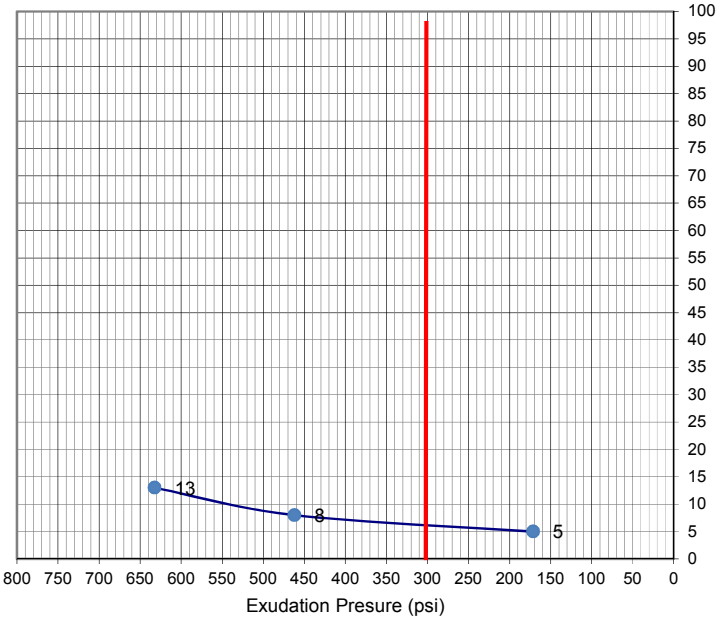


TEST SPECIMEN	A	B	C	D
COMP. FOOT PRESSURE, psi	80	65	40	
INITIAL MOISTURE %	10.0	10.0	10.0	
MOISTURE @ COMPACTION %	22.8	24.7	27.4	
DRY DENSITY, pcf	102.7	98.8	94.9	
EXUDATION PRESSURE, psi	632	462	171	
STABILOMETER VALUE 'R'	13	8	5	

R-VALUE BY EXUDATION	6
R-VALUE BY EXPANSION	0
R-VALUE AT EQUILIBRIUM	**6**

Respectfully Submitted,

NV5 West, Inc.

Sammy Daghighi,PE
Senior Engineering Manager

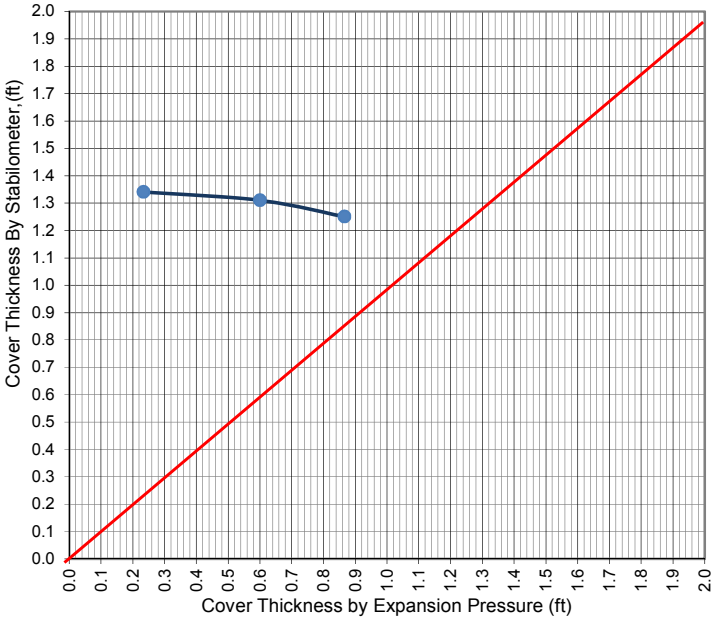
RESISTANCE "R" VALUE TEST

(CTM301 Caltrans / ASTM D2844)

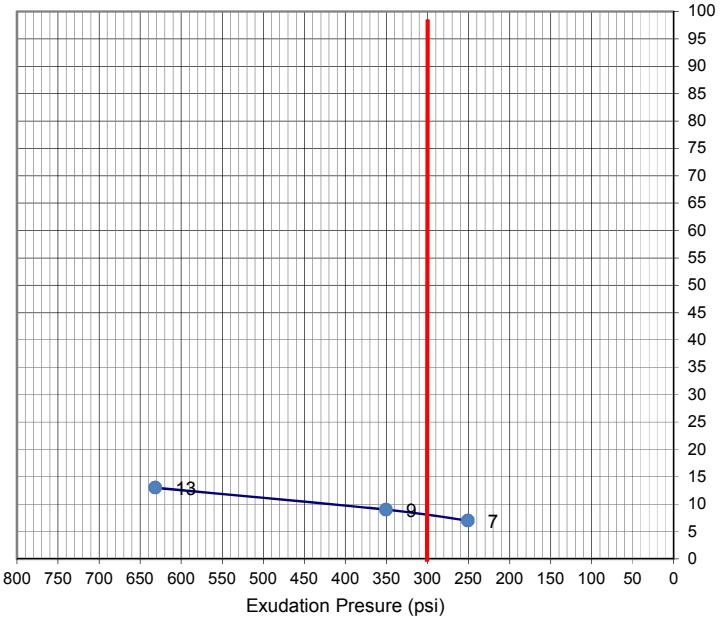
Date:	5/8/2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115872
Project :	Otay Mesa - Geotechnical Investigation		
Project Address :	Chula Vista, CA		

Material:	Tan Silty CLAY (CL)
Material Source:	Native
Location:	B9 @ 1'-3'
Sampled By:	Sean Burford
Date Sampled:	4/12/2018
Date Received:	4/12/2018

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



TEST SPECIMEN	A	B	C	D
COMP. FOOT PRESSURE, psi	100	70	50	
INITIAL MOISTURE %	5.0	5.0	5.0	
MOISTURE @ COMPACTION %	19.9	22.5	24.2	
DRY DENSITY, pcf	106.7	102.3	98.9	
EXUDATION PRESSURE, psi	631	350	251	
STABILOMETER VALUE 'R'	13	9	7	

R-VALUE BY EXUDATION	8
R-VALUE BY EXPANSION	0
R-VALUE AT EQUILIBRIUM	**8**

Respectfully Submitted,

NV5 West, Inc.

Sammy Daghighi,PE
Senior Engineering Manager

L A B O R A T O R Y R E P O R T

Telephone (619) 425-1993 Fax 425-7917 Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: April 30, 2018
Purchase Order Number: 18-0452
Sales Order Number: 39932
Account Number: NV5-SD
To:
--
NV5 West Inc
15092 Avenue of Science #200
San Diego, CA 92128
Attention: Michelle Albrecht

Laboratory Number: SO6843-1 Customers Phone: 858-715-5800
Fax: 858-715-5810
Sample Designation:
--
One soil sample received on 04/25/18 at 3:00pm,
taken from Job# 226817-0000290.07 Otay Mesa
marked as Lab#115853 Report 6026 -B3@3'-5'.

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 8.1

Water Added (ml)	Resistivity (ohm-cm)
10	2000
5	900
5	430
5	330
5	320
5	330
5	360

19 years to perforation for a 16 gauge metal culvert.
25 years to perforation for a 14 gauge metal culvert.
34 years to perforation for a 12 gauge metal culvert.
44 years to perforation for a 10 gauge metal culvert.
54 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417 0.069% (690ppm)

Water Soluble Chloride Calif. Test 422 0.047% (470ppm)

Laura Torres
LT/ram

L A B O R A T O R Y R E P O R T

Telephone (619) 425-1993 Fax 425-7917 Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: April 30, 2018
Purchase Order Number: 18-0452
Sales Order Number: 39932
Account Number: NV5.SD
To:

NV5 West Inc
15092 Avenue of Science #200
San Diego, CA 92128
Attention: Michelle Albrecht

Laboratory Number: SO6843-2 Customers Phone: 858-715-5800
Fax: 858-715-5810
Sample Designation:

One soil sample received on 04/25/18 at 3:00pm,
taken from Job# 226817-0000290.07 Otay Mesa
marked as Lab#115859 Report 6026 - B4@8'-10'.

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 8.3

Water Added (ml)	Resistivity (ohm-cm)
10	1700
5	750
5	270
5	250
5	240
5	270
5	290

17 years to perforation for a 16 gauge metal culvert.
22 years to perforation for a 14 gauge metal culvert.
31 years to perforation for a 12 gauge metal culvert.
39 years to perforation for a 10 gauge metal culvert.
48 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417 0.039% (390ppm)

Water Soluble Chloride Calif. Test 422 0.112% (1120ppm)

Laura Torres
LT/ram

L A B O R A T O R Y R E P O R T

Telephone (619) 425-1993 Fax 425-7917 Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: April 30, 2018
Purchase Order Number: 18-0452
Sales Order Number: 39932
Account Number: NV5.SD
To:
--
NV5 West Inc
15092 Avenue of Science #200
San Diego, CA 92128
Attention: Michelle Albrecht

Laboratory Number: SO6843-3 Customers Phone: 858-715-5800
Fax: 858-715-5810
Sample Designation:
--
One soil sample received on 04/25/18 at 3:00pm,
taken from Job# 226817-0000290.07 Otay Mesa
marked as Lab#115869 Report 6026 -B8@2'-3.5'.

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 8.1

Water Added (ml)	Resistivity (ohm-cm)
10	2100
5	880
5	490
5	450
5	390
5	400
5	430

21 years to perforation for a 16 gauge metal culvert.
27 years to perforation for a 14 gauge metal culvert.
37 years to perforation for a 12 gauge metal culvert.
48 years to perforation for a 10 gauge metal culvert.
58 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417 0.029% (290ppm)

Water Soluble Chloride Calif. Test 422 0.002% (540ppm)

Laura Torres
LT/ram

L A B O R A T O R Y R E P O R T

Telephone (619) 425-1993 Fax 425-7917 Established 1928

C L A R K S O N L A B O R A T O R Y A N D S U P P L Y I N C.
350 Trousdale Dr. Chula Vista, Ca. 91910 www.clarksonlab.com
A N A L Y T I C A L A N D C O N S U L T I N G C H E M I S T S

Date: April 30, 2018
Purchase Order Number: 18-0452
Sales Order Number: 39932
Account Number: NV5.SD
To:
--
NV5 West Inc
15092 Avenue of Science #200
San Diego, CA 92128
Attention: Michelle Albrecht

Laboratory Number: SO6843-4R Customers Phone: 858-715-5800
Fax: 858-715-5810
Sample Designation:
--
One soil sample received on 04/25/18 at 3:00pm,
taken from Job# 226817-0000290.07 Otay Mesa
marked as Lab#115876 Report 6026 B10@ 7 - 9 ft.

Analysis By California Test 643, 1999, Department of Transportation Division of Construction, Method for Estimating the Service Life of Steel Culverts.

pH 7.5

Water Added (ml)	Resistivity (ohm-cm)
10	1400
5	470
5	250
5	190
5	170
5	180
5	210

15 years to perforation for a 16 gauge metal culvert.
19 years to perforation for a 14 gauge metal culvert.
27 years to perforation for a 12 gauge metal culvert.
34 years to perforation for a 10 gauge metal culvert.
41 years to perforation for a 8 gauge metal culvert.

Water Soluble Sulfate Calif. Test 417 0.075% (750ppm)

Water Soluble Chloride Calif. Test 422 0.267% (2670ppm)

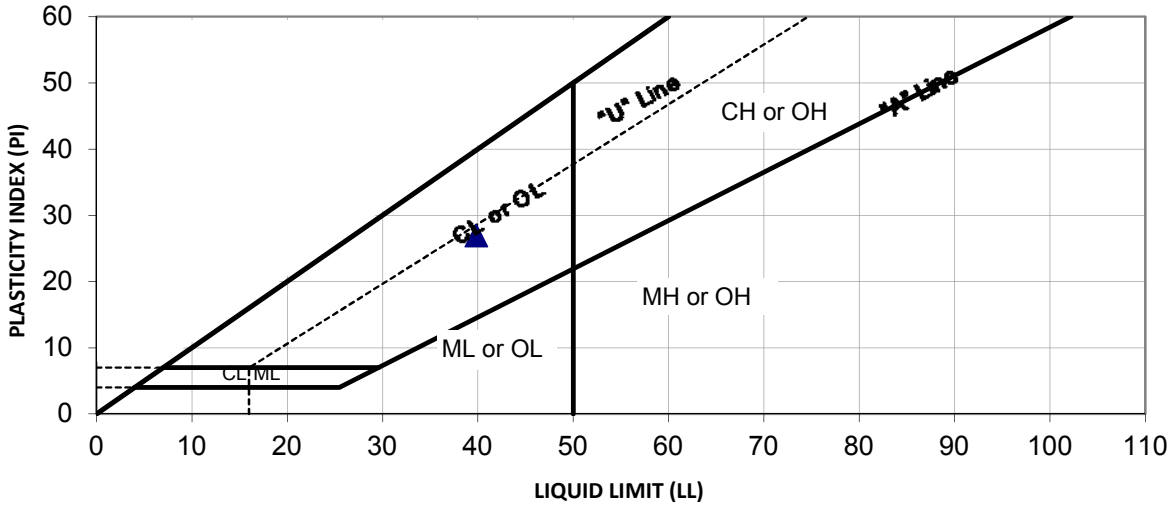
Laura Torres
LT/ram

REPORT OF LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX TESTS

(ASTM 4318)

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6021
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115846

Project:	Otay Mesa - Geotechnical Investigation
Project Address:	Chula Vista, CA
Material:	Tan Silty CLAY (CL)
Location:	B1 @ 1'-3'
Date Sampled:	4/12/2018
Date Submitted:	4/12/2018
Sampled By:	Sean Burford
Date Tested:	4/24/2018



SUMMARY OF TEST RESULTS

SAMPLE ID	SOURCE /LOCATION	DEPTH/ ELEV.	%>#40	TEST RESULT			USCS	
				LL	PL	PI	Class	Group Name
115846	B1	1'-3'	NR	**40**	**13**	**27**	CL	lean CLAY

Reviewed By: _____

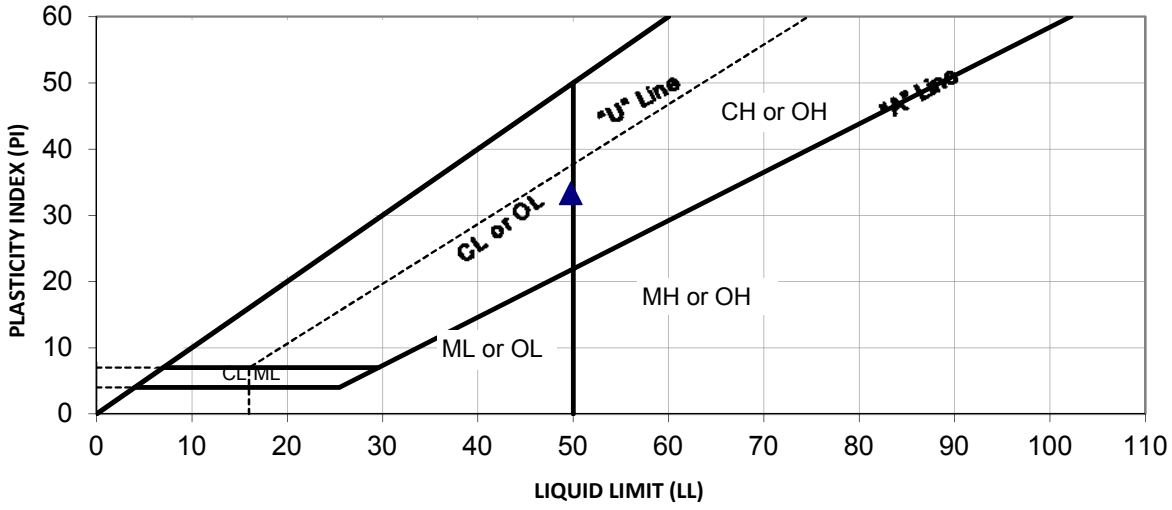
Sammy Daghighi, PE
Senior Engineering Manager

REPORT OF LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX TESTS

(ASTM 4318)

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6021
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115857

Project:	Otay Mesa - Geotechnical Investigation
Project Address:	Chula Vista, CA
Material:	Brown Sandy Lean CLAY (CL)
Location:	B4 @ 3'-5'
Date Sampled:	4/12/2018
Date Submitted:	4/12/2018
Sampled By:	Sean Burford
Date Tested:	5/1/2018



SUMMARY OF TEST RESULTS

SAMPLE ID	SOURCE /LOCATION	DEPTH/ ELEV.	%>#40	TEST RESULT			USCS	
				LL	PL	PI	Class	Group Name
115857	B4	3'-5'	NR	**50**	**16**	**33**	CL	lean CLAY

Reviewed By: _____

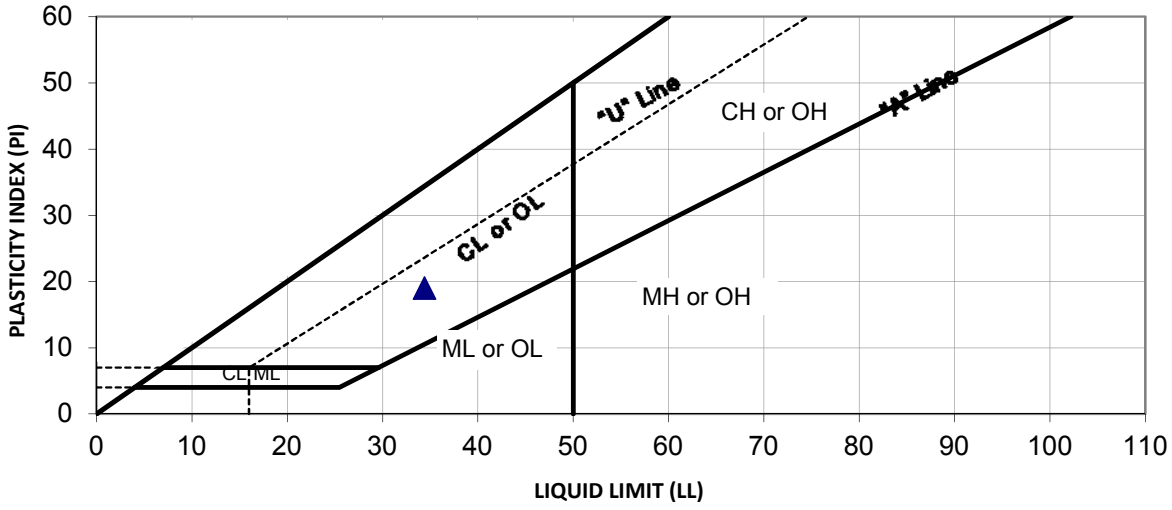
Sammy Daghighi, PE
Senior Engineering Manager

REPORT OF LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX TESTS

(ASTM 4318)

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6021
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115860

Project:	Otay Mesa - Geotechnical Investigation
Project Address:	Chula Vista, CA
Material:	Yellow Brown Silty Clayey SAND (SM) w/Gravel
Location:	B5@ 1'-3'
Date Sampled:	4/12/2018
Date Submitted:	4/12/2018
Sampled By:	Sean Burford
Date Tested:	4/30/2018



SUMMARY OF TEST RESULTS

SAMPLE ID	SOURCE /LOCATION	DEPTH/ ELEV.	%>#40	TEST RESULT			USCS	
				LL	PL	PI	Class	Group Name
115860	B5	1'-3'	NR	**34**	**15**	**19**	CL	lean CLAY

Reviewed By: _____

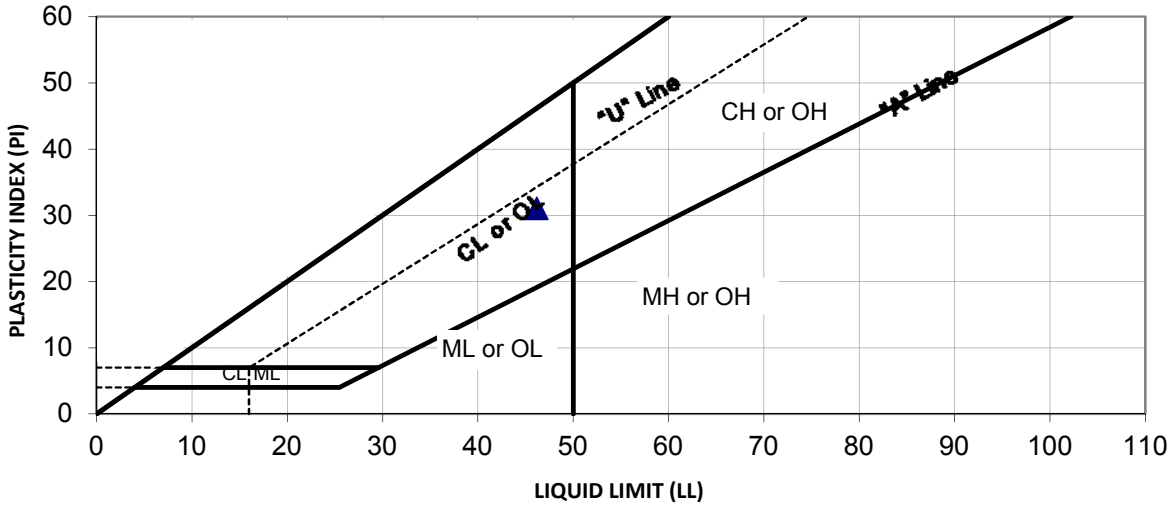
Sammy Daghighi, PE
Senior Engineering Manager

REPORT OF LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX TESTS

(ASTM 4318)

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6021
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115864

Project:	Otay Mesa - Geotechnical Investigation
Project Address:	Chula Vista, CA
Material:	Brown Silty CLAY (CL)
Location:	B7 @ 1'-3'
Date Sampled:	4/12/2018
Date Submitted:	4/12/2018
Sampled By:	Sean Burford
Date Tested:	4/30/2018



SUMMARY OF TEST RESULTS

SAMPLE ID	SOURCE /LOCATION	DEPTH/ ELEV.	%>#40	TEST RESULT			USCS	
				LL	PL	PI	Class	Group Name
115864	B7	1'-3'	NR	**46**	**15**	**31**	CL	lean CLAY

Reviewed By: _____

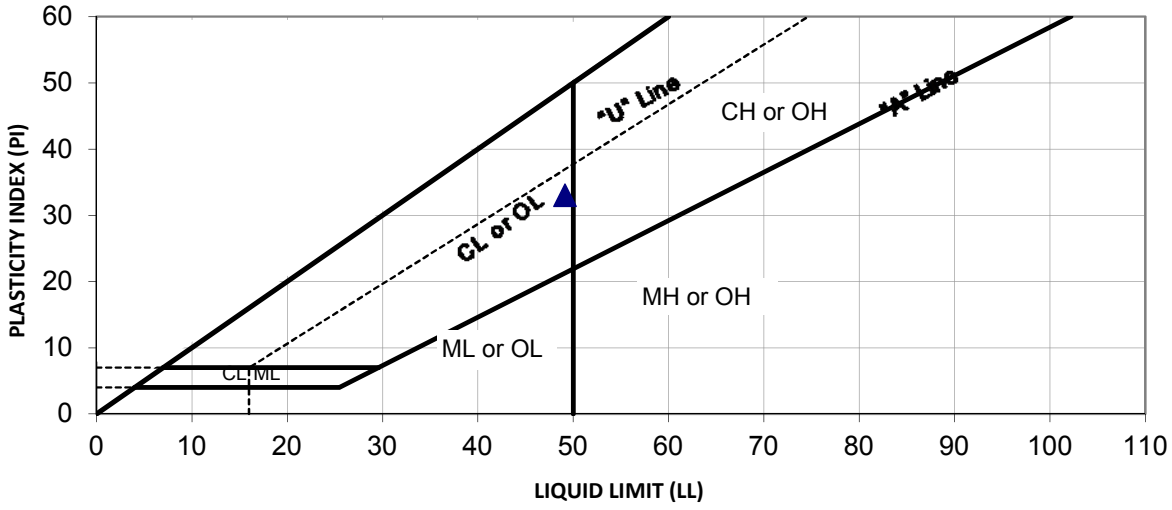
Sammy Daghighi, PE
Senior Engineering Manager

REPORT OF LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX TESTS

(ASTM 4318)

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6021
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115872

Project:	Otay Mesa - Geotechnical Investigation
Project Address:	Chula Vista, CA
Material:	Tan Silty CLAY (CL)
Location:	B9 @ 1'-3'
Date Sampled:	4/12/2018
Date Submitted:	4/12/2018
Sampled By:	Sean Burford
Date Tested:	5/1/2018



SUMMARY OF TEST RESULTS

SAMPLE ID	SOURCE /LOCATION	DEPTH/ ELEV.	%>#40	TEST RESULT			USCS	
				LL	PL	PI	Class	Group Name
115872	B9	1'-3'	NR	**49**	**16**	**33**	CL	lean CLAY

Reviewed By: _____

Sammy Daghighi, PE
Senior Engineering Manager

Expansion Index Test Report

(ASTM D4829)

Date:	May 08, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688	Lab Number:	115849-115869
	Chula Vista, CA 91910		
Project:	Otay Mesa - Geotechnical Investigation		
Project Add:	Chula Vista, CA		
Sampled By:	Sean Burford		
Date Sampled	4/12/2018		
Date Rcvd:	4/21/2018		

Lab Number	115849	115857	115866	115869
Location	B2 @ 3'-5'	B4 @ 3'-5'	B7 @ 8'-10'	B8 @ 2'-3.5'
Material Type	Reddish Brown Sandy Lean CLAY (CL)	Brown Sandy Lean CLAY (CL)	Brown Sandy CLAY (CL)	Brown Sandy Lean CLAY (CL)
Source	Native	Native	Native	Native
Initial Moisture Content, %	10.3	10.6	14.2	10.1
Final Moisture Content, %	27.9	29.5	36.7	22.8
Dry Density, pcf	103.9	102.2	95.8	115.2
Saturation, %	45	44	51	46
Expansion Index	**77**	**81**	**130**	**76**
Potential Expansion	**MEDIUM**	**MEDIUM**	**HIGH**	**MEDIUM**

Respectfully Submitted,
NV5 West, Inc.

Sammy Daghighi, PE
Senior Engineering Manager

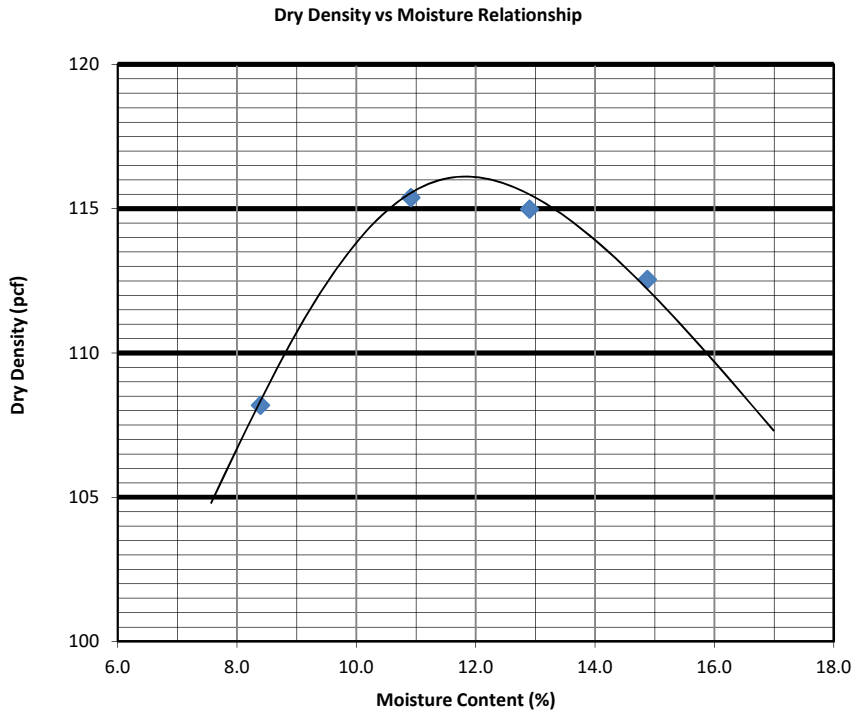
REPORT OF MOISTURE/DENSITY RELATIONSHIP TEST

(ASTM D1557/D698)

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115846

Project:	Otay Mesa - Geotechnical Investigation			
Project Address:	Chula Vista, CA			
Material:	Tan Silty CLAY (CL)	Mold Size:	4	inch
Material Source:	Native			
Location:	B1 @ 1'-3'	ASTM D1557	B	
Date Sampled:	4/12/2018			
Date Submitted:	4/12/2018			
Sampled By:	Sean Burford			

Maximum Dry Density = 116.0 pcf **Optimum Moisture = 12.0%**



Distribution

Client

File

Reviewed By: _____

Sammy Daghighi, PE

Senior Engineering Manager

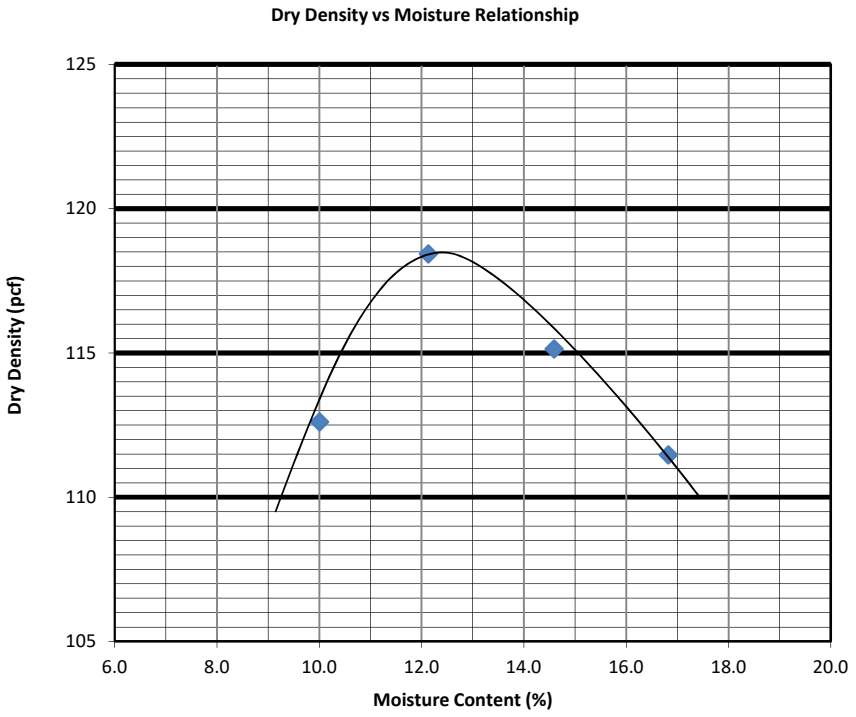
REPORT OF MOISTURE/DENSITY RELATIONSHIP TEST

(ASTM D1557/D698)

Date:	May 8, 2018	Job Number:	226817-0000290.07
Client:	Southwestern Community College District	Report Number:	6026
Address:	900 Otay Lakes Road Room 1688 Chula Vista, CA 91910	Lab Number:	115864

Project:	Otay Mesa - Geotechnical Investigation			
Project Address:	Chula Vista, CA			
Material:	Brown Silty CLAY (CL)	Mold Size:	4	inch
Material Source:	Native			
Location:	B7 @ 1'-3'	ASTM D1557	A	
Date Sampled:	4/12/2018			
Date Submitted:	4/12/2018			
Sampled By:	Sean Burford			

Maximum Dry Density = 118.5 pcf **Optimum Moisture = 12.5%**



Distribution

Client

File

Reviewed By: _____

Sammy Daghighi, PE

Senior Engineering Manager

APPENDIX C

Typical Earthwork Guidelines

TYPICAL EARTHWORK GUIDELINES

1. GENERAL

These guidelines and the standard details attached hereto are presented as general procedures for earthwork construction for sites having slopes less than 10 feet high. They are to be utilized in conjunction with the project grading plans. These guidelines are considered a part of the geotechnical report, but are superseded by recommendations in the geotechnical report 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 and/or the recommendations of the geotechnical report. It is the responsibility of the contractor to read and understand these guidelines as well as the geotechnical report and project grading plans.

1.1. The contractor shall not vary from these guidelines without prior recommendations by the geotechnical consultant and the approval of the client or the client's authorized representative. Recommendations by the geotechnical consultant and/or client shall not be considered to preclude requirements for approval by the jurisdictional agency prior to the execution of any changes.

1.2. The contractor shall perform the grading operations in accordance with these specifications, and shall be responsible for the quality of the finished product notwithstanding the fact that grading work will be observed and tested by the geotechnical consultant.

1.3. It is the responsibility of the grading contractor to notify the geotechnical consultant and the jurisdictional agencies, as needed, prior to the start of work at the site and at any time that grading resumes after interruption. Each step of the grading operations shall be observed and documented by the geotechnical consultant and, where needed, reviewed by the appropriate jurisdictional agency prior to proceeding with subsequent work.

1.4. If, during the grading operations, geotechnical conditions are encountered which were not anticipated or described in the geotechnical report, the geotechnical consultant shall be notified immediately and additional recommendations, if applicable, may be provided.

1.5. An as-graded report shall be prepared by the geotechnical consultant and signed by a registered engineer and registered engineering geologist. The report documents the geotechnical consultants' observations, and field and laboratory test results, and provides conclusions regarding whether or not earthwork construction was performed in accordance with the geotechnical recommendations and the grading plans. Recommendations for foundation design, pavement design, subgrade treatment, etc., may also be included in the as-graded report.

1.6. For the purpose of evaluating quantities of materials excavated during grading and/or locating the limits of excavations, a licensed land surveyor or civil engineer shall be retained.

2. SITE PREPARATION

Site preparation shall be performed in accordance with the recommendations presented in the following sections.

2.1. The client, prior to any site preparation or grading, shall arrange and attend a pre-grading meeting between the grading contractor, the design engineer, the geotechnical consultant, and representatives of appropriate governing authorities, as well as any other involved parties. The parties shall be given two working days notice.

2.2. Clearing and grubbing shall consist of the substantial removal of vegetation, brush, grass, wood, stumps, trees, tree roots greater than 1/2-inch in diameter, and other deleterious materials from the areas to be graded. Clearing and grubbing shall extend to the outside of the proposed excavation and fill areas.

2.3. Demolition in the areas to be graded shall include removal of building structures, foundations, reservoirs, utilities (including underground pipelines, septic tanks, leach fields, seepage pits, cisterns, etc.), and other manmade surface and subsurface improvements, and the backfilling of mining shafts, tunnels and surface depressions. Demolition of utilities shall include capping or rerouting of pipelines at the project perimeter, and abandonment of wells in accordance with the requirements of the governing authorities and the recommendations of the geotechnical consultant at the time of demolition.

2.4. The debris generated during clearing, grubbing and/or demolition operations shall be removed from areas to be graded and disposed of off site at a legal dump site. Clearing, grubbing, and demolition operations shall be performed under the observation of the geotechnical consultant.

2.5. The ground surface beneath proposed fill areas shall be stripped of loose or unsuitable soil. These soils may be used as compacted fill provided they are generally free of organic or other deleterious materials and evaluated for use by the geotechnical consultant. The resulting surface shall be evaluated by the geotechnical consultant prior to proceeding. The cleared, natural ground surface shall be scarified to a depth of approximately 8 inches, moisture conditioned, and compacted in accordance with the specifications presented in Section 5 of these guidelines.

3. REMOVALS AND EXCAVATIONS

Removals and excavations shall be performed as recommended in the following sections.

3.1. Removals

3.1.1. Materials which are considered unsuitable shall be excavated under the observation of the geotechnical consultant in accordance with the recommendations contained herein. Unsuitable materials include, but may not be limited to, dry, loose, soft, wet, organic, compressible natural soils, fractured, weathered, soft bedrock, and undocumented or otherwise deleterious fill materials.

3.1.2. Materials deemed by the geotechnical consultant to be unsatisfactory due to moisture conditions shall be excavated in accordance with the recommendations of the geotechnical consultant, watered or dried as needed, and mixed to generally uniform moisture content in accordance with the specifications presented in Section 5 of this document.

3.2. Excavations

3.2.1. Temporary excavations no deeper than 4 feet in firm fill or natural materials may be made with vertical side slopes. To satisfy California Occupational Safety and Health Administration (CAL OSHA) requirements, any excavation deeper than 4 feet shall be shored or laid back at a 1:1 inclination or flatter, depending on material type, if construction workers are to enter the excavation.

4. COMPACTED FILL

Fill shall be constructed as specified below or by other methods recommended by the geotec1mical consultant. Unless otherwise specified, fill soils shall be compacted to 90 percent relative compaction, as evaluated in accordance with ASTM Test Method D 1557.

4.1. Prior to placement of compacted fill, the contractor shall request an evaluation of the exposed ground surface by the geotechnical consultant. Unless otherwise recommended, the exposed ground surface shall then be scarified to a depth of approximately 8 inches and watered or dried, as needed, to achieve a generally uniform moisture content at or near the optimum moisture content. The scarified materials shall then be compacted to 90 percent relative compaction. The evaluation of compaction by the geotechnical consultant shall not be considered to preclude any requirements for observation or approval by governing agencies. It is the contractor's responsibility to notify the geotechnical consultant and the appropriate governing agency when project areas are ready for observation, and to provide reasonable time for that review.

4.2. Excavated on-site materials which are in general compliance with the recommendations of the geotechnical consultant may be utilized as compacted fill provided they are generally free of organic or other deleterious materials and do not contain rock fragments greater than 6 inches in dimension. During grading, the contractor may encounter soil types other than those analyzed during the preliminary geotechnical study. The geotechnical consultant shall be consulted to evaluate the suitability of any such soils for use as compacted fill.

4.3. Where imported materials are to be used on site, the geotechnical consultant shall be notified three working days in advance of importation in order that it may sample and test the materials from the proposed borrow sites. No imported materials shall be delivered for use on site without prior sampling, testing, and evaluation by the geotechnical consultant.

4.4. Soils imported for on-site use shall preferably have very low to low expansion potential (based on UBC Standard 18-2 test procedures). Lots on which expansive soils may be exposed at grade shall be undercut 3 feet or more and capped with very low to low expansion potential fill. In the event expansive soils are present near the ground surface, special design and construction considerations shall be utilized in general accordance with the recommendations of the geotechnical consultant.

4.5. Fill materials shall be moisture conditioned to near optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils shall be generally uniform in the soil mass.

4.6. Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill shall be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction.

4.7. Compacted fill shall be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift shall be watered or dried as needed to achieve near optimum moisture condition, mixed, and then compacted by mechanical methods, using sheepsfoot rollers, multiple-wheel pneumatic-tired rollers, or other appropriate compacting rollers, to the specified relative compaction. Successive lifts shall be treated in a like manner until the desired finished grades are achieved.

4.8. Fill shall be tested in the field by the geotechnical consultant for evaluation of general compliance with the recommended relative compaction and moisture conditions. Field density testing shall conform to ASTM D 1556-00 (Sand Cone method), D 2937-00 (Drive-Cylinder method), and/or D 2922-96 and D 3017-96 (Nuclear Gauge method). Generally, one test shall be provided for approximately every 2 vertical feet of fin placed, or for approximately every 1000 cubic yards of fill placed. In addition, on slope faces one or more tests shall be taken for approximately every 10,000 square feet of slope face and/or approximately every 10 vertical feet of slope height. Actual test intervals may vary as field conditions dictate. Fill found to be out of conformance with the grading recommendations shall be removed, moisture conditioned, and compacted or otherwise handled to accomplish general compliance with the grading recommendations.

4.9. The contractor shall assist the geotechnical consultant by excavating suitable test pits for removal evaluation and/or for testing of compacted fill.

4.10. At the request of the geotechnical consultant, the contractor shall "shut down" or restrict grading equipment from operating in the area being tested to provide adequate testing time and safety for the field technician.

4.11. The geotechnical consultant shall maintain a map with the approximate locations of field density tests. Unless the client provides for surveying of the test locations, the locations shown by the geotechnical consultant will be estimated. The geotechnical consultant shall not be held responsible for the accuracy of the horizontal or vertical locations or elevations.

4.12. Grading operations shall be performed under the observation of the geotechnical consultant. Testing and evaluation by the geotechnical consultant does not preclude the need for approval by or other requirements of the jurisdictional agencies.

4.13. Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When work is interrupted by heavy rains, the filling operation shall not be resumed until tests indicate that moisture content and density of the fill meet the project specifications. Regrading of the near-surface soil may be needed to achieve the specified moisture content and density.

4.14. Upon completion of grading and termination of observation by the geotechnical consultant, no further filling or excavating, including that planned for footings, foundations, retaining walls or other features, shall be performed without the involvement of the geotechnical consultant.

4.15. Fill placed in areas not previously viewed and evaluated by the geotechnical consultant may have to be removed and recompacted at the contractor's expense. The depth and extent of removal of the unobserved and undocumented fill will be decided based upon review of the field conditions by the geotechnical consultant.

4.16. Off-site fill shall be treated in the same manner as recommended in these specifications for on-site fills. Off-site fill subdrains temporarily terminated (up gradient) shall be surveyed for future locating and connection.

5. OVERSIZED MATERIAL

Oversized material shall be placed in accordance with the following recommendations.

5.1. During the course of grading operations, rocks or similar irreducible materials greater than 6 inches in dimension (oversized material) may be generated. These materials shall not be placed within the compacted fill unless placed in general accordance with the recommendations of the geotechnical consultant.

5.2. Where oversized rock (greater than 6 inches in dimension) or similar irreducible material is generated during grading, it is recommended, where practical, to waste such material off site, or on site in areas designated as "nonstructural rock disposal areas." Rock designated for disposal areas shall be placed with sufficient sandy soil to generally fill voids. The disposal area shall be capped with a 5-foot thickness of fill which is generally free of oversized material.

5.3. Rocks 6 inches in dimension and smaller may be utilized within the compacted fill, provided they are placed in such a manner that nesting of rock is not permitted. Fill shall be placed and compacted over and around the rock. The amount of rock greater than ¾-inch in dimension shall generally not exceed 40 percent of the total dry weight of the fill mass, unless the fill is specially designed and constructed as a "rock fill."

5.4. Rocks or similar irreducible materials greater than 6 inches but less than 4 feet in dimension generated during grading may be placed in windrows and capped with finer materials in accordance with the recommendations of the geotechnical consultant and the approval of the governing agencies. Selected native or imported granular soil (Sand Equivalent of 30 or higher) shall be placed and flooded over and around the windrowed rock such that voids are filled. Windrows of oversized materials shall be staggered so that successive windrows of oversized materials are not in the same vertical plane. Rocks greater than 4 feet in dimension shall be broken down to 4 feet or smaller before placement, or they shall be disposed of off site.

6. SLOPES

The following sections provide recommendations for cut and fill slopes.

6.1. Cut Slopes

6.1.1. The geotechnical consultant shall observe cut slopes during excavation. The geotechnical consultant shall be notified by the contractor prior to beginning slope excavations.

6.1.2. If, during the course of grading, adverse or potentially adverse geotechnical conditions are encountered in the slope which were not anticipated in the preliminary evaluation report, the geotechnical consultant shall evaluate the conditions and provide appropriate recommendations.

6.2. Fill Slopes

6.2.1. When placing fill on slopes steeper than 5:1 (horizontal:vertical), topsoil, slope wash, colluvium, and other materials deemed unsuitable shall be removed. Near-horizontal keys and near-vertical benches shall be excavated into sound bedrock or fine fill material, in accordance with the recommendation of the geotechnical consultant. Keying and benching shall be accomplished. Compacted fill shall not be placed in an area subsequent to keying and benching until the area has been observed by the geotechnical consultant. Where the natural gradient of a slope is less than 5:1, benching is generally not recommended. However, fill shall not be placed on compressible or otherwise unsuitable materials left on the slope face.

6.2.2. Within a single fill area where grading procedures dictate two or more separate fills, temporary slopes (false slopes) may be created. When placing fill adjacent to a temporary slope, benching shall be conducted in the manner described in Section 7.2. A 3-foot or higher near-vertical bench shall be excavated into the documented fill prior to placement of additional fill.

6.2.3. Unless otherwise recommended by the geotechnical consultant and accepted by the Building Official, permanent fill slopes shall not be steeper than 2:1 (horizontal:vertical). The height of a fill slope shall be evaluated by the geotechnical consultant.

6.2.4. Unless specifically recommended otherwise, compacted fill slopes shall be overbuilt and cut back to grade, exposing firm compacted fill. The actual amount of overbuilding may vary as field conditions dictate. If the desired results are not achieved, the existing slopes shall be overexcavated and reconstructed in accordance with the recommendations of the geotechnical consultant. The degree of overbuilding may be increased until the desired compacted slope face condition is achieved. Care shall be taken by the contractor to provide mechanical compaction as close to the outer edge of the overbuilt slope surface as practical.

6.2.5. If access restrictions, property line location, or other constraints limit overbuilding and cutting back of the slope face, an alternative method for compaction of the slope face may be attempted by conventional construction procedures including backrolling at intervals of 4 feet or less in vertical slope height, or as dictated by the capability of the available equipment, whichever is less. Fill slopes shall be backrolled utilizing a conventional sheepsfoot-type roller. Care shall be taken to maintain the specified moisture conditions and/or reestablish the same, as needed, prior to backrolling.

6.2.6. The placement, moisture conditioning and compaction of fill slope materials shall be done in accordance with the recommendations presented in Section 5 of these guidelines.

6.2.7. The contractor shall be ultimately responsible for placing and compacting the soil out to the slope face to obtain a relative compaction of 90 percent as evaluated by ASTM D 1557 and a moisture content in accordance with Section 5. The geotechnical consultant shall perform field moisture and density tests at intervals of one test for approximately every 10,000 square feet of slope.

6.2.8. Backdrains shall be provided in fill as recommended by the geotechnical consultant.

6.3. Top-of-Slope Drainage

6.3.1. For pad areas above slopes, positive drainage shall be established away from the top of slope. This may be accomplished utilizing a berm and pad gradient of 2 percent or steeper at the top-of-slope areas. Site runoff shall not be permitted to flow over the tops of slopes.

6.3.2. Gunite-lined brow ditches shall be placed at the top of cut slopes to redirect surface runoff away from the slope face where drainage devices are not otherwise provided.

6.4. Slope Maintenance

6.4.1. In order to enhance surficial slope stability, slope planting shall be accomplished at the completion of grading. Slope plants shall consist of deep-rooting, variable root depth, drought-tolerant vegetation. Native vegetation is generally desirable. Plants native to semiarid and mid areas may also be appropriate. Large-leafed ice plant should not be used on slopes. A landscape architect shall be consulted regarding the actual types of plants and planting configuration to be used.

6.4.2. Irrigation pipes shall be anchored to slope faces and not placed in trenches excavated into slope faces. Slope irrigation shall be maintained at a level just sufficient to support plant growth. Property owners shall be made aware that over watering of slopes is detrimental to slope stability. Slopes shall be monitored regularly and broken sprinkler heads and/or pipes shall be repaired immediately.

6.4.3. Periodic observation of landscaped slope areas shall be planned and appropriate measures taken to enhance growth of landscape plants.

6.4.4. Graded swales at the top of slopes and terrace drains shall be installed and the property owners notified that the drains shall be periodically checked so that they may be kept clear. Damage to drainage improvements shall be repaired immediately. To reduce siltation, terrace drains shall be constructed at a gradient of 3 percent or steeper, in accordance with the recommendations of the project civil engineer.

6.4.5. If slope failures occur, the geotechnical consultant shall be contacted immediately for field review of site conditions and development of recommendations for evaluation and repair.

7. TRENCH BACKFILL

The following sections provide recommendations for backfilling of trenches.

7.1. Trench backfill shall consist of granular soils (bedding) extending from the trench bottom to 1 foot or more above the pipe. On-site or imported fill which has been evaluated by the geotechnical consultant may be used above the granular backfill. The cover soils directly in contact with the pipe shall be classified as having a very low expansion potential, in accordance with UBC Standard 18-2, and shall contain no rocks or chunks of hard soil larger than 3/4-inch in diameter.

7.2. Trench backfill shall, unless otherwise recommended, be compacted by mechanical means to 90 percent relative compaction as evaluated by ASTM D 1557. Backfill soils shall be placed in loose lifts 8-inches thick or thinner, moisture conditioned, and compacted in accordance with the recommendations of Section 5 of these guidelines. The backfill shall be tested by the geotechnical consultant at vertical intervals of approximately 2 feet of backfill placed and at spacings along the trench of approximately 100 feet in the same lift.

7.3. Jetting of trench backfill materials is generally not a recommended method of densification, unless the on-site soils are sufficiently free-draining and provisions have been made for adequate dissipation of the water utilized in the jetting process.

7.4. If it is decided that jetting may be utilized, granular material with a sand equivalent greater than 30 shall be used for backfilling in the areas to be jetted. Jetting shall generally be considered for trenches 2 feet or narrower in width and 4 feet or shallower in depth. Following jetting operations, trench backfill shall be mechanically compacted to the specified compaction to finish grade.

7.5. Trench backfill which underlies the zone of influence of foundations shall be mechanically compacted to 90 percent or greater relative compaction, as evaluated by ASTM D 1557-02. The zone of influence of the foundations is generally defined as the roughly triangular area within the limits of a 1:1 (horizontal:vertical) projection from the inner and outer edges of the foundation, projected down and out from both edges.

7.6. Trench backfill within slab areas shall be compacted by mechanical means to a relative compaction of 90 percent, as evaluated by ASTM D 1557. For minor interior trenches, density testing may be omitted or spot testing may be performed, as deemed appropriate by the geotechnical consultant.

7.7. When compacting soil in close proximity to utilities, care shall be taken by the grading contractor so that mechanical methods used to compact the soils do not damage the utilities. If the utility contractors indicate that it is undesirable to use compaction equipment in close proximity to a buried conduit, then the grading contractor may elect to use light mechanical compaction equipment or, with the approval of the geotechnical consultant, cover the conduit with clean granular material. These granular materials shall be jetted in place to the top of the conduit in accordance with the recommendations of Section 8.4 prior to initiating mechanical compaction procedures. Other methods of utility trench compaction may also be appropriate, upon review by the geotechnical consultant and the utility contractor, at the time of construction.

7.8. Clean granular backfill and/or bedding materials are not recommended for use in slope areas unless provisions are made for a drainage system to mitigate the potential for buildup of seepage forces or piping of backfill materials.

7.9. The contractor shall exercise the specified safety precautions, in accordance with OSHA Trench Safety Regulations, while conducting trenching operations. Such precautions include shoring or laying back trench excavations at 1:1 or flatter, depending on material type, for trenches in excess of 5 feet in depth. The geotechnical consultant is not responsible for the safety of trench operations or stability of the trenches.

8. DRAINAGE

The following sections provide recommendations pertaining to site drainage.

8.1. Roof, pad, and slope drainage shall be such that it is away from slopes and structures to suitable discharge areas by nonerodible devices (e.g., gutters, downspouts, concrete swales, etc.).

8.2. Positive drainage adjacent to structures shall be established and maintained. Positive drainage may be accomplished by providing drainage away from the foundations of the structure at a gradient of 2 percent or steeper for a distance of 5 feet or more outside the building perimeter, further maintained by a graded swale leading to an appropriate outlet, in accordance with the recommendations of the project civil engineer and/or landscape architect.

8.3. Surface drainage on the site shall be provided so that water is not permitted to pond. A gradient of 2 percent or steeper shall be maintained over the pad area and drainage patterns shall be established to remove water from the site to an appropriate outlet.

8.4. Care shall be taken by the contractor during grading to preserve any berms, drainage terraces, interceptor swales or other drainage devices of a permanent nature on or adjacent to the property. Drainage patterns established at the time of finish grading shall be maintained for the life of the project. Property owners shall be made very clearly aware that altering drainage patterns may be detrimental to slope stability and foundation performance.

9. SITE PROTECTION

The site shall be protected as outlined in the following sections.

9.1. Protection of the site during the period of grading shall be the responsibility of the contractor unless other provisions are made in writing and agreed upon among the concerned parties. Completion of a portion of the project shall not be considered to preclude that portion or adjacent areas from the need for site protection, until such time as the project is finished as agreed upon by the geotechnical consultant, the client, and the regulatory agency.

9.2. The contractor is responsible for the stability of temporary excavations. Recommendations by the geotechnical consultant pertaining to temporary excavations are made in consideration of stability of the finished project and, therefore, shall not be considered to preclude the responsibilities of the contractor. Recommendations by the geotechnical consultant shall also not be considered to preclude more restrictive requirements by the applicable regulatory agencies.

9.3. Precautions shall be taken during the performance of site clearing, excavation, and grading to protect the site from flooding, ponding, or inundation by surface runoff. Temporary provisions shall be made during the rainy season so that surface runoff is away from and off the working site. Where low areas cannot be avoided, pumps shall be provided to remove water as needed during periods of rainfall.

9.4. During periods of rainfall, plastic sheeting shall be used as needed to reduce the potential for unprotected slopes to become saturated. Where needed, the contractor shall install check dams, desilting basins, riprap, sandbags or other appropriate devices or methods to reduce erosion and provide recommended conditions during inclement weather.

9.5. During periods of rainfall, the geotechnical consultant shall be kept informed by the contractor of the nature of remedial or precautionary work being performed on site (e.g., pumping, placement of sandbags or plastic sheeting, other labor, dozing, etc.).

9.6. Following periods of rainfall, the contractor shall contact the geotechnical consultant and arrange a walk-over of the site in order to visually assess rain-related damage. The geotechnical consultant may also recommend excavation and testing in order to aid in the evaluation. At the request of the geotechnical consultant, the contractor shall make excavations in order to aid in evaluation of the extent of rain-related damage.

9.7. Rain or irrigation related damage shall be considered to include, but may not be limited to, erosion, silting, saturation, swelling, structural distress, and other adverse conditions noted by the geotechnical consultant. Soil adversely affected shall be classified as "Unsuitable Material" and shall be subject to overexcavation and replacement with compacted fill or to other remedial grading as recommended by the geotechnical consultant.

9.8. Relatively level areas where saturated soils and/or erosion gullies exist to depths greater than 1 foot shall be overexcavated to competent materials as evaluated by the geotechnical consultant. Where adverse conditions extend to less than 1 foot in depth, saturated and/or eroded materials may be processed in-place. Overexcavated or in-place processed materials shall be moisture conditioned and compacted in accordance with the recommendations provided in Section 5. If the desired results are not achieved, the affected materials shall be overexcavated, moisture conditioned, and compacted until the specifications are met.

9.9. Slope areas where saturated soil and/or erosion gullies exist to depths greater than 1 foot shall be overexcavated and replaced as compacted fill in accordance with the applicable specifications. Where adversely affected materials exist to depths of I foot or less below proposed finished grade, remedial grading by moisture conditioning in-place and compaction in accordance with the appropriate specifications may be attempted. If the desired results are not achieved, the affected materials shall be overexcavated, moisture conditioned, and compacted until the specifications are met. As conditions dictate, other slope repair procedures may also be recommended by the geotechnical consultant.

9.10. During construction, the contractor shall grade the site to provide positive drainage away from structures and to keep water from ponding adjacent to structures. Water shall not be allowed to damage adjacent properties. Positive drainage shall be maintained by the contractor until permanent drainage and erosion reducing devices are installed in accordance with project plans.

APPENDIX D

GBC - Important Info About This Geotechnical Investigation

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical- engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you* — should apply this report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by*: the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.

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NV5

Delivering Solutions
Improving Lives

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