Appendix A Malibu Middle and High School Campus Specific Plan

Appendices

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Malibu Middle and High School Campus

Draft Specific Plan

October 2021

Prepared For:
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PLACEWORKS

TABLE OF CONTENTS

1.0 Introduction 4
1.1 School Design Evolution 4
1.2 Development of the Campus Plan 5
1.3 Level of Detail 6
Site Design Observation 6
1.4 Specific Plan 7
MMHS Campus Specific Plan Organization 8
2.0 MMHS Campus Specific Plan Objectives 1
3.0 Background and Context 2
3.1 Project Location 2
3.2 Existing Conditions 7
Existing Land Use 7
Former JCES Campus 7
MMHS Campus 7
Site Access, Circulation, and Parking 8
Site Topography 8
Environmentally Sensitive Habitat Area 8
4.0 MMHS Campus Specific Plan Facilities and Phasing 11
4.1 MMHS Campus Specific Plan Development 11
Middle School Core 13
High School Core 15
Shared uses 16
Student Capacity and Schedule 17
4.2 Phasing 21
Phase 1 22
Phase 2 22
Phase 3 23
Phase 4 23
Photo Renderings 23
4.3 Grading 31
5.0 Development Standards 32
5.2 Building Height Measurements 33
5.3 Wayfinding and Informational Signage 39
5.4 Landscaping 40
5.5 Sustainability Features 45
5.6 Restoration Plan in the ESHA 45

6.0 Circulation, Mobility and Parking 52
6.1 Vehicle Access and Parking 52
6.2 Pedestrian Access 53
6.3 Construction 54
7.0 Infrastructure 57
7.1 Water Plan 57
7.2 Septic System 57
7.3 Drainage Plan 57
7.4 Lighting 57
Outdoor Lighting Program 57
Pool lighting 58
7.5 Solar Panel System 58
7.6 Solid Waste Disposal 59
8.0 Administration and Authority 61
8.1 Specific Plan Authority 61
8.2 Relationship to the General Plan 61
8.3 Relationship to Other Plans, Programs, Agencies, and Regulations 63
California Coastal Act of 1976 63
City of Malibu Municipal Code 63
Malibu Local Coastal Program 63
8.4 Review and Approval Process 63
8.5 Administrative Amendments 64
8.6 Site Plan Review and Approval 64
8.7 Environmental Review 64
9.0 Financing Measures 65

Tables

Table 1	Existing and Proposed Floor Area Ratios (FAR)	7
Table 2	Existing Assessor's Parcel Map Numbers in the Plan Area	7
Table 3	Summary of Building Demolition	11
Table 4	Summary of New Development	12
Table 5	Summary of Middle School Core Development	15
Table 6	Summary of High School Core Development	16
Table 7	Summary of Shared Uses	17
Table 8	Student Enrollment by Grade Level	18
Table 9	Existing and Buildout Community Use Facilities	20
Table 10	Proposed Specific Plan Phasing	22
Table 11	Estimated Cut/Fill by Phase	31
Table 12	Specific Plan Development Standards – Exceptions from Existing Zoning	34
Table 13	HSMS Campus Plant Palette	41
Table 14	Conceptual Plant Palette for ESHA Restoration Site	47
Table 15	Campus Specific Plan Buildout Parking Count	53
Table 16	Pool Lighting	58
Table 17	Relationship to the General Plan	61

Figures

Figure 1	Regional Location	3
Figure 2	Local Vicinity	4
Figure 3	Aerial Photograph	5
Figure 4	Existing Zoning Map	6
Figure 5	Existing MMHS Campus Buildings and Facilities	10
Figure 6	Proposed Site Plan	14
Figure 7	Building C Proposed Elevation	24
Figure 8	Specific Plan Phasing-Construction	25
Figure 9	Public Vantage Points A, B, C, and D	26
Figure 10	View from Vantage Point A	27
Figure 11	View from Vantage Point B	28
Figure 12	View from Vantage Point C	29
Figure 13	View from Vantage Point D	30
Figure 14	Monument Sign, Two Locations along Morning View Drive	40
Figure 15	Phase 1 Landscaping Plan	44
Figure 16	ESHA Restoration Plan - Downstream Segment	49
Figure 17	ESHA Restoration Plan - Middle Segment	50
Figure 18	ESHA Restoration Plan - Upstream Segment	51
Figure 19	Vehicle Circulation Plan	55
Figure 20	Pedestrian Circulation Plan	56
Figure 21	Solar Panel Location	60

MMHS CAMPUS SPECIFIC PLAN

1.0 Introduction

The Santa Monica-Malibu Unified School District (SMMUSD or District) is in the city of Santa Monica in Los Angeles County and serves both coastal communities of Santa Monica and Malibu. SMMUSD serves approximately 11,000 students with sixteen school sites including: nine elementary schools, three middle schools, two comprehensive high schools, a continuation high school, and a K-8 alternative school. In the City of Malibu, the District operates two elementary schools, one middle school and one comprehensive high school. The SMMUSD mission is: "Extraordinary achievement for all students while simultaneously closing the achievement gap."

This Specific Plan addresses needed improvements at the Malibu Middle and High School (MMHS) which incorporates the adjacent Juan Cabrillo Elementary School campus and other adjacent undeveloped District-owned property as identified in the 2019 Campus Plan.

Malibu Middle and High School is a public secondary school in Malibu, California, serving grades 6-12. The school is approximately 0.25 miles from the Pacific Ocean and Zuma Beach. The campus is on land originally part of Juan Cabrillo Elementary, which was partitioned in 1963 to create Malibu Park Junior High School. In 1992, the District converted the Malibu Park Junior High School campus into the present combined middle school/high school. The SMMUSD property consists of approximately 87 acres over nine parcels that includes the existing Malibu Equestrian Park in the eastern part of the property, the existing MMHS campus in the center, and the former Juan Cabrillo Elementary School (JCES) campus in the west. The east side of the campus is adjacent to Malibu Equestrian Park, which is on District owned land. The west edge borders an Environmentally Sensitive Habitat Area (ESHA). The campus slopes toward the Pacific Ocean and is surrounded by single-family residences.

A new gymnasium and 2-story classroom building were added in 2002. In the last 15 years, three bond measures have passed and utilized to modernize and build new buildings and athletic fields., including the newly completed Administration/Library (A/B) and the 2-story Classroom Building (E).

The school has many partnerships with the City of Malibu, Pepperdine University, and the Boys & Girls Club. The school was recognized as a California Distinguished School in 2003. The school's mission is "to be a collaborative community that respects individuals, sets high expectations, encourages critical thinking, and fosters a passion for learning and creative expression." The school has a strong swim program, and the pool is used all day, every day by students and the community. The school also has a strong marine and environmental sciences program as well as visual and performing arts programs. Given the unique campus organization, middle school students are given the opportunity to participate in some high school electives.

1.1 School Design Evolution

In 1994, California Department of Education (CDE) formalized regulations governing standards on the design and construction of new school facilities. Included are requirements for the submittal of educational specifications (Facility Standards/ Design Guidelines)—see California Code of Regulations, Title 5, Section 14034. The requirements are delineated in the Education Code Section 39101 (c) and California Code of Regulations, Title 5, Section 14030 (a). Specific school design standards are contained in California Code of Regulations, Title 5, Section 14001, 14010 and 14030.

In 2009, CDE added a Plan Summary form for those projects applying for new construction funds from the State Allocation Board for a new school or additions to an existing school. In July 2010, all Educational Specifications

(Facility Standards/ Design Guidelines) were required to be approved by the district's governing Board and submitted to CDE as part of any application for funding.

There is a recognition at the State level that traditional school design requires re-visioning. There is also acknowledgment that the Title 5 Education Code may restrict the new form that school designs may take to support 21st Century learners. CDE's requirement for the Plan Summary Form, provided by the local education agency, allows for dialogue about what is needed to support educational programs for today and tomorrow's learners. Ultimately the development of a lasting and sustainable vision that supports the goals of the District's educational program, depends upon a well thought out Educational Vision.

1.2 Development of the Campus Plan

With a history of partnership and close ties with the community, the District conducted a far-reaching stakeholder engagement process that included teachers, administrative staff, students, parents, community surveys, community meetings, and focused interviews in order to develop the Malibu Middle and High School Campus Plan (Campus Plan). The overall objective of the Campus Plan was to align education program goal with proposed facility improvements.

- Facilities District Advisory Committee (FDAC): The FDAC provided the Board of Education and District staff with the community's perspective regarding the use of bond funds for school site construction. This is a Board appointed committee and subject to the Brown Act. For the campus planning efforts, meetings were held to give process updates, seek input on the development of campus plan options, and confirm the final proposed campus plan.
- District Steering Committee (DSC): The DSC steered and coordinated the process and ensured that input from a range of stakeholders would be optimized. In addition, through regular meetings, the team was responsible for reviewing outcomes from the various groups and providing input on development of the Campus Plan and estimated budget to guide the campus planning process.
- Campus Planning Committee (CPC): The CPC was comprised of a diverse group of District Leadership, school site representatives, students, parents, and local community stakeholders. Meetings were held to discuss broad visioning concepts, develop a program, review, and provide input on the development of campus plan options, and confirm the final proposed campus plan.
- Program Focus Groups: Sub-committee meetings were held on an as-needed basis to focus on programs, including overarching topics such as Athletics and Physical Education, Special Education, and Visual and Performing Arts. Additionally, focused interviews of key District staff for Maintenance and Operations, Food and Nutrition Services, Transportation Management, and Information Services, took place to determine facilities needs within their areas of expertise.
- Community Focus Groups: Sub-committee meetings were held on an as-needed basis to seek input, answer questions and update community groups on the campus planning process.
- Community Outreach: In early late April and early May 2019, two Town Hall Meetings were held to get additional input from stakeholders. Parents and community members were invited to learn about the process, ask questions, review campus plan options, and provide input to the planning team.

After analyzing information gathered during the site walk along with various surveys and interviews on the condition of the facilities and program needs from January 2019 through late-May 2019, multiple meetings were held to review draft Campus Plan options. Stakeholders were selected to serve on a Campus Planning Committee to provide input on the proposed modifications and enhancements. Based on the feedback provided, a final proposed Campus Plan was created, which formed the basis of this Specific Plan.

The purpose of the Campus Plan was to define the long-range facility goals that support District educational goals. It is strategic in nature and illustrates the vision for the campus over the next 10 to 15 years. The plan shows a general path of how to get to the goal without providing specific design solutions and was a tool in establishing estimated budgets. The budget included in the Campus Plan is intended to be used as a "tool kit" by the District for planning purposes, to run program phasing scenarios as funding becomes available. This budget ultimately aids in decision making so that school facility improvements move toward a common, coordinated vision.

1.3 Level of Detail

Since implementation of the Specific Plan will occur over multiple phases, it is important to design individual projects with the overall Specific Plan in mind so that future projects may still be realized. Each project should have the ability to stand on its own without negatively impacting future projects and current school operations. As projects develop over time, the Specific Plan will be revisited and may be updated to reflect the changing needs of the District with sensitivity to changing economics and demographics. This updating process is recommended by the California Department of Education every 3 to 5 years.

Site Design Observation

During preparation of the Specific Plan, the following two observations helped guide design.

- The City of Malibu's Local Coastal Program ESHA Overlay Map 2 and United States Geological Survey (USGS) Point Dume California 7.5-minute topographic quadrangle map shows an unnamed stream along the western edge of the campus. Riparian areas within developed areas are designated as ESHA. The City of Malibu maintains policies to protect environmentally sensitive habitat areas. Developments must be designed to minimize impacts to the ESHA. A development buffer between the limits of the ESHA will be required and is typically 100' minimum. The unnamed stream is also subject to the Clean Water Act Section 404. Adequate setbacks are required to protect the ESHA from increases in water. Proposed septic systems should be designed and sited to avoid impacts to the ESHA. The existing Campus is immediately adjacent to the ESHA and development of a 100-foot setback would cut significantly into buildings, parking, and accessways that are needed for efficient use of the site.
- The City of Malibu municipal code and Local Coastal Program (LCP) have specific requirements under institutional development standards, that affect development. A few key requirements are, there is a "maximum height of eighteen (18) feet above natural or finished grade, whichever results in a lower building height, except for chimneys, rooftop antenna, and light standards. Modern classroom design requires additional height to allow higher interior ceiling heights for ventilation, natural light, and sound attenuation. Additionally, in order to meet California Scholastic Federation (CIF) athletic requirements, gymnasiums must reach higher interior ceiling heights, particularly with regards to volleyball. The exterior height increase is needed to allow required ventilation equipment and CIF requirements. The director may issue a development permit, pursuant to the site plan review process of this title, to allow structure height up to twenty-eight (28) feet for flat or pitched roofs." In addition, "in no event shall the maximum number of stories above grade be greater than two." And front yard setbacks shall be ten (10) feet from the street easement." The City height limit for structures is in conflict with school building design, and while the City's municipal code allows for Planning Commission

approval of buildings, the City pointed out that having to complete this entitlement process for each building over the next 10 – 15 years would be cumbersome for both the District and the City.

1.4 Specific Plan

As the design concepts in the Specific Plan are set to be developed in several phases over a long period of time, the City recommended preparation of a specific plan so that a consistent set of development standards could be adopted. Once adopted, the standards in the specific plan would become the regulations against which later phases of the project would be reviewed by the City. The Malibu Middle and High School Campus Specific Plan establishes the development standards and plan for the Malibu Middle and High School (MMHS) Campus over the next 10 to 15 years. The existing MMHS campus was constructed as Malibu Park Junior High School beginning in 1963, and in 1992 the school was converted for use as a high school. The Project Site is situated on three of nine parcels: Assessor's Parcel Numbers (APN) 4469-017-900 (40.06 acres), 4469-018-900 (9.4 acres), and 4459-018-904 (2.57 acres). The total acreage of the Project Site is 52.03 acres.

Apart from the recently completed Buildings A/B and E, many of the existing buildings no longer meet the District's needs to support 21st century learning, including technology improvements and flexible classrooms that allow for multiple learning modalities. This Specific Plan would result in the demolition of 18 existing buildings on the combined campuses; with only the existing athletic fields, and the recently completed Buildings A/B and E on the MMHS campus would remain, and the construction a new campus with dedicated spaces for Middle and High School. This Specific Plan would result in 32 classrooms and 8 labs and a total of 173,595 square feet of new building space, providing the MMHS campus with a total of 47 classrooms and 12 labs and a total of 222,425 square feet of building space. Table 1, *Existing and Proposed Floor Area Ratio (FAR)*, shows the existing and proposed floor area ratio (FAR) of the project.

Table 1 Existing and Proposed Floor Area Ratios (FAR)

Site	Acres	Existing		Proposed	
		Building Square Feet	FAR	Building Square Feet	FAR
Merged High School and Middle School[1]	40.06	203,734	0.095	222,425	0.103
Proposed Bus Barn	2.57	1,500	0.013	10,500	0.097
Maximum Allowable FAR[2]			0.150		0.150

[1] Merger proposed as part of this Specific Plan.

[2] Section 17.40.110.3.c. Malibu Municipal Code.

Development of the MMHS is subject to the City of Malibu Development Code and LCP that includes the City's zoning and development requirements. Because of their specialized educational functions, the design of some of the buildings within the Specific Plan area would exceed the current zoning requirements and would require individual variances to be built. To avoid the need for multiple variances, the City recommended preparation of this Specific Plan that would establish the vision of the District and adopt development standards specific to the MMHS campus. The MMHS Campus Specific Plan is intended to upgrade and enhance both campus structures and facilities to meet the District's Education Specifications and better accommodate the student population. While the Specific Plan will upgrade the MMHS campus, it does not allow for an increase in the maximum student population.

While this Specific Plan reflects the anticipated buildout condition of the MMHS campus, only Phase 1 of the Plan is designed and funded for construction. Construction of subsequent Phases will require additional financial resources before they can proceed. The Specific Plan relies on established City of Malibu land use and zoning regulations and

procedures and provides development standards for the MMHS Campus Specific Plan. Both the City of Malibu Municipal Code and Local Coastal Plan (LCP) contain provisions for discretionary site plan review. The District anticipates that implementation of subsequent phases will be reviewed by the City for approval and compared to this Specific Plan and Environmental Impact Report for consistency.

MMHS Campus Specific Plan Organization

This Specific Plan consists of eight chapters, as described below.

- **Chapter 1: Introduction.** Covers the overview and purpose of the Specific Plan.
- **Chapter 2: MMHS Campus Specific Plan Objectives.** Outlines the project objectives of the Specific Plan.
- **Chapter 3: Background and Context.** Provides background of the project location and overview of existing conditions.
- **Chapter 4: MMHS Campus Specific Plan Facilities and Phasing.** Provides details on project development and phasing.
- **Chapter 5: Development Standards.** Identifies standards such as building heights, setbacks, design standards for signs, and landscaping.
- **Chapter 6: Circulation, Mobility, & Parking.** Outlines site access, parking, and mobility improvements.
- **Chapter 7: Infrastructure.** Focuses on the major infrastructure systems including storm drain, sewer, water, lighting, and energy.
- **Chapter 8: Administration and Authority.** Provides the process for project approvals, summary of other state, regional, and local plans and programs related to this Specific Plan, review and approval process, and environmental review.

2.0 MMHS Campus Specific Plan Objectives

The following objectives are developed for the MMHS Campus Specific Plan:

1. Create unique and separate identities for the Malibu Middle School and Malibu High School campuses.
2. Advance educational facilities to support 21st Century learning and properly support the projected enrollment.
3. Improve learning by replacing undersized and inflexible facilities with larger, functional flexible spaces that accommodate modern, diverse learning styles and allow for variable uses.
4. Provide enhanced, modern, and functional support spaces, such as libraries, cafeteria, labs, maker spaces, and other student services, that promote whole child development.
5. Improve the arts and athletic facilities in support of both the school and the community's educational, cultural, and recreational enhancement.
6. Reorganize open space and foster intercampus circulation.
7. Improve access, circulation, and drop-off and pickup, and increase on-campus parking in a manner that improves pedestrian and vehicle safety.
8. Respect the natural environment by developing a campus that is of high design, and complementary to the natural landscape and that contributes to the high scenic quality of the area.
9. Adopt development standards for the MMHS allowing for the educational design requirements of many of the buildings.
10. Increase District resiliency, protect and maximize the learning environment, and maximize energy and operational savings through a photovoltaic solar array and battery backup system.
11. Remove hazardous buildings and structures.

3.0 Background and Context

3.1 Project Location

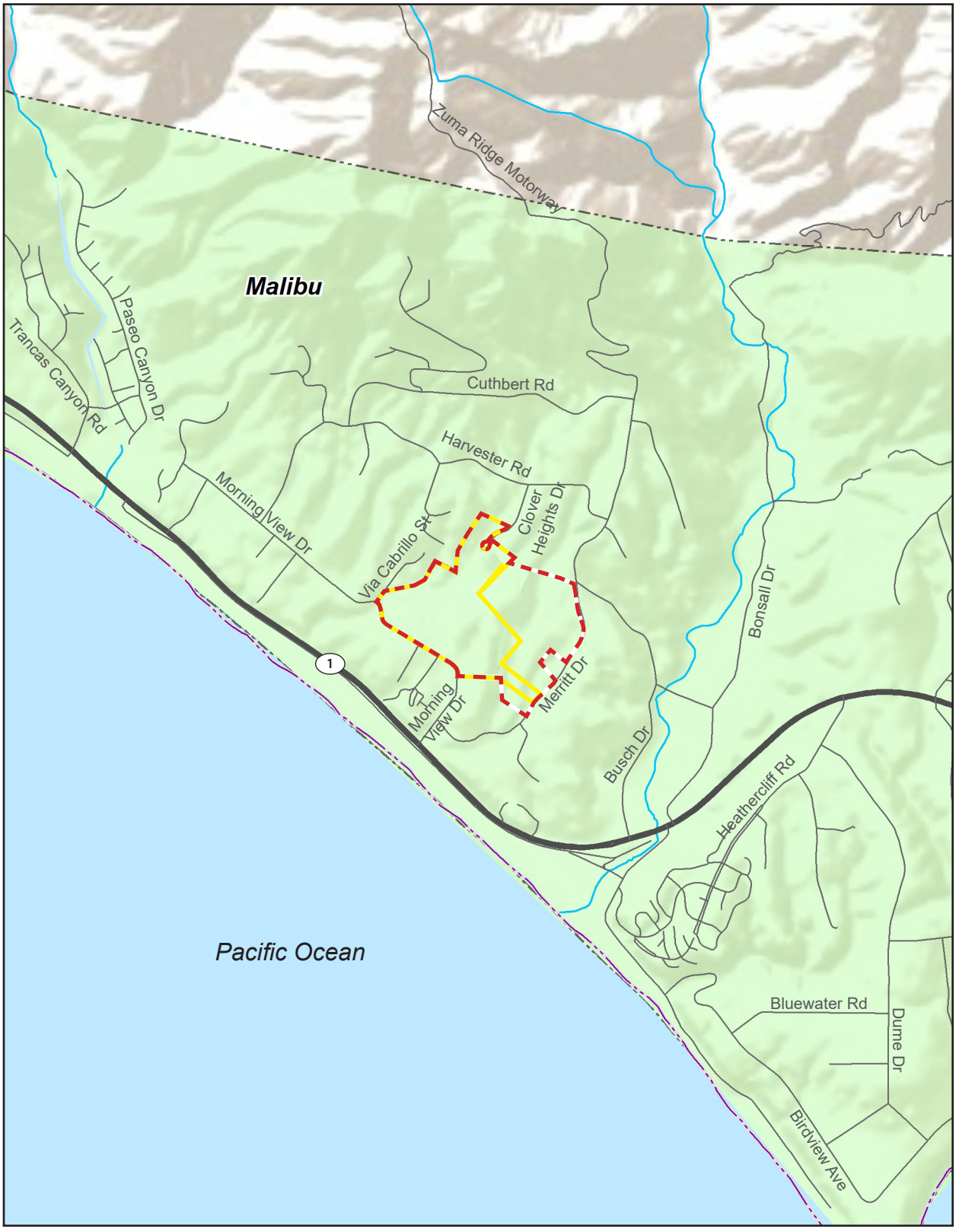
The Specific Plan area includes the entirety of the SMMUSD property that consists of the existing Malibu Equestrian Park in the eastern portion of the property, the existing MMHS campus in the center of the property, and the former Juan Cabrillo Elementary School (JCES) campus in the western portion of the property. MMHS is located at 30215 Morning View Drive (Assessor's Parcel Map Numbers 4469-017-900, 4469-018-900, 4469-018-901, 4469-018-902, 4469-018-903, 4469-018-904, 4469-019-900, 4469-019-901, 4469-019-902 (9 parcels)), in the City of Malibu, Los Angeles County, California (Figure 1, *Regional Location*). This Specific Plan would be developed within the existing MMHS campus and the former JCES campus. The Plan Area is set amid rolling hills, and its buildings and athletic fields are terraced into the hillside setting. The Plan Area is approximately 0.25 miles northeast of both the Pacific Coast Highway (PCH) and Zuma Beach, and bounded by Merritt Drive to the east, Via Cabrillo Street to the west, and Morning View Drive to the south. Single-family homes border the Plan Area to the north (Figure 2, *Local Vicinity*, Figure 3, *Aerial Photograph*, and Figure 4, *Existing Zoning Map*).

Figure 1 Regional Location

0 3
Scale (Miles)

Note: Unincorporated county areas are shown in white.
Source: ESRI, 2020

Figure 2 Local Vicinity



Source: ESRI, 2020 Note: Unincorporated county areas are shown in white.

Figure 3 Aerial Photograph

District Owned Property

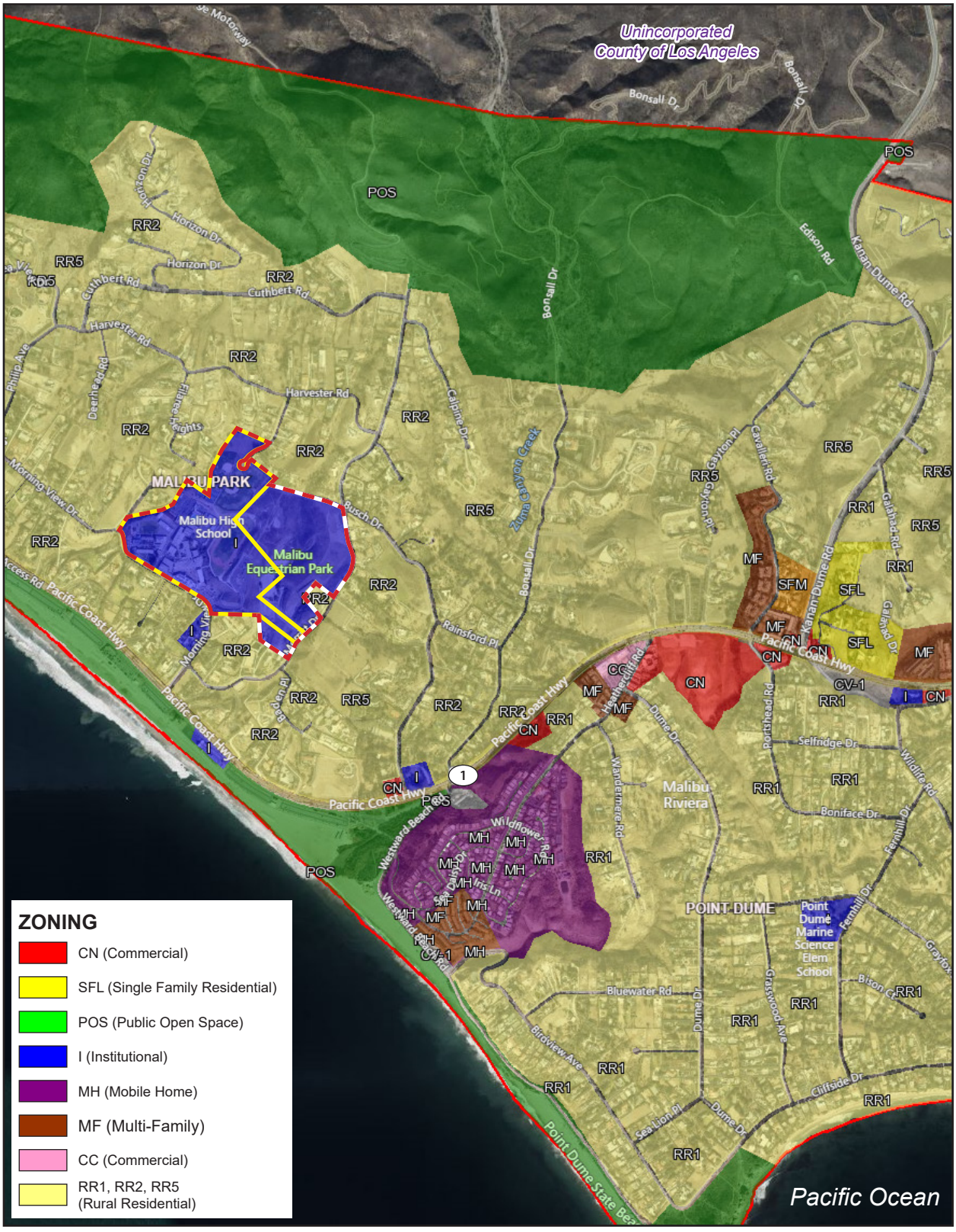
Project Boundary

Parcel Lines
(Note: Some parcel lines are hidden underneath District Owned Property and Project Boundary lines)

0 800
Scale (Feet)

Source: Nearmap, 2020

Figure 4 Zoning Map



Source: City of Malibu, 2021

3.2 Existing Conditions

Existing Land Use

The Plan Area is located within the Zuma Beach area in the Malibu Park neighborhood of the City of Malibu. As shown in Table 2, *Existing Assessor's Parcel Map Numbers in the Plan Area*, the approximately 87-acre Plan Area comprises the existing MMHS campus, the former JCES campus, and Malibu Equestrian Park. As part of this Specific Plan, the District will merge two parcels (4469-017-900, 4469-018-903) into a single parcel that will total 49.06 acres as shown in Appendix A. The combined former JCES and MMHS campus contain a total of approximately 50 acres with 222,425 square feet of developed structures as well as student areas, athletic fields, and parking areas. The Bus Barn will be relocated to the Equestrian Park as part of Phase 4.

Table 2 Existing Assessor's Parcel Map Numbers in the Plan Area

APN Number	Size
4469-017-900 To Be Merged	40.06
4469-018-900	2.49
4469-018-901	2.44
4469-018-902	2.67
4469-018-903 To Be Merged	9.40
4469-018-904 Equestrian Park (to Include Bus Barn in Phase 4)	2.57
4469-019-900	4.05
4469-019-901	5.54
4469-019-902	17.47
Total	**86.69**

Source: Los Angeles County Department of Regional Planning 2020

Former JCES Campus

The former JCES campus covers approximately six acres and is on the western end of the Plan Area to the north of Morning View Drive, west of the MMHS campus. JCES formerly served elementary school grades K-5. As part of SMMUSD's wider Malibu Schools Alignment Project, the JCES student population combined with the Point Dume Marine Science School student population and moved to the Point Dume Marine Science School campus, renamed Malibu Elementary School, at the beginning of the 2019-20 school year. Currently, middle school students utilize the portable classrooms, and Boys & Girls Club utilizes the former library as the Wellness Center., No other JCES rooms are currently being used. Figure 5, *Existing MMHS Campus Buildings and Facilities*, shows the former JCES campus buildings.

MMHS Campus

The MMHS campus covers approximately 34 acres of the overall District property and operates as a sixth- through twelfth-grade public school with a 2018-19 enrollment of 939 students and 134 staff. Presently, the MMHS campus has 60 classrooms (including 12 portable classrooms); a library, auditorium, and administrative offices; an athletic field, 2 gymnasiums, a pool, 9 basketball courts, and 4 tennis courts; and parking for 282 vehicles in three parking

lots. Additionally, the recently constructed Buildings A/B and E would remain, with no work identified for the Specific Plan. Figure 5 shows the MMHS campus buildings.

Site Access, Circulation, and Parking

The Specific Plan area can be accessed from Morning View Drive, approximately 0.3 miles northeast of the intersection of Morning View Drive and PCH and 0.9 miles southeast of the intersection of Guernsey Avenue and PCH. Morning View Drive is a narrow, two-lane, local roadway with an open drainage system that provides direct access to single-family homes in the area as well as to the existing MMHS and former JCES campuses and the Malibu Equestrian Park. Regional access to the Plan Area is provided via PCH.

There are currently two main points of vehicular entry into the MMHS and former JCES campuses. The first entry is along the eastern edge of the campus from Morning View Drive. The second point of entry is at the access road between the former JCES campus and the MMHS campus. This entry is a service access point and provides access to the Bus Barn, Maintenance and Operations Warehouse, and Student Parking Lot A. There are currently five parking lots with a total of 375 parking spaces.

Student drop-off/pick-up for the Middle School currently occurs in Parking Lot E (150-Space Parking Lot), while drop-off/pick-up for the High School Students occurs in the JCES Parking Lot. Sidewalks are provided on both sides of Morning View Drive from PCH north to the western end of the former JCES campus. There are currently three crosswalks along Morning View Drive that provide access to the former JCES and MMHS campuses from the south side of the street. A crossing guard staffs the crosswalk in front of former JCES during the AM drop-off and PM pick-up peak periods. No parking is allowed along Morning View Drive.

Site Topography

The Plan Area is situated on the southern flanks of the western portion of the Santa Monica Mountains. Maximum topographic relief on-site is approximately 94 feet, with elevations ranging from 86 to 180 feet above mean sea level. The campus consists of several near-level pad areas with generally ascending slopes to the north and descending slopes to the PCH to the south. On the MMHS campus, the street-level pad contains the recently constructed MMHS administration, library, and classroom buildings (Buildings A/B); the under-construction Lower Parking Lot; and an outdoor courtyard, cafeteria, and auditorium. On the former JCES campus, the pad contains the administration building, the kindergarten classroom, the special education classrooms, and the JCES Parking Lot. The next pad to the northwest contains the newer and old gymnasiums, outdoor basketball courts and swimming pool, the Boys & Girls Club of Malibu facility, and the Bus Barn and Parking Lot A on the MMHS campus, as well as the multipurpose room, the library, and three educational buildings on the former JCES campus. The third pad contains the Main Sports Field and the 150-Space Parking Lot. The fourth contains the tennis courts and baseball diamonds. The fifth and highest pad contains Parking Lot A (the 150-Space Parking Lot). Each terrace is accessible via stairs and handicap accessible ramps. From street level on Morning View Drive, views of the development on the elevated terraces are limited.

Environmentally Sensitive Habitat Area

There is very little natural vegetation on-site, consisting primarily of grasses, ivy, brush, shrubs, and scattered ornamental and native trees. The City of Malibu's Environmentally Sensitive Habitat Area (ESHA) Map shows a stream approximately 400 feet northwest of the campus. The stream consists of an underground pipe from Floris Heights Road that flows under the school property and daylights into a natural streambed along the western boundary of the school property. The stream extends for approximately 1,088 feet and varies between

approximately 24 and 85 feet wide. the stream course is deeply incised with steep banks. The top of the southeast bank extends significantly higher than the northwest bank because it is located immediately adjacent to the campus.

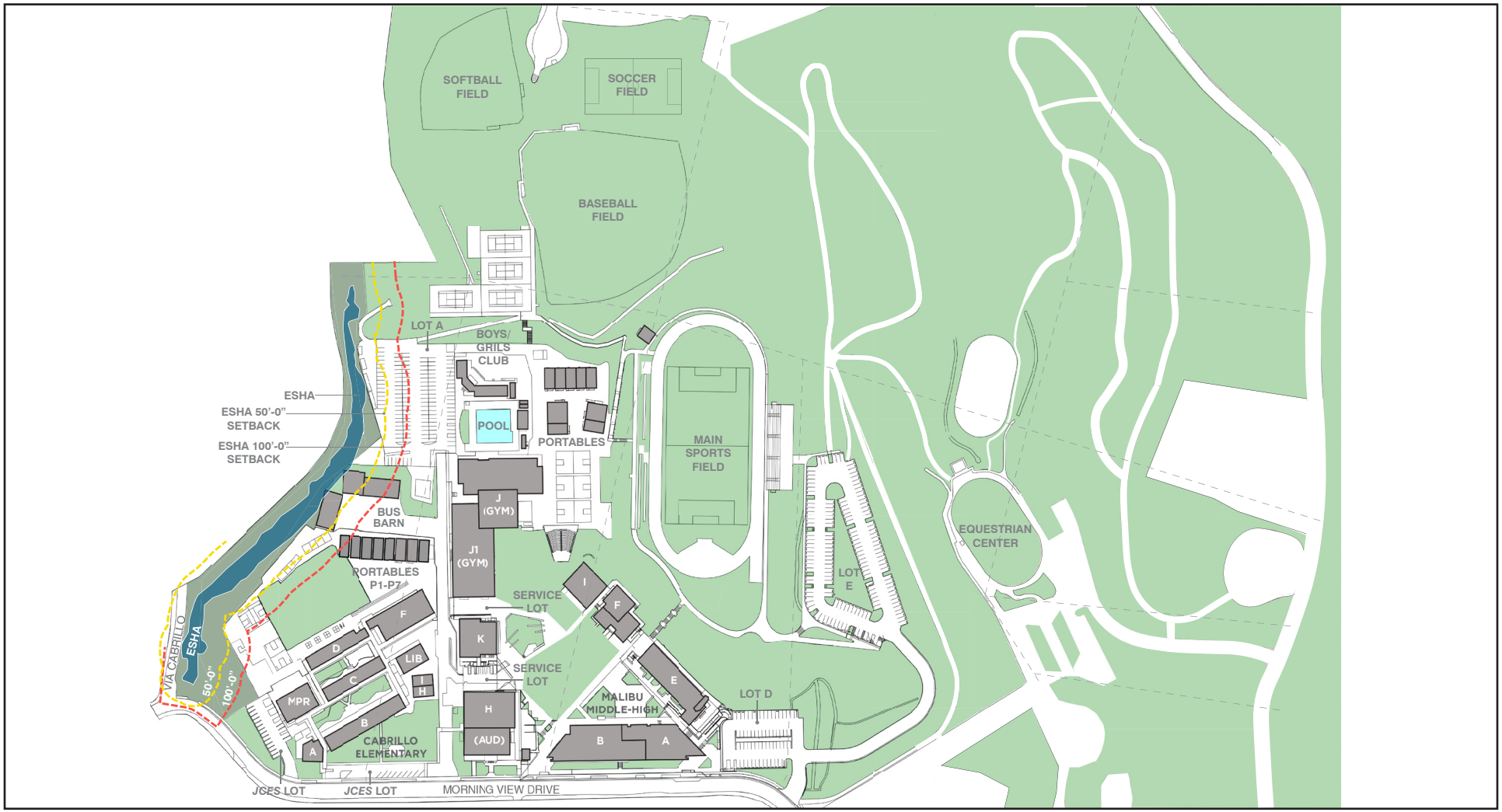
The City of Malibu maintains policies to protect environmentally sensitive habitat areas within city limits, and new developments must be sited and designed to minimize impacts to the ESHA.

Section 4.6.1(A) of the LIP provides for buffer around native stream vegetation:

> New development shall provide a buffer of no less than 100 feet in width from the outer edge of the canopy of riparian vegetation. Where riparian vegetation is not present, the buffer shall be measured from the outer edge of the bank of the subject stream.

Portions of the campus are developed within the 100-foot buffer, including the Bus Barn, the tennis courts, and portions of the former JCES yard. However, all these structures were developed prior to the certification of the LCP, which occurred in 2002, and many of the existing uses predate the Coastal Act.

Figure 5 **Existing MMHS Campus Buildings and Facilities**



Source: LPA, 2021

4.0 MMHS Campus Specific Plan Facilities and Phasing

4.1 MMHS Campus Specific Plan Development

As shown in Table 3, *Summary of Building Demolition*, implementation of the Specific Plan would result in demolition of all 7 buildings and 9 portables on the former JCES campus and 6 buildings and associated amenities on the MMHS campus, totaling 154,904 square feet of demolition. Building E and Buildings A/B at the MMHS Campus would remain, with all other structures removed (see Figure 6*, Proposed Site Plan*). The Bus Barn would be relocated to the east side of the site. No changes to the existing main sports field, baseball, or softball fields would occur except for the development of new field houses and additional parking adjacent to the softball field.

Table 3 Summary of Building Demolition

Name	Square Footage
Former JCES Campus	
Building A: Administration Building	2,280
Building B: Kindergarten Classroom Building	5,941
Building C: Classroom Building	4,554
Building D: Classroom Building	4,535
Building E: Library	2,694
Building F: Classroom Building	7,952
Building G: Multipurpose Room Building	4,758
Buildings H and I (Cottage Portables)	1,920 (2 x 960sf)
Portables: Portables P1 to P5	5,280 (5 x 960sf, 1 x 480sf)
Portables: P6 to P7	1,920 (2 x 96-0sf)
Restroom Portable	480
Former JCES Subtotal	42,314
MMHS Campus	
Building F (300 Building): Music/Band/Choral Building	6,720
Building H (600 Building): Cafetorium	14,478
Building I (400 Building): Graphic Arts	4,561
Building J (Building 700): Gymnasium	20,758
Building J1: 'New' Gymnasium	18,835
Building K: Classroom Building	12,698
Pool	Pool: 60'x75' Pool Equipment Building: 900
Field House	930
Portables (13 Interim Classrooms and Administration)	12,960 (1 @1,920sf, 8 @960sf, 1 @480sf, 3 @960sf)
Boys & Girls Club	9,120 (3@2,880, 1@480)
Bus Barn	9,700
Maintenance and Operation Warehouse	930
MMHS Subtotal	**112,590**
Total Demolition Square Footage	**154,904**

Source: SMMUSD 2021.

As shown in Table 4, *Summary of New Development*, the Specific Plan would result in 32 classrooms and 8 labs and a total of 173,595 square feet of building space, providing the MMHS campus with a total of 51 classrooms and 12 labs and a total of 222,425 square feet of building space, including the existing Buildings A/B and E that would remain.

Table 4 Summary of New Development

Building	Status	Classroom	Lab	Square Footage	Maximum Height
Middle School Core					
Building D: Gymnasium/ Fitness/ PE and Student Activities and Food Services	New	2	0	22,376	36 ft
Middle School Core Subtotal		**2**		**22,376**	
High School Core					
Building C: Classrooms, Student Support Services, Administrative and Campus Support	New	23	8	68,019	36 ft
Building J: Gymnasium/ PE	New	2	0	36,708	45 ft
High School Core Subtotal		**25**	**8**	**104,727**	
Shared Amenities					
Building I: Special Education and Campus Wellness Center	New	1	0	5,094	28 ft
Building H: Visual and Performing Arts (VAPA)	New	4	0	30,094	45 ft
Building L: Aquatics Center/Field House	New	0	0	9,249	28 ft
Building M: Upper Field House	New	0	0	2,055	28 ft
Shared Amenities Subtotal		**5**		**46,492**	
Subtotal – New Development		***32***	***8***	***173,595***	
Existing Buildings A/B and E					
Building A/B: Administration/Library	Existing	7	4	35,315	28 ft
Building E: Classroom Building	Existing	15	0	13,515	28 ft
Subtotal - Existing Buildings		***19***	***4***	***48,830***	
Total		**51**	**12**	**222,425**	

Source: LPA 2019.

The plan generally organizes the campus land uses in three defined areas: Middle School core, High School core, and shared amenities. This consolidation of uses results in a more efficient use of available land while enhancing independent identities for each area and improving wayfinding. The pronounced topography found on site is also utilized to emphasize this concept by creating “terraces” for each defined area.

At the center of the campus, the plan proposes the Performing Art Center along with an arrival plaza to serve as a welcoming entry and as a bridge connecting both schools. A leveled academic quad is proposed for each campus and becomes the main organizing element for the academic cores. This important space will become the “heart” of each school and hub of educational and social activities while providing access to surrounding buildings.

Middle School Core

The Middle School Core would be located at the southeastern portion of the campus with a level academic quad in the middle. As shown in Table 5, *Summary of Middle School Core Development*, the Middle School Core would consist of four buildings, including the existing Building E and Buildings A/B. Building D would include a new middle school gym, student activities, and Food Services. Upon completion, the Middle School Core would result in 71,206 square feet of total development. The Middle School Core would include 21 total classrooms (12 classrooms in the existing Building E, 7 in the existing Buildings A/B, and 2 in the proposed Building D), administration offices, supportive services, a library, four science labs (in Buildings A/B), 2D art studio, lunch shelter, multipurpose room, gymnasium, and locker rooms.

The existing Buildings A/B contains Science, Technology, Engineering, and Math programs, student support services, and administration and supportive services, and has 7 classrooms and 3 labs. Buildings A/B are two stories with a maximum height of 28 feet and oriented east-west along Morning View Drive. Building E houses the humanities department and has 12 classrooms. The existing Building E is a two-story prefabricated modular building with a maximum height of 25.5 feet at the parapet, and it is located to the north of Buildings A/B.

Figure 6 **Proposed Site Plan**

HIGH SCHOOL

Building C - Classrooms, Student Support Services, Administration and Campus Support

Building J - Gymnasium, PE

MIDDLE SCHOOL

Building A/B (existing) - Administration, Library
Building E (existing) - Classrooms
Building D - Gymnasium/Fitness/PE and Student Activities and Food Service

SHARED USES

Building H - Visual and Performing Arts (VAPA)
Building I - Special Education and Campus Wellness Center
Building L - Aquatics Center/Field House
Building M - Upper Field House

OTHER

POTENTIAL OUTDOOR LEARNING OPPORTUNITES

EXISTING FEATURES/ BUILDINGS TO REMAIN

APPROXIMATE LOCATION OF MARQUEE SIGNS

Project Stalls By Lot:
A. 150 (existing)
B. 62 (existing)
C. 25
D. 129
E. 32
F. 14

0 450
Scale (Feet)

Source: LPA, 2021

Building D would be located to the north and northwest of Buildings A/B, along the northern edge of the Middle School campus. Building D would house the physical education center and new student activities and food services. The physical education portion of the building would be one story and 16,932 square feet and would house a 50-foot by 84-foot multipurpose court with storage, 6 rows of bleachers, a lobby and restrooms, and a physical education center with a fitness studio; storage; boys' and girls' lockers and restrooms; and staff office, shower, and restroom. The student activities and food services portion of Building D would be two stories and 5,444 square feet and would have a maximum height of 36 feet along the northern boundary. The student activities area would include maker space and the Associated Student Body (ASB) student store and storage areas, while the food services area would include a warming kitchen, food court, restrooms, and a 3,600-square-foot exterior sheltered lunch area. Building D would serve as the gymnasium and will have a maximum height of 36 feet above grade to meet the National Federation of State High School Association, (NFHS) minimum interior height requirement of 23 feet clear from floor to ceiling for competitive Volleyball. Building D would provide an accessible path to the hardcourt area on the upper level. The Middle School Core buildings would be arranged around a quad that would serve as a central gathering area for the Middle School students.

Table 5 Summary of Middle School Core Development

Building	Status	Classroom	Lab	Square Footage	Maximum Height
Buildings A/B: Administration/Library/ Classroom Building	Existing	7	4	35,315	28 ft
Building D: Gymnasium/ Fitness/ PE and Student Activities and Food Services	New	2	0	22,376	36 ft
Building E: Classroom Building	Existing	12	0	13,515	25.5 ft
Total-Middle School Core		**21**	**4**	**71,206**	

Source: LPA 2019.

High School Core

The High School Core would be at the southwestern portion of the campus occupying the former JCES campus. As shown in Table 6, *Summary of High School Core Development*, Building C would be two stories and would include 25 classrooms, administration offices, supportive services, a library, 8 science labs and maker spaces, Art 3D sculpture/ceramics studio, lunch shelter, and a career center. Building C would be designed to fit the natural topography of the site, such that the southern portion of the building fronting Morning View Drive would have a maximum height of 36 feet above grade. The required exhaust hoods for the science classes extend another ten feet above the main roof which is four feet above the parapet for a height of 41 feet, however the exhaust hoods are near the center of the roof area and are not visible from Morning View Drive.

In addition to Building C, the High School Core would include an approximately 36,708-square-foot main gymnasium and dance/weights rooms (Building J), which would be in the center of the campus adjacent to the hardcourts. Building J would have a maximum height of 45 feet and would include team rooms and four CIF regulation hardcourts for indoor sports. As described in Table 12 below, Building C contains high bay/ high volume spaces to house the library, student union, and career center. These high bay spaces are required to provide the students with adequate functioning spaces conducive to 21st Century learning as defined in the Campus Plan Education Specifications. The interactive, collaborative nature of this space requires an appropriate high-volume ceiling.

Table 6 Summary of High School Core Development

Building	Status	Classroom	Lab	Square Footage	Maximum Height
Building C: Classrooms, Student Support Services, Administrative and Campus Support	New	23	8	68,019	36 ft
Building J: Gymnasium/ PE	New	2	0	36,708	45 ft
Total-High School Core		**25**	**8**	**104,727**	

Source: LPA 2019.

Shared uses

In addition to developing the Middle School and High School Core areas, the Specific Plan would develop new shared facilities. As shown in Table 7, *Summary of Shared Uses,* these shared facilities would include a performing arts center (Building H), wellness center and spaces for special education (Building I), aquatics center/field house (Building L), and pool. As shown in Figure 6, the new shared facilities would be built to the north of the Middle School and High School Cores and west of the existing Main Sports Field. The Boys & Girls Club building, either a newly constructed building or relocation of the existing buildings, next to the tennis courts near the northwestern portion of the campus (for the purposes of this DEIR, it is assumed the existing buildings would be demolished and new facilities constructed).

Shared Performing Arts Facilities

Under the Specific Plan, Building H would have a maximum height of 45 feet above grade for the Theater portion, and 36 feet above grade for the remainder of the performing arts facilities. As described in detail in Table 12, High School Performing Arts facilities require a vertical stage opening of 25 feet (to the bottom of the proscenium). In addition, the long span structure and tension lighting grid ceiling system will add 15 feet above the stage opening plus 5 feet for roof slope and parapet. This equates to a total height of 45 feet, allowing for the school to produce the types of theatrical performances expected in a high school theater curriculum. Buildings I, L and M would be a maximum of 28 feet above grade.

Shared Sport and Recreational Facilities

As part of the Project, the existing 25-meter pool would be replaced with a new Olympic-size 50-meter pool. As with the existing pool, the updated pool would serve educational sporting events such as swim and water polo as well as recreational community uses. In addition to the new gymnasium, weight room, aquatic center and locker rooms, the existing athletic field, baseball, and softball fields would receive minor improvements. A new field house (Building M) would be constructed for the baseball and softball fields, and one for the athletic field (Building L). The existing public address (PA) system and speakers at the athletic field would be relocated to the proposed ADA-compliant press box (same use as current). Additionally, the Specific Plan would add two new tennis courts to the existing tennis court area on the northern side of the Plan Area. The Specific Plan would also extend pedestrian trails throughout the campus to improve pedestrian circulation. The pedestrian trails would include turnouts/viewpoints, which would be used as outdoor classroom space.

Table 7 Summary of Shared Uses

Building	Status	Classroom	Lab	Square Footage	Maximum Height
Building I: Special Education and Campus Wellness Center	New	1	0	5,094	28 ft
Building H: Visual and Performing Arts (VAPA)	New	4	0	30,094	45 ft
Building L: Aquatics Center/Field House	New	0	0	9,249	28 ft
Building M: Upper Field House	New	0	0	2,055	28 ft
Total-Shared Amenities		**5**		**46,492**	

Source: LPA 2019.

Student Capacity and Schedule

Consistent with the City's population decrease, enrollment at the campus has been steadily decreasing since 2006 from a high of approximately 1,576 (281 students at JCES and 1,295 at MMHS) to 1,142 (197 at JCES and 945 at MMHS) in 2018-2019. Enrollment since 2015 to 2020 at the campus has decrease by 15 percent. In the 2019-2020 school year after the closure of JCES, the student population at MMHS was 862, and in the current 2020-2021 school year, enrollment further declined to 784 students, as shown in Table 8, *Student Enrollment by Grade Level*.

Table 8 Student Enrollment by Grade Level

YEAR	SCHOOL	TK	K	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PERCENT DECREASE PER YEAR
2006	CABRILLO		44	40	45	52	48	52								281	
2006	MMHS								161	174	173	219	197	202	169	1295	
2006	TOTALS	0	44	40	45	52	48	52	161	174	173	219	197	202	169	1576	-
2007	CABRILLO		57	41	38	47	56	51								290	
2007	MMHS								148	162	172	177	224	188	207	1278	
2007	TOTALS	0	57	41	38	47	56	51	148	162	172	177	224	188	207	1568	1%
2008	CABRILLO		48	54	47	41	51	56								297	
2008	MMHS								140	164	164	177	174	215	173	1207	
2008	TOTALS	0	48	54	47	41	51	56	140	164	164	177	174	215	173	1504	4%
2009	CABRILLO		32	41	50	52	42	55								272	
2009	MMHS								163	156	173	178	168	170	205	1213	
2009	TOTALS	0	32	41	50	52	42	55	163	156	173	178	168	170	205	1485	1%
2010	CABRILLO		40	32	41	51	46	44								254	
2010	MMHS								145	161	150	176	174	177	177	1160	
2010	TOTALS	0	40	32	41	51	46	44	145	161	150	176	174	177	177	1414	5%
2011	CABRILLO		38	37	35	44	54	45								253	
2011	MMHS								137	161	166	153	183	175	182	1157	
2011	TOTALS	0	38	37	35	44	54	45	137	161	166	153	183	175	182	1410	0%
2012	CABRILLO		34	38	37	41	45	55								250	
2012	MMHS								157	142	162	176	151	181	175	1144	
2012	TOTALS	0	34	38	37	41	45	55	157	142	162	176	151	181	175	1394	1%
2013	CABRILLO		34	32	37	38	46	48								235	
2013	MMHS								172	153	144	177	184	151	182	1163	
2013	TOTALS	0	34	32	37	38	46	48	172	153	144	177	184	151	182	1398	0%
2014	CABRILLO		37	35	33	39	33	48								225	
2014	MMHS								157	137	158	148	170	182	148	1100	

YEAR	SCHOOL	TK	K	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	PERCENT DECREASE PER YEAR
2014	TOTALS	0	37	35	33	39	33	48	157	137	158	148	170	182	148	1325	5%
2015	CABRILLO		22	33	35	29	40	35								194	
2015	MMHS								127	158	147	169	154	175	175	1105	
2015	TOTALS	0	22	33	35	29	40	35	127	158	147	169	154	175	175	1299	2%
2016	CABRILLO	11	26	22	31	33	32	40								195	
2016	MMHS								99	117	161	155	158	154	159	1003	
2016	TOTALS	11	26	22	31	33	32	40	99	117	161	155	158	154	159	1198	8%
2017	CABRILLO	6	31	28	22	35	39	34								195	
2017	MMHS								113	107	116	159	153	152	152	952	
2017	TOTALS	6	31	28	22	35	39	34	113	107	116	159	153	152	152	1147	4%
2018	CABRILLO	14	20	28	32	24	35	44								197	
2018	MMHS								116	112	112	135	163	151	156	945	
2018	TOTALS	14	20	28	32	24	35	44	116	112	112	135	163	151	156	1142	0%
2019	MMHS								112	114	108	108	125	147	148	862	
2019	TOTALS	0	36	35	44	55	46	57	112	114	108	108	125	147	148	862	25%[1]
2020	MALIBU MIDDLE								85	125	115					325	
2020	MALIBU HIGH											111	114	123	149	497	
2020	TOTALS								85	125	115	111	114	123	149	822	5%
															Percent Decrease between 2006 and 2020		**48%**

Source: California Department of Education

Note: Student enrollment for the 2020-2021 school year is 784 students.

[1] Note that the 25 percent decrease observed in 2019 is due to the District Realignment that combined JCES with the Point Dume Marine Science School in 2019.

Moreover, enrollment is not projected to increase, as lower (feeder) grades have been tracking below historic levels, indicating a decrease in future enrollment at middle and high school grades may occur. Enrollment levels are expected to decrease over the coming decade, with a projected enrollment of 533 in 2025 (DecisionInsite 2021) Based on enrollment projections by Decision Insite LLC, the District anticipates a total enrollment of approximately 150 middle school students and 225 high school students, for a total of 375 students by 2030, which would represent a 12 percent reduction in student population compared to 2017 (Decision Insight 2021).

The existing MMHS campus has the capacity to seat approximately 1,200 students, as evidenced by the 2006 enrollment, but no longer meets the District's educational requirements due to the building's age and overall condition. The Proposed Project would not increase the capacity of the MMHS campus but would be designed to support the regrowth of the community from the Woolsey Fire.

School hours would remain the same as existing, from 8:00 AM to 3:00 PM, with staff and students of the middle/high school arriving on campus between approximately 7:00 AM and 8:00 AM and leaving between approximately 3:00 PM and 5:00 PM, with occasional special events and athletic events during weeknights and/or weekends. Additionally, the Visual and Performing Arts program uses the auditorium after school typically until 6:00 PM, and the Boys & Girls Club on the campus is open Monday through Friday from 9:00 AM to 6:30 PM.

Community/Civic Center Use

When the school facilities are not in use and are not scheduled for school-sponsored or other District-related events, the Civic Center Act permits certain community organization and members to utilize school facilities for their events by obtaining a Civic Center Permit from the SMMUSD or the City of Malibu Master Facilities Use Agreement with SMMUSD. Permitted events may include community and/or city use of the playfields, common areas, and classrooms, as permitted in the 2019 Master Agreement between SMMUSD and the City of Malibu Regarding the Joint Use of School District Facilities (SMMUSD/City of Malibu 2019).

Operation of the school facilities for community use occurs outside normal school operating hours, generally between 3:00 PM and 10:00 PM on weekdays, and between 8:00 AM and 10:00 PM on Saturday and Sundays. Parking for Civic Center uses would be provided in the school's on-site surface parking lots. The aquatic center is used for community and school activities from 5:30 AM - 8:00 AM on weekdays and often before 8:00 AM on weekends and breaks. As the Specific Plan would develop additional facilities, there may be a commensurate increase in community use with implementation of the Specific Plan. The Specific Plan would not change or modify the restrictions imposed on the Athletic Field lighting (CDP 12-024), or the lighting associated with the 150-space Parking Lot A under the existing CDP (CDP No. A-MAL-13-030). Table 9, *Existing and Buildout Community Use Facilities*, shows the existing facilities available for community use and the proposed facilities.

Table 9 Existing and Buildout Community Use Facilities

Name	Square Footage
Existing Community Use Facilities	
MMHS Building H (600 Building): Cafetorium	14,478
MMHS Building J (Building 700): Gymnasium	20,758
MMHS Building J1: 'New' Gymnasium	18,835
MMHS Building K: Classroom Building	12,698
JCES Building E: Library	2,694

Name	Square Footage
JCES Building G: Multipurpose Room Building	4,758
Pool	1
Main Sports Field	1
Baseball Field	1
Softball Field	1
Tennis Courts	4
Subtotal Existing	74,221
Proposed Community Use Facilities	
Building D: Middle School Gymnasium/ Fitness/ PE	16,932
Building J: High School Gymnasium	36,708
Building H: Shared Visual and Performing Arts (VAPA)	30,094
Building L: Aquatics Center/Field House	9,249
Building M: Upper Field House	2,055
Pool	1
Boys & Girls Club	9,120
Main Sports Field	1
Baseball Field	1
Softball Field	1
Tennis Courts	6
Subtotal Proposed (Buildout):	**104,158**
Net Increase	**29,937 and Two Tennis Courts**

Source: SMMUSD 2019.

4.2 Phasing

The Specific Plan would be constructed in four phases, with construction activities anticipated to begin in fall 2022 and completed in summer 2031. Each phase would include the following activities—grading and excavation, trenching for site utilities, demolition and construction of the buildings, paving, and finishing. It is anticipated that students would occupy existing buildings on the MMHS campus during construction activities. With the completion of Phase 1, the majority of the Specific Plan's classrooms would be constructed. Therefore, it is not anticipated that portable classrooms, beyond those currently on campus, would be used to house students or staff during construction. Table 10, *Proposed Specific Plan Phasing*, provides details for each construction phase, including timing, amount of demolition, new construction, and drainage management areas (DMA) and infrastructure improvements for each phase.

Table 10 Proposed Specific Plan Phasing

Phase	Demolition	Demolition Square Footage	New Construction	New Construction Square Footage	Infra-structure Improvement	Timeline
1	JCES Buildings A, B, C, D, E, F, G, H, I, P6–P7	36,544	Building C, Parking Lot D Drop-off/Pick-up, Parking Lot C	68,019	• DMA A • DMA B • Septic 1	Fall 2022 – Fall 2024
2	N/A	N/A	Building D, Middle School Quad	22,376	• DMA C • Septic 2	Fall 2024 – Fall 2026
3	MMHS Buildings F, I, Field House, and Portables	27,571	Buildings J, L, and M, Parking Lot E, Parking Lot F, Bus Barn	48,012	• DMA D • Septic 3 • Septic 5	Fall 2026 – Fall 2028
4	MMHS Building K, J, J1, Pool, Pool Building, Boys & Girls Club (demolished or relocated), JCES Portables P1-P5, Restroom Portable, Bus Barn, M&O Warehouse	69,581	Building H and I, Boys & Girls Club (relocated)	56,816	• DMA E • DMA F • Septic 4	Fall 2028 – Fall 2030
	MMHS Building H	14,478	N/A	N/A	• DMA G	Spring 2030 – Spring 2031

SMMUSD 2020

DMA = Drainage Management Area

Phase 1

Phase 1 would consist of demolition of all existing former JCES campus buildings and portables P6 and P7 and construction of the Building C (see Figure 7, *Building C Proposed Elevation*), Parking Lot C, Parking D, and the Drop-off/Pick-up area (see Figure 8, *Specific Plan Phasing-Construction*). Phase 1 is anticipated to begin in Fall 2022 and completed by Summer 2024.

Phase 2

Phase 2 would consist of construction of the Building D and the Middle School Quad. Phase 2 is anticipated to begin in Fall 2024 and completed by Fall 2026, a new bond is required before subsequent phases can move forward.

Phase 3

Phase 3 would consist of demolition of MMHS Buildings F, I; the existing field house; and the portables adjacent to the existing pool, and construction of Buildings J, L, and M and Parking Lot E and F. Phase 3 is anticipated to begin in Fall 2028 and completed by Fall 2030.

Phase 4

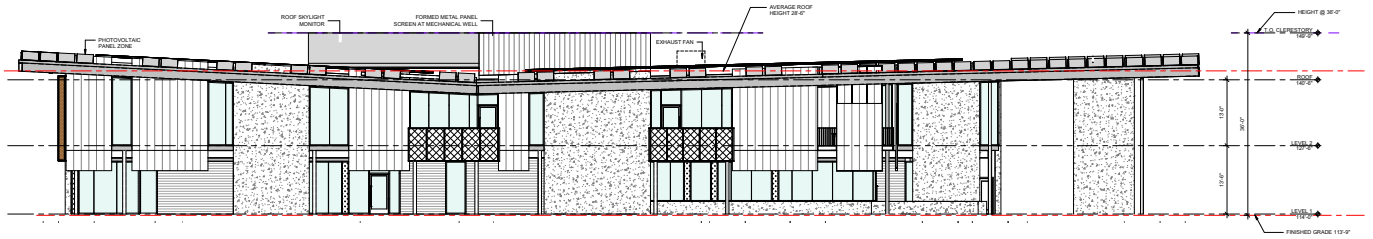
Phase 4 would involve the demolition of MMHS Buildings K, J, J1; the pool and pool building; and Bus Barn, and the demolition and/or relocation of the Boys & Girls Club and construction of the new Buildings H and I. This phase would also require the demolition of the existing MMHS Building H. Phase 4 is anticipated to begin in Spring 2030 and completed by summer 2031.

Photo Renderings

Figure 9 shows vantage points taken from public rights of way (A, B, C, and D) from which photo renderings demonstrating the change in view associated with the plan were prepared. Figures 10 through 13 provide an existing view and a proposed view from each vantage point shown in Figure 9.

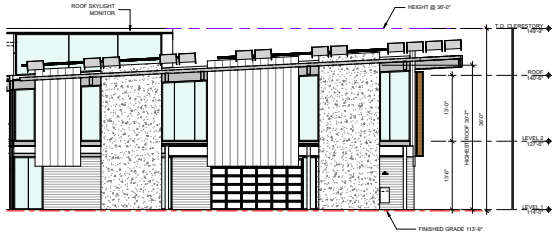
Figure 7 Building C Proposed Elevation

North Elevation



South Elevation

North Elevation Partial

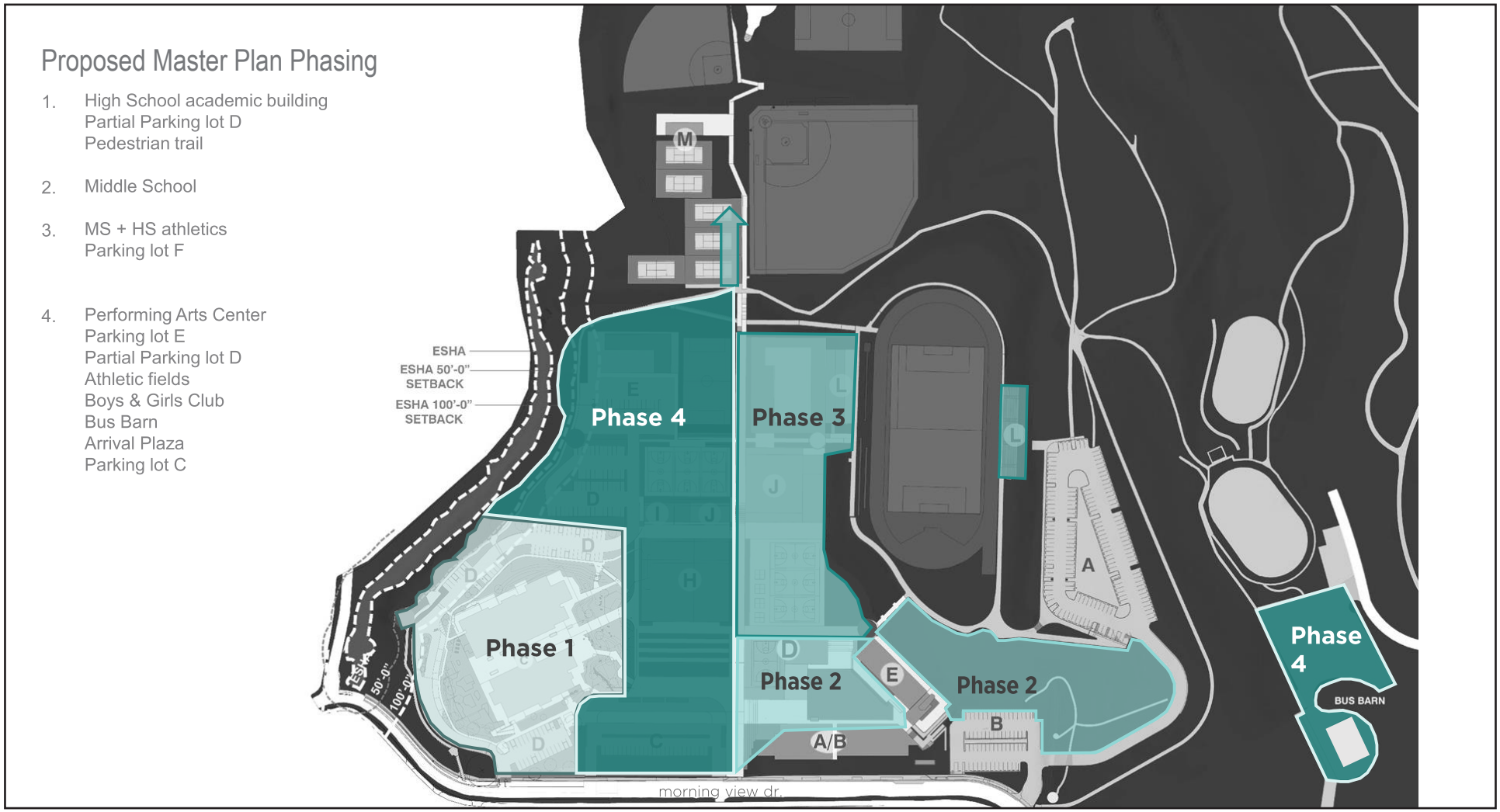


North Elevation Partial

0 35
Scale (Feet)

Source: NAC Architecture, 2021

Figure 8 **Specific Plan Phasing-Construction**



Source: LPA, 2021

Figure 9 **Public Vantage Points A, B, C, and D**

District Owned Property

Project Boundary

Elevation View Location and Direction (4)

0 800

Scale (Feet)

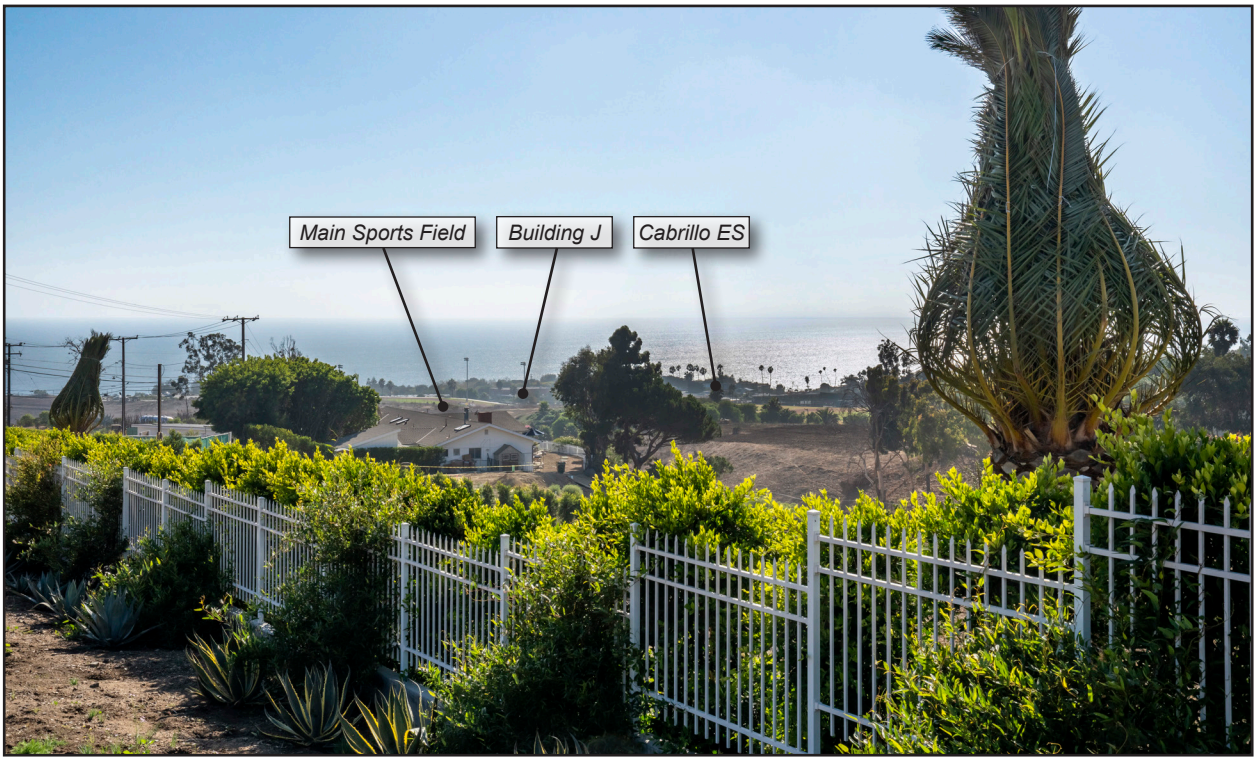
Source: Nearmap, 2021

Figure 10 View from Vantage Point A

Existing

Proposed

Figure 11 View from Vantage Point B

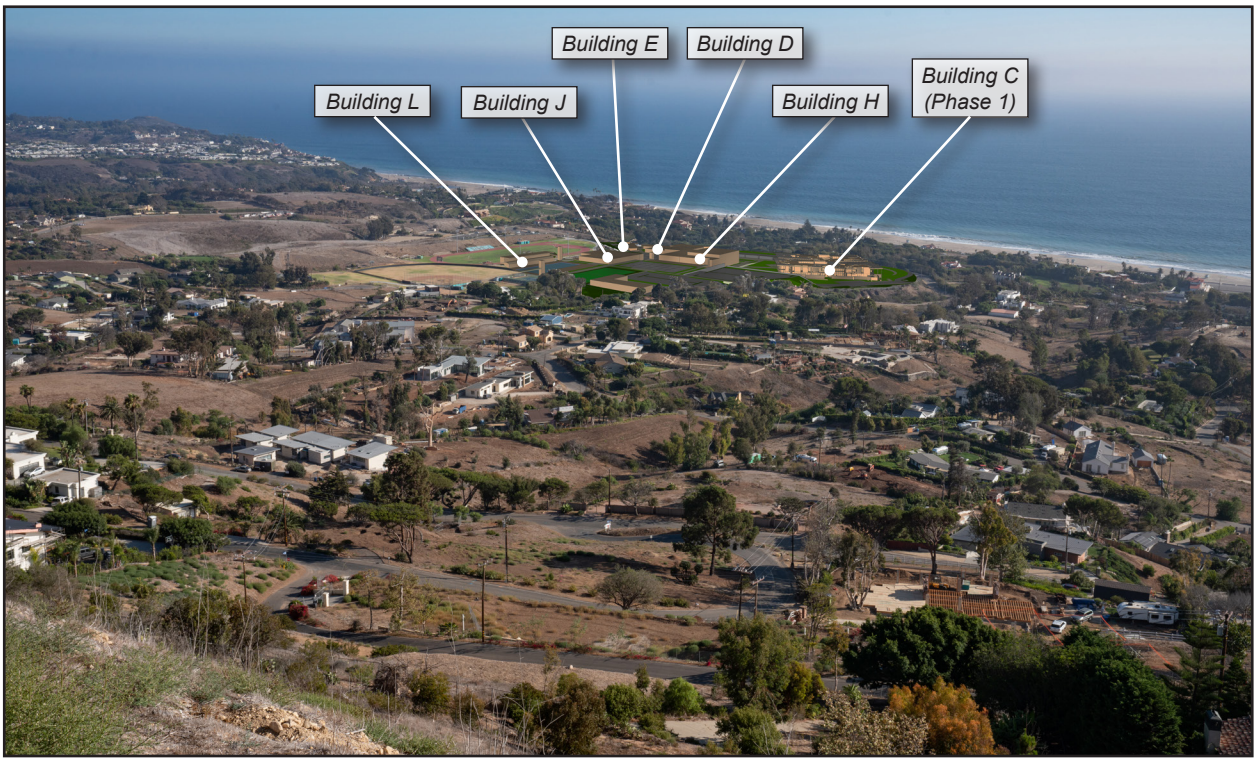


Existing

Proposed

Figure 12 View from Vantage Point C

Existing



Proposed

Figure 13 View from Vantage Point D

Existing

Proposed

4.3 Grading

Previous construction and grading at the Plan Area have created a series of near-level building pads for existing structures and paved parking lots. The majority of the Plan Area, including all areas with current development, is situated on slopes of between 0 and 20 percent, at a minimum of 80 feet above mean sea level (amsl). Around the perimeter of the Plan Area, surrounding the football field, and between building pads, slopes increase to between 40 to 100 percent, reaching up to 170 feet amsl.

For the most part, proposed new construction would take place on the flat, previously developed areas of campus, and existing slope conditions would remain. Because of the topography of the site, and the need to create large terraces for student safety and access, and the overall size of individual school buildings which are larger than most homes require the ability to cut/fill more than 1,000 cubic yards. Table 11, *Estimated Cut/Fill by Phase*, details the total amount of soil to be graded for Phase I and estimates the cut and fill for subsequent phases.

To minimize grading, each bldg. will have its own site-specific geotechnical report that determines individual needs. Because of the topography of the site, and the need to create large terraces, some of the buildings (Bldg. C for example) will serve as a retaining wall and may be over 12 feet in height at certain locations.

Table 11 Estimated Cut/Fill by Phase

Phase	Cut (cy)	Fill (cy)	Project Phase Total (cy)
1	35,190	10,530	24,660 cut
2	5,175	-	5,175 cut
3	25,300	14,000	11,300 cut
4	10,000	33,350	23,350 fill
Total	**75,665**	**57,880**	**17,785 cut**

Source: LPA 2019

5.0 Development Standards

Overall, the development standards definer in the specific plan as outlined below, meet the zoning and development requirements of the City. Table 12 summarizes the exceptions to existing development standards that are essential to the completion of the specific plan.

Higher ceilings in school instructional and creative space are the industry standard; they have been part of new school construction for more than a decade and identified as vital for modern learning. The additional height provides for improved ventilation, noise attenuation, and natural lighting. Similar building heights can be found in several school projects in California such as Newport Harbor High School Library: Newport Beach, New Library/ Media Center, 18 feet high ceiling; Lawndale High School Student Union: Lawndale, 22 feet high ceiling; E Stem High School, Eastvale, Makerspace/ Collaboration Learning Space: 18 feet high ceiling; Hugo Reid ES, Arcadia, Library/ Media Center, 18 feet high ceiling; and Johnson Middle School, Westminster, Maker Classroom, 16 feet high ceiling. The Specific Plan is intended to allow for similar ceiling heights which requires new development standard unique to the school.

With higher interior ceilings the exterior dimensions of the buildings are also higher. Generally, there is between 6 to 8 feet between the interior ceiling and the exterior roofline to provide for internal wiring, lighting, and ventilation. Ventilation equipment and other roof top architectural features would extend above the roofline. Development standards established for the MMHS Campus Specific Plan include the building specifications such as heights, setbacks, design standards for signs and landscaping. To meet the standards established by the District's Educational Specifications, the California Interscholastic Federation, the National Federation of State High School Association, Buildings D, C, H and J must be 36 feet on average, with the science lab hood ventilation equipment for the science classrooms extending to 41 feet. These building heights would exceed the LCP and City's 28-foot height requirements therefore Table 12 includes standards that would allow construction of the school to modern standards.

- **Building C:** High School Building north wing second floor contains high bay/high volume spaces to house educational uses. These high bay spaces are required to provide the students with adequate functioning spaces conducive to 21st Century learning as defined in the Campus Plan Education Specifications. The Student Union is programmed with a central space of 4,000 sf space. The interactive, collaborative nature of this space requires an appropriate high-volume ceiling. A high school Library, based on the District's Educational specifications, require a variety of spaces within the Library, including a large 3,000 sf area that can double as Staff Development space.
- Required rooftop equipment will exceed the 2' maximum height above the roof plane for the science lab exhaust hood, as required by the American National Standard for Laboratory Ventilation (ANSI) Z9.5 as well as the National Fire Protection Association Standard NFPA 45, Chapter 7, section 7.2. Roof top will be occupied by students to support outdoor learning, including visual observation to ESHA. With student access to the roof deck, higher parapets or Guards are required to be 42" minimum height per California Building Code, Part 2, Volume 1, Chapter 10, section 1015.

- **Building D:** The Middle School gymnasium and multipurpose room (MPR) must meet the National Federation of State High School Association, (NFHS) minimum interior height requirement of 23 feet clear from floor to ceiling for competitive Volleyball, the Specific Plan plans for 24' for adequate tolerance in design and construction.
- **Building H:** High School Performing Arts facilities require a vertical stage opening of 25' (to the bottom of the proscenium). In addition, the long span structure and tension lighting grid ceiling system will add 15 feet above the stage opening plus 5' for roof slope and parapet. This equates to a total height of 45 feet, providing for the school to produce the types of theatrical performances expected in a high school theater curriculum. A compromise is being made to create a variable open theater/performance space rather than a traditional proscenium space which would require a fly tower over 80'.
- **Building J:** Gymnasiums must meet National Federation of State High School Associations (NFHS) minimum interior height requirement of 23 feet clear from floor to ceiling for California Interscholastic Federation (CIF) Volleyball, the Specific Plan plans for 25' for adequate tolerance in design and construction and an additional 10' for long span structure and 5' for roof slope and parapet.

Development under the Specific Plan will conform to all other existing development standards under §17.40.110 of the City's Municipal Code for Institutional Development and §3.9 of the City's Local Implementation Program except for those listed under Table 12, *Specific Plan Development Standards.* The table outlines the Specific Plan specifications along with the current City LIP and Municipal Code and reasoning for exceeding current City regulations.

5.2 Building Height Measurements

The campus has varied topography within which several large buildings and plazas will be developed. To meet student safety and accessibility requirements, the buildings and areas surrounding them need to be as even as possible minimizing ramps, stairs, and abrupt changes in elevation. This will result in site grading and a change in the topography to accommodate the buildings. In some cases, the existing grade is such that entry will occur at one level and exit at a different level.

Table 12 Specific Plan Development Standards – Exceptions from Existing Zoning

	Specific Plan Specifications		Current LIP/ and Municipal Code (MC) Requirements	Reason/Notes
Development under the Specific Plan will conform to all existing development standards under § 17.40.110 of the City's Municipal Code for Institutional Development and § 3.9 of the City's LIP with the exception of the following:				
Maximum Building Height[1]	Building J: Gym/PE	45 feet	Section 3.9.A1a of LIP and Section 17.40.110 A.1.a. of MC: Structures shall not exceed a maximum height of 18 feet above natural or finished grade, except for chimneys, rooftop antenna, and light standards. The maximum height of the structure may be increased up to 28 feet for a flat or pitched roof if approved through a site plan review pursuant to Section 13.27 of the Malibu LIP.	Gymnasiums must meet NFHS minimum interior height requirement of 23 feet clear from floor to ceiling for CIF Volleyball, the Specific Plan plans for 25' for adequate tolerance in design and construction and an additional 10' for long span structure and 5' for roof slope and parapet.
	Building H: Theater/ Performing Arts	45 feet		High School Performing Arts facilities require a vertical stage opening of 25' (to the bottom of the proscenium). In addition, the long span structure and tension lighting grid ceiling system will add 15 feet above the stage opening plus 5' for roof slope and parapet. This equates to a total height of 45 feet, allowing for the school to produce the types of theatrical performances expected in a high school theater curriculum.
	Building D: Middle School Gym/MPR	36 feet		Gymnasiums must meet the National Federation of State High School Association, (NFHS) minimum interior height requirement of 23 feet clear from floor to ceiling for competitive Volleyball, the Specific Plan plans for 24' for adequate tolerance in design and construction.
	Building C: High School Building	36 feet (Fume Hood 41 feet)		Building C north wing, second floor contains high bay/ high volume spaces to house educational uses. These high bay spaces are required to provide the students with adequate functioning spaces conducive to 21st Century learning as defined in the Campus Plan Education Specifications. The Student Union is programmed with a central space of 4,000 sf space. The interactive, collaborative nature of this space requires an appropriate high-volume ceiling. A high school Library, based on the District's Educational specifications, require a variety of spaces within the Library, including a large 3,000 sf area that can double as Staff Development space.
Rooftop Equipment Height	Building C: High School Building	Science Labs require exhaust hoods with stacks placed at a minimum of 10 feet above the roof surface.	Section 3.9A.1b of LIP and Section 17.40.110 A.1.b. of MC: Roof-mounted mechanical equipment shall be integrated into the roof design, screened,	Required rooftop equipment will exceed the 2' maximum height above the roof plane for exhaust hoods over Science Labs, as required by the American National Standard for Laboratory Ventilation ANSI Z9.5 as well as the National Fire Protection Association Standard NFPA 45, Chapter 7, section 7.2.

	Specific Plan Specifications		Current LIP/ and Municipal Code (MC) Requirements	Reason/Notes
Development under the Specific Plan will conform to all existing development standards under § 17.40.110 of the City's Municipal Code for Institutional Development and § 3.9 of the City's LIP with the exception of the following:				
	Building C: High School Building	Parapets and or Guardrails that project up to 42 inches in height above the surface of the roof.	and may project no more than two feet higher than the structure roof height (screens included) if approved through a site plan review pursuant to Section 13.27 of the Malibu LIP.	Roof top will be occupied by students to support outdoor learning, including visual observation to ESHA. With student access to the roof deck, higher parapets or Guards are required to be 42" minimum height per California Building Code, Part 2, Volume 1, Chapter 10, section 1015.
Lighting	Nighttime pool lighting will be installed.		Section 3.9.A1d of the LIP and Section 17.40.110 A.1.d. of MC: Sports field lighting shall be limited to the main sports field at Malibu High School and subject to the standards of LIP Sections 4.6.2 and 6.5.G.	Lighting will be installed to meet the requirements of a Class II facility as identified by the Illuminating Engineering Society of North America (IESNA) (10th ed.), where lighting should be a minimum of 30 foot-candles over the pool and 20 foot-candles over the deck, as measured at the water level. Consistent with IESNA recommendations, lighting would also be provided within the pool basin, with the recommended luminance of 15 candelas per square foot (161 candelas per square meter). By meeting these standards, the pool lighting would also meet the requirements of California Building Code § 3115B.1
Signage	Two new 15'6" x 7'6" electronic marquee signs, with a 10'x4' LED Display Screen. One sign each at the Middle and High schools.		Section 3.15.3.J of the LIP ad Section 17.52.040.J.of the MC: Except for those signs allowed under the provisions of Section 3.15.4 (E) of the Malibu LIP, "Special permits," the following signs are prohibited: Automatic changing signs or electronic message center signs, except for public service, time, and temperature	Marquee signs for High School and Middle School are required by the District for proper communications with the Students/ Community. Marquee signs serve a multitude of communication needs including emergency and safety communications.
Setback	The Specific Plan will remove existing parking and drive aisles and maintain a 50-foot buffer from ESHA with the exception of a meandering deconstructed granite walking path adjacent to the ESHA for instructional stations and parking. All new buildings will be set back 100-feet.		Section 4.6 of the LIP: New development adjacent to the riparian habitats shall provide native vegetation buffer areas of no less than 100 feet to serve as transitional habitat and provide distance and physical barriers to human intrusion. Buffers shall be of a sufficient size to ensure the biological integrity and preservation of the habitat they are designed to protect. Vegetation removal,	The current District development including the vacated Juan Cabrillo ES, District Bus Barn facilities, parking lots, drive aisles and fencing/ site structures extend up to the edge of the ESHA and in some instances into the ESHA, with no set back.

	Specific Plan Specifications	Current LIP/ and Municipal Code (MC) Requirements	Reason/Notes
Development under the Specific Plan will conform to all existing development standards under § 17.40.110 of the City's Municipal Code for Institutional Development and § 3.9 of the City's LIP with the exception of the following:			
		vegetation thinning, or planting of non-native or invasive vegetation shall not be permitted within buffers except as provided in Section 4.6.1 (E) or (F) of the Malibu LIP.	
Maximum Grading Quantity	The Specific Plan, as shown in Table 11, will exceed the grading limitations.	Section 8.3.B. of the LIP and Section 17.40.110 A.4.a of MC: Maximum Quantity of Grading. Notwithstanding any other provisions of the Malibu LIP, grading per lot of residential development, per acre of commercial development, or per acre of institutional development (total cut and fill) is limited to 1,000 cubic yards (per items a, b, c, and d).	Because of the topography of the site, and the need to create large terraces for student access, and the overall size of individual school buildings which are larger than most homes require the ability to cut/fill more than 1,000 cubic yards.,
Maximum Height of Cuts and Fills	Certain buildings may serve as a retaining wall.	Section 8.3.C of the LIP Section 17.40.110 A.4.b of MC: Maximum Height of Cuts and Fills with Retaining Walls. 6 feet in height for any one wall, or 12 feet for any combination of walls, where a minimum 3-foot separation exists between walls, except single cuts up to 12 feet in height which are an integral part of the structure are permitted. Retaining walls shall be designed with smooth, continuous lines that conform to the topography.	Each bldg. will have its own site-specific geotechnical report that determines individual needs. Because of the topography of the site, and the need to create large terraces, some of the buildings (Bldg. C for example) will serve as a retaining wall and may be over 12 feet in height at certain locations.

Source: SMMUSD 2021; Malibu 2002

[1] All other buildings will have a maximum height of 28 feet.

The following are the development standards for the MMHS Specific Plan:

A. The Malibu Middle and High School (MMHS) Campus Specific Plan shall be subject to the following development standards:

1. Height. Except as allowed in this section structures shall not exceed eighteen (18) feet above finished grade, except for chimneys, rooftop antenna, and light standards.

a. Building C: High School Building shall not exceed a maximum height of thirty-six (36) feet finished grade, except for chimneys, rooftop antenna, and light standards that shall not exceed forty-one (41) feet above approved grading plan.

b. Building D: Middle School Gym/Multi-Purpose Room and Structures shall not exceed a maximum height of thirty-six (36) feet finished grade, except for chimneys, rooftop antenna, and light standards that shall not exceed forty (40) feet.

c. Building H: Theater/Performing Arts and shall not exceed a maximum height of forty-five (45) feet above finished grade.

d. Building J: Gym/Physical Education shall not exceed a maximum height of forty-five (45) feet above finished grade.

e. Building L: shall not exceed a maximum height of eighteen (18) feet above finished grade, except for chimneys, rooftop antenna, and light standards that shall not exceed a maximum height of 28 feet.

f. .

g. For all other buildings, roof-mounted mechanical equipment shall be integrated into the roof design, screened, and may project no more than two feet higher than the structure roof height (screens included).

h. In no event shall the maximum number of stories above grade be greater than two.

2. Yards/Setbacks.

a. Building placement for Phase 1 shall be as shown on Figure 6, *Proposed Site Plan*, as approved by City Council. Building Placement for subsequent phases will be considered by the City as part of the site plan review process.

b. Any future buildings must comply with the following:

(1) Front yard setbacks shall be ten (10) feet from the street easement.

(2) Side yard setbacks shall be five feet

(a) When adjacent to a residentially-zoned parcel(s) along a side yard, the setback shall be increased to ten (10) percent of the lot width or ten (10) feet, whichever is greater.

(b) When adjacent to the ESHA all buildings shall have a 100-foot setback from the ESHA. With the exception of access trails and fencing, and parking, all other improvements shall be setback 50-feet from the ESHA.

(3) Rear yard setbacks shall be five feet; however, when adjacent to a residentially-zoned parcel(s) along the rear yard, the setback shall be increased to fifteen (15) percent of the lot depth or fifteen (15) feet, whichever is greater.

3. **Site Development Criteria**. All proposed construction within the MMHS Specific Plan shall comply with the following site development standards:

   a. Structure Size. The gross floor area of all buildings on a given parcel shall be limited to a maximum Floor Area Ratio (FAR) of 0.15, or fifteen (15) percent of the lot area (excluding slopes equal to or greater than 1:1 and street easements). Additional gross floor area may be approved by the city council, up to the maximum allowed for the parcel under the general plan, where additional significant public benefits and amenities are provided as part of the project.

   b. Landscaping and Site Permeability. Twenty-five (25) percent of the lot area (excluding slopes equal to or greater than 1:1 and street easements) shall be devoted to landscaping. The required five-foot landscape buffer around the perimeter of parking areas pursuant to Section 17.48.050(E)(1) shall count toward the twenty-five (25) percent requirement. An additional five percent of the lot area (excluding slopes equal to or greater than 1:1 and street easements) shall be permeable.

   c. Pool and pool deck lighting shall be installed consistent with the Illuminating Engineering Society of North America (IESNA) standards for a Class II pool facility. Lighting shall be a minimum of 30-foot candles over the pool and 20-foot candles over the deck, as measured at the water level. for improved safety. Consistent with IESNA recommendations, lighting shall also be provided within the pool basin, with the recommended luminance of 15 candelas per square foot (161 candelas per square meter). All pool lighting shall also be consistent with the California Building Code and section 3115B.1, where the pool must have underwater and deck lighting such that lifeguards or other persons may observe, without interference from direct and reflected glare from the lighting sources, every part of the underwater area and pool surface, all diving boards or other pool appurtenances.

   d. Sports field lighting shall be limited to the main sports field and parking lots at Malibu High School. All new outdoor lighting shall adhere to the standards of Malibu Local Coastal Program Local Implementation Plan Sections 4.6.2 and 6.5.G and Section 17.41 Malibu Dark Sky provisions of the municipal code.

   e. All parking areas within the 100-foot ESHA area shall be paved with permeable pavement, to allow stormwater runoff to infiltrate into the soil below. Suspended paving systems shall be constructed below the permeable paving to treat and slow stormwater runoff before it reaches the ESHA. The system shall be designed to provide treatment and storage for stormwater but also promote healthy tree growth within parking areas.

4. **Grading.** Notwithstanding any other provisions of this code, grading shall be as follows:

   a. Grading for Phase 1 shall be as follows:

Phase	Cut (cy)	Fill (cy)	Project Phase Total (cy)
1	35,190	10,530	24,660 cut
2	5,175	-	5,175 cut
3	25,300	14,000	11,300 cut
4	10,000	33,350	23,350 fill
Total	**75,665**	**57,880**	**17,785 cut**

Phase	Cut (cy)	Fill (cy)	Project Phase Total (cy)

Source: LPA 2019

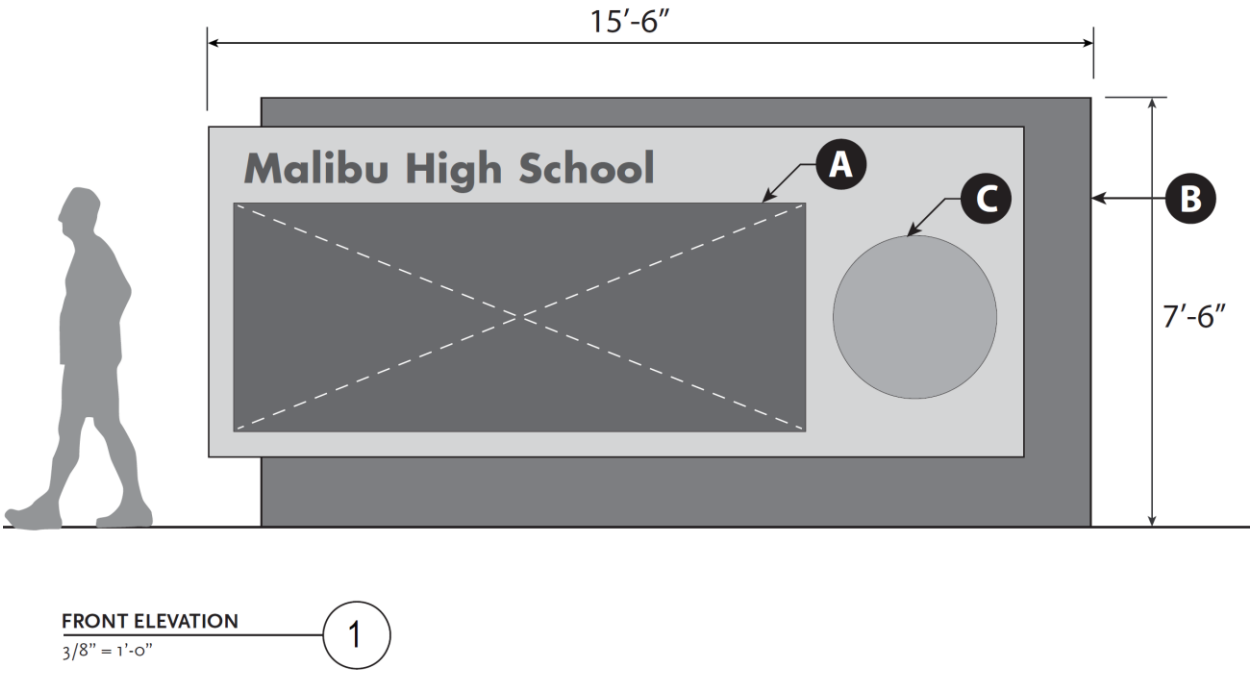
b. approved by the City Council Action.

c. Grading for subsequent phases will be considered by the City as part of the site plan review process.

5.3 Wayfinding and Informational Signage

Campus identification and wayfinding is important to the District as more trails and joint use facilities are open to the public. Figure 6, I, shows the location of the marquee signs that would occur along Morning View Drive to guide parents and visitors. Figure 14, *Monument Signs*, shows the two single-sided monument signs 15 feet 6 inches wide by 7 feet 6 inches tall, that will contain a 10-foot by 4-foot LED display screen, 10 mm pixel spacing with dimmable brightness (A), be placed on a concrete wall support (B), and have an internally illuminated logo (C). Marquee sign(s) for high schools and middle schools are required by the District for proper communications with the students/ community. Marquee signs serve a multitude of communication needs including emergency and safety communications. Building Identification Signs. All buildings will have non-illuminated identification signs mounted flush to the wall to comply with public safety requirements.

Figure 14 Monument Sign, Two Locations along Morning View Drive



5.4 Landscaping

Landscaping would be provided along pathways, building perimeters, and within and around new parking lot areas. Landscaping would be consistent with the requirements of the City of Malibu's Municipal Code, Chapter 9.22, "Landscape Water Conservation." Such requirements include that plants must be grouped into hydrozones—that is, with other plant species having similar water demand—and by their soil, sun, and shade requirements. Additionally, irrigation systems would be designed to prevent runoff, overspray, low-head drainage, and similar conditions when irrigation water flows or sprays onto unintended areas, such as walkways, driveways, roadways. Landscaping plans for subsequent phases will be provided as part of the site plan approval process.

Table 13 shows the plant palette that will be used in the landscaping of the Campus. While only Phase 1 is shown in detail as Figure 15, *Phase 1 Landscaping Plan*, the plants in the table will be used throughout the campus in subsequent phases.

Table 13 HSMS Campus Plant Palette

* In Middle School Construction/CCD Plan, not on Coastal Permit
**In High School Plant List; not yet reviewed by Coastal
*** Also on ESHA list. Refer to 3/18/2021 Psomas memo with Conceptual Plant Palette for ESHA Restoration Site

Large Canopy Trees	**Common Name**
Juniperus californica**	California juniper
Metrosideros excelsus**	New Zealand Christmas Tree
Pinus torreyana**	Torrey Pine
Platanus racemosa***	California sycamore
Quercus species***	California Native Oak
Medium and Accent Trees	**Common Name**
Alnus rhombifolia***	White Alder
Arbutus unedo or 'Marina'**	Strawberry Tree
Cercis occidentalis/canadensis**	Western Redbud /Eastern Redbud
Cordyline australis**	Dracaena Spike
Heteromeles arbutifolia***	Toyon
Juglans californica**	Black Walnut
Lagerstroemia 'Natchez'	Crape Myrtle
Lyonothamnus floribundus	Catalina Ironwood
Metrosideros collina 'Spring Fire'	Dwarf New Zealand Christmas Tree
Olea europea 'Swan Hill'	Olive
Umbellularia californica	California Bay
Shrubs	
Arctostaphylos species***	Manzanita
Artemisia calfornica***	Californian Sagebrush
Baccharis species***	Coyote Bush
Ceanothus species	Wild Lilac
Erigonum species	Buckwheat
Juniperus californica-- prostrate species	California Juniper
Peritoma arborea***	Bladderpod
Pittosporum toberia 'Wheeler's Dwarf'	Dwarf Pittosporum
Fragula californica***	California Coffeeberry
Rhus integrifolia	Lemonade Berry
Ribes speciosum***	California Gooseberry
Rosmarinus spp**	NCN
Westringia fruticosa**	Coast Rosemary

* In Middle School Construction/CCD Plan, not on Coastal Permit
**In High School Plant List; not yet reviewed by Coastal
*** Also on ESHA list. Refer to 3/18/2021 Psomas memo with Conceptual Plant Palette for ESHA Restoration Site

Groundcovers/Grasses	
Carissa macrocarpa**	Natal Plum
Dianella species**	Flax Lilly
Dieties bicolor/ irioides**	Fortnight Lilly
Festuca glauca 'Elijah Blue'*	Elijah Blue Fescue
Festuca species**	Native no-mow Meadow Mix
Juncus patens	California Gray Rush
Juniperus species**	Juniper
Lantana camara**	Lantana
Leymus condensattus 'Canyon Prince'**	Giant Wild Rye
Lomandra longfolia 'Breeze'*	Spiny-Head Mat Rush
Muhlenbergia rigens	Deer Grass
Myoporum parvifolium	NCN
Sedum species	Stonecrops
Senecio mandraliscae/serpens	Kleinia/Blue Chalksticks
Perennials/ Accents	
Agave species	Agave
Aloe species**	Aloe
Anigozanthos 'Bush Gold'	Kangaroo Paw
Dasylirion quadrangulatum/ wheeleri**	Mexican Grass Tree
Encelia californica	California bush sunflower
Hesperaloe parviflora	Red Yucca
Kalanchoe species	Kalanchoe
Keckiella cordifolia**	Heart-Leaved Penstemon
Opuntia species**	Prickley Pear Cactus
Penstemon species **	Beard Tongue
Rosa californica***	California Rose
Salvia species - native varieties	Sage
Yucca species	Yucca
Vines	
Jasminus polyanthum	Pink Jasmine
Lonicera hispidula***	California Honeysuckle
Vitis californica**	California Grape

edited 3/31/2021, Spurlock Landscape Architects

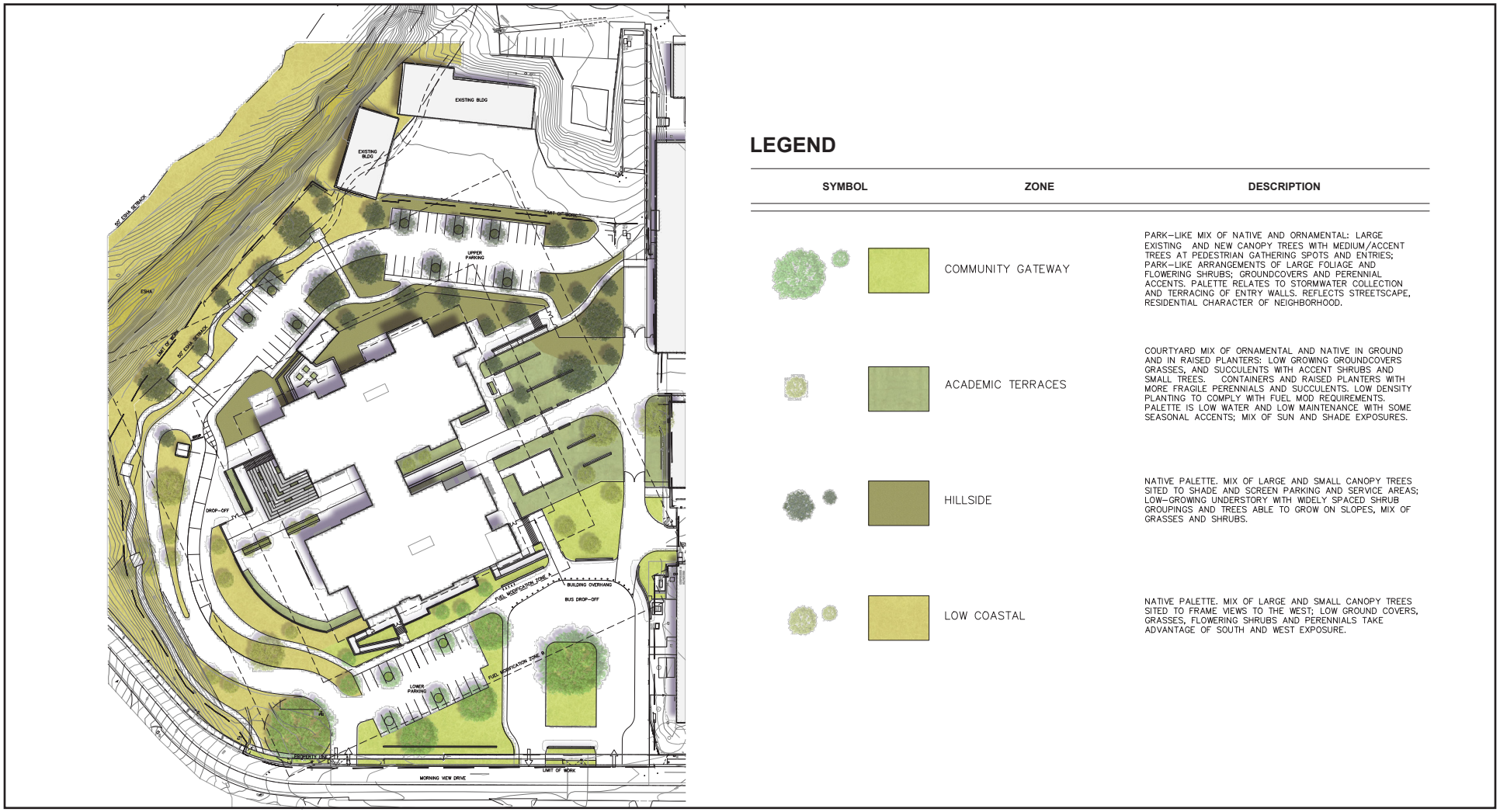
The Malibu campus landscape plan includes several strategies to promote a sustainable environment. These include strategies within the ESHA and its buffer, as well as connections between the restored ESHA and the central campus.

A proposed trail outside of the 50-foot ESHA buffer creates accessible pedestrian access from Morning View Drive along the restored upland ESHA and the campus beyond. The trail is proposed to be decomposed granite paving, which is composed of natural, locally sourced, and permeable materials. The trail would connect users to outdoor education overlooks, small areas located for their views into the ESHA. These areas may include relevant interpretive signage dependent on the location.

The 100-foot ESHA buffer is anticipated to contain large areas of restored native landscape, after the removal of existing asphalt and lawn. It will also contain a small amount of vehicular circulation, which includes required fire access, and parking. The parking areas are proposed to be paved with permeable pavement, to allow stormwater runoff to infiltrate into the soil below. Suspended paving systems are also proposed below the permeable paving to treat and slow stormwater runoff before it reaches the ESHA. These systems not only provide treatment and storage for stormwater but also promote healthy tree growth within parking areas.

Native plant communities connect the Phase 1 high school site both visually and physically with the restored ESHA and buffer. The edges between the campus along the ESHA and adjacent hillside are proposed to be primarily composed of native plants that are also used within the ESHA. Stormwater basins along these edges and within the central campus also utilize some of the same native riparian plant species to capture, slow down and filter campus stormwater runoff.

Figure 15 Proposed Phase I Landscaping Plan



NO SCALE

Source: NAC Architecture, 2021

5.5 Sustainability Features

All new buildings developed under the Specific Plan would be designed using applicable green building practices, including those of the most current Building Energy Efficiency Standards (Title 24, California Code of Regulations, Part 6) and California Green Building Standards Code (CALGreen; Title 24, California Code of Regulations, Part 11). The Building Energy Efficiency Standards contain energy and water efficiency requirements (and indoor air quality requirements) for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. CALGreen is California's statewide "green" building code. Its purpose to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices in the following categories: planning and design; energy efficiency; water efficiency and conservation; water conservation and resource efficiency; and environmental quality. Additionally, the District has an adopted Districtwide Plan for Sustainability that incorporates sustainability into Education Services and all aspects of student learning; and integrates climate protection, resource efficiency, waste management, and other sustainability practices into District operations. (See also Section 7.5, *Solar Panel System*)

5.6 Restoration Plan in the ESHA

There is very little natural vegetation on the Proposed Project Site, consisting primarily of grasses, ivy, brush, ruderal species, and scattered ornamental trees with pockets of native riparian and upland species, including native trees in various stages of development. However, a stream course designated as an ESHA by the City of Malibu's LCP maps occurs on the western edge of the MMHS campus Developed portions of the existing campus are within the mapped ESHA boundaries, including portions of the JCES play yard, the Bus Barn, and existing Parking Lot A. The ESHA map also shows a stream approximately 400 feet northwest of the campus. This stream consists of an underground pipe from Floris Heights Road that flows onto the school property and daylights into the ESHA streambed along the school's western property boundary.

The stream course along the District's western boundary extends for approximately 1,088 feet and varies between approximately 24 and 85 feet wide, covering an area of approximately 0.68 acres determined to be potentially under regulatory jurisdiction with an additional approximately 1.35 acres within a 50-foot buffer of the ESHA for a total of approximately 2.03 acres. The stream course is deeply incised with steep banks. The drainage is unlined along its entire length. The upstream end of the drainage has a broad, concave cross-section with no abrupt break in bank slope. Soils in this area were saturated and surface water was present during multiple site visits. The middle and downstream end of the drainage is more incised, with steep slopes and a narrow channel bed. A portion of the bank is eroded or undercut. The ESHA and surrounding areas burned in the 2018 Woolsey fire. Some vegetation experienced mortality as a result of the fire while other vegetation is recovering.

Approximately 0.50 acres of the existing developed campus, specifically the JCES play yard, the bus barn, and portions of Existing Parking Lot A are within the 100-foot buffer of the ESHA. The Proposed Project would result in demolition of these structures within this buffer area. As part of the Proposed Project, the District would construct a pedestrian path and elevated outdoor learning spaces overlooking the ESHA and within 100 feet, but not closer than 50 feet of the ESHA boundaries. The trails would be accessible to the public during non-school.

All parking areas (excluding drive aisles) within the 100-foot ESHA area shall be paved with permeable pavement, to allow stormwater runoff to infiltrate into the soil below. Suspended paving systems shall be constructed below the permeable paving to treat and slow stormwater runoff before it reaches the ESHA. The system shall be designed to provide treatment and storage for stormwater but also promote healthy tree growth within parking areas.

The District would implement a phased restoration plan for the ESHA within the District's property. The restoration plan would include removing all hardscape within the proposed 100-foot buffer of the ESHA boundary. The District would conduct weed abatement, establish invasive plant controls, broadcast seed and plant native species within the ESHA and the proposed 50-foot buffer area, and implement erosion prevention and bank stability improvements as part of the restoration plan within District property. The restoration plan would be phased to meet the District's development schedule and funding constraints. The restoration and trail enhancements would reestablish the ESHA as viable habitat, provide educational opportunities for the MMHS students within the confines of the campus, and allow the public greater connectivity to the various trails in the community, including the newly reconstructed Equestrian Path Trail. See Figures 16 through 18.

Opportunities for restoration are present at upstream, middle, and downstream areas of the ESHA as well as developed and undeveloped areas within the proposed 50-foot buffer of the ESHA boundary. During Phase 1 of the Proposed Project, demolition of hardscape within the 100-foot buffer of the downstream area would occur. Restoration activities that would occur within the entire reach include weed abatement, broadcast of native seed and planting of native stock and invasive plant controls. Bank stability improvements and erosion control would occur in the upstream and downstream portions of the ESHA during Phase 1 of the Proposed Project, which would include the proposed pedestrian trail and new drive aisles. Demolition of developed areas within the 100-foot buffer of the upstream and middle stream area would occur during Phase 4, as the Bus Barn and other existing structures would remain operational until Phase 4 commences. Upon completion of Phase 4, the pedestrian trail would be completed and connect to existing trails on the campus.

Each phase of the Proposed Project would add to the overall reclamation/restoration plan. The restoration effort will focus on supplementing the native vegetation currently found within the ESHA with native seed and stock and utilizing contouring and natural features such as the existing mature native trees to enhance and stabilize the bank. The proposed trail and teaching platforms within the 100-foot buffer would connect the existing Equestrian Trail along the northeastern portion of the campus to the western portion of the campus and provide the community with additional pedestrian access to Morning View Drive. The teaching platforms would be utilized by the MMHS students, as well as community groups. In total, 2.03 acres of the ESHA would be restored, with the removal of approximately 0.50 acres of hardscape and structures.

Table 14, *Conceptual Plant Palette for ESHA Restoration Site*, provides a list of plants suitable for consideration for ESHA restoration efforts. The list is consistent with recommendations of the Los Angeles/Santa Monica Mountains Chapter of the California Native Plant Society for landscaping in the Santa Monica Mountains and have been updated to reflect the current scientific and common names changes designated by the Jepson Herbarium. Species that have no assigned common name by the Jepson Herbarium follow the Calflora website.

Table 14 Conceptual Plant Palette for ESHA Restoration Site

Plant Species		Restoration Location		
Common Name	Scientific Name	Lower Bank	Upper Bank	Upland
White alder	*Alnus rhombifolia*		x	
Yerba mansa*	*Anemopsis californica*	x		
California sagebrush	*Artemisia californica*			x
Narrow-leaf milkweed*	*Asclepias fascicularis*		x	x
Coyote brush	*Baccharis pilularis*			x
California brickellia	*Brickellia californica*		x	x
Yerba buena	*Clinopodium douglasii*		x	x
Bush poppy	*Dendromecon rigida*			x
Salt grass	*Distichlis spicata*	x	x	
Bush sunflower	*Encelia californica*		x	x
Scarlet monkeyflower*	*Erythranthe cardinalis*	x		
Common monkeyflower*	*Erythranthe guttata*	x		
California coffee berry	*Fragula californica*		x	x
Gumweed	*Grindelia camporum*			x
Toyon*	*Heteromeles arbutifolia*		x	x
California barley	*Hordeum brachyantherum* ssp. *Californicum*	x		
Spreading Rush	*Juncus patens*	x		
Giant tickseed*	*Leptosyne gigantea*		x	x
Pink honeysuckle	*Lonicera hispidula*		x	
Greene's saxifrage	*Micranthes californica*	x		
Bird's foot fern	*Pellaea mucronata*		x	
Bladderpod	*Peritoma arborea*			x
Western sycamore*	*Platanus racemosa*		x	
Bracken fern	*Pteridium aquilinum* var. *pubescens*	x	x	x
Coast live oak*	*Quercus agrifolia*		x	x
Golden currant	*Ribes aureum*		x	x
Fuchsia-flowering gooseberry	*Ribes speciosum*			x
California rose	*Rosa californica*	x	x	
Arroyo willow	*Salix lasiolepis*	x	x	
Purple sage	*Salvia leucophylla*			x
Black sage	*Salvia mellifera*			x
California hummingbird sage*	*Salvia spathacea*		x	x
Blue elderberry	*Sambucus nigra subsp. caerulea*		x	x
California figwort	*Scrophularia californica*		x	x

Plant Species		Restoration Location		
Common Name	Scientific Name	Lower Bank	Upper Bank	Upland
Nightshade*	*Solanum xanti*		x	x
Southern hedge nettle	*Stachys bullata*		x	x
Creeping snowberry	*Symphoricarpos mollis*	x	x	
California bay	*Umbellularia californica*		x	x
Giant chain fern	*Woodwardia fimbriata*	x		

Source: California Native Plant Society; Los Angeles/Santa Monica Mountains Chapter. 1996 [Revised 2007]. *Recommended List of Native Plants for Landscaping in the Santa Monica Mountains*

*Fire Resistant

Figure 16 ESHA Restoration Plan - Downstream Segment

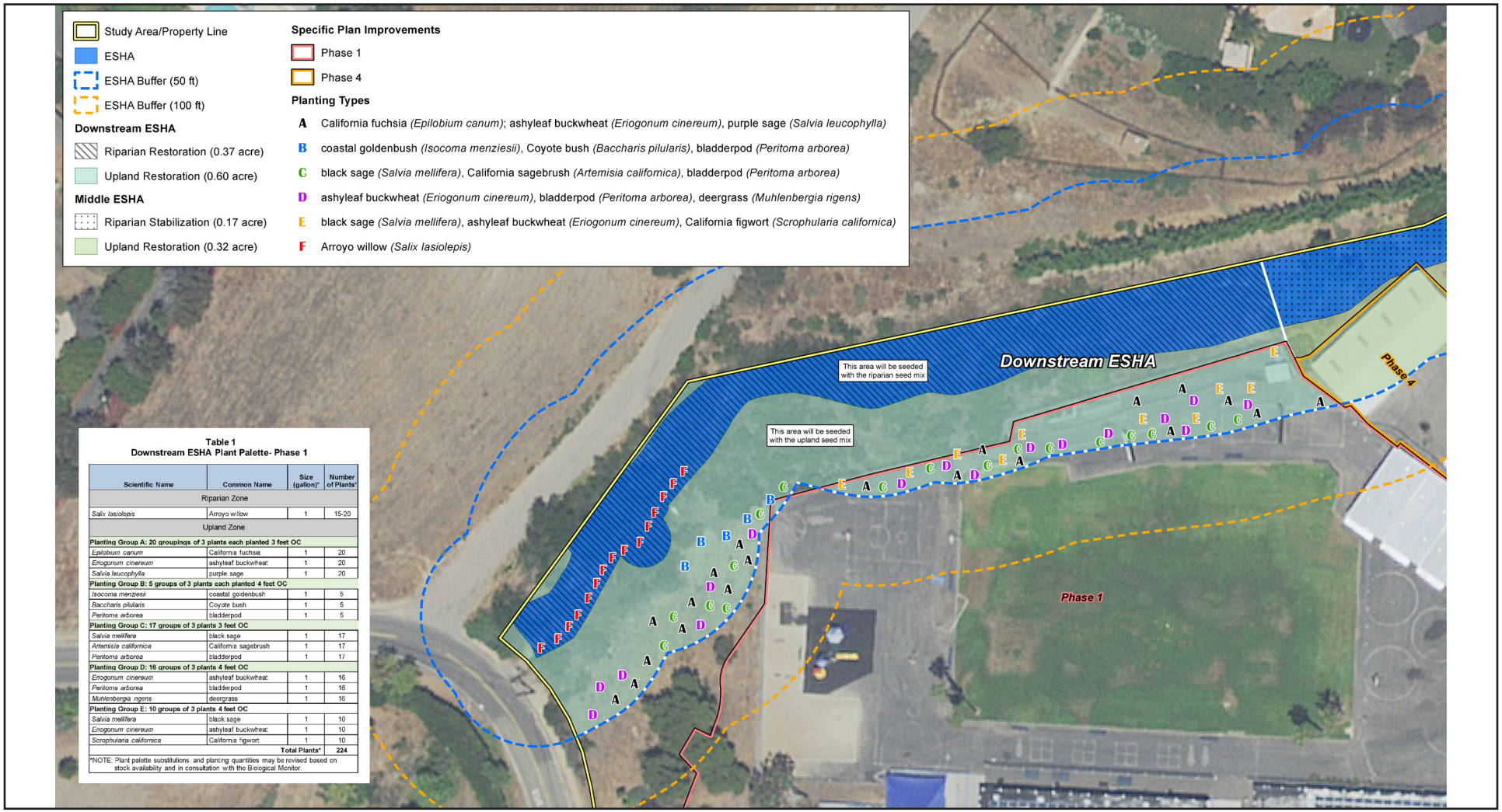


Table 1
Downstream ESHA Plant Palette- Phase 1

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone			
Salix lasiolepis	Arroyo willow	1	15-20
Upland Zone			
Planting Group A: 20 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	20
Eriogonum cinereum	ashyleaf buckwheat	1	20
Salvia leucophylla	purple sage	1	20
Planting Group B: 5 groups of 3 plants each planted 4 feet OC			
Isocoma menziesii	coastal goldenbush	1	5
Baccharis pilularis	Coyote bush	1	5
Peritoma arborea	bladderpod	1	5
Planting Group C: 17 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	17
Artemisia californica	California sagebrush	1	17
Peritoma arborea	bladderpod	1	17
Planting Group D: 16 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	16
Peritoma arborea	bladderpod	1	16
Muhlenbergia rigens	deergrass	1	16
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
	Total Plants*		**224**

*NOTE. Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

0 80
Scale (Feet)

Source: Hexagon Geosystems, 2021

Figure 17 ESHA Restoration Plan - Middle Segment

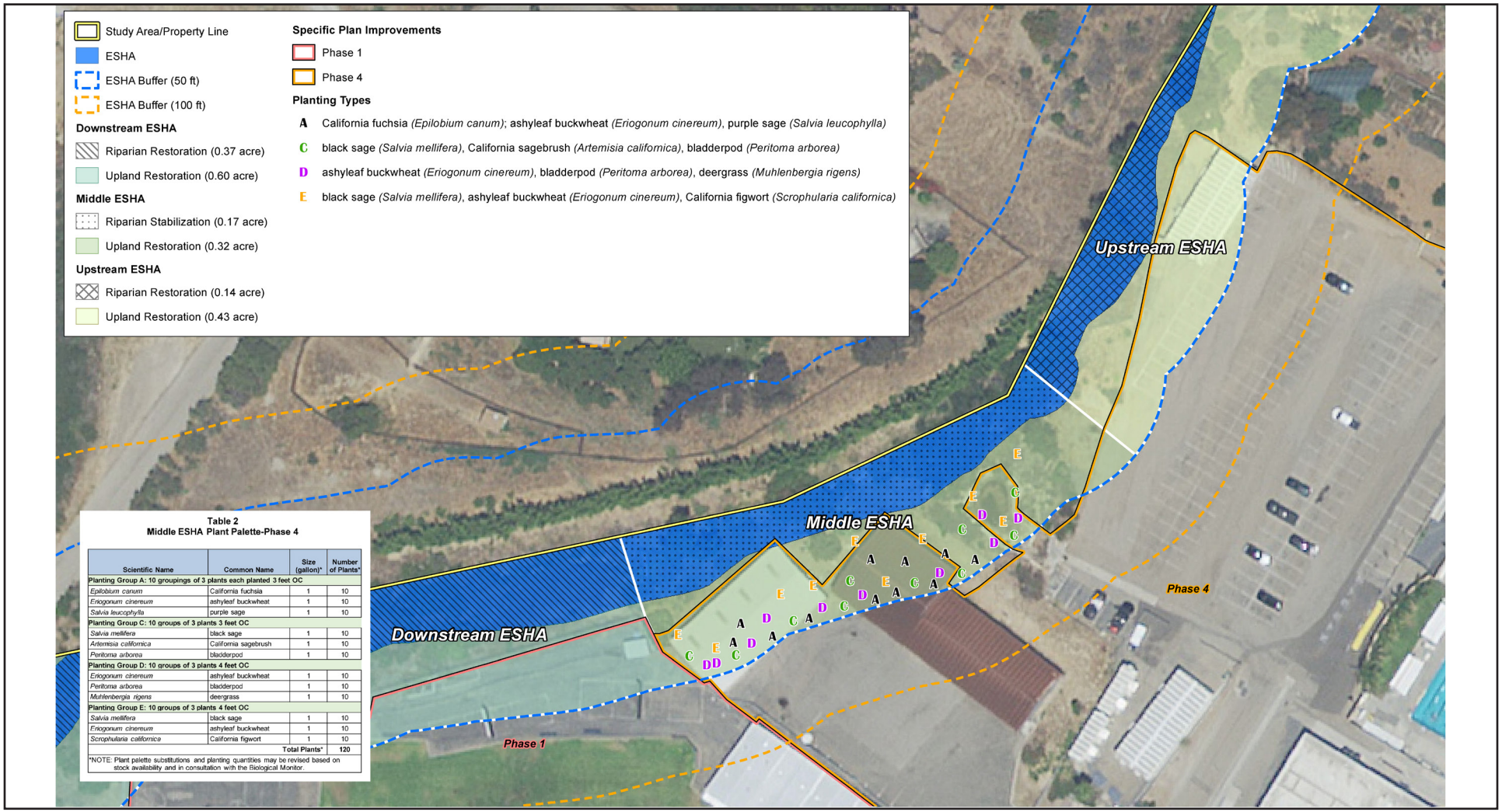


Table 2
Middle ESHA Plant Palette-Phase 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuchsia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 10 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	10
Artemisia californica	California sagebrush	1	10
Peritoma arborea	bladderpod	1	10
Planting Group D: 10 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	10
Peritoma arborea	bladderpod	1	10
Muhlenbergia rigens	deergrass	1	10
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**120**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

0 80
Scale (Feet)

Source: Hexagon Geosystems, 2021

Figure 18 ESHA Restoration Plan - Upper Segment

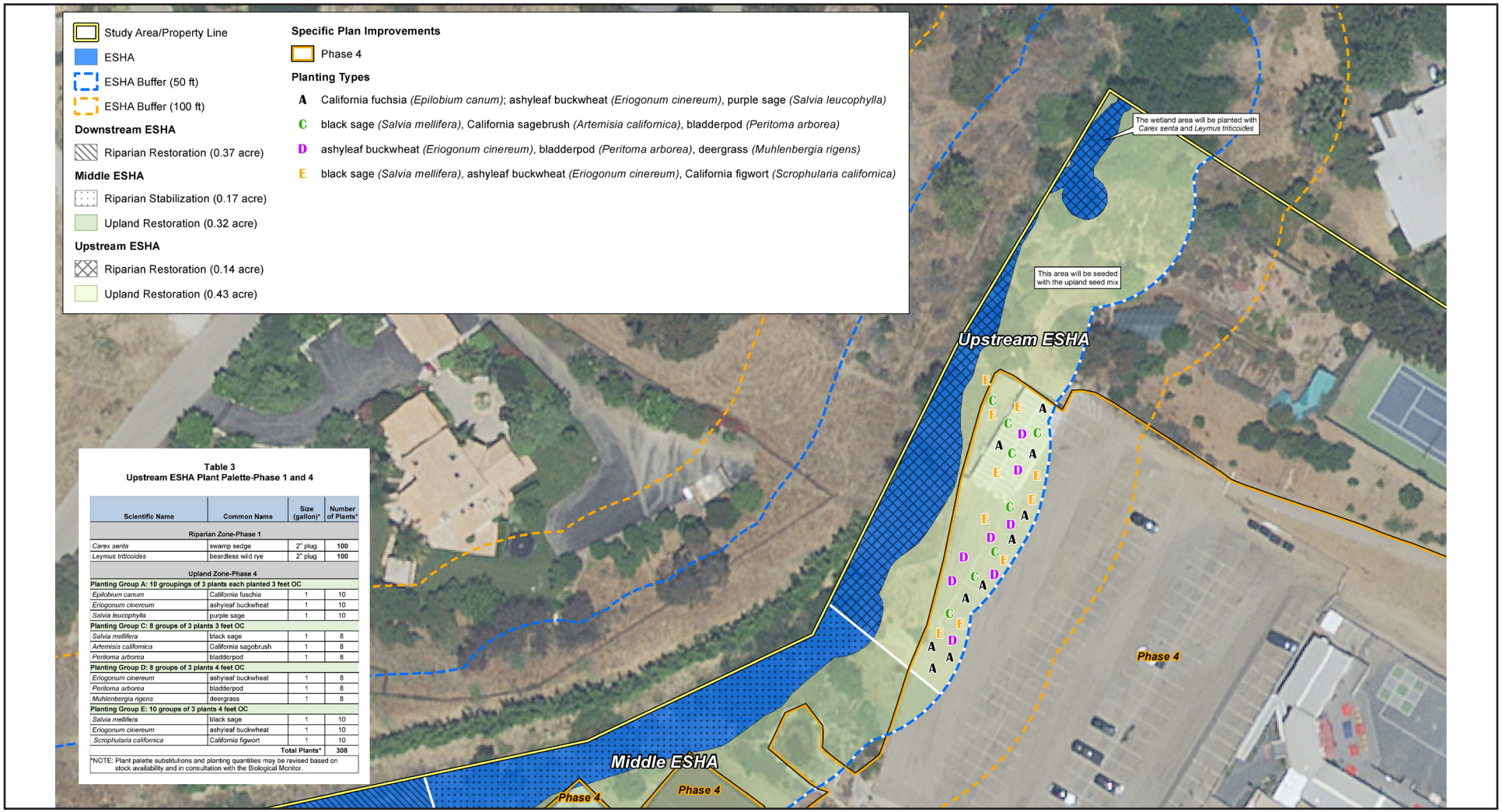


Table 3
Upstream ESHA Plant Palette-Phase 1 and 4

Scientific Name	Common Name	Size (gallon)*	Number of Plants*
Riparian Zone-Phase 1			
Carex senta	swamp sedge	2" plug	100
Leymus triticoides	beardless wild rye	2" plug	100
Upland Zone-Phase 4			
Planting Group A: 10 groupings of 3 plants each planted 3 feet OC			
Epilobium canum	California fuschia	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Salvia leucophylla	purple sage	1	10
Planting Group C: 8 groups of 3 plants 3 feet OC			
Salvia mellifera	black sage	1	8
Artemisia californica	California sagebrush	1	8
Peritoma arborea	bladderpod	1	8
Planting Group D: 8 groups of 3 plants 4 feet OC			
Eriogonum cinereum	ashyleaf buckwheat	1	8
Peritoma arborea	bladderpod	1	8
Muhlenbergia rigens	deergrass	1	8
Planting Group E: 10 groups of 3 plants 4 feet OC			
Salvia mellifera	black sage	1	10
Eriogonum cinereum	ashyleaf buckwheat	1	10
Scrophularia californica	California figwort	1	10
		Total Plants*	**308**

*NOTE: Plant palette substitutions and planting quantities may be revised based on stock availability and in consultation with the Biological Monitor.

0 80
Scale (Feet)

Source: Hexagon Geosystems, 2021

6.0 Circulation, Mobility and Parking

6.1 Vehicle Access and Parking

The campus plan has been developed with input from the neighbors and user groups to improve vehicle access and to reduce impacts to Morning View Drive. These items include expanding the drop off lane on Morning View; providing multiple drop off and pick up zones off of Morning View; separating the bus pick up and drop off away from commuter vehicles; moving the bus barn away from the schools; and providing more parking so that parking does not spill onto the roadways.

Regional vehicle access to the Specific Plan Area is provided via Pacific Coast Highway (State Route 1). The Specific Plan area can be accessed from Morning View Drive, approximately 0.3 miles northeast of the intersection of Morning View Drive and State Route 1 and 0.9 miles southeast of the intersection of Guernsey Avenue and Highway 1. Morning View Drive is a narrow, two-lane, local roadway that provides direct access to single-family homes in the area as well as to the existing MMHS and former JCES campuses and the Malibu Equestrian Park.

Site access would remain along Morning View Drive, with a centrally located drop-off area for buses and parents/guardians between the Middle School and High School Core areas. The District will re-label the parking lots and reconfigure parking within the Master Plan resulting in an increase in overall site parking and an improved pick-up and drop off location on Morning View Drive. The new drop-off/pick-up area would be able to accommodate up to five school buses and would have parking spaces for visitor use (Parking Lot C). Figure 19, *Vehicle Circulation Plan*, show the existing parking and proposed circulation under the Specific Plan. The Specific Plan will modify the existing access configuration to include:

- One two-way driveway from Morning View Drive on the southeastern portion of the campus providing vehicular access to parking lots A and B. Parking lot A has already been constructed. This driveway will provide access to a total of 212 parking spaces. Parking lots A and B will have a one-way counterclockwise circulation. Currently parking lot A is utilized as one of the areas for student drop-off. Lot B would be the closes parking lot to the future middle school buildings.
- Two one-way driveways from Morning View Drive in the southern portion of the campus across Ebbtide Way providing vehicular access to parking lot C, which will consist of 25 spaces. The eastern driveway will provide ingress and the western driveway egress. School buses will utilize this area for student drop-off and pick-up. Lot C would provide easy access to both the high-school and the middle school buildings.
- One two-way driveway from Morning View Drive on the southwestern portion of the campus providing vehicular access to parking lots D and E. This driveway will provide access to a total of 175 parking spaces. Lots D and E would be the closest lots to the proposed high-school buildings.
- One two-way driveway from Clover Heights Avenue on the northern part of the campus that would provide access to parking area F with 14 parking spaces. This lot is required to provide accessible parking to the upper fields. This parking lot would be the most accessible to the upper fields (baseball and soccer). Lot F is intended to serve athletic programs for school and non-school related youth sports. The parking lot would be primarily required to provide ADA parking spaces for access to the upper fields and field house and would link to accessible paths. Other parking spaces in Parking Lot F would be provide for parking during athletic events and prevent cars from parking in the cul-de-sac, which is an emergency turn around. There

is not a driveway from the upper part of the campus to the lower part of the campus to not increase driving through the neighborhood to support school.

- Curbside drop-off would continue to occur on the northern side of Morning View Drive. However, no parking is allowed along Morning View Drive.
- Other than frontage improvements along Morning View Drive, no vehicle related off-site improvements are proposed.

Parking Lot D would be a new, approximately 129-space parking lot that would be developed to the north of Building C and would be accessed by a new entryway along the western edge of the campus from Morning View Drive. Parking Lot E would be constructed during Phase 3 and would have 32 parking spots and be connected by the shared driveway to serve both the High School and the Boys & Girls Club. A small parking lot (Parking Lot F) with approximately 14 spaces would be developed along the northeastern boundary of the softball field with access from Clover Heights Avenue. Table 15, *Campus Specific Plan Buildout Parking Count*, shows the name and parking count for each lot and the construction phasing of each lot. The Specific Plan would not change or modify the restrictions imposed on the lighting associated with the 150-space Parking Lot A under the existing CDP (CDP No. A-MAL-13-030).

Table 15 Campus Specific Plan Buildout Parking Count

Existing Parking Lot	Existing Spaces	Proposed Changes	Specific Plan Spaces	Built Phase
150-Space Parking Lot (E)	150	Renamed to Parking Lot A	150	Existing
Lower Parking Lot (D)	62	Renamed to Parking Lot B	62	Existing
Student Parking Lot A	119	Removed		
JCES Parking Lots	37	Removed		
Service Lot	7	Removed		
		Parking Lot C (New)	25	1
		Parking Lot D (New)	129	1
		Parking Lot E (New)	32	3
		Parking Lot F (New)	14	3
Total	**375**	**-**	**412**	

Source: SMMUSD 2020.

Note: 11 spaces within the Bus Barn will also be removed as part of the Specific Plan.

6.2 Pedestrian Access

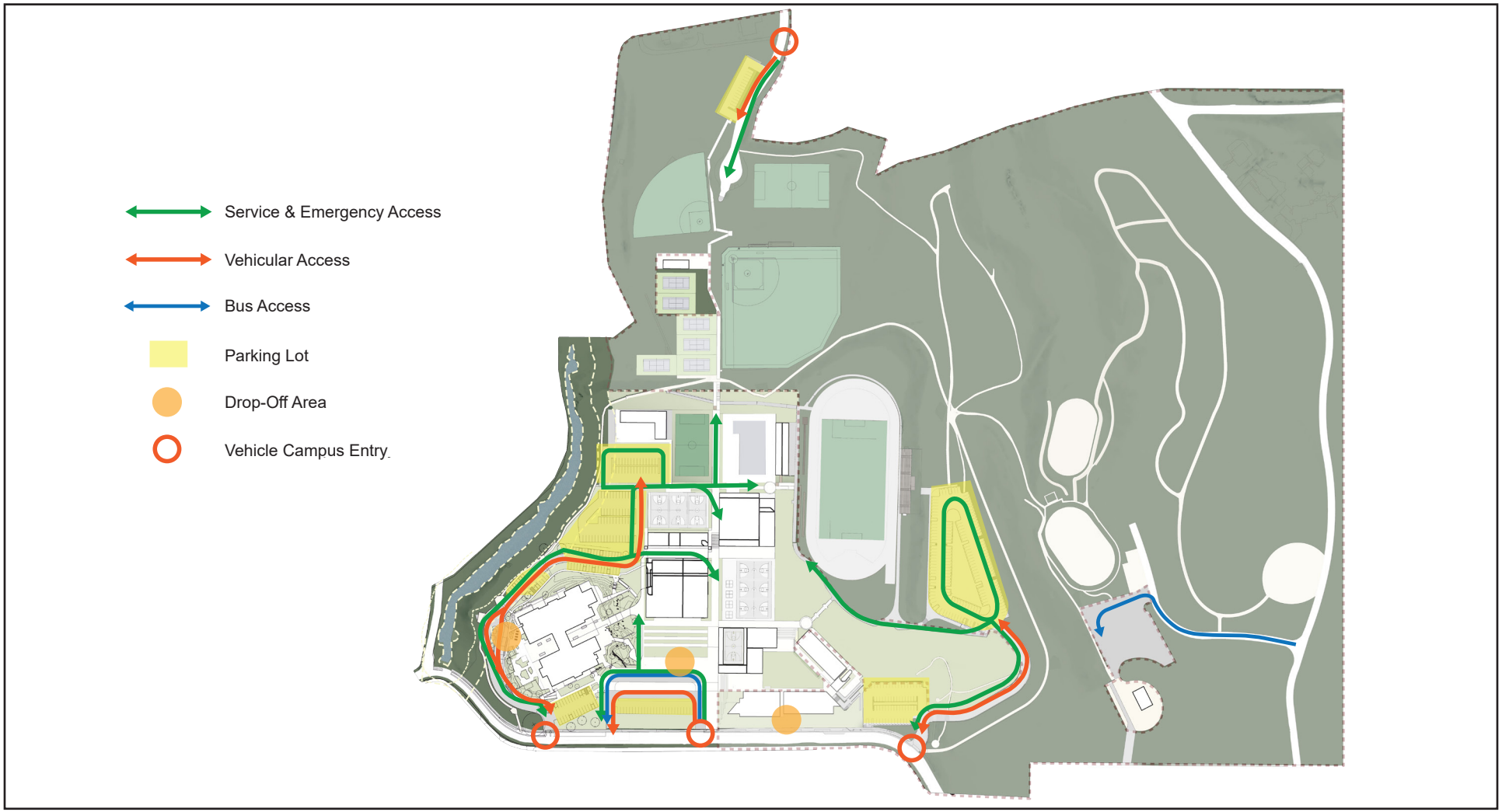
Pedestrian access to the Plan Area would remain along Morning View Drive with access at the new drop-off area, and Clover Heights Avenue, with access to the athletic fields. All circulation is wheelchair accessible via a network of either ramps and/ or elevators, connecting the parking lots with athletic and educational facilities throughout the campuses. Additionally, As shown in Figure 20, *Pedestrian Circulation Plan,* the Specific Plan would include a pedestrian trail system that starts along the ESHA on the west and connects to a larger system of existing walking trails around the Equestrian Park and surrounding hills. Fencing would surround the entire campus. Ornamental fencing near Morning View Drive and the proposed buildings would allow the MMHS and former JCES campuses to

be secure during school days and would reinforce a single point of entry for each school. Wildlife permeable fencing would run along the east, north, and west sides of the Plan Area.

6.3 Construction

Construction of the Specific Plan would temporarily generate additional traffic on the existing area roadway network. These vehicle trips would include construction workers traveling to the Plan Area as well as delivery trips associated with construction equipment and materials. Delivery of construction materials to the Plan Area would require several oversized vehicles that may travel at slower speeds than existing traffic. Once materials are delivered to the campus, all construction activities would occur on-site within the existing boundaries of the school campus and would not disrupt off-site traffic flows. Additionally, construction workers would park in the designated staging area to provide adequate parking for all employees and visitors to the campus throughout the duration of construction activities of the Specific Plan. Signage and/or workers conducting traffic would be present to direct pedestrians and vehicles during construction. Per standard construction procedures, the construction contractor would prepare and implement a traffic control plan to ensure that public safety and emergency access are maintained during the construction phase. Should any temporary fencing be needed during construction, it would meet the requirements of the LCP and LIP and be wildlife permeable.

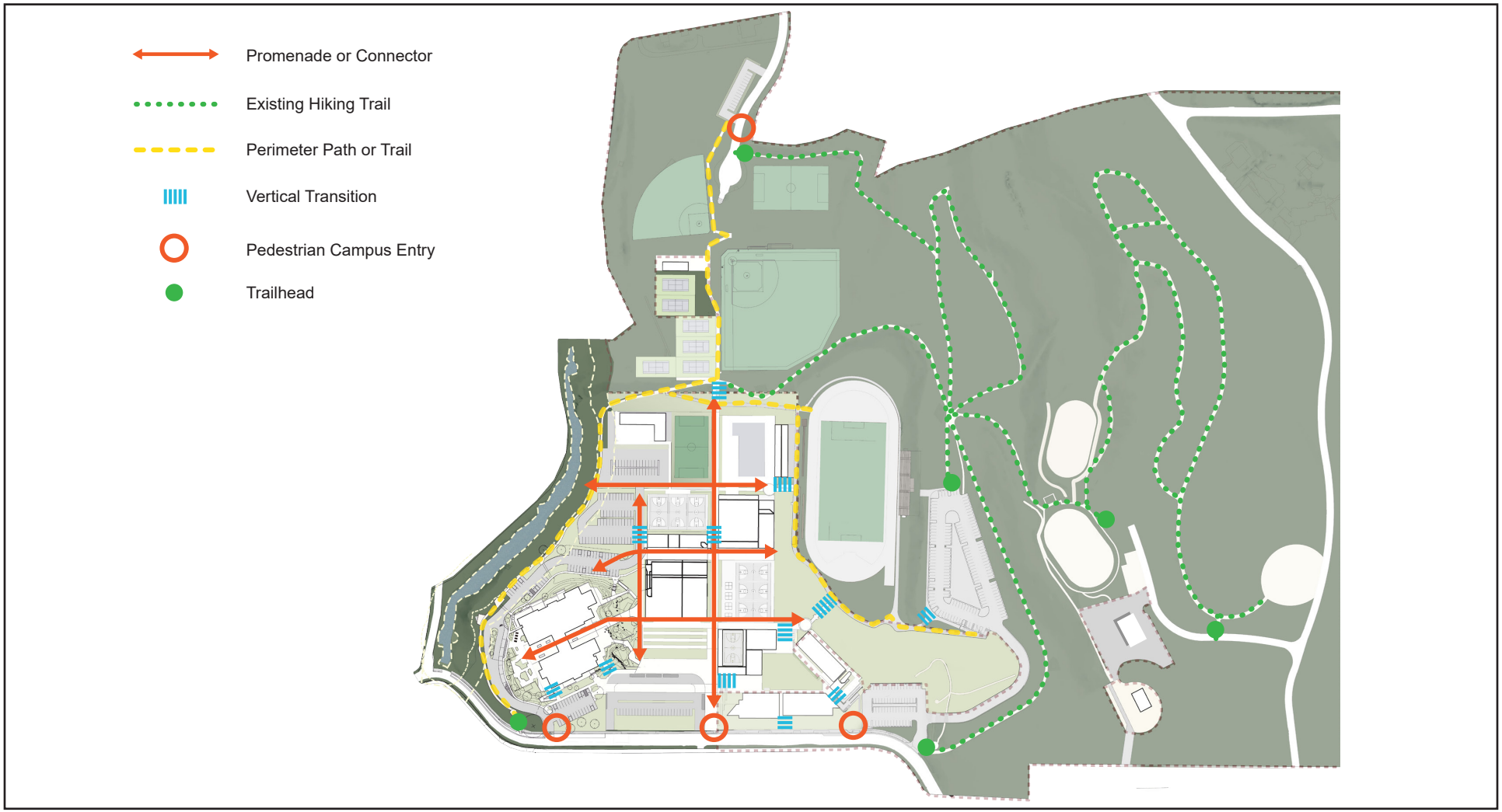
Figure 19 **Proposed Site, Access, Circulation, and Parking**



Source: Spurlock Landscape Architects, 2021

MMHS CAMPUS SPECIFIC PLAN
OCTOBER 2021

Figure 20 Pedestrian Circulation Plan



Source: Spurlock Landscape Architects, 2021

7.0 Infrastructure

Utility improvements necessary to serve the proposed replacement buildings would be constructed. The future on-site utilities would connect to existing facilities serving the site.

7.1 Water Plan

The proposed domestic and fire water lines would connect to the existing 12-inch public water main located on Morning View Drive. Water will be served by Los Angeles County Waterworks District No. 29.

7.2 Septic System

Currently, 10 septic tanks exist on the former JCES and MMHS campuses. The Specific Plan would upgrade the existing septic system as each phase is developed. The location of the septic tanks and associated leach fields will be reviewed as part of each phase. Timing of the decommissioning of existing septic systems and sizing and replacement with new infrastructure would be conducted such that continued sufficient systems remain in place and service is not disrupted.

7.3 Drainage Plan

The Plan Area would be divided into seven drainage management areas (DMA) that will coordinate drainage to Morning View Drive. New stormwater retention basins would be developed to infiltrate and treat runoff from the Specific Plan.

7.4 Lighting

Outdoor Lighting Program

The Proposed Project would install new and upgraded outdoor lighting within each development phase that would include lighting in both existing and proposed campus parking lots, pedestrian pathways, marquee sign lighting, and nighttime security- and safety-required lighting. All outdoor campus lighting would be designed to provide for the security and safety of students, staff, and visitors. Final design of the Project's outdoor lighting program must meet the requirements of the City of Malibu's Dark Sky Ordinance and adhere to the standards of the Malibu Local Coastal Program Local Implementation Plan Sections 4.6.2 and 6.5.G.

Maintenance and custodial staff typically leave the campus at 11:00 PM; as such, consistent with the existing lighting program on the MMHS Campus, the nighttime lighting would be controlled by an automatic timer and would be programmed to turn off at 11:30 PM each evening. On a limited number of occasions when school activities are scheduled to extend past 10:00 PM, such as an MMHS sports teams returning to campus following an "away" game or when a SMMUSD School Board meeting is held on campus, the programmed lights off time would be overridden to accommodate such authorized uses. The Specific Plan would not change or modify the restrictions imposed on the Athletic Field lighting (CDP 12-024), or the lighting associated with the 150-space Parking Lot A under the existing CDP (CDP No. A-MAL-13-030).

Pool lighting

In addition to the outdoor campus lighting described above, new lighting would be installed as part of the development of the new pool in Phase 4. As described in Section 3.3.1.3 above, the new pool would be an Olympic-size 50-meter pool intended to serve student sport and educational curriculum such as swim and water polo recreational, as well as community uses. Pool and pool deck lighting would be replaced as part of the Project in order to meet the needs and standards associated with this size of pool and intended uses. Lighting would be installed to meet the requirements of a Class II facility as identified by the Illuminating Engineering Society of North America (IESNA), 10th Edition, where lighting should be a minimum of 30 foot candles over the pool and 20 foot candles over the deck, as measured at the water level. for improved safety. Consistent with IESNA recommendations, lighting would also be provided within the pool basin, with the recommended luminance of 15 candelas per square foot (161 candelas per square meter). Through meeting these standards, the pool lighting would also meet the requirements of California Building Code section 3115B.1, which requires a pool have underwater and deck lighting such that lifeguards or other persons may observe, without interference of glare, every part of the underwater area, pool surface, and any diving appurtenances.

As with existing use and operation, the pool would be lit for an annual total of 524 hours, as detailed below in Table 16, *Pool Lighting*.

Table 16 Pool Lighting

Months	Days Lit	Times
July 1 – August 18	No Lights	-
August 19 – November 6	Monday – Friday (53 school days)	6:15pm – 8:45pm (132.5 hours total over this time period)
November 7 – March 12	Monday – Friday (74 school days)	5:15pm – 8:45pm (259 hours total over this time period)
March 13 – June 10	Monday – Friday (53 school days)	6:15pm – 8:45pm (132.5 hours total over this time period)
June 11 – June 30	No Lights	-

Source: SMMUSD 2021

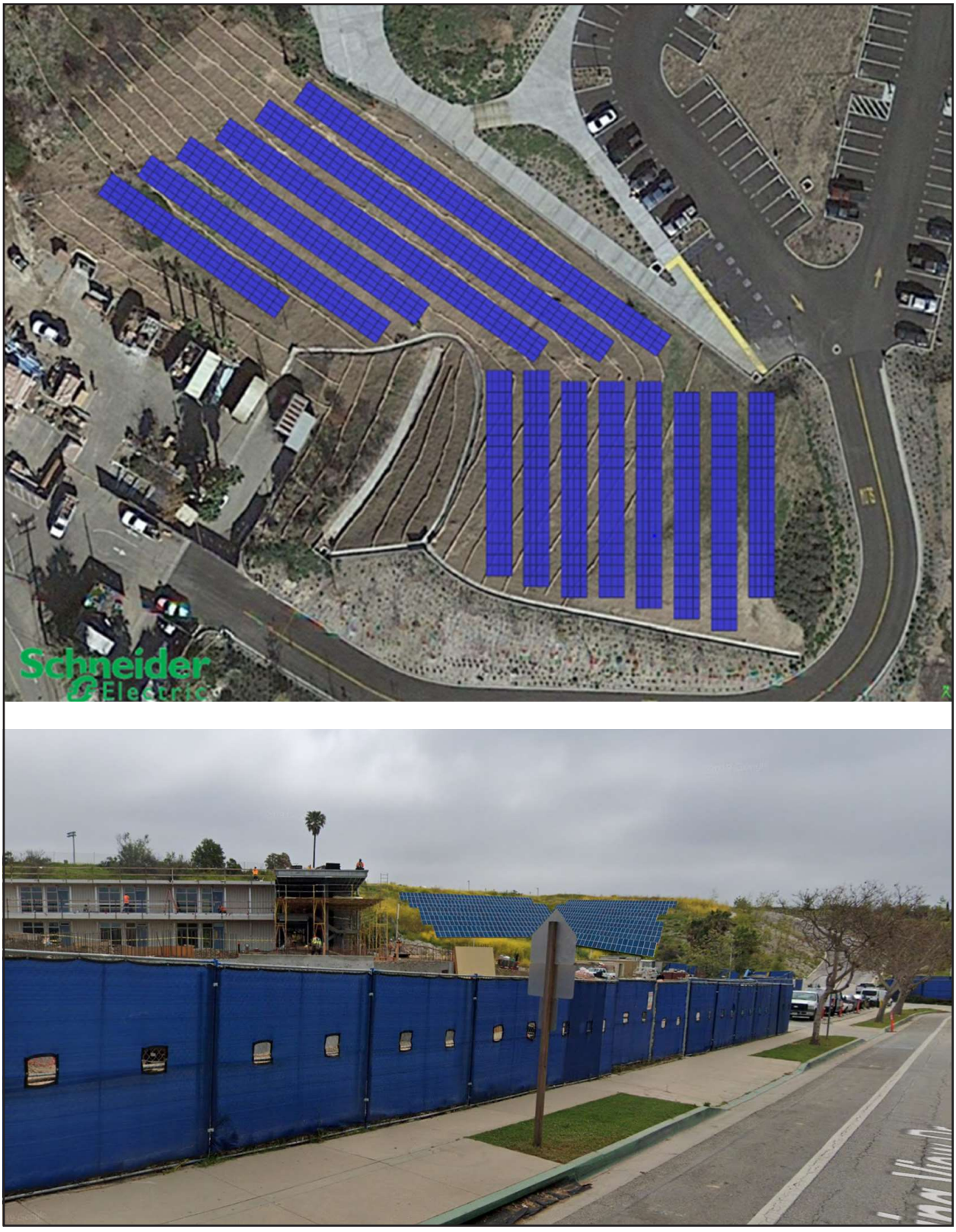
7.5 Solar Panel System

Because of the campus location in a high-risk fire area with an increased severity of wildfire risks in recent years, mandated public safety utility shutdowns have led to approximately 20 days of lost instruction at the MMHS Campus. In addition, the cost of utility provision continues to rise in California. To increase District resiliency, protect the learning environment, and maximize energy and operational savings, the MMHS Campus Specific Plan includes development of an “islandable microgrid” or ground mount photovoltaic (PV) solar array system treated to reduce glare, with battery storage and energy control center. An approximately 422 kilowatt (KW) PV system would be installed on the sloping hillside to the south of the existing Lot A and the Main Sports Field and to the north/northwest of the new Middle School Building E (core classrooms building). A 500 KW/1,000 KW hour battery storage system would be installed. The existing approximately 118 KW of PV located on the newly constructed Building A/B would connect with the larger system. The solar panel system, shown in Figure 21, would be installed as part of Phase 2.

7.6 Solid Waste Disposal

Solid waste is gathered daily from each of the school buildings by custodial staff and taken to a central location for pickup. Other than small trash cans that are placed throughout the campus to discourage littering, trash facilities are screened from public view and accessible only to authorized employees. While the location of some of the small trash cans may vary, the centralized collection points are not anticipated to change with adoption of the specific plan. As no increase in capacity is planned, there should be no increase in solid waste from the campus.

Figure 21 Solar Panel System



Source: Schneider Electric, 2020

8.0 Administration and Authority

8.1 Specific Plan Authority

The MMHS Campus Specific Plan provides customized regulatory guidance to enable development of architectural features and building designs that would not otherwise be allowed by the City's current development standards. The Specific Plan is established through the authority granted to the City of Malibu by the California Government Code, Title 7, Division 1, Chapter 3, Article 8, Sections 65450 through 65457. The Government Code authorizes cities to adopt specific plans either by resolution as policy or by ordinance as regulation.

A Planning Commission hearing and City Council hearing are required to adopt this specific plan. This Specific Plan is a regulatory document for all development projects within the boundaries of the Plan Area. Development within this area must be consistent with this Specific Plan and with all applicable City and District regulations. Government Code 65450 states that a "Specific Plan shall include a statement of the relationship of the Specific Plan to the General Plan, and further, that it may not be adopted or amended unless found to be consistent with the General Plan." The Specific Plan document has been designed to be consistent with the City of Malibu General Plan goals and policies.

8.2 Relationship to the General Plan

Adopted November 20, 1995, The City of Malibu's General Plan is intended to guide development, as well as promote the general welfare of the local community, while protecting the local resources. Table 17, *Relationship to the General Plan*, shows the applicable policies relevant to the Specific Plan.

Table 17 Relationship to the General Plan

General Plan Policies	Relevance/Consistency
LU Policy 1.1.1: The City shall protect the natural environment by regulating design and permitting only land uses compatible with the natural environment.	**Consistent.** Implementation of the MMHS Campus Specific Plan would not result in a new land use onsite that would be incompatible with the natural environment. Instead, the MMHS Campus Specific Plan would redevelop and modernize the existing MMHS campus and former JCES campus to provide increased resources for the campus.
LU Policy 1.1.4: The City shall preserve the City's rural residential character.	**Consistent.** Implementation of the MMHS Campus Specific Plan would redevelop and modernize buildings within an existing school site. The institutional land use would remain the same. The MMHS Campus Specific Plan would not impede upon the surrounding rural residential character. The MMHS Campus Specific Plan's lighting program would be consistent with the existing lighting program on the MMHS campus and the City of Malibu's Dark Sky Ordinance. All campus lighting would be designed to provide for the security and safety of students, staff, and visitors.
LU Policy 1.1.5: The City shall require careful site planning which blends development with the natural topography.	**Consistent.** The topography of the campus slopes up north from Morning View Drive. The existing topography of the site would not be altered because of the Specific Plan implementation.

General Plan Policies	Relevance/Consistency
LU Policy 1.2.1: The City shall prohibit development in Environmentally Sensitive Habitat Areas (ESHA) unless no feasible alternative is available.	**Consistent.** As discussed previously as part of the Restoration Plan for the ESHA, the MMHS Campus Specific Plan proposes to remove existing parking and drive aisles and maintain a 50-foot buffer from ESHA except for a meandering deconstructed granite walking path adjacent to the ESHA for instructional stations. Therefore, no development would occur in the ESHA.
LU Policy 1.4.1: The City shall preserve significant ridgelines and other significant topographic features (such as canyons, knolls, hills, and promontories).	**Consistent.** The MMHS campus is set amongst rolling hills and its buildings and athletic fields are terraced into its hillside setting. The existing topography of the site would be maintained, and no significant topographic features would be altered because of the Specific Plan's implementation.
LU Policy 2.1.4: The City shall require development to be landscaped so that the project blends in with the environment and neighborhood.	**Consistent.** The MMHS Campus Specific Plan is a redevelopment and modernization of an existing public educational use. New development would be designed and landscaped in a manner that preserves the existing topography, incorporates sustainable building practices, maintains open spaces, and reflects the rural community character of Malibu. Landscaping would be provided along pathways, building perimeters, and within and around new parking lot areas.
LU Policy 2.2.1: The City shall require adequate infrastructure, including but not limited to roads, water, and wastewater disposal capacity, as a condition of proposed development.	**Consistent.** The MMHS Campus Specific Plan will include adequate infrastructure to serve the Malibu Middle and High School Campus. The future on-site utilities would connect to existing facilities serving the site. The MMHS Campus Specific Plan modifications to the wastewater and drainage system will adequately serve the Malibu Middle and High School Campus.
LU Policy 2.3.1: The City shall protect and preserve the unique character of Malibu's many distinct neighborhoods.	**Consistent.** Implementation of the MMHS Campus Specific Plan would modernize and renovate buildings within an existing school site. The MMHS Campus Specific Plan is consistent with similar modern school facilities and the design limits its scale and massing to blend with the surrounding topography and buildings.
LU Policy 2.4.2: The City shall limit nonresidential uses to those compatible with the rural residential character of the surrounding neighborhoods.	**Consistent.** The MMHS Campus Specific Plan continues the existing public educational use for the site. The existing topography of the site would not be altered because of project implementation. The MMHS Campus Specific Plan blends and preserves the rural qualities of the community including the maintenance of open space areas for equestrian and trail uses.
LU Policy 2.4.6: The City shall avoid improvements which create a suburban atmosphere such as sidewalks and streetlights.	**Consistent.** The MMHS Campus Specific Plan would not create new sidewalks. However, the MMHS Campus Specific Plan would include lighting on the existing and new campus parking lots, pedestrian pathways, pool lighting, and other nighttime security- and safety-required lighting, consistent with existing conditions. Pool lighting would be regulated by the requirements of California Building Code (CBC) Section 3115B.1, requiring sufficient illumination that lifeguards have direct view of all areas of the pool surface and diving appurtenances. The MMHS Campus Specific Plan's lighting program would be consistent with the City of Malibu's Dark Sky Ordinance. The Specific Plan would not change or modify the restrictions imposed on the Athletic Field lighting (CDP 12-024), or the lighting associated with the 150-space Parking Lot A under the existing CDP (CDP No. A-MAL-13-030).

Source: Malibu 1995.

8.3 Relationship to Other Plans, Programs, Agencies, and Regulations

The following is a summary of the most relevant plans, programs, agencies, and regulations that should be referenced for consistency or compliance when implementing the Specific Plan.

California Coastal Act of 1976

The California Coastal Act of 1976 (CCA) is the permanent enacting law approved by the State Legislature. The CCA established a set of policies, coastal boundary lines, and permitting procedures regulating coastal development. Further, it provides for the transfer of permitting authority, with certain limitations reserved for the state, to local governments through adoption and certification of Local Coastal Program (LCP) by the California Coastal Commission. In conjunction with this Specific Plan, the LCP for the Plan Area will also be updated and submitted to the Coastal Commission.

City of Malibu Municipal Code

The Zoning Regulations (Title 17 of the Malibu Municipal Code), in conformance with the General Plan, regulate land use development in the City of Malibu. In each zoning designation, the regulations specify the permitted and prohibited uses and the development standards, including setbacks, height, parking, and design standards, among others. The Specific Plan is located within the Institutional District Zone that authorizes public educational institutions with a conditional use permit.

Malibu Local Coastal Program

The City of Malibu is located within the California coastal zone and all developments are subject to the regulations of the City's LCP. It was certified by the California Coastal Commission in 2002 and grants the City authority to review and approve coastal development permits (CDPs) at the local level. The LCP includes a Land Use Plan (LUP to regulate land use and a Local Implementation Plan (LIP) for zoning. Amendments to certified LUPs and LIPs only become effective after approval by the California Coastal Commission. Development within the Coastal Zone may not commence until a coastal development permit has been issued by either the Commission or a local government that has a Commission-certified local coastal program.

8.4 Review and Approval Process

The responsibilities of the Director shall include administering, interpreting, and enforcing all requirements and standards of the Specific Plan, including the acceptance and processing of all land use permit applications. Enforcement of the Specific Plan shall be in accordance with Chapter 17.04 Administration and Enforcement provisions of the City Municipal Code.

- **The Planning Director** or designated representative may approve, conditionally approve, or deny applications that meet the requirements of this Specific Plan and do not require a conditional use permit. The Director holds final approval authority for and enforcement of building permits, certificates of occupancy, sign permits, and temporary use permits.
- **The Planning Commission** may recommend approval, conditional approval, or denial of conditional use permits, applications for variances, specific plan amendments, and appeals of the actions of the Director or Zoning Administrator.

- **The City Council** may approve, conditionally approve, or deny conditional use permits, applications for variances, specific plan amendments, and appeals of the actions of the Planning Commission.
- **Coastal Commission** will have the final approval authority over the amendment to the LCP.

8.5 Administrative Amendments

Any modifications to the MMHS Campus Specific Plan shall occur in accordance with the Specific Plan amendment process and are required to be reviewed for approval by the Planning Commission and the City Council, as well as the California Coastal Commission. In all cases, Specific Plan amendments must be found to be in conformance with the objectives and intent of the MMHS Campus Specific Plan. Amendments may be requested at any time pursuant to section 65453(a) of the Government Code. Depending upon the nature of the proposed Specific Plan amendment, a supplemental environmental analysis may be required, pursuant to the CEQA Guidelines section 15162. Amendments may also require revision of the City's Local Coastal Program and approval by the California Coastal Commission.

8.6 Site Plan Review and Approval

Phases II through IV are considered conceptual and will require review and approval by the City prior to construction. Subsequent phases will be reviewed for compliance with this Specific Plan. Site Plan Approval shall occur in accordance with the City's Municipal Code, and Local Coastal Plan.

8.7 Environmental Review

The Environmental Impact Report (EIR) primarily a source of environmental information and disclosure for the Santa Monica-Malibu Unified School District, the lead agency for the MMHS Campus Specific Plan. The EIR describes the potential impacts from the adoption of the MMHS Campus Specific Plan. While the MMHS Campus Specific Plan would be conducted in phases, each phase has been fully developed and approved by the SMMUSD Board. As such, it is not anticipated that substantial subsequent CEQA review would be required by the District. Preparation of a Project level EIR does not relieve the District of its duty to review subsequent Coastal Development Permit (CDP) projects contemplated under the EIR. Any individual CDP application that is processed as under this EIR would have to satisfy the requirements of CEQA Guidelines section 15162, such that new information or project changes would require revisions to the EIR. Further, the analysis and mitigation measures will provide the City enough detail that subsequent environmental review should not be necessary absent the conditions set forth in section 15162.

9.0 Financing Measures

Construction of the new high school, as Phase 1 of the Malibu Campus Plan, will be funded by a General Obligation Bond, entitled Measure M, passed in 2018. Prior to the election in 2018, the District created a Malibu-only School Facilities Improvement District (SFID). The result of the SFID is that bond dollars generated by Measure M can only be used in Malibu (not in Santa Monica) for school facility improvement needs. Phase 1 does not anticipate the receipt of additional funding from the state or other sources. It is anticipated that the proceeds from bond sales under Measure M will adequately fund Phase 1 of the Malibu Campus Plan. It is further anticipated that future phases will require additional funding, most likely in the form of a future general obligation bond for the Malibu SFID. The District does not anticipate funding from the city.

Appendix B Initial Study (IS)/Notice of Preparation (NOP)

Appendices

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August 2020 | Initial Study EIR Scoping Document

MALIBU MIDDLE AND HIGH SCHOOL CAMPUS SPECIFIC PLAN AND LOCAL COASTAL PLAN AMENDMENT PROJECT

Santa Monica–Malibu Unified School District

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PLACEWORKS

Table of Contents

Section **Page**

1. INTRODUCTION 1
1.1 PROJECT LOCATION 1
1.2 ENVIRONMENTAL SETTING 2
1.3 PROJECT DESCRIPTION 15
1.4 EXISTING ZONING AND GENERAL PLAN 23
1.5 REQUIRED PERMITS AND APPROVALS 23

2. ENVIRONMENTAL CHECKLIST 57
2.1 PROJECT INFORMATION 57
2.2 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED 60
2.3 DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY) 60
2.4 EVALUATION OF ENVIRONMENTAL IMPACTS 61

3. ENVIRONMENTAL ANALYSIS 69
3.1 AESTHETICS 69
3.2 AGRICULTURE AND FORESTRY RESOURCES 70
3.3 AIR QUALITY 71
3.4 BIOLOGICAL RESOURCES 73
3.5 CULTURAL RESOURCES 76
3.6 ENERGY 77
3.7 GEOLOGY AND SOILS 78
3.8 GREENHOUSE GAS EMISSIONS 81
3.9 HAZARDS AND HAZARDOUS MATERIALS 82
3.10 HYDROLOGY AND WATER QUALITY 86
3.11 LAND USE AND PLANNING 89
3.12 MINERAL RESOURCES 89
3.13 NOISE 90
3.14 POPULATION AND HOUSING 91
3.15 PUBLIC SERVICES 92
3.16 RECREATION 93
3.17 TRANSPORTATION 94
3.18 TRIBAL CULTURAL RESOURCES 95
3.19 UTILITIES AND SERVICE SYSTEMS 97
3.20 WILDFIRE 98
3.21 MANDATORY FINDINGS OF SIGNIFICANCE 100

4. REFERENCES 103

5. LIST OF PREPARERS 107

Table of Contents

List of Figures

Figure		Page
Figure 1	Regional Location	7
Figure 2	Local Vicinity	9
Figure 3	Aerial Photograph	11
Figure 4	Existing MMHS Campus Buildings and Facilities	13
Figure 5	Proposed Site Plan	29
Figure 6	Conceptual Utility Layout: Phase 1	31
Figure 7	Conceptual Utility Layout: Phases 2–4	33
Figure 8	Conceptual Storm Drain and Water Quality: Phase 1	35
Figure 9	Conceptual Storm Drain and Water Quality: Phases 2–4	37
Figure 10A	Phase 1 Proposed Demolition	39
Figure 10B	Phase 1 Proposed Construction Plan	41
Figure 11	Phase 2 Proposed Construction Plan	43
Figure 12A	Phase 3 Proposed Demolition	45
Figure 12B	Phase 3 Proposed Construction Plan	47
Figure 13A	Phase 4A Proposed Demolition	49
Figure 13B	Phase 4A Proposed Construction Plan	51
Figure 14A	Phase 4B Proposed Demolition	53
Figure 14B	Phase 4B Proposed Construction Plan	55

Table of Contents

List of Tables

Table		Page
Table 1	Former JCES Campus Existing Building and Facilities	2
Table 2	MMHS Campus Existing Building and Facilities	3
Table 3	Existing Project Site Parking	4
Table 4	Summary of New Development	16
Table 5	Existing and Build Out Community Use Facilities	18
Table 6	Campus Specific Plan Buildout Parking Count	20
Table 7	Proposed Stormwater Management Systems	21
Table 8	Proposed Project Phasing	22
Table 9	Proposed Project Cut/Fill by Phase	23
Table 10	Specific Plan Variances	24

Table of Contents

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Abbreviations and Acronyms

AAQS	ambient air quality standards
AB	Assembly Bill
amsl	above mean sea level
AQMD	air quality management district
AQMP	air quality management plan
BMP	best management practices
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
CalRecycle	California Department of Resources, Recycling, and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
cy	cubic yards
dB	decibel
dBA	A-weighted decibel
EIR	environmental impact report
EOP	emergency operations plan
EPA	United States Environmental Protection Agency
ESHA	environmentally sensitive habitat area
FEMA	Federal Emergency Management Agency
FHSZ	fire hazard severity zone
GHG	greenhouse gases
JCES	Juan Cabrillo Elementary School
LACoFD	Los Angeles County Fire Department
LCP	local coastal plan
LOS	level of service
LRA	local responsibility area
MMHS	Malibu Middle and High School

Abbreviations and Acronyms

NAHC	Native American Heritage Commission
NO_X	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
O_3	ozone
OPR	[Governor's] Office of Planning and Research
PCH	Pacific Coast Highway
PM	particulate matter
RTP/SCS	regional transportation plan/sustainable communities strategy
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SEMS	Standardized Emergency Management System
SMMUSD	Santa Monica–Malibu Unified School District
SoCAB	South Coast Air Basin
SO_X	sulfur oxides
SRA	state responsibility area
VMT	vehicle miles traveled
WQMP	water quality management plan

1. Introduction

Santa Monica–Malibu Unified School District (SMMUSD or District) intends to redevelop the former Juan Cabrillo Elementary School (JCES) and Malibu Middle and High School (MMHS) sites to: create a middle- and high-school campus that provides separate education spaces for the middle- and high-school students, improve vehicle and pedestrian circulation, and secure campus access while respecting the natural environment of West Malibu. The Proposed Project would reorganize the campus into three defined areas: Middle School Core, High School Core, and shared amenities. The Proposed Project would result in the demolition of all 18 existing buildings on the combined campuses; with only the existing athletic fields, and the nearly or recently completed buildings (Buildings A/B and E) on the MMHS campus would remain. The Proposed Project would not result in an increase in student enrollment or capacity. The Proposed Project would not impact the Malibu Equestrian Park located on District property adjacent to the campus.

SMMUSD will serve as the lead agency for the Proposed Project in accordance with the California Environmental Quality Act (CEQA) Guidelines section 15051(c). This Initial Study is a preliminary evaluation of the potential environmental consequences associated with the Proposed Project. As part of the District's approval process, the Proposed Project is required to undergo an environmental review pursuant to CEQA. The lead agency uses the initial study analysis to determine whether an environmental impact report (EIR) or a negative declaration is required and to solicit public comments on the scoping of the EIR. If an initial study concludes that the project may have a significant effect on the environment, an EIR must be prepared. Otherwise, a negative declaration or mitigated negative declaration is prepared.

1.1 PROJECT LOCATION

The Project Site includes the entirety of the SMMUSD property that consists of the existing Malibu Equestrian Park in the eastern portion of the property, the existing MMHS campus in the center of the property, and the former JCES campus in the western portion of the property. Malibu Middle and High School is located at 30215 Morning View Drive (Assessor's Parcel Map Numbers 4469-017-900, 4469-018-900, 4469-018-901, 4469-018-902, 4469-018-903, 4459-018-904, 4469-019-900, 4469-019-901, 4469-019-902 (9 parcels)), in the City of Malibu, Los Angeles County, California (Figure 1, *Regional Location*). The Malibu Middle and High School Campus Specific Plan (Proposed Project) would be developed within the existing MMHS campus and the former JCES campus. The Proposed Project would not impact the Malibu Equestrian Park. The MMHS campus is set amid rolling hills, and its buildings and athletic fields are terraced into the hillside setting. The MMHS campus is approximately 0.25 miles northeast of both the Pacific Coast Highway (PCH) and Zuma Beach, and bounded by Merritt Drive to the east, Via Cabrillo Street to the west, and Morning View Drive to the south. Single-family homes border the Project Site to the north (Figure 2, *Local Vicinity*, and Figure 3, *Aerial Photograph*).

1.2 ENVIRONMENTAL SETTING

1.2.1 Existing Land Use

The Project Site is in the Zuma Beach area in the Malibu Park portion of the City of Malibu. The 40-acre Project Site comprises the existing Malibu Equestrian Park, the existing MMHS campus, and the former JCES campus. The combined former JCES and MMHS campus contain a total of 228,558 square feet of developed structures as well as student areas, athletic fields, and parking areas.

1.2.1.1 FORMER JCES CAMPUS

The former JCES campus covers approximately six acres and is on the western end of the Project Site to the north of Morning View Drive, west of the MMHS campus. JCES formerly served elementary school grades K-5. As part of SMMUSD's wider Malibu Schools Alignment Project, the JCES student population combined with the Point Dume Marine Science School student population and moved to the Point Dume Marine Science School campus, renamed Malibu Elementary School, at the beginning of the 2019-20 school year. The former JCES campus includes 28 classrooms (including 9 portable classrooms), a library; administrative offices, multipurpose room; grass field, hardcourt area, and parking for 49 vehicles. Currently, middle school students occupy the portable classrooms, and high school students occupy Building F. No other JCES rooms are currently being used. Figure 4**,** *Existing MMHS Campus Buildings and Facilities*, shows the former JCES campus buildings, and Table 1, *Former JCES Campus Existing Building and Facilities*, provides each buildings' use and square footage:

Table 1 Former JCES Campus Existing Building and Facilities

Name	Primary Function	Square Footage
Building A: Administration Building	Main Administration offices.	2,280
Building B: Kindergarten Classroom Building	Kindergarten Classrooms	5,941
Building C: Classroom Building	Classrooms	4,554
Building D: Classroom Building	Classrooms (Art and Music)	4,535
Building E: Library	Library	2,694
Building F: Classroom Building	Classrooms	7,952
Building G: Multipurpose Room Building	Multipurpose Room and Food Service	4,758
Portables: Portables P1 to P5	Classrooms and Restrooms	5,280 (5 x 960sf, 1 x 480sf)
Portables: P6 to P7	Malibu Boys and Girls Club	1,920 (2 x 960sf)
Portables: Cottage A and B	Storage	N/A
Buildings H and I	Special Ed Classrooms	1,920 (2 x 960sf)
Total Square Footage		**41,834**

Source: SMMUSD 2020.

1.2.1.2 MMHS CAMPUS

The MMHS campus covers approximately 35 acres of the overall District property and operates as a sixth- through twelfth-grade public school with a 2018-19 enrollment of 939 students and 134 staff. Presently, the MMHS campus has 60 classrooms (including 12 portable classrooms); a library, auditorium, and administrative

offices; an athletic field, 2 gymnasiums, a pool, 9 basketball courts, and 4 tennis courts; and parking for 282 vehicles in three parking lots. Figure 4 shows the MMHS campus buildings, and Table 2, *MMHS Campus Existing Building and Facilities*, shows each building's use and square footage:

Table 2 MMHS Campus Existing Building and Facilities

Name	Primary Function	Square footage
Buildings A/B: Administration/Library/Classroom Building[1]	Administration Offices, Library, Classrooms, Science Classrooms	35,315
Building E: Classroom Building[2]	Classrooms	13,515
Building D: Classroom/Science Lab Building[3]	Classrooms, Science Labs, Staff Lounge	26,952
Building F (300 Building): Music/Band/Choral Building	Music and Lecture	6,720
Building G: Art, "Woodshop" Building[4]	Art (Ceramics), Makerspace, Special Ed (Life Skills)	9,972
Building H (600 Building): Cafetorium	Food Service, Kitchen, Auditorium (350 seat capacity)	14,478
Building I (400 Building): Graphic Arts	Photo and Art Classrooms	4,561
Building J (Building 700): Gymnasium	Gymnasium and Locker Rooms	20,758
Building J1: 'New' Gymnasium	Gymnasium and Team Locker Rooms	18,835
Building K: Classroom Building	Classrooms and Science Labs	12,698
Pool	Swimming, Water Polo	Pool: 60'x75' Pool Equipment Building: 900
Field House	Equipment Storage	930
Portables (Interim Classrooms and Administration)	Interim Classrooms and Administration	12,960 (1 @1,920sf, 8 @960sf, 1 @480sf, 3 @960sf)
Boys & Girls Club	Classrooms and Administration for before- and after-school care	9,120 (3@2,880, 1@480)
Bus Depot	Bus Storage	N/A
Maintenance and Operation Warehouse	Equipment Storage	930
Total Square Footage		**188,644**

Source: SMMUSD 2019.
1: Buildings A/B are currently under construction. These buildings would remain, with no work identified for the Proposed Project. Construction of Buildings A/B was evaluated and cleared as part of a previous MMHS EIR (SCH#2008091059).
2. Building E was recently constructed. This building would remain, with no work identified in the Proposed Project. Construction of Building E was evaluated and cleared as part of a previous MMHS EIR (SCH#2008091059)
3. Building D is included in this EIR for informational purposes. Demolition of Building D was evaluated for environmental impacts, cleared, and approved by the District in October 2019.
4. Building G is included in this EIR for informational purposes. Demolition of Building G was evaluated for environmental impacts, cleared, and approved by the District in June 2020.

1.2.1.3 SITE ACCESS, CIRCULATION, AND PARKING

The Project Site can be accessed from Morning View Drive, approximately 0.3 miles northeast of the intersection of Morning View Drive and PCH and 0.9 miles southeast of the intersection of Guernsey Avenue and PCH. Morning View Drive is a narrow, two-lane, local roadway with an open drainage system that provides direct access to single-family homes in the area as well as to the existing MMHS and former JCES campuses and the Malibu Equestrian Park. Regional access to the Project Site is provided via PCH.

There are currently two main points of vehicular entry into the MMHS and former JCES campuses. The first entry is along the eastern edge of the campus from Morning View Drive. The currently under-construction

Lower Parking Lot along Morning View Drive will provide 61 spaces as well as direct access to the MMHS campus; it will be primarily used by middle school staff and visitors. The 150-Space Parking Lot is accessed by the shared driveway with the Lower Lot from Morning View Drive and is next to the athletic field. The 150-Space Parking Lot has 145 standard and 5 ADA parking spaces; it is primarily used by high school staff and visitors and during nighttime athletic events.

The second point of entry is at the access road between the former JCES campus and the MMHS campus. This entry is a service access point and provides access to the Bus Depot, Maintenance and Operations Warehouse, and Parking Lot A. Parking Lot A has approximately 132 parking spaces (128 standard and 4 ADA) and is primarily used by high school students and Boys & Girls Club staff. Parking Lot A also provides access to on-site athletic facilities. The JCES Parking Lot has 37 spaces and is primarily used by high school staff and students. There is also a small service lot used for deliveries to the south of Building K. with seven parking spots Table 3, *Existing Project Site Parking*, shows the parking lot total per lot. Figure 4 shows the locations of the existing parking lots.

Table 3 Existing Project Site Parking

Name	Spaces
Lower Parking Lot	61
150-Space Parking Lot	150
Parking Lot A	119
JCES Parking Lot	37
Service Lot	7
Total	**374**

Source: SMMUSD 2018.

Student drop-off/pick-up for the Middle School currently occurs in the 150-Space Parking Lot, while drop-off/pick-up for the High School Students occurs in the JCES Parking Lot. As part of the current A/B Building project, a new 400-foot-long drop-off and pick-up lane would be provided along Morning View in front of the new A/B Building, with a dedicated 20-foot-long accessible drop zone. Sidewalks are provided on both sides of Morning View Drive from PCH north to the western end of the former JCES campus. There are currently three crosswalks along Morning View Drive that provide access to the former JCES and MMHS campuses from the south side of the street. A crossing guard mans the crosswalk in front of former JCES during the AM drop-off and PM pick-up peak periods. No parking is allowed along Morning View Drive.

1.2.1.4 SITE TOPOGRAPHY

The Project Site is situated on the southern flanks of the western portion of the Santa Monica Mountains. Maximum topographic relief on-site is approximately 94 feet, with elevations ranging from 86 to 180 feet above mean sea level. The campus consists of several near-level pad areas with generally ascending slopes to the north and descending slopes to the PCH to the south. On the MMHS campus, the street-level pad contains the currently under-construction MMHS administration, library, and classroom buildings (Buildings A/B); the under-construction Lower Parking Lot; and an outdoor courtyard, cafeteria, and auditorium. On the former JCES campus, the pad contains the administration building, the kindergarten classroom, the special education classrooms, and the JCES Parking Lot. The next pad contains the newer and old gymnasiums, outdoor

basketball courts and swimming pool, the Boys & Girls Club of Malibu facility, and the Bus Depot and Parking Lot A on the MMHS campus, as well as the multipurpose room, the library, and three educational buildings on the former JCES campus. The third pad contains the football field and track and the 150-Space Parking Lot. The fourth and highest pad contains the tennis courts and baseball diamonds. Each terrace is accessible via stairs and handicap accessible ramps. From street level, views of the development on the elevated terraces are limited.

There is very little natural vegetation on-site, consisting primarily of grasses, ivy, brush, shrubs, and scattered trees. The City of Malibu's Local Coastal Program (LCP) Environmentally Sensitive Habitat Area (ESHA) Map shows a stream approximately 400 feet northwest of the campus. The stream consists of an underground pipe that flows under the school property that daylights into a natural streambed to the south of the school property. Drainage from the campus flows overland and along parking lots and driveways in a southerly direction to Morning View Drive, where it collects in existing storm drains. The City of Malibu maintains policies to protect environmentally sensitive habitat areas within city limits, and new developments must be sited and designed to minimize impacts to the ESHA.

1.2.2 Surrounding Land Use

Surrounding land uses in the general vicinity of the Project Site include properties that are zoned Rural Residential (RR). These parcels are primarily developed with homes on lots that range between one to two acres in size. Single-family homes are to the north, west, and south of the Project Site. Immediately adjacent to the Project Site to the east is the Malibu Equestrian Park, which leases the District-owned property. The entirety of the District-owned property, including the former JCES campus, the MMHS campus, and the Equestrian Park, is zoned for institutional uses. To the south, across Morning View Drive, is the Malibu United Methodist Church and Nursery School. Los Angeles County Zuma Beach, a public beach, and PCH are approximately 1,000 feet and 1,500 feet southwest of the Project Site, respectively.

1. Introduction

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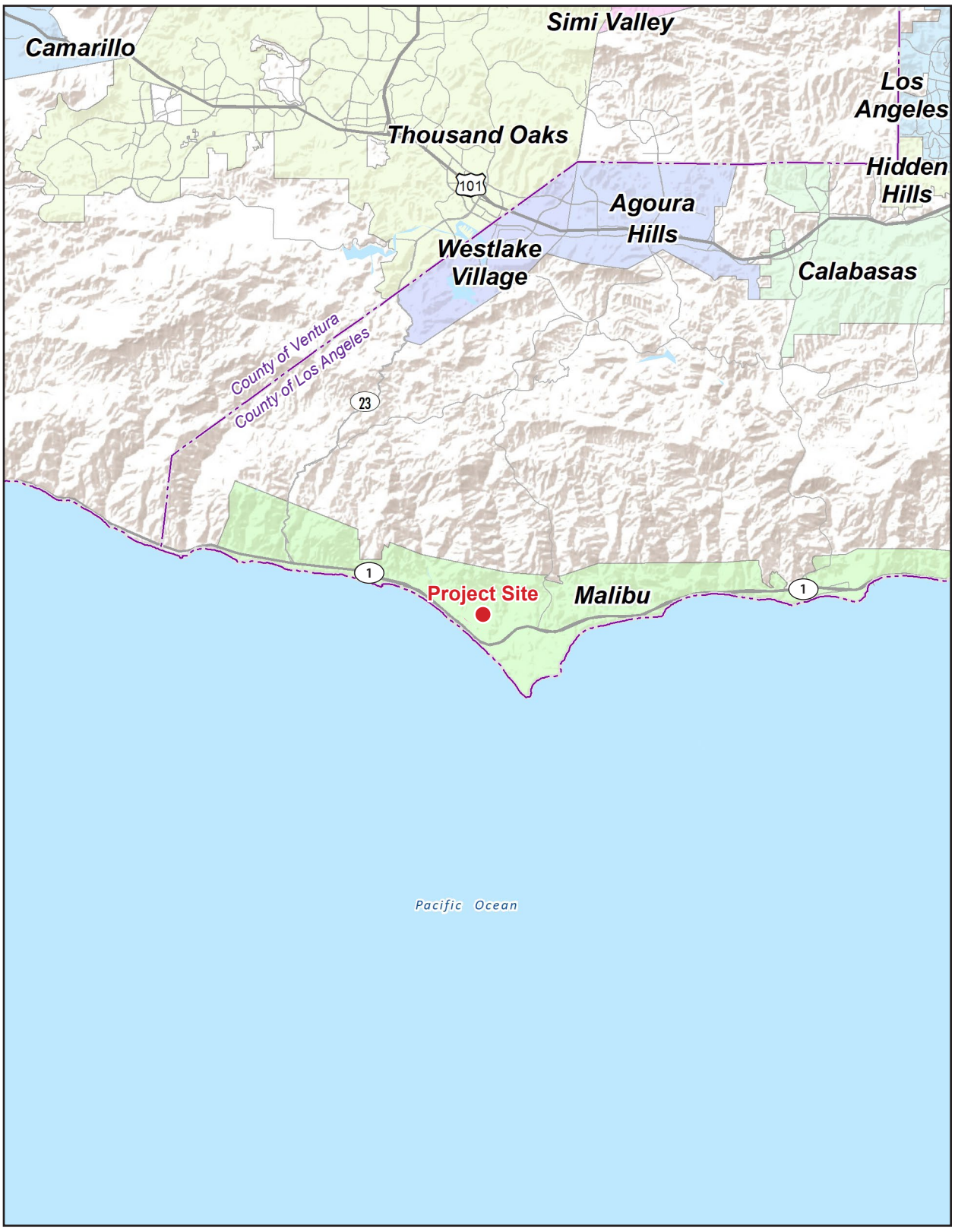
Figure 1 - Regional Location
1. Introduction



Note: Unincorporated county areas are shown in white.
Source: ESRI, 2020

0 3
Scale (Miles)

1. Introduction

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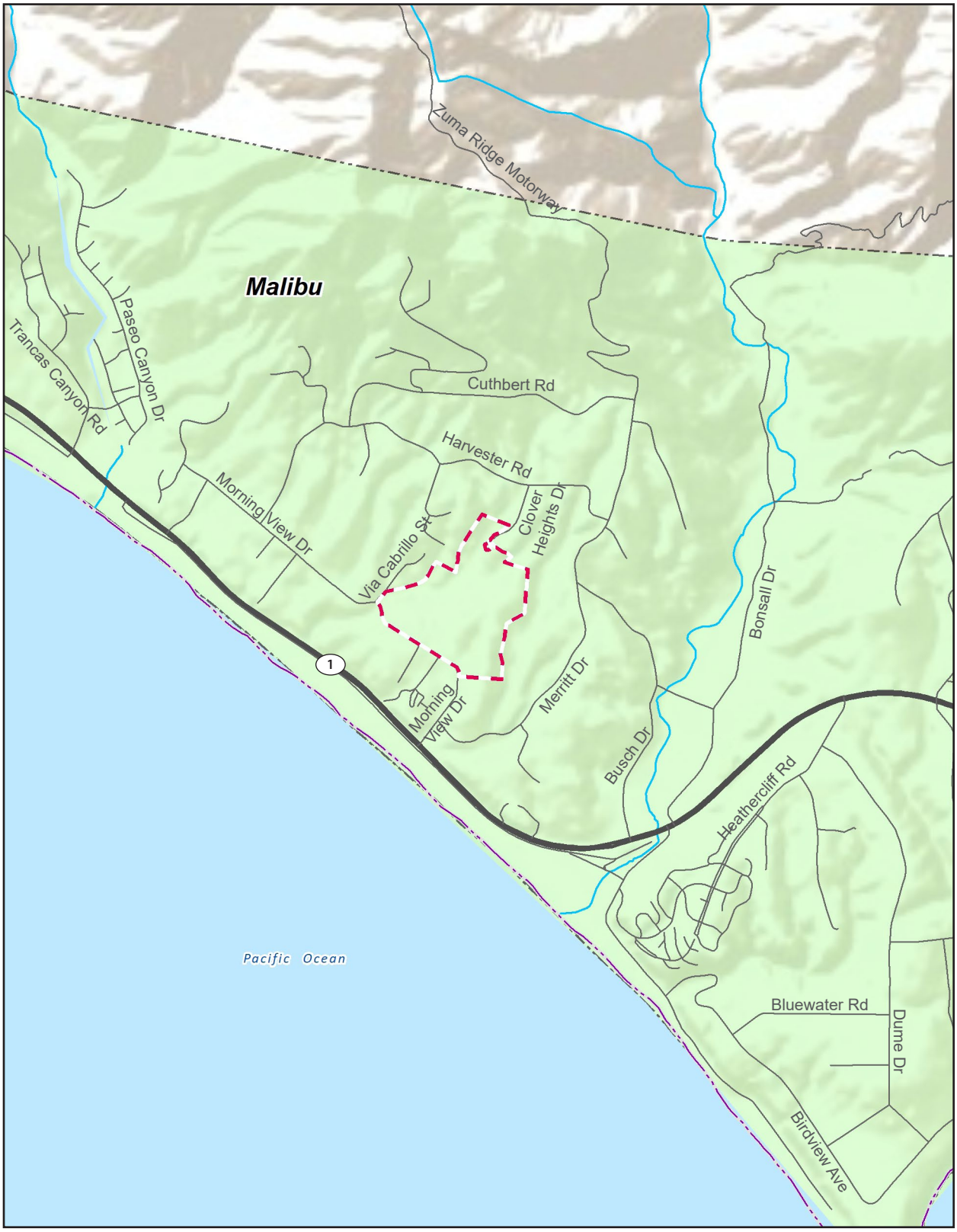
Figure 2 - Local Vicinity

1. Introduction



Project Boundary

Note: Unincorporated county areas are shown in white.

Source: ESRI, 2020

0 2,000
Scale (Feet)

1. Introduction

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Figure 3 - Aerial Photograph
1. Introduction

Project Boundary

0 800
Scale (Feet)

Source: Nearmap, 2020

1. Introduction

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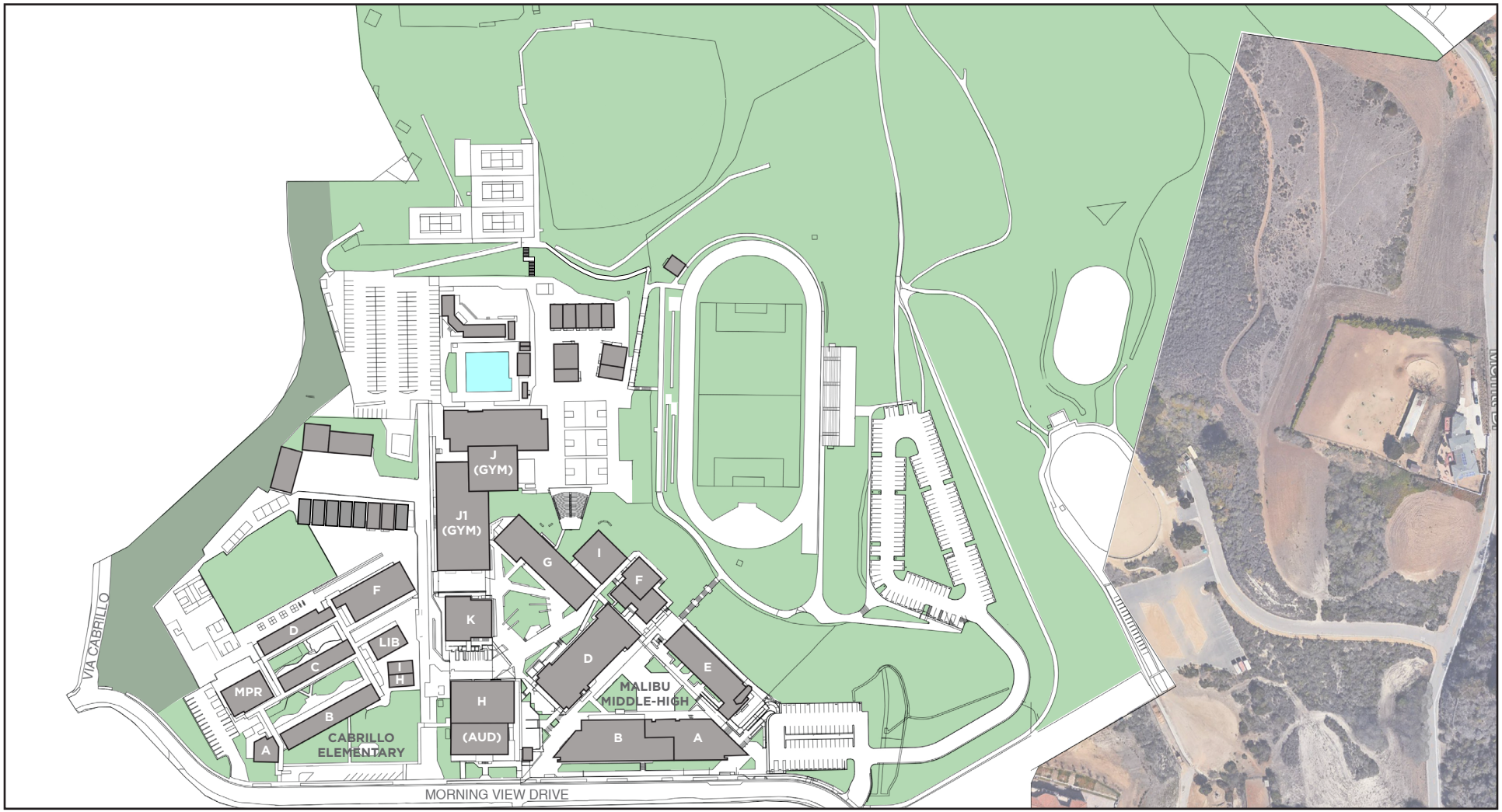
Figure 4 - Existing MMHS Campus Buildings and Facilities



Source: LPA, 2019

1. Introduction

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1.3 PROJECT DESCRIPTION

"Project," as defined by the CEQA Guidelines, means "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and that is any of the following: (1)…enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100–65700" (14 Cal. Code of Reg. § 15378[a]).

Following is a detailed description of the proposed project's overall site plan and character and the various development components, elements, and improvements. Implementation of the proposed project requires approval of the by the City of Malibu of The Malibu Middle and High School Campus Specific Plan and the associated LCP amendments. Refer to Section 1.5.2 for more information regarding the Specific Plan.

1.3.1 Proposed Project

The Proposed Project would redevelop and modernize the existing MMHS campus and former JCES campus to create three distinct areas: Middle School Core, High School Core, and shared facilities. Implementation of the Proposed Project would result in demolition of all 11 buildings on the former JCES campus and 7 buildings on the MMHS campus, totaling 147,556 square feet of demolition. The currently constructed Building E and the under-construction Buildings A/B would remain, with all other structures removed (see Figure 5*, Proposed Site Plan*). No changes to the existing football/track, baseball, or softball fields would occur with the exception of the development of new field houses and additional parking adjacent to the softball field. The Proposed Project would not impact the Malibu Equestrian Park. As shown in Table 4, *Summary of New Development*, the Proposed Project would result in 32 classrooms and 8 labs and a total of 190,967 square feet of building space, providing the MMHS campus with a total of 47 classrooms and 12 labs and a total of 240,650 square feet of building space.

Table 4 Summary of New Development

Building	Status	Classroom	Lab	Square Footage	Maximum Height
Middle School Core					
Building D: Gymnasium/ Fitness/ PE and Student Activities and Food Services	New	2	0	22,376	36 ft
Middle School Core Subtotal		**2**		**22,376**	
High School Core					
Building C: Classrooms, Student Support Services, Administrative and Campus Support	New	23	8	85,391	36 ft
Building J: Gymnasium/ PE	New	2	0	36,708	45 ft
High School Core Subtotal		**25**	**8**	**122,099**	
Shared Amenities					
Building I: Special Education and Campus Wellness Center	New	1	0	5,094	28 ft
Building H: Visual and Performing Arts (VAPA)	New	4	0	30,094	45 ft
Building L: Aquatics Center/Field House	New	0	0	9,249	28 ft
Building M: Upper Field House	New	0	0	2,055	28 ft
Shared Amenities Subtotal		**5**		**46,492**	
Total – New Development		**32**	**8**	**190,967**	
Total – with Buildings A/B and Building E	**Existing**	**47**	**12**	**240,650**	

Source: LPA 2019.

1.3.1.1 MIDDLE SCHOOL CORE

The Middle School Core would be located at the southeastern portion of the campus with a level academic quad in the middle. The Middle School Core would consist of four buildings, including the existing Building E and the under-construction Buildings A/B. Building D would include a new middle school gym and a student activities and Food Services Building. Upon completion, the Middle School Core would result in 72,059 square feet of total development (49,683 of existing Building E and under construction Buildings A/B, and 22,376 square feet of new construction). The Middle School Core would include 17 total classrooms (8 classrooms in Building E, 7 in Buildings A/B, and 2 in Building D), administration offices, supportive services, a library, four science labs (in Buildings A/B), 2D art studio, lunch shelter, multipurpose room, gymnasium, and locker rooms.

The Buildings A/B will contain STEAM, student support services, and administration and supportive services, and will have 7 classrooms and 4 labs. Buildings A/B are two stories and 36,200 square feet, with a maximum height of 28 feet and oriented east-west along Morning View Drive. Building E houses the humanities department and has 8 classrooms. Building E is a two-story, 13,483-square-foot prefabricated modular building with a maximum height of 25.5 feet at the parapet, and it is located to the north of Buildings A/B. The construction and operation of these buildings were evaluated and cleared as part of a previous MMHS EIR (SCH#2008091059) and are included here for informational purposes only.

Building D would be located to the north and north west of the Buildings A/B, along the northern edge of the Middle School campus. Building D would house the physical education center and new student activities and food services. The physical education portion of the building would be one story and 16,932 square feet

and would house a 50-foot by 84-foot multipurpose court with storage, 6 rows of bleachers, a lobby and restrooms, and a physical education center with a fitness studio; storage; boys' and girls' lockers and restrooms; and staff office, shower, and restroom. The student activities and food services portion of Building D would be two stories and 5,444 square feet and would have a maximum height of 36 feet along the northern boundary. The student activities area would include maker space and the Associated Student Body (ASB) student store and storage areas, while the food services area would include a warming kitchen, food court, restrooms, and a 3,600-square-foot exterior sheltered lunch area. Building D would have a maximum height of 45 feet above grade to accommodate the gymnasium and would provide an accessible path to the hardcourt area on the upper level. The Middle School Core buildings would be arranged around a quad that would serve as a central gathering area for the Middle School students.

1.3.1.2 HIGH SCHOOL CORE

The High School Core would be located at the southwestern portion of the campus occupying the former JCES campus. Building C would be two stories and approximately 85,391 square feet and would include 25 classrooms, administration offices, supportive services, a library, 6 science labs, Art 3D sculpture/ceramics studio, lunch shelter, and a career center. Building C would be designed to fit the natural topography of the site, such that the southern portion of the building fronting Morning View Drive would have a maximum height of 36 feet above grade, while the northern portion, adjacent the slope that separates the two pads, would have a maximum height of 45 feet.

In addition to Building C, the High School Core would include an approximately 36,708-square-foot main gymnasium and an approximately 4,256-square-foot dance/weights rooms (Building J), which would be located in the center of the campus adjacent to the hardcourts. Building J would have a maximum height of 45 feet and would include team rooms and four CIF regulation hardcourts for indoor sports.

1.3.1.3 SHARED USES

In addition to developing the Middle School and High School Core areas, the Proposed Project would develop new shared facilities. These shared facilities would include a performing arts center (Building H), wellness center and spaces for special education (Building I), aquatics center/field house (Building L), and pool. As shown in Figure 5, the new shared facilities would be built to the north of the Middle School and High School Cores and west of the existing football/soccer/track and field. The Boys & Girls Club building would be relocated next to the tennis courts near the northwestern portion of the campus. Under the Proposed Project, Building H would have a maximum height of 45 feet above grade for the Theater portion, and 36 feet above grade for the remainder of the performing arts facilities. Buildings I, L and M would be a maximum of 28 feet above grade.

Shared Sport and Recreational Facilities

In addition to the new gymnasium, weight room, aquatic center and locker rooms, the existing athletic field, baseball, and softball fields would receive minor improvements. A new field house (Building M) would be constructed for the baseball and softball fields, and one for the athletic field (Building L). Additionally, the Proposed Project would add two new tennis courts to the existing tennis court area on the northern side of the Project Site. The Proposed Project would also extend pedestrian trails throughout the Project Site to

improve pedestrian circulation. The pedestrian trails would include turnouts, which would be used as outdoor classroom space.

1.3.1.4 STUDENT CAPACITY AND SCHEDULE

The existing MMHS campus was constructed as Malibu Park Junior High School beginning in 1963, and in 1992 the school was converted for use as a high school. The buildings no longer meet the District's needs for flexible classrooms with the ability to support multiple learning zones. The Proposed Project would modernize the campus facilities and retain the total capacity of 1,200 students (750 high school students and 450 middle school students), which is consistent with historical enrollments (in 2013 the middle school had 466 students in grades 6-8 while the high school had 692, for a total of 1,158 students). While enrollment has declined in recent years, with only 939 students during the 2018-19 school year (337 middle school students and 602 high school students), the District is moving from a traditional classroom and instructional model to a progressive, project-based learning model; as a result, class sizes, support spaces, community areas, and collaboration zones require more space from the school design of the past. The Proposed Project is intended to upgrade and enhance both campuses structures and facilities to meet the District's Education Specifications and better accommodate the student population.

School hours would remain generally from 8:00 AM to 3:00 PM, with staff and students of the middle/high school arriving on campus between approximately 7:00 AM and 8:00 AM and leaving between approximately 3:00 PM and 5:00 PM, with occasional special events and athletic events during weeknights and/or weekends. Additionally, the Visual and Performing Arts program uses the auditorium after school typically until 6:00 PM, and the Boys & Girls Club on the campus is open Monday through Friday from 9:00 AM to 6:30 PM.

Community/Civic Center Use

When the school facilities are not in use and are not scheduled for school-sponsored or other District-related events, the Civic Center Act permits community organization and members to utilize school facilities for their events by obtaining a Civic Center Permit from the SMMUSD or the City of Malibu (California n.d.). Permitted events may include community and/or city use of the playfields, common areas, and classrooms, as permitted in the 2019 Master Agreement between SMMUSD and the City of Malibu Regarding the Joint Use of School District Facilities (SMMUSD/City of Malibu 2019). Operation of the school facilities for community use may occur outside normal school operating hours, generally between 3:00 PM and 10:00 PM on weekdays, and between 8:00 AM and 10:00 PM on Saturday and Sundays. Parking for Civic Center uses would be provided in the school's on-site surface parking lots. As the Proposed Project would develop additional facilities, there may be a commensurate increase in community use with implementation of the Proposed Project. Table 5, *Existing and Buildout Community Use Facilities*, shows the existing facilities available for community use and the proposed facilities.

Table 5 Existing and Build Out Community Use Facilities

Name	Square Footage
Existing Community Use Facilities	
MMHS Building H (600 Building): Cafetorium	14,478
MMHS Building J (Building 700): Gymnasium	20,758

Table 5 Existing and Build Out Community Use Facilities

Name	Square Footage
MMHS Building J1: 'New' Gymnasium	18,835
MMHS Building K: Classroom Building	12,698
JCES Building E: Library	2,694
JCES Building G: Multipurpose Room Building	4,758
Pool	1
Track and Field	1
Baseball Field	1
Softball Field	1
Tennis Courts	4
Subtotal Existing	**74,221**
Proposed Community Use Facilities	
Building D: Middle School Gymnasium/ Fitness/ PE	16,932
Building J: High School Gymnasium	36,708
Building H: Shared Visual and Performing Arts (VAPA)	30,094
Building L: Aquatics Center/Field House	9,249
Building M: Upper Field House	2,055
Pool	1
Track and Field	1
Baseball Field	1
Softball Field	1
Tennis Courts	6
Subtotal Proposed (Buildout):	**95,038**
Net Increase	**20,817 and Two Tennis Courts**

Source: SMMUSD 2019.

1.3.1.5 SITE ACCESS, CIRCULATION, AND PARKING

Site access would remain along Morning View Drive, with a centrally located drop-off area for buses and parents/guardians between the Middle School and High School Core areas. A total of 451 parking spaces would be developed under the Proposed Project. The 150-Space Parking Lot and the Lower Parking Lot are renamed Parking Lot A and Parking Lot B, respectively, and would continue to have 150 and 62 parking spots. The new drop-off/pick-up area would be able to accommodate up to five school buses and would have 13 parking spaces for visitor use (Parking Lot C).

Parking Lot D would be a new, approximately 185-space parking lot that would be developed to the north of Building C and would be accessed by a new entryway along the western edge of the campus from Morning View Drive. Parking Lot E would be constructed during Phase 3 and would have 27 parking spots and be connected by the shared driveway to serve both the High School and the Boys & Girls Club. A small parking lot (Parking Lot F) with approximately 14 spaces would be developed along the northeastern boundary of the softball field with access from Clover Heights Avenue. Table 6, *Campus Specific Plan Buildout Parking Count*, shows the name and parking count for each lot.

Table 6 Campus Specific Plan Buildout Parking Count

Existing Parking Lot	Proposed Parking Lot	Count
150-Space Parking Lot	Parking Lot A	150
Lower Parking Lot	Parking Lot B	62
	Parking Lot C (New)	13
	Parking Lot D (New)	185
	Parking Lot E (New)	27
	Parking Lot F (New)	14
Total		**451**

Source: SMMUSD 2020.

Additionally, the Proposed Project would include a pedestrian trail system that starts along the Environmentally Sensitive Habitat Area (ESHA) on the west and connects to a larger system of existing walking trails around the Equestrian Park and surrounding hills. Fencing would surround the entire campus. Ornamental fencing near Morning View Drive and the proposed buildings would allow the MMHS and former JCES campuses to be secure during school days and would reinforce a single point of entry for each school. Chain-link fencing would run along the east, north, and west sides of the Project Site.

1.3.1.6 INFRASTRUCTURE

Utility improvements necessary to serve the proposed replacement buildings would be constructed. The future on-site utilities would connect to existing facilities serving the site. The proposed domestic and fire water lines would connect to the existing 12-inch public water main located on Morning View Drive. Currently, 11 septic tanks exist on the former JCES and MMHS campuses. The Proposed Project would upgrade the existing septic system. As shown in Figure 6, *Conceptual Utility Layout: Phase 1*, and Figure 7, *Conceptual Utility Layout: Phases 2–4*, five septic tanks would be developed under the Proposed Project:

- Septic 1 in Parking Lot D, serving Building C
- Septic 2 in the Middle School Quad, serving Building D
- Septic 3 under the Middle School Hard Courts, serving Buildings H, I, J, and L
- Septic 4 under Parking Lot E, serving the Boys & Girls Club
- Septic 5 adjacent the existing Tennis Courts, serving Building M

A shown in Figure 8, *Conceptual Storm Drain and Water Quality: Phase 1*, and Figure 9, *Conceptual Storm Drain Water Quality: Phases 2–4*, the Project Site would be divided into seven drainage management areas (DMA). DMAs A, B, and E would drain to the existing ESHA, and DMAs C, D, F, and G would drain to Morning View Drive. New stormwater retention basins would be developed to infiltrate and treat runoff from the Proposed Project. Table 7, *Proposed Stormwater Management Systems*, provides the area of the DMAs and the capacity of the new treatment basins.

Table 7 Proposed Stormwater Management Systems

Drainage Management Area (Acres)	Water Quality BMP (square-feet)
DMA A – 3.08	11,000
DMA B – 3.05	10,000
DMA C – 1.15	4,000
DMA D – 3.10	11,000
DMA E – 3.26	11,400
DMA F – 1.90	7,000
DMA G – 1.37	5,000
Total	**59,400**

Source: LPA 2019.

1.3.1.7 LIGHTING

The Proposed Project's lighting program would be consistent with the City of Malibu's Dark Sky Ordinance. All campus lighting would also be designed to provide for the security and safety of students, staff, and visitors. Night lighting would include existing and new campus parking lots, pedestrian pathways, pool lighting, and other nighttime security- and safety-required lighting. Pool lighting would be regulated by the requirements of California Building Code (CBC) Section 3115B.1, requiring sufficient illumination that lifeguards have direct view of all areas of the pool surface and diving appurtenances.

Maintenance and custodial staff typically leave the campus at 11:00 P.M., as such, consistent with the existing lighting program on the MMHS Campus, the nighttime lighting would be controlled by an automatic timer and would be programmed to turn off at 11:30 PM each evening. On a limited number of occasions when school activities are scheduled to extend past 10:00 PM, such as an MMHS sports teams returning to campus following an "away" game or when a SMMUSD School Board meeting is held on campus, the programmed lights' off time would be overridden to accommodate such authorized uses. The Proposed Project would not change or modify the restrictions imposed on the Athletic Field lighting (CDP 12-024), or the lighting associated with the 150-space Parking Lot A under the existing CDP (CDP No. A-MAL-13-030).

1.3.1.8 LANDSCAPING

Landscaping would be provided along pathways, building perimeters, and within and around new parking lot areas. Landscaping would be consistent with the requirements of the City of Malibu's Municipal Code, Chapter 9.22, "Landscape Water Conservation." Such requirements include that plants must be grouped into hydrozones—that is, with other plant species having similar water demand—and by their soil, sun, and shade requirements. Additionally, irrigation systems would be designed to prevent runoff, overspray, low-head drainage, and similar conditions where irrigation water flows or sprays onto unintended areas, such as walkways, driveways, roadways, neighboring properties, or the public right-of-way.

1.3.2 Project Phasing

The Proposed Project would be constructed in four phases, with construction activities anticipated to begin in fall 2022 and completed in summer 2030. Each phase would include the following activities—grading and

excavation, trenching for site utilities, demolition and construction of the buildings, paving, and finishing. It is anticipated that students would occupy existing buildings on the MMHS campus during construction activities. With the completion of Phase 1, the majority of the Proposed Project's classrooms would be constructed. Therefore, it is not anticipated that portable classrooms, beyond those currently on campus, would be used to house students or staff during construction.

Phase 1 would consist of demolition of existing former JCES campus buildings and construction of the High School Core. Phase 2 would consist of construction of the Building D. Phase 3 would consist of demolition of MMHS Buildings F, I; the existing field house; and the portables adjacent the existing pool, and construction of Buildings J, L, and M and Parking Lot F. Phase 4 would include two subphases—Phase 4A would involve the demolition of Buildings K, J, J1; the pool and pool building; and bus barn, and the relocation of the Boys & Girls Club and construction of the new Buildings H and I. Phase 4B would involve the demolition of the existing theatre building and construction of the new drop-off/pick-up area and Parking Lot E. Construction activities would lead to 16,470 cubic yards (cy) of cut and 13,692 cy of fill material. Table 8*, Proposed Project Phasing***,** provides details for each construction phase, including timing, amount of demolition, new construction, and infrastructure improvements for each phase. Figures 10A through Figure 14B depict the Proposed Project Phasing.

Table 8 Proposed Project Phasing

Phase	Demolition	Demolition Square Footage	New Construction	New Construction Square Footage	Infrastructure Improvement	Timeline
1	JCES Buildings A, B, C, D, E, F, G, H, I, P1–P5	40,844	Building C, Parking Lot D	85,391	• DMA A • DMA B • Septic 1	Fall 2021 – Fall 2024
2	N/A	N/A	Building D, Middle School Quad	22,376	• DMA C • Septic 2	Fall 2024 – Fall 2026
3	MMHS Buildings F, I, Field House and Portables	25,171	Buildings J,L, and M, Parking Lot E, Parking Lot F	43,756	• DMA D • Septic 3 • Septic 5	Fall 2026 – Fall 2028
4A	MMHS Building K, J, J1, Pool, Pool Building, Boys & Girls Club (relocated)	53,191	Building H and I, Boys & Girls Club (relocated)	56,816	• DMA E • DMA F • Septic 4	Fall 2028 – Fall 2030
4B	MMHS Building H	14,478	Drop-off/Pick-up, Parking Lot C	N/A	• DMA G	Spring 2030 – Spring 2031

SMMUSD 2020

1.3.2.1 GRADING

Previous construction and grading at the Project Site have created a series of near-level building pads for existing structures and paved parking lots. The majority of the Project Site, including all areas with current development, is situated on slopes of between 0 and 20 percent, at a minimum of 80 feet above mean sea level (amsl). Around the perimeter of the Project Site, surrounding the football field, and between building pads, slopes increase to between 40 to 100 percent, reaching up to 170 feet amsl. For the most part, proposed new construction would take place on the flat, previously developed areas of campus, and existing slope conditions

would remain. However, each construction phase would do substantial grading. Table 9, *Proposed Project Cut/Fill by Phase*, details the total amount of soil to be graded for each phase.

Table 9 Proposed Project Cut/Fill by Phase

Phase	Cut (cy)	Fill (cy)	Net Cut/Fill (cy)	Contingency (cy)	Project Phase Total (cy)
1	16,992	21,470	4,478 (Fill)	4,953 (Cut)	475 (Cut)
2	4,449	24	4,425 (Cut)	924 (Cut)	5,349 (Cut)
3	21,834	13,697	8,137 (Cut)	2,509 (Cut)	10,646 (Cut)
4	9,717	28,671	18,954 (Fill)	5,262 (Cut)	13,692 (Fill)
Total	**52,992**	**63,862**	**10,870 (Fill)**	**13,648 (Cut)**	**2,778 (Cut)**

Source: LPA 2019.

1.4 EXISTING ZONING AND GENERAL PLAN

The Project Site is designated for institutional use in the Land Use and Zoning section of the City of Malibu's Local Coastal Program. Both the land use designation and zoning of the campus allow for public school use. According to the City of Malibu's LCP, the Institutional District accommodates existing public and quasi-public facilities, which include educational, religious, and governmental facilities.

Although the California legislature has granted school districts the power to exempt their school construction projects from the general plan and zoning requirements of the jurisdictions in which their facilities are located (provided the school district complies with the terms of Government Code section 53094), the Proposed Project is consistent with the City of Malibu's General Plan and zoning designations and is subject to the policies and provisions of the City of Malibu's LCP.

1.5 REQUIRED PERMITS AND APPROVALS

As required by CEQA Guidelines, this section provides, to the extent the information is known to the SMMUSD, a list of the agencies that are expected to use the environmental analysis of the Proposed Project in their decision-making. This section also lists the permits and other approvals required to implement the Proposed Project.

1.5.1 Lead Agency Approval

SMMUSD is the lead agency under CEQA and is carrying out the Proposed Project. In order to approve the Proposed Project, the SMMUSD Board of Education must first certify the Final EIR (FEIR). The Board will consider the information in the EIR when making its decision to approve or deny the Proposed Project, or in directing modifications to the Proposed Project in response to the EIR's findings and mitigation measures. The EIR is intended to disclose to the public the Proposed Project's details, analyses of the Proposed Project's potential environment impacts, and identification of feasible mitigation or alternatives that will lessen or reduce significant impacts to less than significant levels.

1.5.2 Specific Plan Approval

The Malibu Middle and High School Campus Specific Plan is proposed to regulate the project. Adopting the Specific Plan is a discretionary, legislative, decision that must be made by the City of Malibu's City Council. In order to meet the District's Education Specifications, the California Interscholastic Federation, the National Federation of State High School Association, the District is proposing that Buildings D, C, H and J exceed the LIP's 28-foot height requirements. Additionally, the labs located in Building C would require fume hoods that would exceed the height restrictions for rooftop mounted equipment. Development standards established under the Specific Plan include the building specifications such as heights, setbacks, design standards for landscaping and signs. Table 10, *Specific Plan Variances* provides a listing of the City's LCP requirements and the deviations that the Specific Plan is requesting.

Table 10 Specific Plan Variances

City of Malibu LIP Section Number	Requirement	Proposed	Notes
3.9.A1a	Structures shall not exceed a maximum height of 18 feet above natural or finished grade, whichever results in a lower building height, except for chimneys, rooftop antenna, and light standards. The maximum height of the structure may be increased up to 28 feet for a flat or pitched roof if approved through a site plan review pursuant to Section 13.27 of the Malibu LIP	Building J: Gym/PE – 45 feet maximum height.	Gymnasiums must meet NFHS minimum interior height requirement of 23 feet clear from floor to ceiling for CIF Volleyball, we plan for 25' for adequate tolerance in design and construction. Add 10' for long span structure and 5' for roof slope and parapet.
		Building H: Theater/Performing Arts – 45 feet maximum height	High School Performing Arts facilities require a vertical stage opening of 24' (to the bottom of the proscenium). In addition, the long span structure and tension lighting grid ceiling system will add 15 feet above the stage opening plus 5' for roof slope and parapet. This equates to a total height of 44 feet. This allows for the school to produce the types of theatrical performances expected in a high school theater curriculum.
		Building D: Middle School Gym/MPR - 36 feet maximum height.	Gymnasiums must meet the National Federation of State High School Association, (NFHS) minimum interior height requirement of 23 feet clear from floor to ceiling for competitive Volleyball, we plan for 24' for adequate tolerance in design and construction.
		Building C: High School Building – 34 feet maximum height.	Building C north wing, second floor contains high bay/ high volume spaces to house the Library, Student Union and Career Center. These high bay spaces are required to provide

Table 10 Specific Plan Variances

City of Malibu LIP Section Number	Requirement	Proposed	Notes
			the students with adequate functioning spaces conducive to 21st Century learning as defined in the Campus Plan Education Specifications. The Student Union is programmed with a central space of 4,000 sf space. The interactive, collaborative nature of this space requires an appropriate high-volume ceiling. A high school Library, based on the District's Educational specifications, require a variety of spaces within the Library, including a large 3,000 sf area that can double as Staff Development space.
3.9A.1b	Roof-mounted mechanical equipment shall be integrated into the roof design, screened, and may project no more than two feet higher than the structure roof height (screens included) if approved through a site plan review pursuant to Section 13.27 of the Malibu LIP.	Building C: Science Labs require fume hoods with exhaust stacks placed at a minimum of 10 feet above the roof surface	Limited rooftop equipment will exceed the 2' maximum height above roof plane for fume hoods over Science Labs, as required by the American National Standard for Laboratory Ventilation ANSI Z9.5 as well as the National Fire Protection Association Standard NFPA 45, Chapter 7, section 7.2.
		Building C: Parapets and or Guardrails that project up to 42 inches in height above the surface of the roof.	Roof top will be occupied by students to support outdoor learning, including visual observation to ESHA. With student access to roof deck, higher parapets or Guards are required to be 42" minimum height per California Building Code, Part 2, Volume 1, Chapter 10, section 1015.
3.9.A1d	Sports field lighting shall be limited to the main sports field at Malibu High School and subject to the standards of LIP Sections 4.6.2 and 6.5.G.	Night time pool lighting	Aquatics Facilities require lighting within the pool and above the pool deck per California Building Code, chapter 31B, Section 3115B "Pool Lighting
3.15.3.J	Automatic changing signs or electronic message center signs, except for public service time and temperature	Separate electronic Marquees are proposed for both the Middle and High schools	Marquee sign(s) for High School and Middle School required by the District for proper communications with the Students/ Community. Marquee signs serve a multitude of communication needs including emergency and safety communications.

1. Introduction

Table 10 Specific Plan Variances

City of Malibu LIP Section Number	Requirement	Proposed	Notes
4.6.	New development adjacent to the riparian habitats shall provide native vegetation buffer areas of no less than100 feet to serve as transitional habitat and provide distance and physical barriers to human intrusion. Buffers shall be of a sufficient size to ensure the biological integrity and preservation of the habitat they are designed to protect. Vegetation removal, vegetation thinning, or planting of non-native or invasive vegetation shall not be permitted within buffers except as provided in Section 4.6.1 (E) or (F) of the Malibu LIP.	The current District development including the vacated Cabrillo ES, District Bus Barn facilities, parking lots, drive aisles and fencing/ site structures extend up to the edge of the ESHA and in some instances into the ESHA, with no set back.	The Campus Plan proposes to remove existing parking and drive aisles and maintain 50-foot buffer from ESHA with the exception of a meandering deconstructed granite walking path adjacent the ESHA for instructional stations.
8.3.B.	Maximum Quantity of Grading. Notwithstanding any other provisions of the Malibu LIP, grading per lot of residential development, per acre of commercial development, or per acre of institutional development(total cut and fill) is limited to 1,000 cubic yards (per items a, b, c and d).	Proposed Project will exceed the grading limitations.	
8.3.C	Maximum Height of Cuts and Fills with Retaining Walls. 6 feet in height for any one wall, or 12 feet for any combination of walls, where a minimum 3-foot separation exists between walls, except single cuts up to 12 feet in height which are an integral part of the structure are permitted. Retaining walls shall be designed with smooth, continuous lines that conform to the topography.	Building C would serve as retaining wall.	

SMMUSD 2020

If adopted, the Specific Plan would be the governing document for development on the site. The purpose of the Specific Plan is to provide a foundation for the proposed phased development on the campus through the application of regulations, standards and design guidelines. A Specific Plan provides a comprehensive plan for the Campus Plan as a whole, rather than needing to request variances for each phase and its attending CDP.

1.5.3 Other Required Permits and Approval

A public agency other than the lead agency that has discretionary approval power over a part of a project is known as a "responsible agency," defined by CEQA Guidelines section 15381. The responsible agencies and their corresponding approvals for the Proposed Project may include:

- Regional Agencies
  - Los Angeles Regional Water Quality Control Board (RWQCB) (Issuance of waste discharge requirements)
  - South Coast Air Quality Management District (SCAQMD) (Rule 1166 VOC Contaminated Soil Mitigation Plan)
- County of Los Angeles
  - Fire Department (Approval of Site Plan for Emergency Access)
  - Los Angeles Department of Public Works (Water District 29)
- City of Malibu
  - Public Works/Engineering (for grading permit)
  - Planning Commission (for Coastal Development Permit, Conditional Use Permit, Variances, Site Reviews)
  - City Council (For Specific Plan approval)

1.5.3.1 OTHER REVIEWING AGENCY ACTIONS AND APPROVALS

Other agencies include those agencies that do not have discretionary powers, but which may review the Draft EIR for adequacy and accuracy. Potential other agencies may include:

- Federal
  - U.S. Fish and Wildlife Services (USFWS)
- State of California
  - Division of State Architect (Approval of Construction Drawings)
  - Office of Historic Preservation (OHP)
  - Department of Transportation (Caltrans)
  - Resources Agency
  - California Coastal Commission (CCC)
  - California Department of Fish and Wildlife (CDFW)
  - Department of Conservation (DOC)
  - Department of Parks and Recreation (DPR)
  - Native American Heritage Commission (NAHC)
  - California Highway Patrol (CHP)
- Regional Agencies

1. Introduction

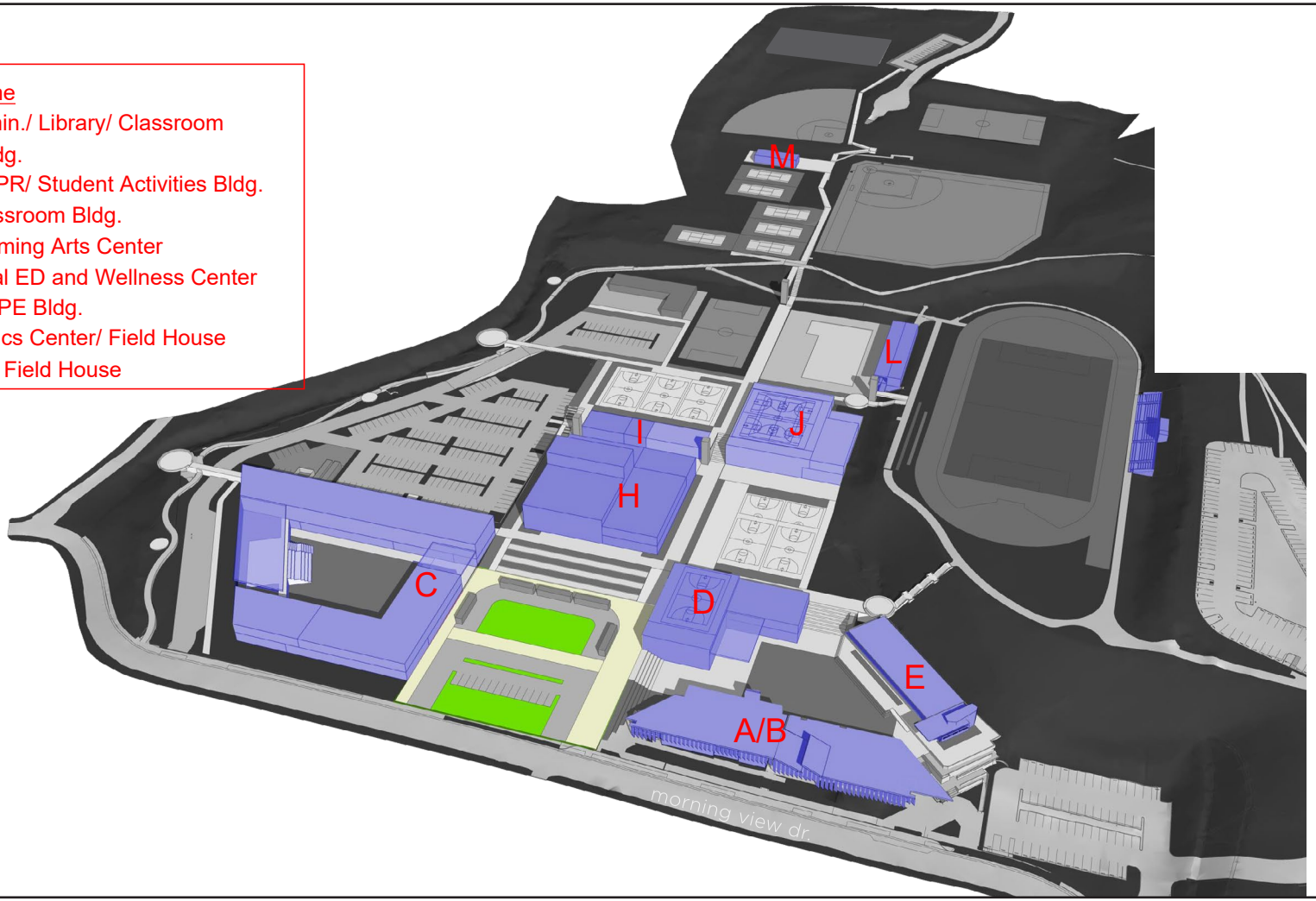
- Los Angeles RWQCB (Construction General National Pollution Discharge Elimination System [NPDES] Permit)
- Los Angeles County Sherriff's Department (LACSD)
- Los Angeles County Fire Department (LACoFD)
- Los Angeles Forestry Division
- Southern California Association of Governments (SCAG)

- City of Malibu
  - Environmental Community Development

Figure 5 - Proposed Site Plan

LEGEND

BLDG. #	BLDG. Name
A/B	(E) MS Admin./ Library/ Classroom
C	New HS Bldg.
D	New MS MPR/ Student Activities Bldg.
E	(E) MS Classroom Bldg.
H	New Performing Arts Center
I	New Special ED and Wellness Center
J	New Gym/ PE Bldg.
L	New Aquatics Center/ Field House
M	New Upper Field House



Source: LPA, 2019

1. Introduction

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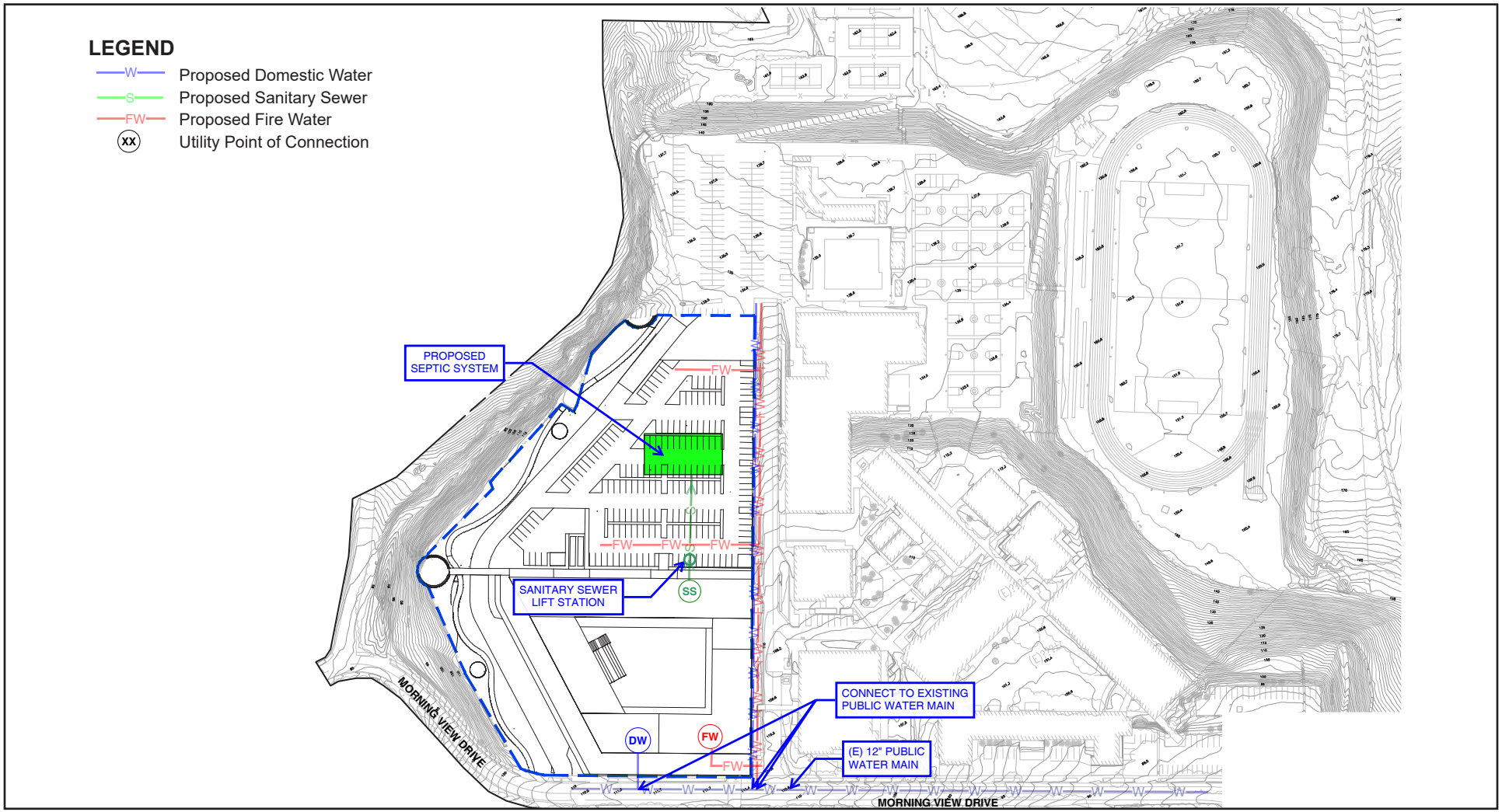
Figure 6 - Conceptual Utility Layout: Phase 1



Source: LPA, 2019

1. Introduction

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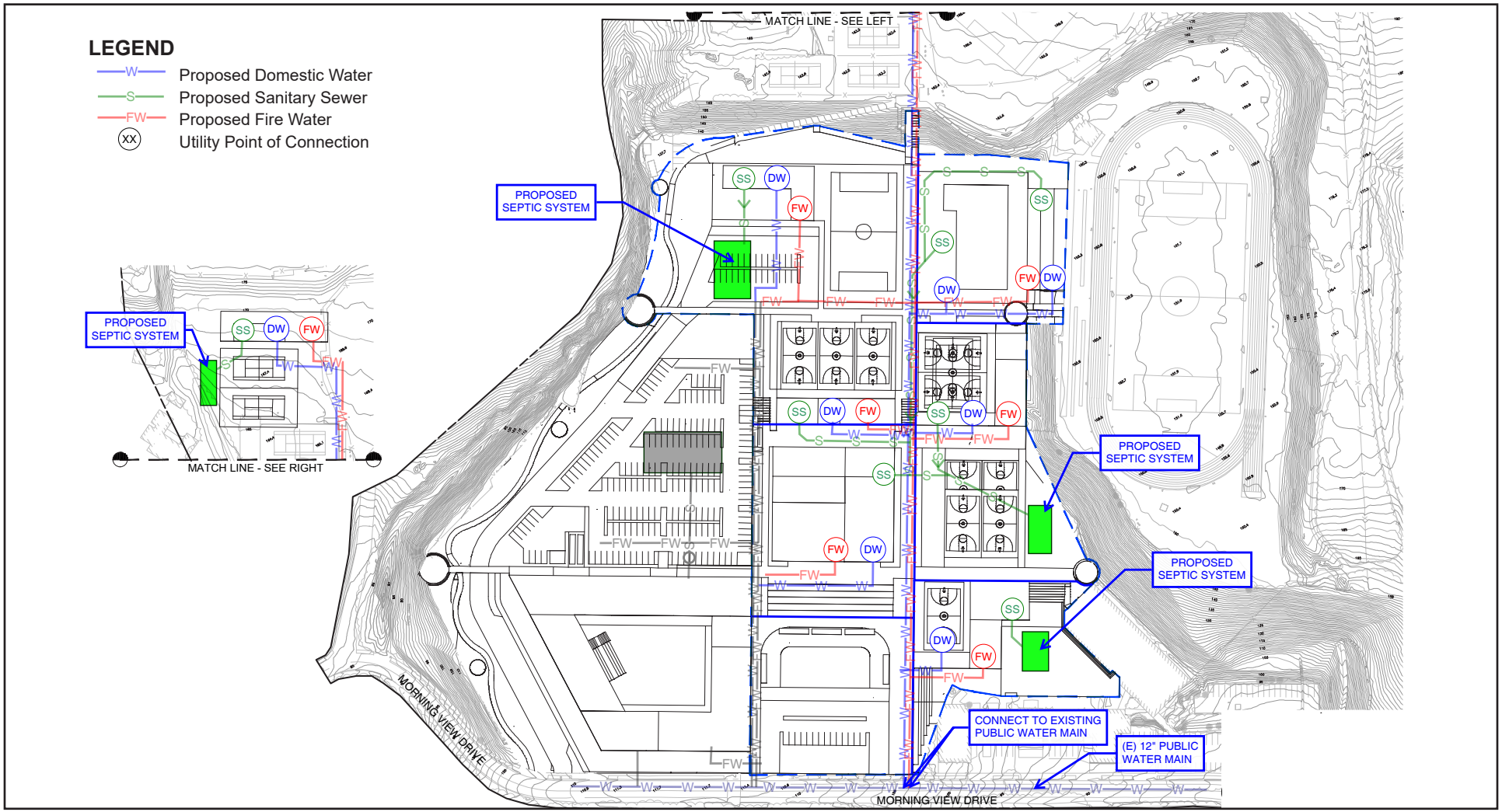
Figure 7 - Conceptual Utility Layout: Phases 2 to 4



Source: LPA, 2019

1. Introduction

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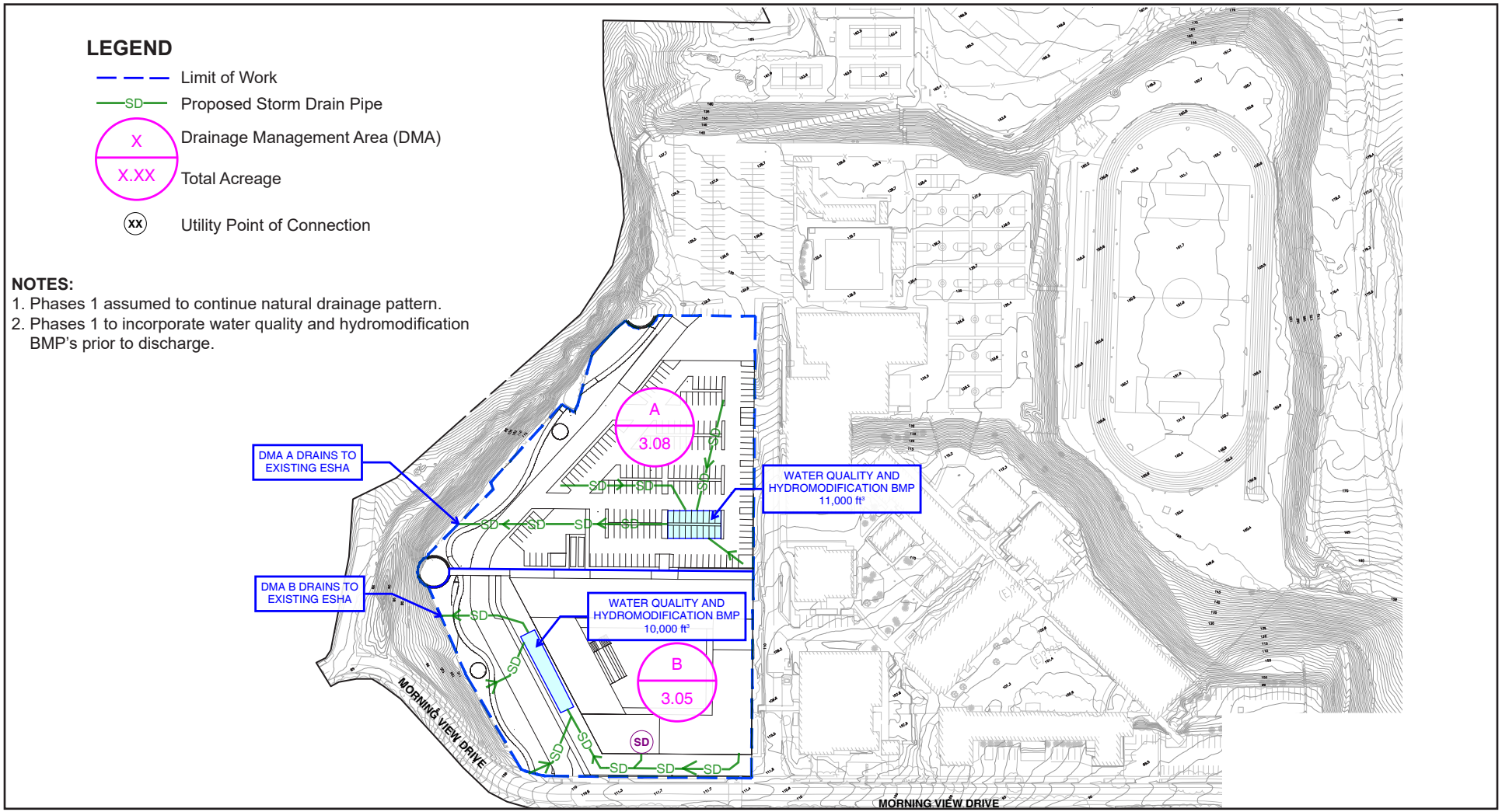
Figure 8 - Conceptual Storm Drain and Water Quality: Phase 1



Source: LPA, 2019

1. Introduction

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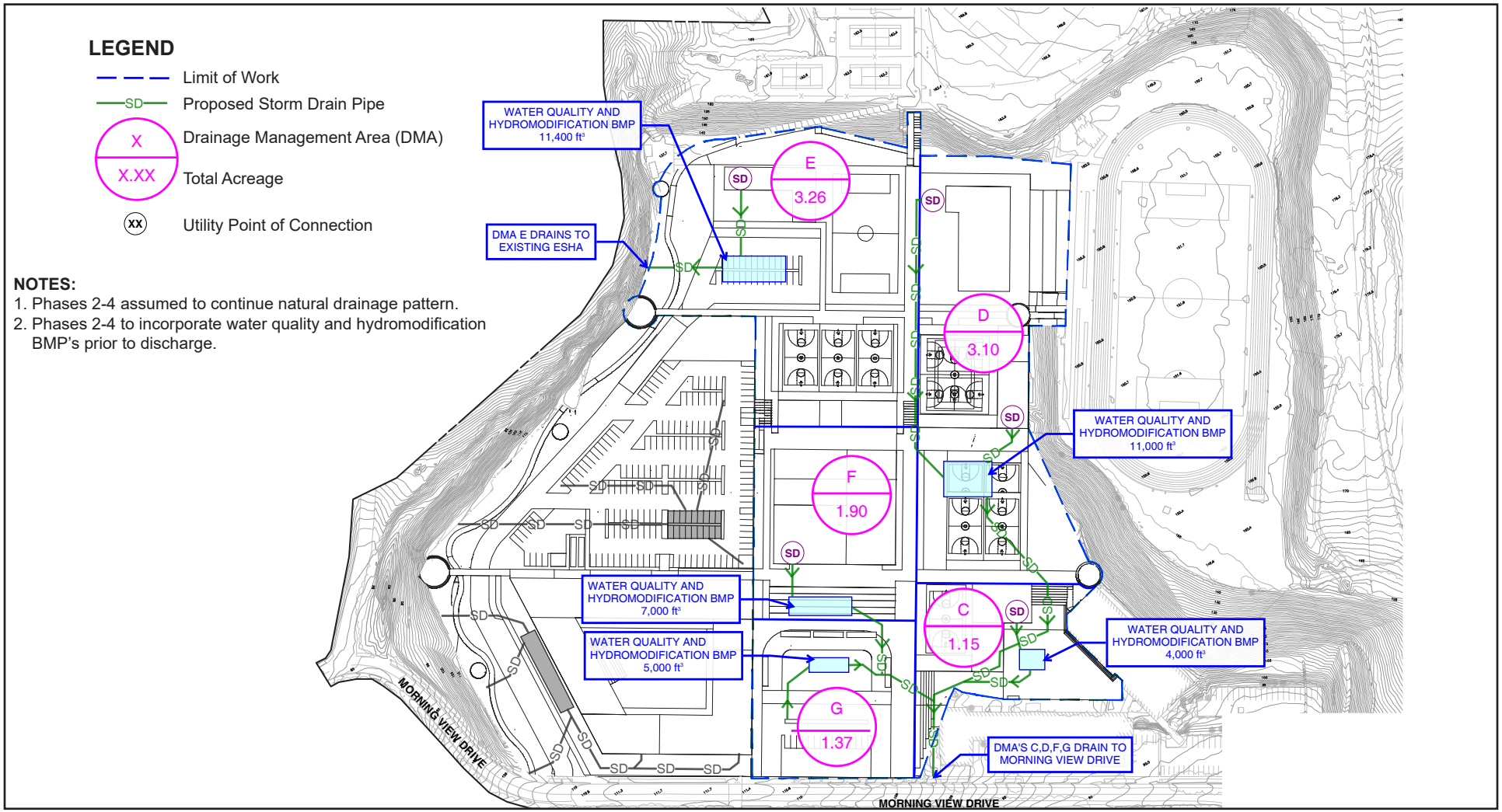
Figure 9 - Conceptual Storm Drain and Water Quality: Phase 2



Source: LPA, 2019

1. Introduction

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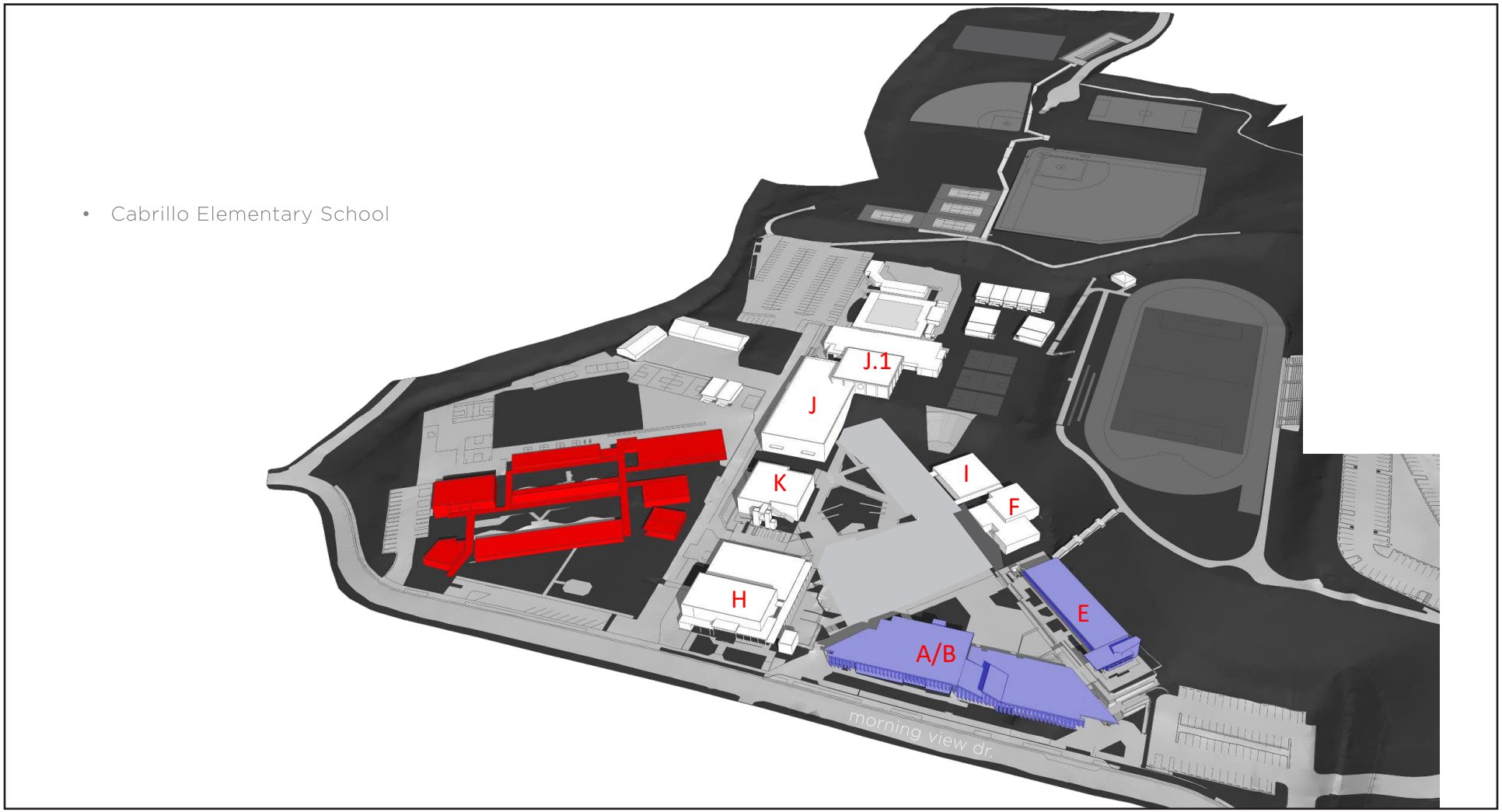
Figure 10a - Phase 1 Proposed Demolition



Source: LPA, 2019

1. Introduction

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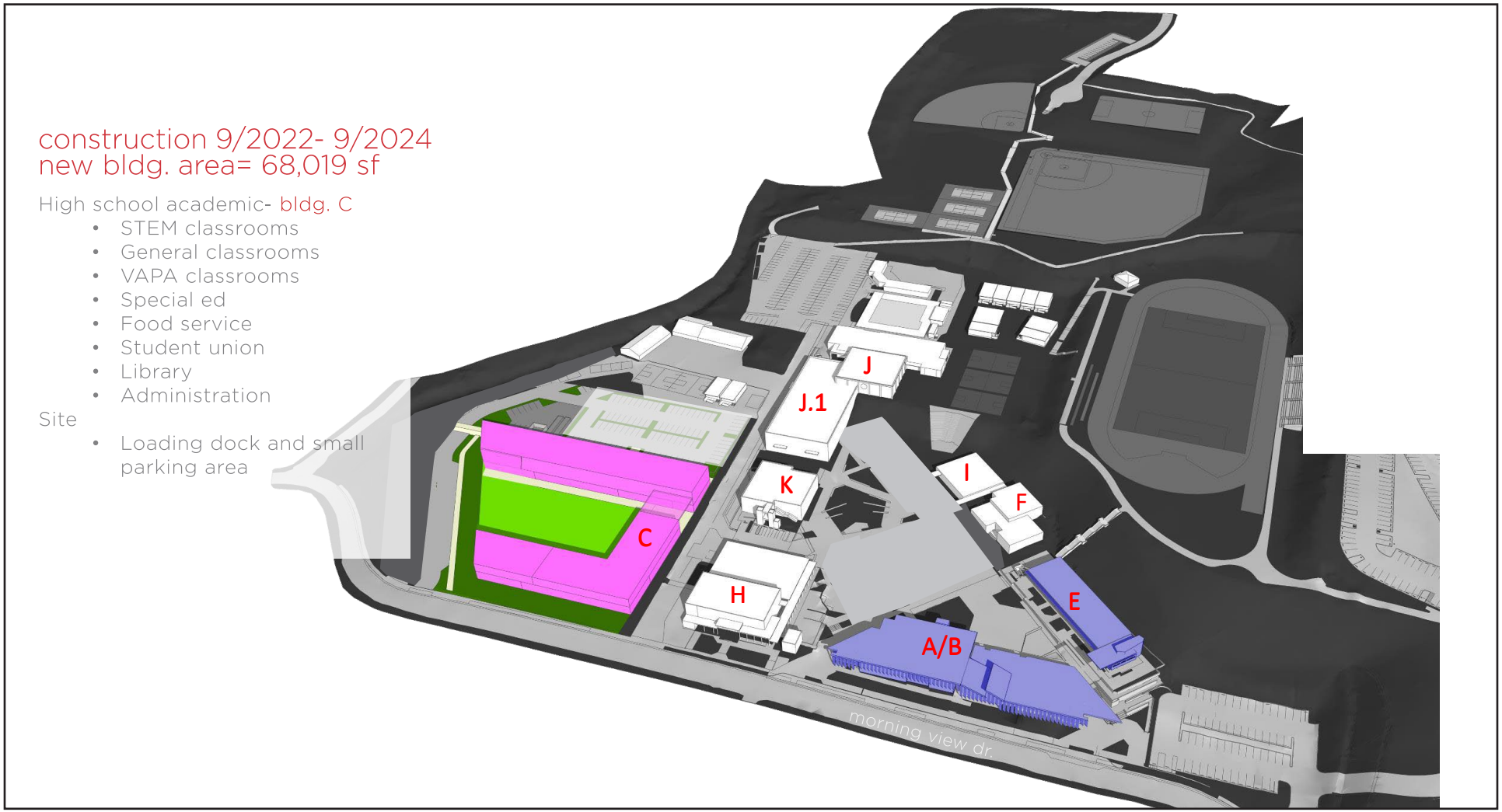
Figure 10b - Phase 1 Proposed Construction Plan



Source: LPA, 2019

1. Introduction

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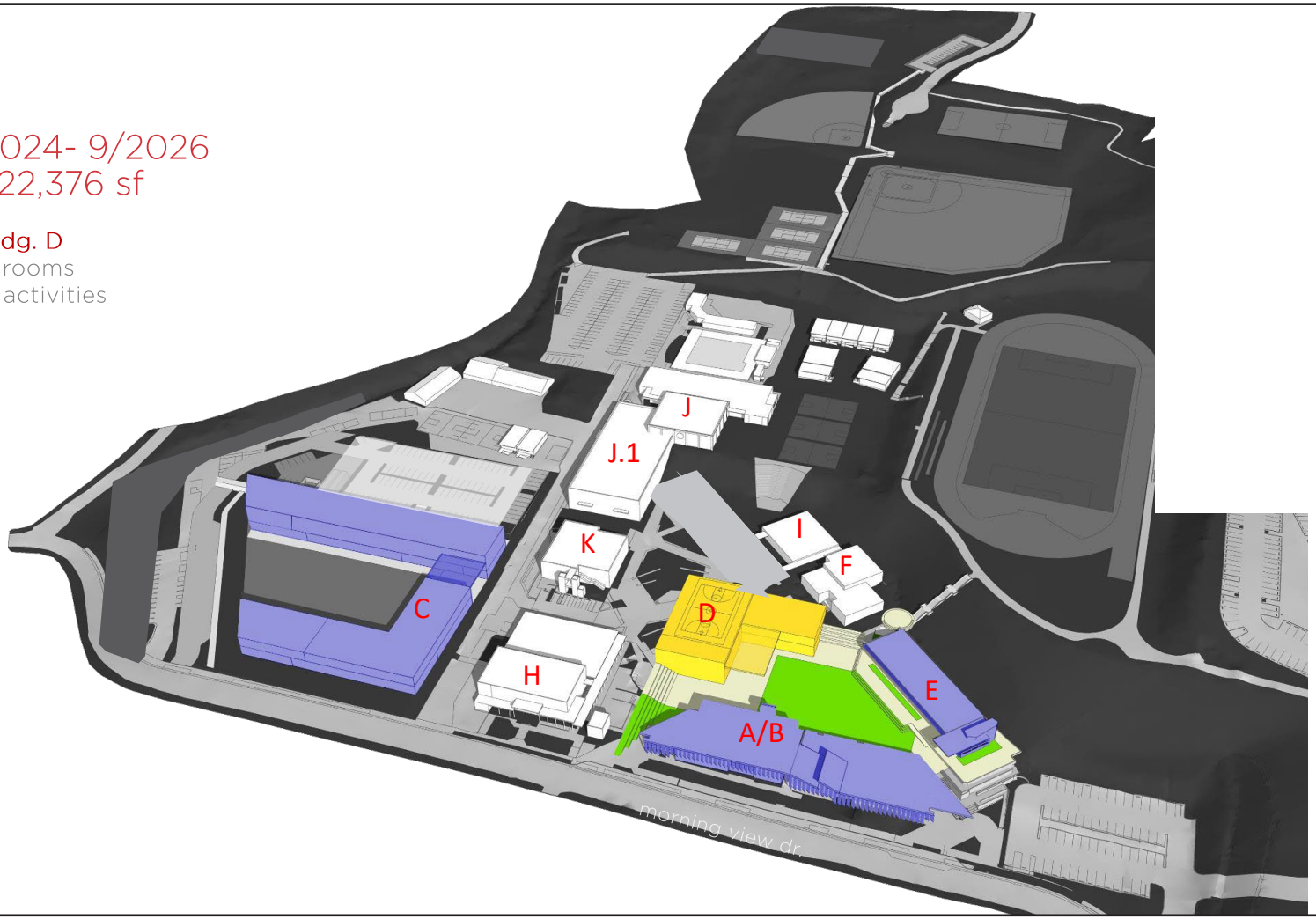
Figure 11 - Phase 2 Proposed Construction Plan

construction 9/2024- 9/2026
new bldg. area= 22,376 sf

- MS gym/MPR- bldg. D
  - MS PE classrooms
  - MS student activities
- MS lunch shelter



Source: LPA, 2019

1. Introduction

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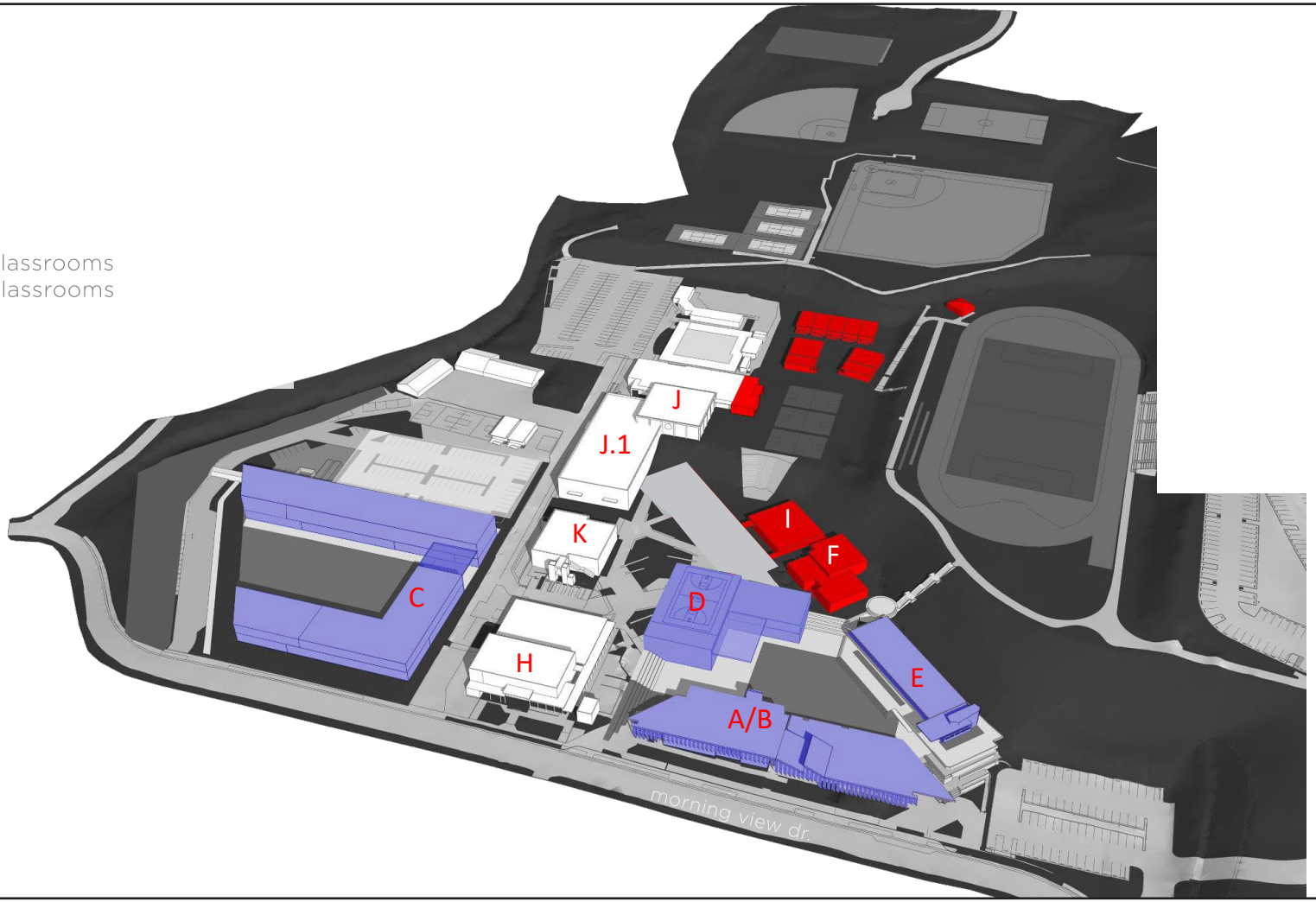
Figure 12a - Phase 3 Proposed Demolition

- Portables
- MS/HS STEM classrooms
- MS/HS VAPA classrooms
- Tennis courts
- Amphitheater
- Field house



Source: LPA, 2020

1. Introduction

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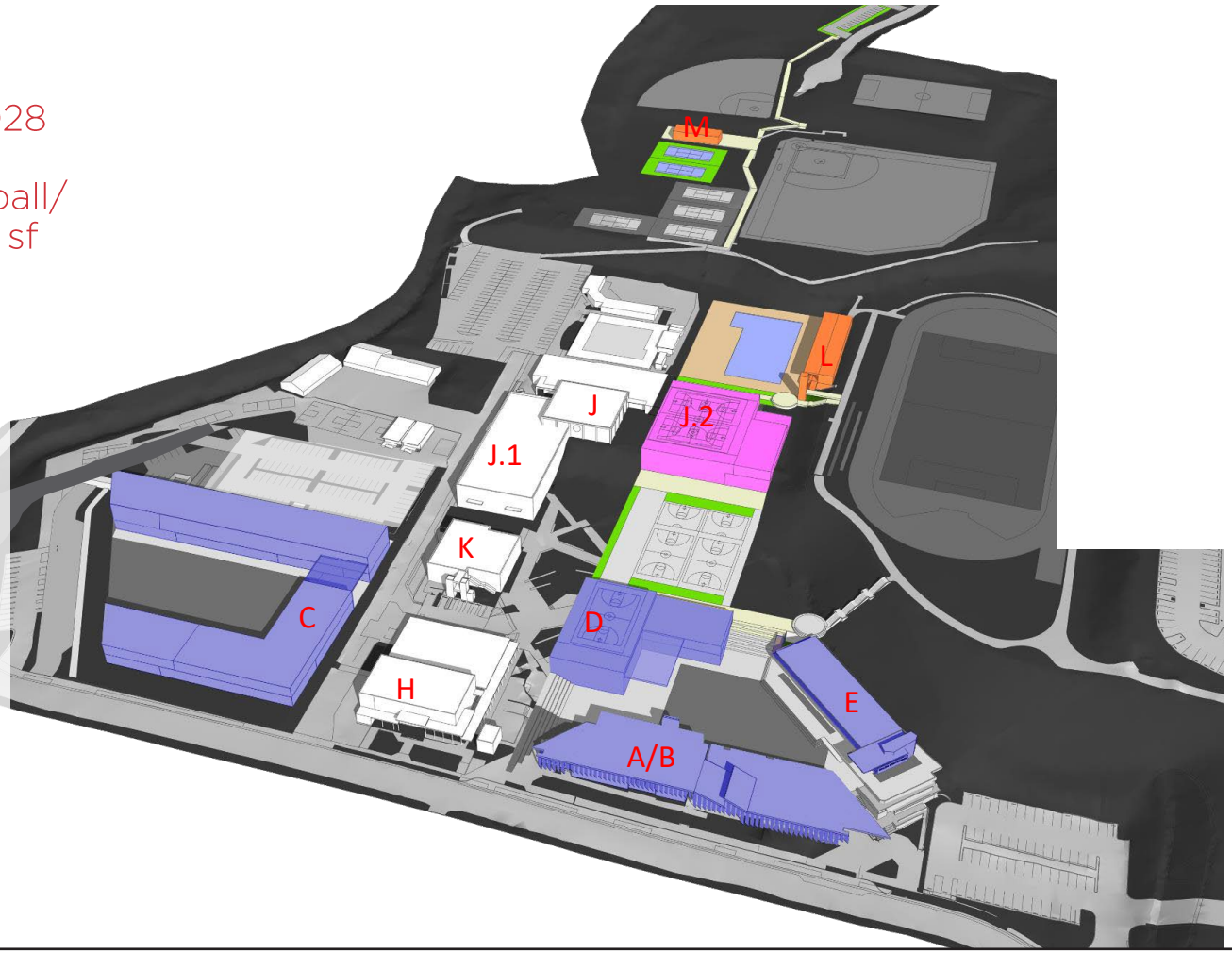
Figure 12b - Phase 3 Proposed Construction Plan

construction 9/2026- 9/2028
new bldg. area:
Shared PE- Baseball/ Softball/ Aquatics/ Stadium= 11,304 sf
HS PE= 32,452 sf

- HS gym- bldg. J.2
  - Team rooms
  - 4 cross-courts
- Baseball field house- bldg. M
- Track + field house- bldg. L
- Aquatic Center- bldg. L
  - Pool lockers
  - Community lockers
  - Coach offices
  - Covered spectator stands

Site
- Pool
- MS Hardcourts
- Pedestrian trail to stadium
- Track seating + press box
- New tennis courts

(38) teaching stations (until HS bldg. is complete)



Source: LPA, 2019

1. Introduction

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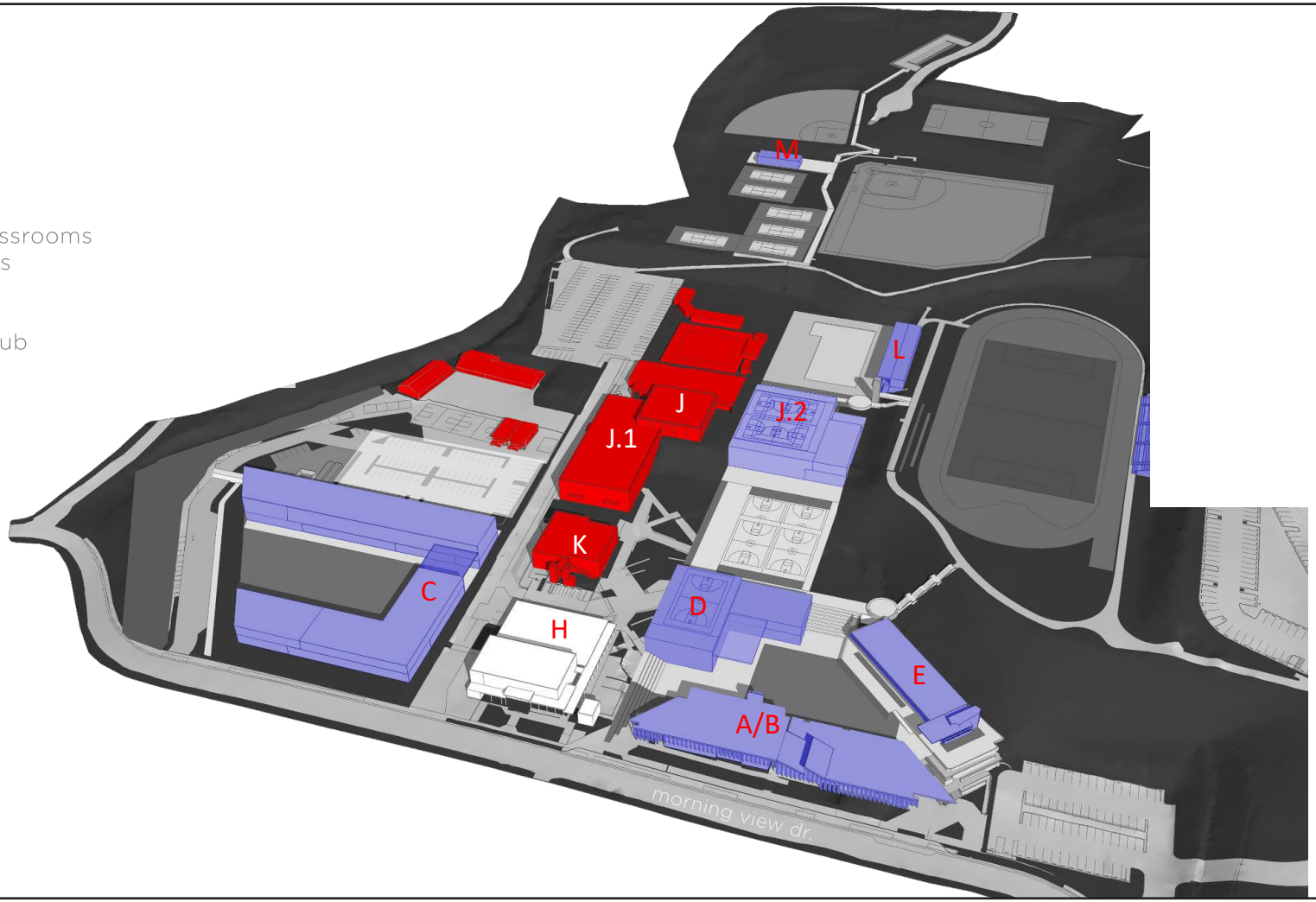
Figure 13a - Phase 4a Proposed Demolition

- HS General classrooms
- All gymnasiums
- Pool
- Pool building
- Boys & Girls Club
- Bus Barn



Source: LPA, 2020

1. Introduction

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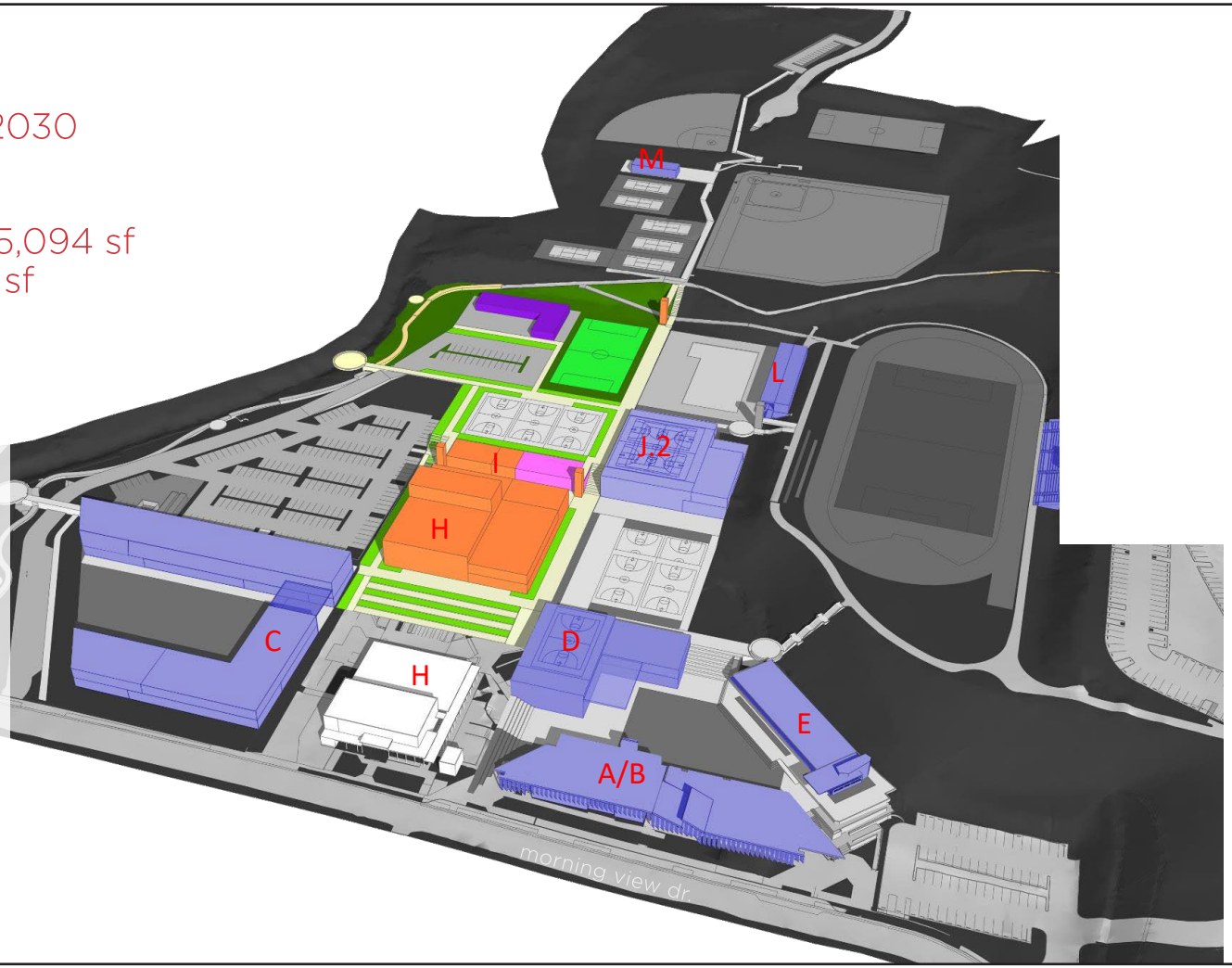
Figure 13b - Phase 4a Proposed Construction Plan

construction 9/2028- 9/2030
new bldg. area:
shared vapa= 30,094 sf
shared sp ed/ wellness= 5,094 sf
hs dance/weight = 4,256 sf
relocate boys/ girls club

- Theater- bldg. H
- VAPA classrooms- bldg. H
- Special education classrooms- bldg. I
- HS PE classrooms- bldg. H
- Wellness Center- bldg.I
- Boys & Girls Club

Site
- Soccer field
- HS Hard courts
- Drop-off + parking
- Pedestrian connection to upper fields



Source: LPA, 2019

1. Introduction

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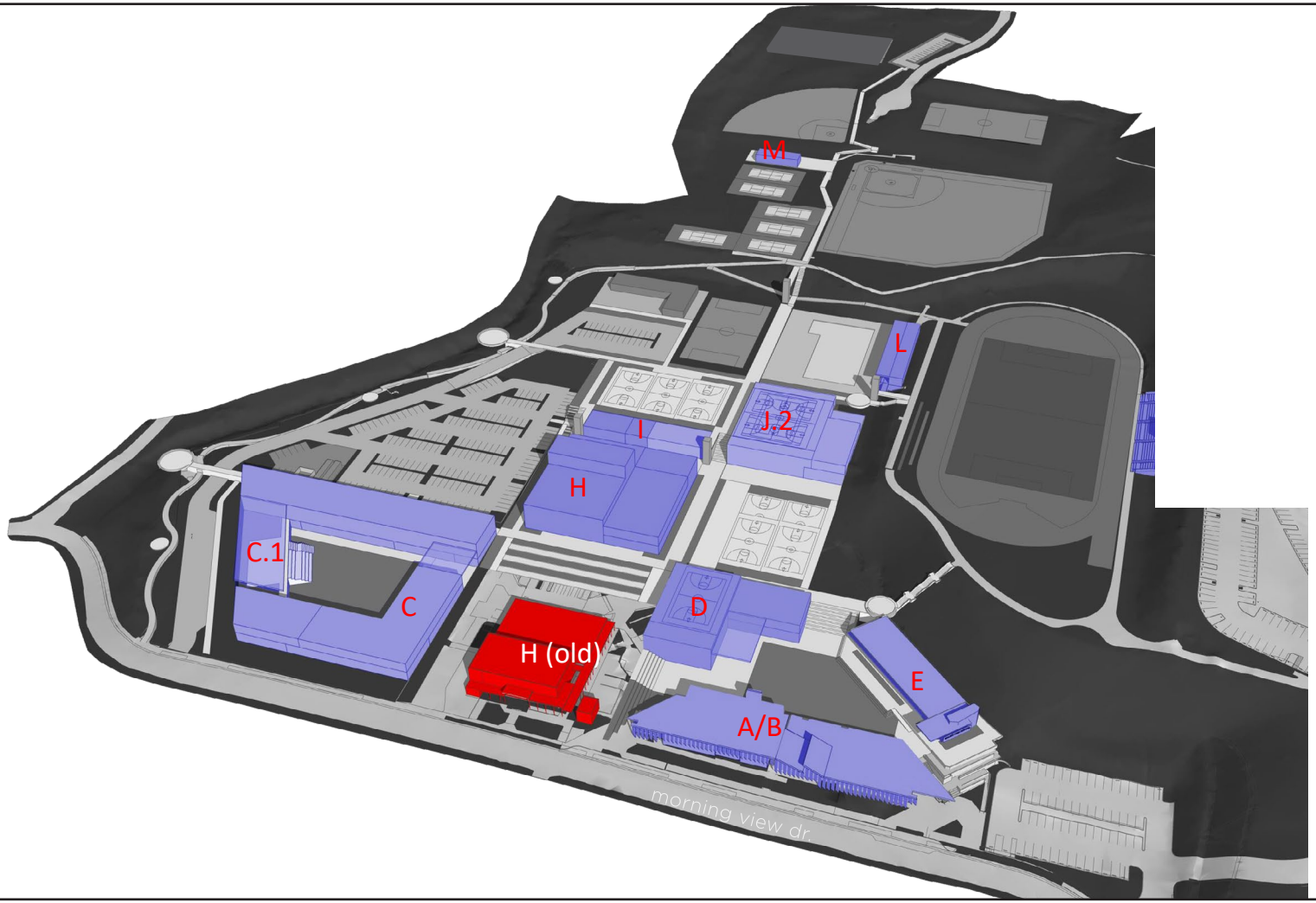
Figure 14a - Phase 4b Proposed Demolition

- Theater



Source: LPA, 2020

1. Introduction

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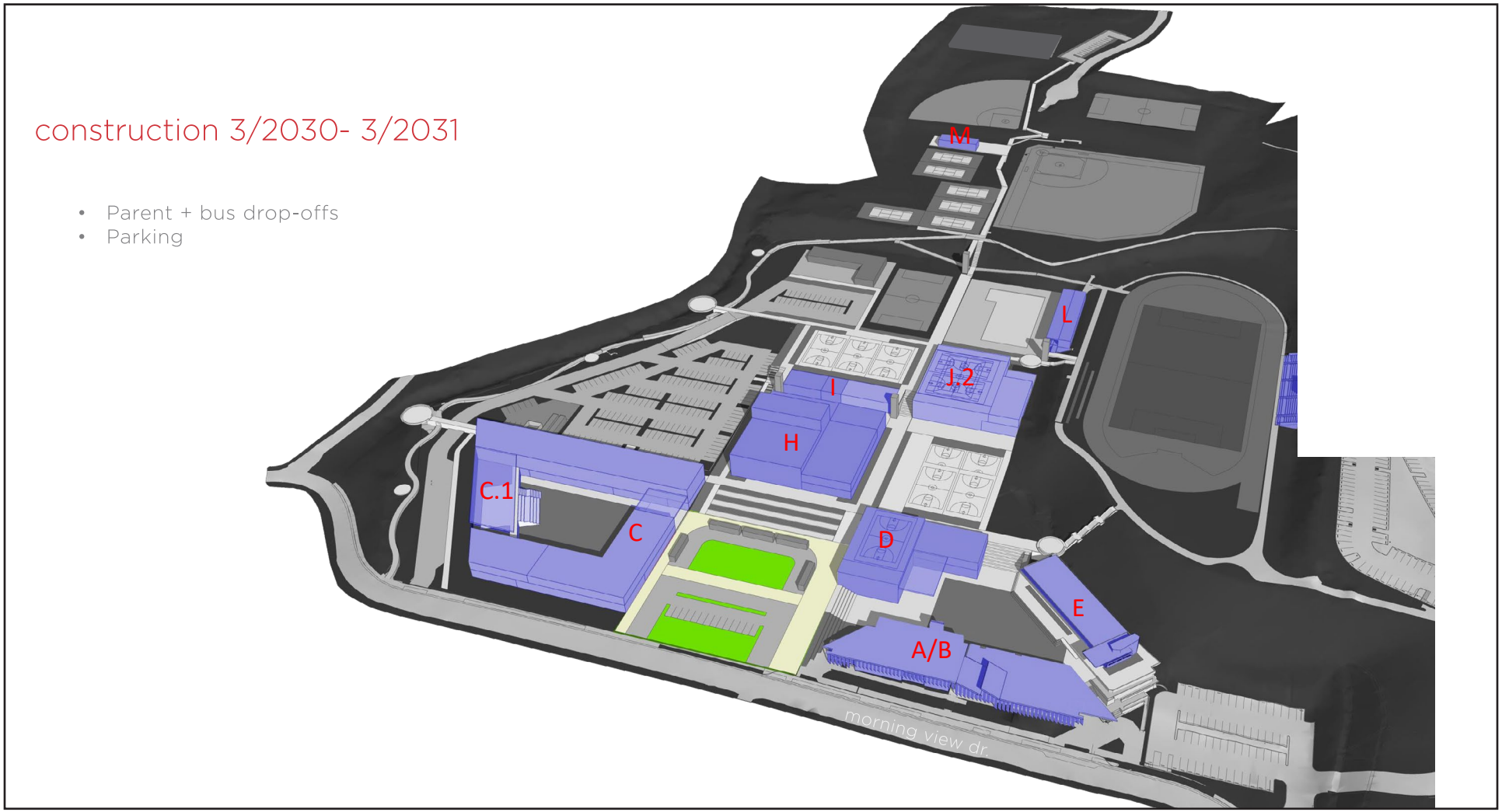
Figure 14b - Phase 4b Proposed Construction Plan



Source: LPA, 2020

1. Introduction

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2. Environmental Checklist

2.1 PROJECT INFORMATION

1. **Project Title:** Malibu Middle and High School Campus Specific Plan

2. Lead Agency Name and Address:
   Santa Monica-Malibu Unified School District
   1651 16th Street
   Santa Monica , CA 90404

3. Contact Person and Phone Number:
   Carey Upton, Chief Operations Officer
   310.450.8338

4. **Project Location:** The Project Site includes the entirety of the SMMUSD property: the existing Malibu Equestrian Park in the eastern portion of the property, the existing MMHS campus in the center, and the former JCES campus in the western portion. MMHS is at 30215 Morning View Drive (Assessor's Parcel Map Numbers 4469-017-900, 4469-018-900, 4469-018-901, 4469-018-902, 4469-018-903, 4459-018-904, 4469-019-900, 4469-019-901, 4469-019-902 [9 parcels]), in the City of Malibu, Los Angeles County, California. The Malibu Middle and High School Campus Specific Plan (Proposed Project) would be developed on the existing MMHS campus and the former JCES campus. The MMHS campus is set amid rolling hills, and its buildings and athletic fields are terraced into its hillside setting. The MMHS campus is approximately 0.25-mile northeast of both the Pacific Coast Highway (PCH) and Zuma Beach, with Merritt Drive to the west, Via Cabrillo Street to the east, and Morning View Drive to the south. Single-family homes border the Project Site to the north.

5. **Project Sponsor's Name and Address:**
   Santa Monica-Malibu Unified School District
   1651 16th Street
   Santa Monica , CA 90404

6. **General Plan Designation:** Institutional

7. **Zoning:** Institutional

8. **Description of Project:** The Proposed Project would redevelop the existing MMHS and former JCES campus to create three distinct areas: Middle School Core, High School Core, and shared facilities. Implementation of the Proposed Project would result in demolition of all 11 buildings on the former JCES campus and 7 buildings on the MMHS campus, totaling 147,556 square feet of demolition. The newly constructed Building E and Buildings A/B (under construction) would remain, with all other structures removed. No changes to the existing football/track, baseball, or softball fields would occur with the exception of the development of new field houses and additional parking adjacent to the softball

field. The Proposed Project would not impact the Malibu Equestrian Park. The Proposed Project would result in 32 classrooms and 8 labs and a total of 190,967 square feet of building spaces, providing the MMHS campus with a total of 47 classrooms and 12 labs and a total of 240,650 square feet of building spaces.

Additionally, the Malibu Middle and High School Campus Specific Plan is proposed to regulate the project. Adopting the Specific Plan is a discretionary, legislative, decision that must be made by the City of Malibu's City Council. In order to meet the District's Education Specifications, the California Interscholastic Federation, the National Federation of State High School Association, the District is proposing that Buildings D, C, H and J exceed the LIP's 28-foot height requirements. Additionally, the labs located in Building C would require fume hoods that would exceed the height restrictions for rooftop mounted equipment. Development standards established under the Specific Plan include the building specifications such as heights, setbacks, design standards for landscaping and signs.

9. **Surrounding Land Uses and Setting:** Surrounding land uses in the general vicinity of the Project Site include properties that are zoned Rural Residential (RR). These parcels are primarily developed with homes on lots that range between one to two acres in size. Single-family homes are to the north, west, and south of the Project Site. Immediately adjacent to the Project Site to the east is the Malibu Equestrian Park, which leases the District-owned property. The entirety of the District-owned property—including the former JCES, the MMHS campus, and the Equestrian Park—is zoned for institutional uses. To the south, across Morning View Drive, is the Malibu United Methodist Church and Nursery School. Zuma Beach and PCH are approximately 1,000 feet and 1,500 feet southwest of the Project Site, respectively.

10. **Other Public Agencies Whose Approval Is Required (e.g., permits, financing approval, or participating agreement):**

- Regional Agencies
  - Los Angeles RWQCB (Issuance of waste discharge requirements)
  - South Coast Air Quality Management District (SCAQMD) (Rule 1166 VOC Contaminated Soil Mitigation Plan)
- County of Los Angeles
  - Fire Department (Approval of Site Plan for Emergency Access)
  - Los Angeles Department of Public Works (Water District 29)
- City of Malibu
  - Public Works/Engineering (for grading permit)
  - Planning Commission (for Coastal Development Permit)

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

    Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.94 and the California Historical Resources Information System administered by the

California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

The Proposed Project would comply with tribal consultation requirements pursuant to Assembly Bill 52 (AB 52). The Santa Ynez Band of Chumash Indians, Gabrielino/Tongva San Gabriel Band of Mission Indians, and the Torres Martinez Desert Cahuilla Indians are on the SMMUSD's notification list pursuant to AB 52. The District provided notification letters to these tribes on May 15, 2020 and as of the time of publication of this Initial Study, no response has been received.

2.2 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

☒ Aesthetics	☐ Agriculture / Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology/Soils	☒ Greenhouse Gas Emissions	☒ Hazards and 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

2.3 DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

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

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

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

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

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier 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.

Carey Upton

Digitally signed by Carey Upton
DN: cn=Carey Upton, o=Santa Monica-Malibu Unifoed School District, ou=Chief Operations Officer, email=cupton@smmusd.org, c=US
Date: 2020.08.13 13:45:25 -07'00'

Signature *Date*

Carey Upton, Chief Operations Officer

2.4 EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project would 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.

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. CEQA Guidelines section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

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

   b) I**mpacts 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.

2. Environmental Checklist

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.

Issues	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?	X			
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	X			
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	X			
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	X			
II. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
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))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X
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?	X			
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?	X			
c) Expose sensitive receptors to substantial pollutant concentrations?	X			
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			X	
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?	X			
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?	X			
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	X			
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?	X			
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	X			
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?	X			
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	X			
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	X			
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

2. Environmental Checklist

Issues	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?	X			
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	X			
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.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?	X			
b) Result in substantial soil erosion or the loss of topsoil?	X			
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?	X			
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?	X			
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	X			
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	X			
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?	X			
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	X			
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?	X			
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?	X			

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	X			
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?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	X			
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	X			
X. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	X			
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 a substantial erosion or siltation on- or off-site;			X	
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			X	
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	X			
iv) impede or redirect flood flows?	X			
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	X			
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	
XI. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?				X
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?	X			

2. Environmental Checklist

Issues	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 a value to the region and the residents of the state?				X
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?				X
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?	X			
b) Generation of excessive groundborne vibration or groundborne noise levels?	X			
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?				X
XIV. POPULATION AND HOUSING. Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X
XV. PUBLIC SERVICES. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	X			
Police protection?	X			
Schools?				X
Parks?				X
Other public facilities?				X
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?				X

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	X			
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?	X			
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	X			
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	X			
d) Result in inadequate emergency access?			X	
XVIII. TRIBAL CULTURAL RESOURCES.				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or			X	
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			X	
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?	X			
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	X			
c) Result in a determination by the waste water 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?	X			

2. Environmental Checklist

Issues	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?			X	
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	
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?			X	
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?	X			
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?	X			
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?	X			
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?	X			
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	X			
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	X			

3. Environmental Analysis

Section 2.4 provided a checklist of environmental impacts. This section provides an evaluation of the impact categories and questions contained in the checklist and identifies mitigation measures, if applicable.

3.1 AESTHETICS

Except as provided in Public Resources Code section 21099, would the project:

a) Have a substantial adverse effect on a scenic vista?

Potentially Significant Impact. Scenic vistas are panoramic views of features such as mountains, forests, the ocean, or urban skylines. The Project Site is fully developed with an existing middle and high school campus, athletic fields, on-site parking, and ancillary educational uses. The Project Site does not contain unique scenic visual features that would distinguish it from surrounding areas, nor is it in a designated scenic vista identified in the City of Malibu General Plan Conservation Element (Malibu 1995). The nearest scenic area in the vicinity is the Santa Monica Mountains National Recreation Area, approximately one mile north of the Project Site, which include portions of the Zuma Ridge Trail and the Coastal Slope Trail (Malibu 2001). There are also local trails along Morning View Drive and the Malibu Equestrian Park within close proximity to the Project Site (Malibu 2016). Since project elements would be visible from the surrounding neighborhood, implementation of the Proposed Project would potentially result in the obstruction or degradation of existing scenic views. Therefore, the Proposed Project's impacts on scenic vistas are potentially significant, and this issue will be further analyzed in the EIR.

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

Potentially Significant Impact. The closest designated state scenic highway is Route 27 (designated in March 2017), approximately 15 east miles from the Project Site. The nearest eligible designated state scenic highway is Pacific Coast Highway (PCH), located 0.25 mile south of the Project Site (Caltrans 2019). Although the Project Site is only minimally visible from PCH, the Proposed Project would result in buildings that are larger in size, scale, and mass than existing buildings. Therefore, the Proposed Project would potentially damage scenic resources within a state scenic highway. Impacts would be potentially significant, and this issue will be further evaluated in the EIR.

c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly

accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Potentially Significant Impact. The Project Site is not in an area that qualifies as an "urbanized area" and is surrounded by rural residential and recreational uses.[1] The Proposed Project would involve the demolition of all buildings on the Project Site with the exceptions of Buildings A/B and E. Implementation of the Proposed Project would allow for redevelopment of existing uses, resulting in new development that differs in scale, mass, density, and character. Therefore, the Proposed Project would potentially result in the degradation of the visual character and quality of public views of the Project Site and its surroundings. Impacts would be potentially significant, and this issue will be further evaluated in the EIR.

d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Potentially Significant Impact. The Project Site is a developed school campus. Existing sources of light include field lights, pool lighting, building and security lights, and parking lot lights. Implementation of the Proposed Project would result in a reconfiguration of existing land uses and new development with associated lighting security lighting. Light levels from the Proposed Project could exceed the City of Malibu's Dark Sky Ordinance standards. Therefore, new sources of light and glare could result in adverse impacts to day- or nighttime views. Impacts would be potentially significant, and this issue will be further evaluated in the EIR.

3.2 AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. 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:

[1] See PRC § 21071/CEQA Guidelines § 15191(m)(1). For an incorporated city "Urbanized area" means the city that either by itself or in combination with two contiguous incorporated cities has a population of at least 100,000 persons. City of Malibu has a population of about 12,777 (U.S. Census Bureau. QuickFacts. Population estimates, July 1, 2019).

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

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

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

d) Result in the loss of forest land or conversion of forest land to non-forest use?

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

No Impact for (a) through (e). The California Department of Conservation manages the Farmland Mapping and Monitoring Program, which identifies and maps significant farmland. Farmland is classified using a system of five categories—Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land. The classification of farmland as Prime Farmland, Unique Farmland, and Farmland of Statewide Importance is based on the suitability of soils for agricultural production, as determined by a soil survey conducted by the Natural Resources Conservation Service. The California Department of Conservation manages an interactive website, the California Important Farmland Finder. This website program identifies the Project Site as "Urban and Built-Up Land," and it is therefore not considered agriculturally important land (DOC 2016).

The Project Site is developed with existing educational uses, and no farmland exists on the Project Site. The Project Site is not subject to a Williamson Act contract, and the Project Site is zoned as institutional use in the Land Use and Zoning section of the City of Malibu's LCP (Malibu 2001). The Project Site contains no forest land or timber resources and is not zoned for forestland protection or timber production. Therefore, the Proposed Project would result in no impact to agriculture or forest resources. No further discussion in the EIR is necessary.

3.3 AIR QUALITY

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

a) Conflict with or obstruct implementation of the applicable air quality plan?

Potentially Significant Impact. The Project Site is in the South Coast Air Basin (SoCAB), which is under the jurisdiction of the South Coast Air Quality Management District (AQMD). Along with the California Air Resources Board, the Southern California Association of Governments (SCAG), and the US Environmental Protection Agency (EPA), the South Coast AQMD is the air pollution control agency primarily responsible for preparing the air quality management plan (AQMP) for the region in coordination. The AQMP is a

comprehensive air pollution control program for progressing towards and attaining the established state and federal ambient air quality standards (AAQS). The final 2016 AQMP, adopted by the South Coast AQMD governing board on March 3, 2017, includes pollutant control strategies based on the latest scientific and technical information and planning assumptions from SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, SCAG's latest growth forecasts, and updated emission inventory methodologies for various source categories (SCAQMD 2017).

A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the AQMP. It fulfills the CEQA goal of informing decision makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. In addition, it provides the local agency with ongoing information as to whether they are contributing to clean air goals in the AQMP. The Proposed Project involves the redevelopment of the former JCES and MMHS sites, which may result in an increase in air pollutant emissions during Project-related construction and operational phases. An air quality assessment will be prepared to analyze the Project's potential air quality impacts and consistency with the AQMP. This impact will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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

Potentially Significant Impact. The SoCAB is designated nonattainment for ozone (O_3) and fine particulate matter ($PM_{2.5}$) under the California and National AAQS, nonattainment for particulate matter (PM_{10}) under the California AAQS, and nonattainment for lead (Pb) under the National AAQS (CARB 2018). Any project that produces a significant project-level regional air quality impact in a nonattainment area adds to the cumulative impact. Due to the extent of the SoCAB area and the large number of cumulative project emissions, a project would be cumulatively significant when project-related emissions exceed the SCAQMD regional significance emissions thresholds (SCAQMD 1993). In addition, an increase in emissions could result during long-term operation of proposed facilities and cumulatively contribute to the nonattainment designations. The EIR will evaluate the Proposed Project's potential to result in a cumulatively considerable net increase in criteria pollutants. Mitigation measures will be incorporated as needed.

c) Expose sensitive receptors to substantial pollutant concentrations?

Potentially Significant Impact. An air quality analysis is required to determine if the potential mobile and stationary air emissions associated with implementation of the Proposed Project could result in exposure of off-site sensitive receptors to significant concentrations of air pollutants. An air quality analysis will be prepared to address these potential impacts to sensitive receptors. Further evaluation in the EIR is required to determine the level of significance and to identify mitigation measures (if necessary) that reduce impacts to below a level of significance, if required.

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

Less Than Significant Impact. The threshold for odor is if a project creates an odor nuisance pursuant to SCAQMD Rule 402, Nuisance, which states:

> A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

The type of facilities that are considered to have objectionable odors include wastewater treatment plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The Proposed Project does not include any of these uses. Proposed Project uses, such as kitchen or waste management activities, could generate odors; however, these types of uses are typical of school facilities and would be subject to established SMMUSD waste management practices, which would minimize and control odors. Furthermore, construction activities could also generate odors from construction equipment, such as diesel exhaust, and from volatile organic compounds from architectural coatings and paving activities. However, these odors would be temporary and confined to the immediate vicinity of the construction equipment. They are not expected to affect a substantial number of people. Therefore, impacts related to objectionable operational and construction-related odors would be less than significant. This topic will not be evaluated in the EIR, and applicable mitigation measures will be identified.

3.4 BIOLOGICAL RESOURCES

Would the project:

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

Potentially Significant Impact. Sensitive biological resources are habitats or species that have been recognized by federal, state, and/or local agencies as endangered, threatened, rare, or in decline throughout all or part of their historical distribution. Sensitive animal and plant species have been identified in the Point Dume region, including species identified in the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDB). This database lists special status wildlife species that have historically occurred within regions of California, including the City of Malibu. The CNDDB indicates that 22 rare plant species and 7 sensitive, federal- and state-listed wildlife species have been identified in the Point Dume region (CDFW 2020). A biological resource assessment will be conducted to identify sensitive species on or near the Project Site. Therefore, implementation of the Proposed Project would potentially have a substantial adverse effect on

sensitive biological resources. Impacts would be potentially significant, and this issue will be further evaluated in the EIR and applicable mitigation measures will be identified.

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?

Potentially Significant Impact. Riparian habitats are those occurring along the banks of rivers and streams. Sensitive natural communities are natural communities that are considered rare in the region by regulatory agencies, are known to provide habitat for sensitive animal or plant species or are known to be important wildlife corridors. According to the previous EIR conducted for the Malibu Middle and High School Campus Improvements Project (SCH No. 2008091059) and Malibu Middle and High School Biological Assessment conducted in 2009, there is a stream approximately 400 feet northwest of the Project Site (Atkins 2011; GLA 2009). Therefore, implementation of the Proposed Project would potentially have a substantial adverse effect on riparian habitat and other sensitive natural community. Impacts would be potentially significant, and this issue will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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

Potentially Significant Impact. Wetlands are defined under the federal Clean Water Act as land that is flooded or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that normally does support, a prevalence of vegetation adapted to life in saturated soils. Wetlands include areas such as swamps, marshes, and bogs. According to the U.S. Fish and Wildlife Service's National Wetlands Inventory, there is a freshwater forested/shrub wetland along the western boundary of the Project Site and a riverine habitat to the northwest of the Project Site (USFWS 2018; Atkins 2011; GLA 2009). Therefore, implementation of the Proposed Project would potentially have a substantial adverse effect on state or federally protected wetlands. Impacts would be potentially significant, and this issue will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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

Potentially Significant Impact. Wildlife corridors link areas of natural habitats separated by rugged terrain, changes in vegetation, or human disturbance. Corridors accommodate animal movement to enhance genetic interchange and re-colonization of the species and provide buffers for species populations to use in response to environmental changes and natural disasters. Large corridors (often referred to as habitat or landscape linkages) can provide both transitory and resident habitat for a variety of species. The former JCES and MMHS campuses are landscaped with typical ornamental groundcovers, shrubs, and trees while the athletic field is vegetated with turf grasses and ornamental species. The slopes surrounding the athletic field are vegetated with ruderal species and disturbed Venturan coastal sage scrub. Open space areas to the north and east of the Project Site support disturbed Venturan coastal sage scrub, Venturan coastal sage scrub, ruderal vegetation, and

disturbed/developed land (Atkins 2011; GLA 2009). The Project Site is surrounded by rural development and no major drainages, canyon bottoms, ridgetops, rivers, creeks, or areas that provide substantial movement corridors or migratory pathways occur within the Project Site. No areas that would be considered nursery sites, which generally include some types of wetlands and avian rookeries, are found within the Project Site. The stream, located northwest to the Project site, is a riparian habitat; and its potential to provide suitable nursery habitat or serve as a migratory corridor will be evaluated in the EIR.

Migrating birds use trees as nesting or nursery sites. Project construction would require the removal of existing trees on-site, which could potentially result in direct and indirect impacts to migratory birds. A tree count and mapping would be conducted to show the number of trees would be removed under the Proposed Project. Therefore, Project implementation could interfere substantially with the movement of a native resident or migratory fish or wildlife species. Impacts would be potentially significant, and this issue will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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

Potentially Significant Impact. The City of Malibu's LUP contains policies related to biological resources and is intended to achieve the goals and objectives of the California Coastal Act. Specifically, the City of Malibu Native Tree Protection Ordinance "applies to those areas containing one or more native oak (*Quercus* species), California Walnut (*Juglans californica*), Western Sycamore (*Platanus racemosa*), Alder (*Alnus rhombifolia*), or Toyon (*Heteromeles arbutifolia*) tree, that has at least one trunk measuring six inches or more in diameter, or a combination of any two trunks measuring a total of eight inches or more in diameter, measured at four and one-half feet above natural grade" (Malibu 2002). According to the tree survey conducted for the Project Site in 2009, a total of 138 native and nonnative trees were recorded within the Project Site. Native trees in the Project Site include California Walnut and Western Sycamore (Atkins 2011; Carlberg 2009). A biological resource assessment will be conducted to analyze the potential impacts to protected trees. Therefore, impacts would be potentially significant, and this issue will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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. Aside from the Local Coastal Plan, there are no other adopted habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plans that govern the Project Site (CDFW 2019). The City of Malibu's Land Use Plan (LUP) ESHA Map shows an unnamed ESHA stream on the northwest boundary of the Project Site approximately 400 feet northwest of campus development. The unnamed stream consists of an underground pipe that flows under the school property then daylights into a natural streambed to the south of the school property. Therefore, construction and operation of the Proposed Project could impact the ESHA, and this issue will be further discussed in the EIR, and applicable mitigation measures will be identified.

3.5 CULTURAL RESOURCES

Would the project:

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

Potentially Significant Impact. CEQA Guidelines section 15064.5 defines historic resources as resources listed or determined to be eligible for listing by the State Historical Resources Commission, a local register of historical resources, or the lead agency. Generally, a resource is considered "historically significant" if it meets one of the following criteria:

i) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

ii) Is associated with the lives of persons important in our past;

iii) Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic values;

iv) Has yielded, or may be likely to yield, information important in prehistory or history.

According to City of Malibu General Plan, there are no historical landmarks in the Project Site (Malibu 1995). Furthermore, the record search conducted at SCCIC in 2008 (SCCIC file #8739.5767 and #9087.6045) also did not identified historical resources within the Project Site. The search included a review of the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), the California Inventory of Historic Resources, California Historic Landmarks, California Points of Historic Interest, City of Los Angeles Historic-Cultural monuments, records of previously recorded cultural resources, and relevant technical reports. The previous environmental documents conducted for the MMHS Campus Improvement Project concluded that the Project Site does not meet the criteria for listing on the California Register of Historical Resources (CRHR), an no impact to historical resources would occur from the modification of the Project Site (Atkins 2011). However, there is potential for historic resources to be located in the Project Site, as there are buildings that would be demolished that were not evaluated as part of the 2011 EIR. Therefore, local historic research will be conducted to address the historic land use and developments within the Project Site. The EIR will evaluate the Proposed Project's impacts on any potentially historic resources.

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

Potentially Significant Impact. As discussed above, no archaeological or historic-era resources were identified within the Project Site. However, the Proposed Project is located in an area that is known for archeological resources and nine archaeological sites were identified within a half-mile radius (Atkins 2011). Construction of the Proposed Project may cause the disturbance of archaeological resources. Excavation to depths greater than current foundations has the potential to encounter unknown archaeological resources.

Therefore, impacts to archaeological resources would be potentially significant and will be further addressed in the EIR.

c) Disturb any human remains, including those interred outside of dedicated cemeteries?

Less than Significant Impact. Health and Safety Code section 7050.5; CEQA Guidelines section 15064.5; and Public Resources Code section 5097.98 mandate the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery. Specifically, Health and Safety Code section 7050.5, requires that if human remains are discovered on a project site, disturbance of the site shall remain halted until the coroner has conducted an investigation into the circumstances, manner, and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in section 5097.98 of the Public Resources Code. If the coroner determines that the remains are not subject to his or her authority and if the coroner has reason to believe the human remains to be those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission. Although soil-disturbing activities associated with the construction of the Proposed Project could result in the discovery of human remains, compliance with existing law regarding the discovery of human remains would reduce potential impacts to human remains to less than significant levels. Therefore, impacts would be less than significant, and this impact will not be further analyzed in the EIR.

3.6 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?

Potentially Significant Impact. Following is a discussion of the potential impacts related to the consumption of energy sources resulting from the construction and operational phases of development that would be accommodated by the Proposed Project.

Construction

Construction of the Proposed Project would require energy use to power the construction equipment. The energy use would vary during different phases of construction—the majority of construction equipment during demolition and grading would be gas or diesel powered. The later construction phases could require electricity-powered equipment for interior construction and architectural coatings. Transportation energy use depends on the type and number of trips, vehicle miles traveled, fuel efficiency of vehicles, and travel mode. Transportation energy use during construction would come from the transport and use of construction equipment, delivery vehicles and haul trucks, and construction employee vehicles that would use diesel fuel and/or gasoline. Impacts related to energy use during construction will be addressed further in the EIR, and applicable mitigation measures will be identified.

Operation

The Project Site is currently developed with institutional uses. The existing facilities onsite consumes electricity for various needs, including but not limited to, heating, cooling, and ventilation of buildings; water heating; operation of electrical systems; lighting; and use of on-site equipment and appliances. The Proposed Project would involve the replacement of older buildings with new buildings that would comply with the 2019 Building Energy Efficiency Standards. Under the 2019 standards, buildings would be more energy efficient compared to the 2016 standards (CEC 2018).

Southern California Edison and Southern California Gas Company provide electrical and natural gas energy services, respectively, to Malibu and the Project Site. The Proposed Project would result in 32 classrooms and 8 labs and a total of 190,967 square feet of building spaces, providing the MMHS campus with a total of 47 classrooms and 12 labs and a total of 240,650 square feet of building spaces. Therefore, increased electrical, gas, and transportation energy demands would result from Project implementation. The EIR will provide anticipated increase in demands and analyze potential impacts to existing energy services, and applicable mitigation measures will be identified.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Potentially Significant Impact. The Proposed Project would redevelop the Project Site through demolishing 147,556 square feet of existing facilities and adding 190,967 square feet of new development. The new buildings would be constructed to meet the 2019 California Green Building Standards and Energy Efficiency Standards. Additionally, the District has an adopted Districtwide Plan for Sustainability that includes energy-related goals and action. Consistency with the energy-related goals and actions of the Districtwide Plan for Sustainability will be further evaluated in the EIR, and applicable mitigation measures will be identified.

3.7 GEOLOGY AND SOILS

Would the project:

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

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

Less Than Significant Impact. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. Surface rupture is the most easily avoided seismic hazard. Fault rupture generally occurs within 50 feet of an active fault line and is limited to the immediate area of the fault zone where the fault breaks along the surface. The main purpose of the Alquist-Priolo Earthquake Fault Zoning Act is to prevent construction of buildings used for human occupancy on the surface of active faults, in order to minimize the hazard of surface rupture of a fault to

people and habitable buildings. Before cities and counties can permit development within Alquist-Priolo Earthquake Fault Zones, geologic investigations are required to show that the proposed development site is not threatened by surface rupture from future earthquakes.

No active earthquake fault—that is, a fault that has ruptured during Holocene time (the last 11,700 years)—or Alquist-Priolo Earthquake Fault Zone is mapped on or near the Project Site on the California Geological Survey Data Viewer (CGS 2020). The nearest Alquist-Priolo Earthquake Fault Zone to the Project Site is the Anacapa (Dume)–Santa Monica fault zone, which runs in an east-west direction and is approximately three miles to the east of the Project Site. The Anacapa (Dume)–Santa Monica fault zone is classified as a Holocene fault (CGS 2020). Therefore, impacts from rupture of a known earthquake fault would be less than significant. This topic will not be further evaluated in the EIR.

ii) Strong seismic ground shaking?

Potentially Significant Impact. There are several known active faults in the region, including the Anacapa (Dume)–Santa Monica Fault system and the Malibu Coast Fault. Therefore, any major earthquake along these major active faults will likely cause seismic ground shaking at the Project Site.

Project-related structures and buildings are required to be designed and built in compliance with the California Building Code (CBC [California Code of Regulations, Title 24, Part 2], adopted by reference as Chapter 15.04, Building Code Adopted, in the City's Municipal Code), which contains provisions for enhanced earthquake safety based on factors including occupancy type, the types of soil and rock on-site, and the probable strength of ground motion. The Proposed Project will be designed to meet the exacting seismic requirements of the Field Act, reviewed, and approved by DSA, and construction will be monitored by a DSA approved inspector. Compliance with the legal requirements for school construction, the Proposed Project would not cause a potentially significant seismic impact. Accordingly, this topic will not be further identified in the EIR.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction refers to soils that lose their load-supporting capability when strongly shaken. In general, soils that are susceptible to liquefaction are loose, saturated granular soils having low content of fine-grained particles (such as clays) and under low confining pressures. Liquefaction can make soils highly mobile, leading to lateral movement, sliding, consolidation, and settlement of loose sediments; sand boils; and other damaging deformations. Lateral spreading is a form of seismic ground failure due to liquefaction in a subsurface layer.

The Project Site is not in a liquefaction zone identified in the State of California Seismic Hazard Zones Map (Point Dume Quadrangle) (CGS 2002). Therefore, impacts would be less than significant. This topic will not be evaluated in the EIR.

iv) Landslides?

Potentially Significant Impact. Slope failures in the form of landslides are common during strong seismic shaking in areas of steep hills. The Project Site is situated on the southern flanks of the western

portion of the Santa Monica Mountains. Maximum topographic relief on-site is approximately 94 feet, with elevations ranging from 86 to 180 feet above mean sea level. The campus consists of several near-level pad areas with generally ascending slopes to the north and descending slopes to the Pacific Coast Highway to the south. Therefore, the Project Site may be prone to landslides. This topic will be studied further in the EIR, and mitigation measures will be identified as necessary.

b) Result in substantial soil erosion or the loss of topsoil?

Potentially Significant Impact. Erosion is the movement of rock and soil from place to place. Erosion occurs naturally by agents such as wind and flowing water; however, grading and construction activities can greatly increase erosion if effective erosion control measures are not used. Common means of soil erosion from construction sites include water, wind, and being tracked off-site by vehicles. About half of the Project Site, including all areas with current development, is situated on slopes between 0 and 20 percent, at elevations of a minimum of 80 feet above mean sea level. Construction of the Proposed Project would result in ground surface disturbance during excavation, grading, and trenching that would create the potential for soil erosion. Therefore, impacts to soil erosion would be potentially significant and will be further analyzed in the EIR, and applicable mitigation measures will be identified.

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?

Potentially Significant Impact. See responses to Sections 3.7(a)(iii) and (iv), above. Impacts related to lateral spreading, subsidence, and collapse will be evaluated in the EIR.

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?

Potentially Significant Impact. Expansive soils shrink or swell as the moisture content decreases or increases; the shrinking can shift, crack, or break structures built on such soils. According to Expansion Index (EI) testing performed by Leighton Inc. soils on the Project Site are highly expansive, with an EI greater than 20 (Atkins 2011). Mitigation measures were identified in the previous environmental documents to reduce impacts from expansive soils. Therefore, there is a potential for expansive soils to exist within the confines of the Project Site. This issue will be further evaluated in the EIR and mitigation measures will be identified as necessary.

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

Potentially Significant Impact. The Project Site is currently served by a septic tank system, and the Proposed Project would require an update to the existing septic system. A geotechnical report will be prepared to analyze the adequacy the Project Site to support an upgraded septic system. Impacts would be potentially significant, and this issue will be further evaluated in the EIR, and applicable mitigation measures will be identified.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Potentially Significant Impact. The Project Site is located in an area with high paleontological sensitivity (the Monterey Formation geologic unit), and excavation into undisturbed sediments of the Monterey Formation may have the potential to indirectly destroy undiscovered unique paleontological resources during construction (Petra Paleontology 1999). The paleontology records checks performed by the Natural History Museum of Los Angeles County for the MMHS Improvements Project concluded that there are no vertebrate fossil localities within the Project Site, but there are localities nearby from the same sedimentary units that underlain the Project Site (NHM 2008). Given the disturbed condition of the Project Site and its surroundings, the potential for implementation of the Proposed Project to impact an unidentified paleontological resource is considered low. However, a paleontological records search will be conducted as part of the cultural resource assessment for the Project Site. This impact is potentially significant and will be analyzed in the EIR; mitigation measures will be identified as necessary.

3.8 GREENHOUSE GAS EMISSIONS

Would the project:

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

Potentially Significant Impact. Global climate change is not confined to a particular project site and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough greenhouse gas emissions on its own to influence global climate change significantly. The issue of global climate change is thus, by definition, only a cumulative environmental impact. Through its governor and legislature, the State of California has established a comprehensive framework to substantially reduce GHG emissions over the next 40 years and beyond. Reduction measures will occur primarily through the implementation of Assembly Bill 32 (AB 32), Senate Bill 32 (SB 32), and Senate Bill 375 (SB 375), which address GHG emissions on a statewide, cumulative basis.

The Proposed Project could potentially generate GHG emissions that could significantly impact the environment. The EIR will evaluate the potential for the Proposed Project to generate a substantial increase in GHG emissions, and mitigation measures will be incorporated as necessary.

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

Potentially Significant Impact. The California Air Resources Board's (CARB) Scoping Plan is California's GHG reduction strategy to achieve the state's GHG emissions reduction target, established by AB 32, of 1990 emission levels by year 2020 (CARB 2008). In addition, SB 375, the Sustainable Communities and Climate Protection Act of 2008, was adopted by the legislature to reduce per capita vehicle miles traveled and associated GHG emissions from passenger vehicles. SCAG's 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (SCAG 2016) identifies the per capita GHG reduction goals for the SCAG region. SCAG recently released the 2020-2045 RTP/SCS (Draft Connect SoCal Plan) on November 7, 2019,

and, once finalized, the 2020-2045 RTP/SCS will replace the 2016-2040 RTP/SCS. Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan and SCAG's RTP/SCS. Furthermore, the City of Malibu is also currently preparing the Community Resilience and Adaptation Plan. Construction and operation of the Proposed Project have the potential to conflict with GHG reduction strategies and goals of CARB's Scoping Plan and SCAG's 2016 RTP/SCS. Therefore, impacts are potentially significant. The EIR will evaluate consistency with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions, and mitigation measures will be identified as necessary.

3.9 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?

Potentially Significant Impact. The term "hazardous material" is defined in different ways by different regulatory programs. For purposes of this environmental document, the definition of "hazardous material" is the same as Health and Safety Code section 25501:

> Hazardous materials that, because of their quantity, concentration, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the unified program agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

"Hazardous waste" is a subset of hazardous materials, and the definition is essentially the same as Health and Safety Code section 25117, and California Code of Regulations, Title 22, section 66261.2:

> Hazardous wastes are those that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to an increase in mortality or an increase in serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous materials can be categorized as hazardous nonradioactive chemical materials, radioactive materials, and biohazardous materials (infectious agents such as microorganisms, bacteria, molds, parasites, viruses, and medical waste).

Construction

Construction activities of the Proposed Project would involve the use of larger amounts of hazardous materials than would Project operation. Construction activities would include the use of materials such as fuels, lubricants, and greases in construction equipment and coatings used in construction. However, the materials

used would not be in such quantities or stored in such a manner as to pose a significant safety hazard. These activities would also be short term or one time in nature. Project construction workers would also be trained in safe handling and hazardous materials use.

The use, storage, transport, and disposal of construction-related hazardous materials and waste would be required to conform to existing laws and regulations. Compliance with applicable laws and regulations governing the use, storage, and transportation of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner and would minimize the potential for safety impacts to occur. For example, all spills or leakage of petroleum products during construction activities are required to be immediately contained, the hazardous material identified, and the material remediated in compliance with applicable state and local regulations for the cleanup and disposal of that contaminant. All contaminated waste encountered would be required to be collected and disposed of at an appropriately licensed disposal or treatment facility. Furthermore, strict adherence to all emergency response plan requirements set forth by the City of Malibu and Los Angeles County Fire Department (LACoFD) would be required through the duration of the Project construction. However, demolition of buildings containing PCBs, asbestos, lead, fluorescent lamps, and other hazardous building materials would be required under the Proposed Project. Therefore, hazards to the public or the environment arising from the routine use of hazardous materials during Project construction would be potentially significant and applicable mitigation measures will be identified.

Operation

Operation of the Proposed Project would involve the limited use of hazardous materials for air conditioning, janitorial, maintenance, and repair activities, as well as medical supplies used at the nurse's office. These materials would include commercial cleansers, lubricants, and paints as well as ointments and other medical treatment products typically used to care for minor injuries. However, these types of materials are not considered acutely hazardous and would be used in limited quantities. Additionally, the new science labs could potentially result in the increased use of hazardous materials. All materials will be used, stored, and disposed of in accordance with SMMUSD and applicable state and federal standards, including Title 22 of the California Code of Regulations. The SMMUSD School Safety Plan outlines procedures to protect students and staff from exposure to hazards and hazardous materials. The SMMUSD School Safety Plan contains procedures to address evacuation, clean up, and communication to protect students and staff in case of a hazardous material spill (SMMUSD 2018). Waste materials generated at the new science labs would be disposed of in accordance with regulated practices, which would ensure that hazardous materials are not disposed of in the municipal waste stream or discharged to the campus' sanitary sewage system. All chemical waste would be captured in the labs and disposed of in accordance with all statutory requirements. No manufacturing, industrial, or other uses utilizing large amounts of hazardous materials would occur within the Project Site.

The use, storage, transport, and disposal of hazardous materials of the Proposed Project would be required to comply with existing regulations of several agencies, including the California Department of Toxic Substances Control, US Environmental Protection Agency, California Division of Occupational Safety and Health, California Department of Transportation, County of Los Angeles Department of Environmental Health, and LACoFD. Compliance with applicable laws and regulations governing the use, storage, transport, and disposal

of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner and would minimize the potential for safety impacts to occur.

Therefore, hazards to the public or the environment arising from the routine use, storage, transport, and disposal of hazardous materials during Project operation would not occur. Impacts would be less than significant. This topic will not be further analyzed in the EIR.

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?

Potentially Significant Impact. The Project Site is currently built out with institution uses. The previous EIR conducted for the MMHS Campus Improvements Project concluded that PCB and pesticide affected soils would be removed as part of the Proposed Project in accordance with applicable regulations and the synthetic turf material would not exceed California Code of Regulations Title 22 criteria (Atkins 2011). Further analysis is necessary to characterize the existing conditions within the Project Site with respect to past and current activities involving the handling, use, storage, transport, or emission of hazardous materials. Based on the findings of the analysis, it can be determined whether the Proposed Project could involve a risk of release of hazardous materials into the environment. Therefore, potentially significant impacts may occur. This topic will be evaluated in the EIR and mitigation measures will be identified as necessary.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less than Significant Impact. The Project Site encompasses the MMHS campus and former JCES campus. As discussed in 3.9(a), implementation of the Proposed Project is not anticipated to involve the handling of hazardous materials other than fuels, greases, paints, cleaning and maintenance materials, and chemicals and materials used for educational purposes, such as in science labs, in limited quantities. The use, storage, transport, and disposal of hazardous materials of the Proposed Project would be required to comply with existing federal, local, and state regulations. Therefore, impacts would be less than significant. This topic will not be further analyzed in the EIR.

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 significant hazard to the public or the environment?

Potentially Significant Impact. Government Code section 65962.5 specifies lists of the following types of hazardous materials sites: hazardous waste facilities; hazardous waste discharges for which the State Water Quality Control Board has issued certain types of orders; public drinking water wells containing detectable levels of organic contaminants; underground storage tanks with reported unauthorized releases; and solid waste disposal facilities from which hazardous waste has migrated. As indicated in the GeoTracker database, the Project Site is an active Waste Discharge Requirements site (SWRCB 2020). The previous environmental documents concluded is identified on the State Leaking Underground Storage Tank (LUST) List, HAZNET, State Hazardous Waste and Substances Sites (CORTESE), and Statewide Environmental Evaluation and Planning System (SWEEPS UST) databases (Atkins 2011). Further evaluation in the EIR is required to identify

whether hazardous materials sites exist on or in the vicinity of the Project Site. Therefore, potentially significant impacts may occur, and mitigation measures will be identified as necessary.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles or 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?

No Impact. The nearest public-use airport to the Project Site is Santa Monica Airport, approximately 23 miles to the southeast of the Project Site. The Project Site is not within the airport's land use plan and is outside of the areas where land uses are regulated respecting air crash hazards and where heights of structures are limited to prevent airspace obstructions for aircraft approaching or departing Santa Monica Airport (Los Angeles County ALUC 2003). Thus, implementation of the Proposed Project would not result in safety hazards related to aircraft operations. This topic will not be discussed in the EIR.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The Standardized Emergency Management System (SEMS), California Code of Regulations, Title 19, Division 2, section 2443, requires compliance with the SEMS to "be documented in the areas of planning, training, exercise, and performance." The Malibu Emergency Operation Plan (EOP) was approved by City Council on February 2018. The EOP, which is overseen and managed by the Malibu Disaster Council, meets the SEMS requirements of state law. The EOP addresses the planned response by the City of Malibu to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies. The purpose of the EOP is to guide the mitigation, response and recovery efforts of the City of Malibu before, during, and after an emergency (Malibu 2018).

For the following reasons, the Proposed Project would not interfere with the implementation of the EOP and any of the daily operations of the City's Emergency Operation Center, LACoFD, or Los Angeles County Sheriff's Department. All construction activities would be required to be performed per the City's and LACoFD's standards and regulations. For example, the Proposed Project would be required to provide the necessary on- and off-site access and circulation for emergency vehicles and services during the construction and operation phases. The Proposed Project would also be required to go through the City's development review and permitting process and would be required to incorporate all applicable design and safety standards and regulations, as set forth in the Malibu Municipal Code Chapter 8.12, Fire Code Adopted, to ensure that they do not interfere with the provision of local emergency services (provision of adequate access roads to accommodate emergency response vehicles, adequate numbers/locations of fire hydrants, etc.).

Impacts associated with emergency response and evacuation will be further analyzed in the EIR and will include consultation with the Los Angeles County Fire Department and Sherriff's Department regarding firefighting and police resources available near the site and project impacts on emergency services. Impacts on emergency response or evacuation plans would be considered potentially significant and will be further analyzed in the EIR.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Potentially Significant Impact. A wildland fire hazard area is typically characterized by areas with limited access, rugged terrain, limited water supply, and combustible vegetation. Impacts for wildland fire risks due to implementation of Proposed Project are discussed in detail in Section 3.20, *Wildfire*. The Project Site is located within a Very High Fire Hazard Severity Zone in a Local Responsibility Area (CAL FIRE 2011). Therefore, there is potential for the Proposed Project to expose people or structures to substantial hazards from wildland fires. This topic will be evaluated in the EIR and mitigation measures will be identified as necessary.

3.10 HYDROLOGY AND WATER QUALITY

Would the project:

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

Less than Significant Impact. The US Environmental Protection Agency (EPA) establishes national water quality standards. Pursuant to section 402 of the Clean Water Act, the EPA has also established regulations under the National Pollution Discharge Elimination System (NPDES) program to control direct stormwater discharges. The Los Angeles Regional Water Quality Control Board (RWQCB) administers the NPDES permitting programs for the City of Malibu and is responsible for developing waste discharge requirements. Los Angeles RWQCB requirements include those requiring preparation and implementation of water quality management plan (WQMP) to control contaminants into storm drain systems, educate the public about stormwater impacts, detect and eliminate illicit discharges, control runoff from construction sites, and implement best management practices (BMPs) and site-specific runoff controls and treatments. Construction and operation of the Proposed Project have the potential to discharge sediment and pollutants to storm drains and receiving waters, thereby leading to a potential water quality impact. However, the City's MS4 Permit and Municipal Code Chapter 13.04 (Stormwater Management and Discharge Control) require reduction of pollutants in stormwater to the maximum extent practical and prohibits the discharge of non-stormwaters unless covered by a separate NPDES permit or Water Board's conditional discharge exemption (13.04.030(A(1) and 13.04.060(D). Compliance with these regulatory requirements would prevent any violations and the impact would be less than significant. This topic will not be further analyzed in the EIR.

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

Potentially Significant Impact. Although much of the Project Site is already built out with hardscape and impervious surfaces, implementation of the Proposed Project would increase development intensity in the Project Site and may increase impervious surfaces. The EIR will determine whether available water supplies are sufficient to serve the demand generated by the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years. Impacts to groundwater recharge due to implementation of the Proposed Project are potentially significant and will be evaluated in the EIR; mitigation measures will be identified as necessary.

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 a substantial erosion or siltation on- or off-site?

Less than Significant Impact. According to the City of Malibu's General Plan, the Trancas Canyon Drainage runs along the northwestern portion of the Project Site (Malibu 1995). Soils in the Project Site could experience erosion during construction, and as required by the Construction General NPDES Permit and City's Municipal Code Section 13.04.110, a Stormwater Pollution Prevention Plan specifying BMPs for minimizing pollution of stormwater with soil and sediment during Project construction would be prepared and implemented to reduce impacts to soil erosion. Although the Proposed Project may result in an increase in impervious surfaces and potentially result in alteration of the existing site's drainage patterns, compliances with the applicable regulatory requirements would prevent impacts from soil erosions. Therefore, impacts would be less than significant and this topic will not be evaluated in the EIR.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less than Significant Impact. The Project Site is not in a flood hazard zone, but in an area of undetermined flood hazard (Zone D) (FEMA 2008). Implementation of the Proposed Project may result in an increase in impervious surfaces and alter the existing drainage pattern of the Project Site. Although implementation of the WQMP would reduce runoff from construction and identify BMPs for runoff controls and treatments and the City's Municipal Code section 13.04.120(D) and MS4 Permit would require the Proposed Project design to control runoff volume to the maximum extent feasible. Therefore, impacts related to the increase in the rate or amount of surface runoff would be less than significant. This topic will not be further evaluated in the EIR.

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

Potentially Significant Impact. Increased impervious surfaces may increase the amount of runoff and discharge of sediments and pollutants to stormwater drainage systems. If increased, the additional runoff could exceed the capacity of existing or planned stormwater drainage systems in the Project Site. New stormwater retention basins would be developed to treat runoff from the Proposed Project. This topic will be addressed in the EIR, and mitigation measures will be recommended as needed.

iv) Impede or redirect flood flows?

Potentially Significant Impact. According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps, the Project Site is in the Zone D flood hazard zone, indicating that the site is in an area of undetermined flood hazard (FEMA 2008). Therefore, impacts would be potentially significant and will be evaluated in the EIR; mitigation measures will be identified as necessary.

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

Potentially Significant Impact. The following describes potential pollutant impacts related to flood hazard, seiche, and tsunami zones.

Flood Hazard

As noted in Section 3.10(c)(iv), above, the Project Site in an area of undetermined flood hazard. Therefore, impacts related to risk of pollutant release due to inundation from a flooding event would be potentially significant, and this impact will be evaluated in the EIR.

Seiche

A seiche is a surface wave created when a body of water is shaken, usually by earthquake activity. Seiches are of concern relative to water storage facilities because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. Although there are no large water tanks in the area that could impact the Project Site, there are dams in the region that could create flooding impacts. The Project Site is not in a dam inundation area (DSOD 2020). Therefore, there is no risk of pollutant release due to inundation from a seiche. No impact would occur, and this impact will not be evaluated in the EIR.

Tsunami

A tsunami is a series of ocean waves caused by a sudden displacement of the ocean floor, most often due to earthquakes. The Project Site is approximately 0.3 miles inland from the Pacific Ocean, outside of the tsunami hazard zone identified by the California Governor's Office of Emergency Services (Cal OES 2009). The tsunami zones are identified using a modeling process which accounted for over 50 potential "worst-case" scenarios representing both local and distant tsunami sources. Additionally, the Project Site is not located with a 100-year or 500-year tsunami run-up zone (Malibu 1995). Therefore, there is no possibility of the Project Site being affected by a tsunami; there is no risk of pollutant release due to inundation from a tsunami. No impact would occur, and this impact will not be evaluated in the EIR.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant Impact. The quality of surface and groundwater is affected by land uses in the watershed and the composition of subsurface geologic materials. Water quality in surface and groundwater bodies is regulated by the State Water Resources Control Board and RWQCB. The City of Malibu is under the jurisdiction of the Los Angeles RWQCB, which is responsible for implementation of state and federal water quality protection guidelines. RWQCB implements the WQMP for the Coastal Watersheds of Los Angeles and Ventura Counties (Basin Plan), a master policy document for managing water quality issues in the region. The Project Site is not located within a groundwater basin (DWR 2016) or within a groundwater management plan.

As discussed in the Sections 3.10(a) and (b), above, construction of the Proposed Project has the potential to discharge sediment and pollutants to receiving waters and may obstruct the implementation of the water quality

control plan. The Los Angeles RQWCB would also require a WQMP to be prepared with BMPs for site-specific runoff controls and treatments. Compliance with these regulatory requirements would reduce impacts to a less than significant level. This topic will not be further analyzed in the EIR.

3.11 LAND USE AND PLANNING

Would the project:

a) Physically divide an established community?

No Impact. The Proposed Project would not divide an established residential community because it would occur entirely on an existing school campus. Minor off-site improvements may include utility hookups and new crosswalks; these improvements would occur within the public right-of-way and would not physically divide the community. Therefore, no impact would occur. No further discussion in the EIR is necessary.

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?

Potentially Significant Impact. The Malibu Middle and High School Campus Specific Plan is proposed to regulate the project. In order to meet the District's Education Specifications, the California Interscholastic Federation, the National Federation of State High School Association, the District is proposing that Buildings D, C, H and J exceed the LIP's 28-foot height requirements. Additionally, the labs located in Building C would require fume hoods that would exceed the height restrictions for rooftop mounted equipment. Development standards established under the Specific Plan include the building specifications such as heights, setbacks, design standards for landscaping and signs. The EIR will evaluate the potential impacts that could potentially occur adoption of the proposed Specific Plan, including conflicting with City's LCP and LIP. Impacts would be potentially significant, and this issue will be further evaluated in the EIR.

3.12 MINERAL RESOURCES

Would the project:

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

No Impact. No mineral resource recovery sites of statewide or regional significance are located on or in the immediate vicinity of the Project Site. The Project Site is in an area classified as Mineral Resource Zone 3, which is defined as "areas containing mineral deposits the significance of which cannot be evaluated from available data" (DOC 1994). The Project Site is a developed with the former JCES campus and MMHS campus; therefore, implementation of the Proposed Project would not result in the loss of availability of a known mineral resource or resource recovery site. No mineral resource impact would occur. No further discussion in the EIR is necessary.

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?

No Impact. As discussed above in Response 3.12(a), no mineral resource recovery sites are identified on or in the immediate vicinity of the Project Site. There would be no loss of availability of locally important mineral resources, and no impact would occur. No further discussion in the EIR is necessary.

3.13 NOISE

Would the project result in:

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

Potentially Significant Impact. Implementation of the Proposed Project would involve construction, including demolition of existing buildings/facilities, and operational activities that would generate noise levels that may expose sensitive land uses to noise levels in excess of the noise standards. Short-term construction activities could elevate ambient noise levels at nearby noise-sensitive receptors. Under City's Municipal Code Section 8.24.050(g) construction between the hours of 7:00 PM and 7:00 AM on weekdays, before 8:00 AM or after 5:00 PM on Saturday, or at any time on Sundays or holidays are declared to be in violation of the noise ordinance. The City of Malibu General Plan has an established non-transportation-related exterior noise level for Institutional Uses of 65 dBA L_{eq} during daytime hours with a not to be exceeded L_{max} of 85 dBA. The established transportation-related exterior noise level for Institutional uses is 60 dBA L_{dn}.

Long-term operation of new development under the Proposed Project could potentially result in two types of long-term noise impacts. The first may occur if Project-related noise sources substantially increase noise levels in the vicinity of the Project Site. Operational sources will likely include increased roadway traffic as well as stationary sources such as heating, ventilation, and air conditioning units; activities associated with outdoor activities; and educational and recreational uses. The second type of long-term noise impact may occur if the Project Site's noise-sensitive uses are in a high-noise-exposure area. Further evaluation in the EIR is required to determine potential on- and off-site noise impacts, and applicable mitigation measures will be identified.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Potentially Significant Impact. Following is a discussion of the potential short- and long-term vibration impacts that could result from development that would be accommodated by the Proposed Project.

Short-Term Construction Impacts

Construction operations can generate varying degrees of groundborne vibration, depending on the procedures and equipment used. Operation of construction equipment generate vibrations that spread through the ground and diminish with distance from the source. The effect on buildings and sensitive receptors in the vicinity of the construction site varies depends on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and

perceptible vibrations at moderate levels, to architectural damage at the highest levels. There are nearby buildings/structures and sensitive receptors near the Project Site that could be affected by any construction-related groundborne vibration generated at the Project Site. This impact is potentially significant and will be analyzed in the EIR; mitigation measures will be identified as necessary.

Long-Term Operation Impacts

The Proposed Project involves the redevelopment of an existing school campus. Such land uses would not create operational-related groundborne vibration or noise in the Project area as there are no notable sources of vibrational energy associated with these uses. Therefore, no operational-related groundborne vibration or groundborne noise impact would result from the Proposed Project, and this impact will not be analyzed in the EIR.

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?

No Impact. The nearest public-use airport to the Project Site is Santa Monica Airport, approximately 23 miles to the southeast. The Project Site is not within the 60 dBA CNEL airport contour (Los Angeles County ALUC 2003). The nearest private airstrip is the Anacapa View Estates Heliport, located approximately one-mile northwest of the Project Site. However, this private heliport is primarily used by the Los Angeles County Fire Department during times of an emergency to better protect the surrounding residents. Therefore, no impact would occur, and this impact will not be addressed in the EIR.

3.14 POPULATION AND HOUSING

Would the project:

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

No Impact. The Project Site is in the established former JCES campus and MMHS campus, and no new roads or extensions of existing roads that could enable development of undeveloped land are proposed. The Proposed Project is intended to serve the existing and anticipated future student population and would not result in the creation of housing or infrastructure that would induce unplanned population growth in the area. The objective of the Proposed Project is to create a middle school and high school campuses that provide separate education spaces for the middle school and high school students as well as shared facilities, improve vehicle and pedestrian circulation, and secure campus access while respecting the natural environmental of West Malibu. Therefore, no impacts involving direct or indirect unplanned increase in population growth would occur as a result of the Proposed Project. This topic will not be further analyzed in the EIR.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Project Site is completely within the existing school boundaries. No residences would be displaced or removed as a result of the Proposed Project, and the Proposed Project would have no impact on existing housing because the Proposed Project will accommodate the same enrollment of 1,200, as the existing facilities. Therefore, the Proposed Project would not displace any people or necessitate the construction of any replacement housing. No significant impact would occur. This topic will not be further analyzed in the EIR.

3.15 PUBLIC SERVICES

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

a) Fire protection?

Potentially Significant Impact. Fire prevention, fire protection, and emergency medical services in the project area are provided by the LACoFD. The nearest fire station to the Project Site is Fire Station 71 at 28722 Pacific Coast Highway, approximately 2.3 miles from the Project Site. The Proposed Project would be constructed to meet the requirements of the State Fire Marshal. By adhering to the County's fire safety standards, the Proposed Project would not affect LACoFD's performance objectives. The proposed improvements would not result in a change in student capacity, but they would increase community use facilities. Due to the nature of the facilities proposed, there is potential that such conditions would substantially increase the need for fire protection services, alter response times, or adversely affect the department's ability to provide service to the site using existing equipment and personnel. Therefore, a potentially significant impact would occur. Impacts regarding fire protection will be further analyzed in the EIR and include consultation with the LACoFD regarding firefighting resources available near the Project Site and impacts on fire protection.

b) Police protection?

Potentially Significant Impact. Law enforcement services in the area are provided by the Los Angeles County Sheriff's Department. The Malibu/Lost Hills Station is at 27050 Agoura Road in the community of Agoura Hills, approximately 17 miles from the Project Site. The proposed improvements would not result in a change in student capacity, but they increase community use facilities. Due to the nature of the facilities proposed, there is potential that such conditions would substantially increase the need for police protection services, alter response times, or adversely affect the department's ability to provide services to the site using existing equipment and personnel. Therefore, potentially significant impact would occur. Impacts regarding police protection will be further analyzed in the EIR and include consultation with the Los Angeles County Sheriff's Department regarding law enforcement resources available near the Project Site and impacts on police protection.

c) Schools?

No Impact. The Proposed Project improvements would benefit students attending the existing MMHS and would not result in an increase in student population. The Proposed Project would not result in changes in land uses (e.g., housing) that would result in population growth or create a greater demand for school services. Therefore, no impact to schools would result from Project implementation. This topic will not be further analyzed in the EIR.

d) Parks?

No Impact. The Proposed Project is intended to allow for the redevelopment of the former JCES and existing MMHS campuses that would enhance recreational opportunities for both educational and student athletics. The Proposed Project further includes the expansion of pedestrian trails around the Project Site that would be available for educational uses and open to the surrounding community. Therefore, the Proposed Project would not result in increased demand for additional parks and recreation services either on-site or in the surrounding area. The Proposed Project would not cause an increase in area population that would have the potential to increase demands on the City's recreational amenities or public parks. No impact would occur. This topic will not be further analyzed in the EIR.

e) Other public facilities?

No Impact. The Proposed Project is designed to serve the existing and future student population at MMHS and to provide separate education spaces for the middle school and high school students as well as shared facilities. No new population would be generated by the proposed uses; therefore, no increased demand on other public facilities is anticipated. The Proposed Project would not significantly affect any other public facilities. No impact would occur. This topic will not be further analyzed in the EIR.

3.16 RECREATION

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

No Impact. Demand for parks and recreational facilities in an area are usually determined by the area's population. The Proposed Project does not include the development of new homes, which would lead to an increase in population and the need for additional park and recreation facilities. The Proposed Project involves the redevelopment of existing school campuses to serve the existing and future student population at MMHS. Therefore, the Proposed Project would not increase the use of existing neighborhood and regional parks or other recreational facilities, nor would it require construction of new or expanded parks or recreational facilities. No impact to park and recreational facilities would occur. This topic will not be further analyzed in the EIR.

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

Potentially Significant Impact. The Proposed Project includes the development of recreational facilities and amenities within the confines of the Project Site, including a pedestrian trail through the Project Site that would be available for student and public use. The Proposed Project would not involve any construction of recreational facilities beyond what is proposed to serve the existing and future students. The physical impacts associated with the construction of the proposed recreational facilities are also analyzed in other sections of this Initial Study. Therefore, the Proposed Project could potentially result in a significant impact to recreational facilities, and this issue will be further analyzed in the EIR, and applicable mitigation measures will be identified.

3.17 TRANSPORTATION

Would the project:

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

Potentially Significant Impact. Implementation of the Proposed Project would potentially result in the generation of additional vehicular traffic in the area and region as the District enrollment increases as anticipated under the Proposed Project. A traffic impact analysis will be prepared to determine the Proposed Project's traffic impacts and will help form the basis for the impact analysis to be provided in the EIR. The traffic impact analysis and EIR will address consistency with existing programs, plans, ordinances, or policies addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. This impact is potentially significant and will be further evaluated in the EIR, and applicable mitigation measures will be identified.

b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

Potentially Significant Impact. On September 27, 2013, SB 743 was signed into law, which started a process that fundamentally changed transportation impact analysis as part of CEQA compliance. These changes include the elimination of auto delay, level of service (LOS), and other similar measures of vehicular capacity or traffic congestion as a basis for determining significant impacts in many parts of California (if not statewide). As part of the updated CEQA Guidelines, the new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses" (Public Resources Code section 21099(b)(1)). On January 20, 2016, the Governor's Office of Planning and Research (OPR) released revisions to its proposed CEQA guidelines for the implementation of SB 743. Final review and rulemaking for the new guidelines were completed in December 28, 2018, when the California Natural Resource Agency certified and adopted the CEQA Guidelines update package, including guidelines section implementing SB 743. OPR allows agencies an opt-in period to adopt the guidelines; they become mandatory on July 1, 2020. Vehicle miles traveled (VMT) is an indicator of the travel levels on the roadway system by motor vehicles. It corresponds to the number of vehicles multiplied by the distance traveled in a given period over a geographical area. In other words, VMT is a function of (1) number of daily trips and (2) the average trip length (VMT = daily trips x average trip length).

Implementation of the Proposed Project would result in the generation of additional vehicular traffic in the area and region as anticipated after-school use intensity increases. As part of the traffic impact study, a VMT analysis will be included for existing and future conditions to address consistency with CEQA Guidelines section 15064.3, subdivision (b). This impact is potentially significant and will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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

Potentially Significant Impact. Implementation of the Proposed Project would include the development of a new pick-up/drop-off area, and it would change the entryway into the Project Site with the development of Parking Lots D, E, and F, which could potentially result in vehicle or pedestrian conflict. The relocation of the driveway and interim and new parking areas could increase hazards if not properly designed and constructed. Therefore, impacts are considered potentially significant in this regard. A traffic study will be completed as part of the EIR. Impacts related to circulation/transportation design features will be further evaluated, and feasible mitigation measures (if necessary) will be identified in the EIR.

d) Result in inadequate emergency access?

Less Than Significant Impact. To address fire and emergency access needs, the Proposed Project would be required to incorporate all applicable design and safety requirements from the most current adopted fire codes, building codes, and nationally recognized fire and life safety standards of the City and LACoFD, such as those outlined in Chapter 8.12, Fire Code Adopted, of the City's Municipal Code, which incorporates by reference the 2016 California Fire Code. The City and LACoFD would be responsible for reviewing Project compliance with related codes and standards prior to issuance of building permits. Review from the City's Public Works Department would also be required for building plan check and traffic control plan review.

Additionally, during the building plan check and development review process, the City would coordinate with the LACoFD and Los Angeles County Sherriff 's Department to ensure that the necessary fire prevention and emergency response features are incorporated into the Proposed Project, and that adequate circulation and access (e.g., adequate turning radii for fire trucks) is provided in the traffic and circulation components of the Proposed Project. Thus, impacts on emergency access would be less than significant and will not be further analyzed in the EIR.

3.18 TRIBAL CULTURAL RESOURCES

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural

landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

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

Less than Significant Impact. As of July 1, 2015, Public Resources Code sections 21080.1, 21080.3.1, and 21080.3.2 require public agencies to consult with California Native American tribes recognized by the Native American Heritage Commission for the purpose of mitigating impacts to tribal cultural resources. This law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions.

In accordance with Public Resources Code section 21080.3.1(d), a lead agency is required to provide formal notification of intended development projects to Native American tribes that have requested to be on the lead agency's list for receiving such notification. The formal notification is required to include a brief description of the Proposed Project and its location, lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation for tribal cultural resources. The Santa Ynez Band of Chumash Indians, Gabrielino/Tongva San Gabriel Band of Mission Indians, and the Torres Martinez Desert Cahuilla Indians are on the SMMUSD's notification list pursuant to AB 52. The District provided notification letters to these tribes on May 15, 2020 and as of the time of publication of this Initial Study, no response has been received, and the 30-day time period for requesting consultation has expired.

In addition to notification of and potential consultation with Native American tribes that have requested to be notified of projects in the City, a Sacred Lands search request will be obtained from the Native American Heritage Commission (NAHC) as part of the tribal consultation process. The NAHC Sacred Lands search and previous EIR conducted for the MMHS Campus Improvements Project did not find the presence of Native American resources in the vicinity of the Project Site (Atkins 2011). Additionally, development of the MMHS Campus Improvements Project has not encounter any tribal cultural resources. The Project Site is not listed or eligible for listing in the California Register of Historical Resources or in a local register of historical resources as defined in Public Resources Code section 5020.1(k). As no Californian Native American Tribe has requested consultation, this topic will not be further addressed in the EIR.

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

Less than Significant Impact. This topic will not be discussed in the EIR, as explained above in Section 3.18(a).

3.19 UTILITIES AND SERVICE SYSTEMS

Would the project:

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

Potentially Significant Impact. Buildout of the Proposed Project would not result in an increase in student capacity, but would require utility improvements to adequately serve the Project Site. Under the Proposed Project, the proposed domestic and fire water lines would connect to the existing 12-inch public water main on Morning View Drive. The Project Site is currently served by 11 septic tanks, and the Proposed Project would require development of 5 new septic tanks.

The existing drainage system drains via sheet flow and underground storm drain either south discharging to Morning View Drive through the driveways and curb outlets or west with connections to an unnamed stream. Implementation of the Proposed Project would also require new stormwater retention basins to treat runoff generated from the Project Site.

Electricity is provided by the Southern California Edison and natural gas by Southern California Gas Company. The existing electrical system on the Project Site is old and in need of replacement—power outages occur at least once during summer and at least two to three times during winter. Service providers would also be consulted to ensure all utilities would be available to properly serve the Project Site. Project development would result in the relocation or construction of new or expanded water, wastewater, storm drainage, electric power, natural gas, or telecommunication facilities. Therefore, this impact is potentially significant and will be evaluated in the EIR; mitigation measures will be identified as necessary.

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

Potentially Significant Impact. The City of Malibu is served by the Los Angeles County Waterworks District 29 and receives water through a contract with the West Basin Municipal Water District. Project implementation would not result in an increase in student capacity but would result in an increase in after-school use intensity, and landscaped areas. The potential volume of increased demand will be assessed in the EIR to compared existing and planned water supplies and determine whether implementation of the Proposed Project would result in significant impacts on local or regional water supplies. The EIR will determine whether sufficient water supplies are available to serve the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years. This impact is potentially significant and will be evaluated in the EIR; mitigation measures will be identified as necessary.

c) Result in a determination by the waste water 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. See response to Section 3.19(a), above. The Proposed Project would need to upgrade the existing septic system. The adequacy of the new septic system would be evaluated in the EIR. This impact is potentially significant and will be evaluated in the EIR; mitigation measures will be identified as necessary.

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?

Less Than Significant Impact. Solid waste generated in the City of Malibu is disposed of at the Calabasas Landfill. Demolition of the existing buildings would generate demolition debris. Section 5.408, Construction Waste Reduction, Disposal, and Recycling, of the California Green Building Standards Code (CALGreen section 5.408.1.1) requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse. Therefore, demolition from the Proposed Project would not adversely impact landfill capacity.

The Proposed Project would not increase student capacity or introduce a new demand to the region, rather it would continue to serve the existing and future student population at the Project Site. The Proposed Project would not increase solid waste generation in the District. Therefore, the Proposed Project would not adversely impact landfill capacity or impair attainment of solid waste reduction goals. Impacts would be less than significant and will not be further analyzed in the EIR. This topic will not be further analyzed in the EIR.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. The District currently complies with federal, state, and local statutes and regulations related to solid waste, and would continue this practice. CALGreen section 5.408, Construction Waster Reduction, Disposal, and Recycling, requires that at least 65 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse. Therefore, impacts would be less than significant and will not be further analyzed in the EIR.

3.20 WILDFIRE

Wildland fire protection in California is the responsibility of either the local government, state, or the federal government. State Responsibility Areas (SRA) are the areas in the state where the State of California has the primary financial responsibility for the prevention and suppression of wildland fires. The SRA covers a total of over 31 million acres, to which the California Department of Forestry and Fire Protection (CAL FIRE) provides a basic level of wildland fire prevention and protection services.

Local responsibility areas (LRA) include incorporated cities, cultivated agricultural lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, and

by CAL FIRE under contract to local government. CAL FIRE uses an extension of the SRA Fire Hazard Severity Zone model as the basis for evaluating fire hazard in LRAs. The local responsibility area hazard rating reflects flame and ember intrusion from adjacent wildlands and from flammable vegetation in the urban area. LACoFD currently provides fire protection and emergency medical services to Malibu. Fire Hazard Severity Zones (FHSZ) are identified by Moderate, High and Very High in an SRA, and Very High in an LRA. The Project Site is in a Very High FHSZ in an LRA (CAL FIRE 2011).

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?

Less than Significant Impact. The Malibu EOP was approved by City Council on February 2018. Implementation of the Proposed Project would not have a significant impact on implementation of the EOP, as substantiated in Section 3.9(f), *Hazards and Hazardous Materials*. Therefore, impacts would be less than significant, and this impact will not be further analyzed in the EIR.

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?

Potentially Significant Impact. The Project Site is in a Very High FHSZ in an LRA. The Project Site is situated on the southern flanks of the western portion of the Santa Monica Mountains, with elevations ranging from 86 to 180 feet above mean sea level. Therefore, there is potential for the Proposed Project to expose project occupants to pollutant concentrations from a wildfire. This impact is potentially significant and will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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?

Potentially Significant Impact. The Project Site is located in a Very High FHSZ in an LRA. The Proposed Project would require the installation and upgrade of new and existing infrastructure. Therefore, this impact is potentially significant and will be further evaluated in the EIR, and applicable mitigation measures will be identified.

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?

Potentially Significant Impact. Refer to Responses 3.7(a)(iii) and 3.10(c)(i) and (ii). This impact will be further evaluated in the EIR, and applicable mitigation measures will be identified.

3.21 MANDATORY FINDINGS OF SIGNIFICANCE

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

Potentially Significant Impact. As stated in Section 3.4, potentially significant biological impacts are anticipated because of wetlands and riparian habitats adjacent to the Project Site and the potential for rare or endangered plants or animal species within the Project Site. Additionally, implementation of the Proposed Project has the potential to impact important examples of California history or prehistory. The EIR will analyze these topics in greater detail to determine whether the Proposed Project would generate any significant impacts, and applicable mitigation measures will be identified.

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

Potentially Significant Impact. Potentially significant impacts are identified in this Initial Study related to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, recreation, transportation, tribal cultural resources, utilities and service systems, and wildfire. While impacts to geology and soils are site specific and generally do not contribute to cumulative impacts, cumulative impacts to the other resources for which potentially significant impacts are identified in this Initial Study will be addressed in the EIR. Mitigation measures will be recommended as needed.

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

Potentially Significant Impact. Development of the Proposed Project could create direct and indirect adverse effects on humans. The Proposed Project has the potential to affect human beings through impacts related to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, recreation, transportation, tribal cultural resources, utilities and service systems, and wildfire. The significance of these potential impacts will be analyzed in the EIR, and applicable mitigation measures will be identified.

d) Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term goals?

Potentially Significant Impact. The Proposed Project addresses both short-term and long-term environmental goals. The Proposed Project has the potential to achieve short-term environmental goals to the

disadvantage of long-term goals through impacts related to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, public services, recreation, transportation, tribal cultural resources, utilities and service systems, and wildfire. The significance of these potential impacts will be analyzed in the EIR, and applicable mitigation measures will be identified.

3. Environmental Analysis

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4. References

Airnav, LLC. 2020. Airport Information. http://www.airnav.com/airports

Atkins. 2011, July. Santa Monica–Malibu Unified School District Malibu Middle And High School Campus Improvement Project Environmental Impact Report.

California, State of. n.d. sections 38130 et seq. *Education Code*.

California Air Resources Board (CARB). 2008, October. Climate Change Proposed Scoping Plan: A Framework for Change.

———. 2018, June 12 (updated). Air Quality Standards and Area Designations. http://www.arb.ca.gov/desig/desig.htm.

California Department of Conservation (DOC). 2016. California Important Farmland Finder (CIFF). Accessed January 21, 2020. https://maps.conservation.ca.gov/dlrp/ciff/.

California Department of Conservation (DOC), Division of Mines and Geology. 1994. Generalized Mineral Land Classification Map of Los Angeles County – South Half Aggregate Resources Only. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/OFR_94-14/.

California Department of Fish and Wildlife (CDFW). April 2019. California Regional Conservation Plans. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline.

———. 2020. CNDDB QuickView Tool. https://apps.wildlife.ca.gov/bios/?tool=cnddbQuick.

California Department of Forestry and Fire Protection (CAL FIRE). 2011, September. Very High Fire Hazard Severity Zones in LRA. https://osfm.fire.ca.gov/media/5831/malibu.pdf.

California Department of Transportation (Caltrans). 2019. List of eligible and officially designated State Scenic Highways. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways.

California Department of Water Resources – Division of Safety of Dams (DSOD). 2020. California Dam Breach Inundation Maps. https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2

California Energy Commission (CEC). 2018, March. 2019 Building Energy Efficiency Standards. https://ww2.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

4. References

California Geological Survey (CGS). 2002. Earthquake Zones of Required Investigation Point Dume Quadrangle. https://gmw.conservation.ca.gov/SHP/EZRIM/Maps/POINT_DUME_EZRIM.pdf.

———. 2020, January 18. Data Viewer. https://maps.conservation.ca.gov/geologichazards/DataViewer/index.html.

California Governor's Office of Emergency Services (CAL EOS). 2009, March 1. Tsunami Inundation Map For Emergency Planning – Point Dume Quadrangle. https://www.conservation.ca.gov/cgs/documents/tsunami/maps/Tsunami_Inundation_PointDume_Quad_LosAngeles.pdf

Carlberg, CY. 2009, October 10. Malibu High School-Tree Report.

Department of Water Resources (DWR). 2016, December 22. Bulletin 118 Interim Update 2016. https://water.ca.gov/LegacyFiles/groundwater/bulletin118/docs/Bulletin_118_Interim_Update_2016.pdf

Federal Emergency Management Agency (FEMA). 2008, September 26. FEMA Flood Map Service Center: Search By Address. https://msc.fema.gov/portal/search?AddressQuery=30215%20Morning%20View%20Dr%2C%20Malibu%2C%20CA%2090265#searchresultsanchor

Glenn Lukos Associates (GLA). 2009, December. Biological Assessment Malibu Middle And High School Campus Improvements Project City Of Malibu, Los Angeles County, California

Malibu, City of. 1995, November. City of Malibu General Plan. https://qcode.us/codes/malibu-general-plan/misc/malibu-general-plan.pdf.

———. 2001, December. Local Coastal Program - City of Malibu Public Access Map. https://www.malibucity.org/DocumentCenter/View/4420/LCP-Maps?bidId=.

———. 2002, September 13. Local Coastal Program - City of Malibu. http://qcode.us/codes/malibu-coastal/.

———. 2016, April 11. City of Malibu General Plan Figure OS-2 Malibu/Santa Monica Mountains Area Trail System. https://www.malibucity.org/DocumentCenter/View/12785/Proposed-General-Plan-Figure-OS-2---2016?bidId=.

———. 2018. Emergency Operations Plan. https://www.malibucity.org/DocumentCenter/View/68/Emergency-Operations-Plan?bidId=.

Los Angeles County Airport Land Use Commission (ALUC). 2003, May 13. Airport Influence Area. http://planning.lacounty.gov/assets/upl/project/aluc_airport-santa-monica.pdf

4. References

Natural History Museum of Los Angeles County. 2008, August 7. Vertebrate Paleontology Records Check for paleontological resources for the proposed Malibu High School redevelopment Project, in the City of Malibu, Los Angeles County, project area.

Petra Paleontology. 1999, August 4. Paleontological Resource Assessment Malibu High School.

Santa Monica-Malibu Unified School District. 2018, February. Comprehensive School Safety Plan. https://www.smmusd.org/cms/lib/CA50000164/Centricity/Shared/SchoolSafetyPlan.pdf

Southern California Association of Governments (SCAG). 2016, April 7. Final 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. Accessed June 3, 2019. http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx.

South Coast Air Quality Management District (SCAQMD). 1993. California Environmental Quality Act Air Quality Handbook.

———. 2017, March 4. Final 2016 Air Quality Management Plan. https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15.

State Water Resources Control Board (SWRCB). 2020. GeoTracker. http://geotracker.waterboards.ca.gov/.

U.S. Fish and Wildlife Service (FWS) 2018. National Wetlands Inventory. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

4. References

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5. List of Preparers

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Appendix C IS/NOP Comments

Appendices

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From: Linda Gould
To: Upton, Carey; Miller, Patrina
Cc: Malibure@aol.com
Subject: Malibu High School Parking Lot in Malibu Park
Date: Sunday, September 20, 2020 8:42:59 AM

I reside at 5815 Clover Heights, in Malibu Park, and have since 1977.
Clover Heights is on a cul de sac with blind curves and no speed bumps or sidewalks. Families with children reside on Clover Heights. Equestrians use the street. It is a quiet residential community where families take their kids for bike rides, toddlers in strollers, joggers, dog walkers. As a long time resident I have seen car accidents along the twisty blinding Busch Drive and Harvester Road.

The community should not be burdened by the thought of adding parking on Clover Heights for the school's sport field usage. We have seen what happens on Clover Heights when activities take place. Disrespect for parking signs, blocking driveways, garbage left, kids and parents in a hurry to get to and from games.

Woolsey fire has left barron hillside causing flooding during heavy rain storms.

The school should consider subterranean parking on Morningview for the proposed project.

thank you

From: malibure@aol.com
To: Massetti, Steve; Miller, Patrick; Upton, Carey
Subject: from terry lucoff
Date: Tuesday, September 8, 2020 5:20:43 PM

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at this time i believe every one of my neighbors on clover heights has written to you to delete the proposed parking lot on clover heights

additionally it looks like my letter was ciruclated by my neighbors and people on Harvester, Busch, Deerhead and other Malibu Streets have written to you opposing the parking lot.

If the parking lot came in front of the Malibu Planning Commission or Malibu City Counsel I am sure many residents, walkers and horse people would speak against the plan to build a parking lot that requires driving on narrow and curvy limited line of site Malibu Streets that do not have sidewalks

Thank you for deleting the parking lot aspect of your high school building proposal

BEST REGARDS
TERRY LUCOFF

From: judith guillemot
To: Upton, Carey; Miller, Patrina
Cc: Maliburee@aol.com
Subject: Fwd: PARKING LETTER - COMPLETED! LOOKS GREAT - LET ME KNOW IF YOU WANT ME TO SEND FROM DG MAIL ?
Date: Tuesday, September 8, 2020 12:48:16 PM

PETITION TO STOP PROPOSED CONSTRUCTION OF SANTA MONICA MALIBU HIGH SCHOOL PARKING LOT IN MALIBU PARK

We are long time residents of Malibu Park. Our address is 5940 Clover Heights Avenue. We are the last property adjacent to the athletic fields at Malibu High at the end of the cul de sac.

We are writing to express our strong opposition to the proposed Parking Lot F - directly across the street from our house. For the following reasons, we believe the School Board should take off Lot F as a proposed additional parking area in their Campus Specific Plan and Local Coastal Amendment Project.

Ecologically, Malibu Park is only now finally showing some kinds of recovery since the Woolsey Fire. The hawks and the owls have found their way back to our neighborhood. One owl has even established her night quarters in the eucalyptus trees along Clover Heights adjacent to the property Lot F. Along with the coyotes these hawks and owls are helping to eradicate the rodents (gophers, rats, mice, rabbits, squirrels) who have invaded since the fire. We are desperate to have this natural and healthy equilibrium back to our area. The natural habitat is finding its balance. Increased traffic, noise and lighting will suffocate this recovery.

Safety wise, increased traffic of people loitering around the parking area will increase crime and trash. Already in the last number of years Malibu Park has suffered from a surge of thefts. Our street alone had two attempted break ins this month. As well, we often have to pick up trash and alcohol bottles left behind.

Malibu Park has suffered enough. Overdevelopment of an unattended parking lot creates a liability for Malibu High as well as for the safety of the surrounding neighbors. There are approximately 40 street parking spaces available for use on the street as it is now for the days of the sporting events which is most likely no more than 50 days per year. It makes no sense. The proposed parking lot of 14 spaces which would require lights and maintenance etc makes no sense when there are already approximately 40 spots available on the street as is currently.

Clover Heights Ave is a quiet and safe street. It is narrow, and on a downgrade and there are no sidewalks. Every day neighbors and kids come down Clover Heights Ave. with their horses, on their skateboards, on foot, on bikes, with their dogs. As well, kids are walking to and from school up and down the street.
The addition of increased traffic will create a very unsafe environment for the pedestrians and neighborhood. As well, the street regularly floods even in a mild rain. More incoming and outgoing traffic does not make sense.

Furthermore, it is our understanding that the population of Malibu High is drastically declining. Why then is there a need to build more parking in a residential area for a declining school population? Isn't there a more urgent need elsewhere to spend the funds allocated?

Additionally, Malibu Park already lost the battle with the football lights which were installed in the field a number of years ago. These are now defunct as there are no more football games at Malibu High. Millions of dollars were spent and now it exists solely as an eyesore for the entire neighborhood. Additional night time lighting in a residential neighborhood would be a travesty and in conflict of the the intent of the Malibu Dark Sky ordinance.

Lastly, as autonomous vehicles will be commonplace in only a matter of years, urban planners are already considering the ways in which they are remaking cities. Parking lots for example will be reduced in size. Less people will be parking and for the cars that are self driving, they will require less space than traditional lots (cars can park closer together). In Boston, a recent study by the World Economic Forum has found that self driving vehicles will require about half the city's current parking. The future for all of our cities will be similar. Less cars

and less parking lots. Malibu needs to modernize and this requires foresight and research and most importantly protection of our neighborhoods which are the heart of Malibu.

Following through with the construction of this superfluous additional parking lot - "Parking Lot F “ is a dated and financially irresponsible, it is a danger to the ecosystem, and a severe safety hazard., as well as a liability for Malibu High School and headache for the Malibu Park neighborhood.

PLEASE DO WHAT IS RIGHT FOR THE COMMUNITY OF MALIBU PARK AND DO NOT BUILD THIS PARKING LOT.

Thank you for considering the voices of the community.

Respectfully yours,

Judith and Dominick Guillemot
5940 Clover Heights Ave.
Malibu CA 90265
judeguillemot@gmail.com
dg@dominickphoto.com

From: Peter C Jones
To: Upton, Carey
Subject: Opposition To Malibu Parking Lot F
Date: Wednesday, September 9, 2020 4:04:38 PM

Ladies and Gentlemen:

I write in the strongest possible opposition to the construction of Parking Lot-F on Clover Heights Avenue.

My family lives at the intersection of Clover Heights and Harvester.

We will be directly and adversely impacted by new traffic patterns that will irreparably damage our tranquil community.

And by the proposed parking lot's ecological damage, created by pouring massive amounts of macadam on top our community's steadily shrinking greenspace.

Lighting the parking lot will be a violation of Malibu's Night Sky Ordinance which preserves the environment for owls and other night creatures.

Although not as grotesque as the despised football tower lights, the illuminated the parking lot will, unquestionably, be absolutely hideous.

For what?

As published in *The Malibu Times*, The United States Census is reporting that Malibu's population has declined by more than 60%.

Malibu High School is widely renowned for its rapidly declining enrollment.

Even without Covid-19, Malibu High School cannot even yield a football team.

Malibu taxpayers approved a bond to refurbish the existing school.

We did not raise our taxes to build a completely unnecessary parking lot for sporting events that will never be played.

Sincerely,

Peter C. Jones
peter@petercjonesinc.com
Mobile: 646-321-4448

From: Danelle Rondberg
To: Upton, Carey; Miller, Patrina
Cc: Maliburee@aol.com
Subject: PETITION TO STOP PROPOSE CONSTRUCTION OF PARKING LOT F
Date: Tuesday, September 8, 2020 5:01:51 PM

To Whom it may Concern:

My name is Danelle Rondberg and I am a Santa Monica resident who works in Malibu and spends a lot of time in Malibu Park. I often walk the trails adjacent to Malibu High School. When I heard about the ridiculous proposal to create a parking lot at the end of Clover Heights Avenue, where I have spent a lot of time, I wanted to expressly share my opposition to the proposed PARKING LOT F

I believe the school board should delete the proposal to add PARKING LOT F to its agenda. My reasons include the following points:

Ecologically, Malibu Park is only now finally showing some kinds of recovery since the Woolsey Fire. The hawks and the owls have found their way back to our neighborhood. One owl has even established her night quarters in the eucalyptus trees along Clover Heights adjacent to the property Lot F. Along with the coyotes these hawks and owls are helping to eradicate the rodents (gophers, rats, mice, rabbits, squirrels) who have invaded since the fire. We are desperate to have this natural and healthy equilibrium back to our area. The natural habitat is finding its balance. Increased traffic, noise and lighting will suffocate this recovery.

Safety wise, increased traffic of people loitering around the parking area will increase crime and trash. Already in the last number of years Malibu Park has suffered from a surge of thefts. Our street alone had two attempted break ins this month. As well, we often have to pick up trash and alcohol bottles left behind.

Malibu Park has suffered enough. Overdevelopment of an unattended parking lot creates a liability for Malibu High as well as for the safety of the surrounding neighbors. There are approximately 40 street parking spaces available for use on the street as it is now for the days of the sporting events which is most likely no more than 50 days per year. It makes no sense. The proposed parking lot of 14 spaces which would require lights and maintenance etc makes no sense when there are already approximately 40 spots available on the street as is currently.

Clover Heights Ave is a quiet and safe street. It is narrow, and on a downgrade and there are no sidewalks. Every day neighbors and kids come down Clover Heights Ave. with their horses, on their skateboards, on foot, on bikes, with their dogs. As well, kids are walking to and from school up and down the street.
The addition of increased traffic will create a very unsafe environment for the pedestrians and neighborhood. As well, the street regularly floods even in a mild rain. More incoming and outgoing traffic does not make sense.

Furthermore, it is our understanding that the population of Malibu High is drastically declining. Why then is there a need to build more parking in a residential area for a declining school population? Isn't there a more urgent need elsewhere to spend the funds allocated?

Additionally, Malibu Park already lost the battle with the football lights which were installed in the field a number of years ago. These are now defunct as there are no more football games at Malibu High. Millions of dollars were spent and now it exists solely as an eyesore for the entire neighborhood. Additional night time lighting in a residential neighborhood would be a travesty and in conflict of the the intent of the Malibu Dark Sky ordinance.

Lastly, as autonomous vehicles will be commonplace in only a matter of years, urban planners are already considering the ways in which they are remaking cities. Parking lots for example will be reduced in size. Less people will be parking and for the cars that are self driving, they will require less space than traditional lots (cars can park closer together). In Boston, a recent study by the World Economic Forum has found that self driving vehicles will require about half the city's current parking. The future for all of our cities will be similar. Less cars

and less parking lots. Malibu needs to modernize and this requires foresight and research and most importantly protection of our neighborhoods which are the heart of Malibu.

Following through with the construction of this superfluous additional parking lot - "Parking Lot F “ is a dated and financially irresponsible, it is a danger to the ecosystem, and a severe safety hazard., as well as a liability for Malibu High School and headache for the Malibu Park neighborhood.

PLEASE DO WHAT IS RIGHT FOR THE COMMUNITY OF MALIBU PARK AND DO NOT BUILD THIS PARKING LOT.

Thank you for considering the voices of the community.

Danelle Rondberg
danellerondberg@mac.com
2035 4th Street #301C
Santa Monica, CA 90405

From:	Charlotte Frieze
To:	Upton, Carey; Miller, Patrina
Cc:	Maliburee@aol.com
Subject:	PETITION TO STOP PROPOSED CONSTRUCTION OF SANTA MONICA MALIBU HIGH SCHOOL PARKING LOT IN MALIBU PARK
Date:	Wednesday, September 9, 2020 4:30:15 PM

Dear Mr. Upton,

I WRITE IN OPPOSITION TO THE PROPOSED 14-SPACE PARKING LOT-F ACCESSED FROM CLOVER HEIGHTS AVENUE.

We have been homeowners at the junction of Harvester Road and Clover Heights Avenue in Malibu since 2012. We moved to Malibu Park for its natural setting and quiet neighborhood. We will be directly and adversely impacted by the new traffic patterns created by this parking lot.

The construction of Parking Lot-F will irreparably damage our tranquil community.

Since the Woolsey Fire we have been striving to rebuild our homes and our community. If the proposed parking lot is constructed, we will lose all that we have tried so hard to regain over the past twenty-two months.

Malibu Park is home to many wild animals. The hawks and owls have started to return. This spring a family of five owls occupied the owl box on our sole remaining eucalyptus tree.

We neighbors in Malibu Park are striving to encourage the return of a strong ecosystem - a healthy, natural, pesticide-free equilibrium. Together with the coyotes that run through our neighborhood, the owls and hawks help to limit the gopher, rat and rabbit populations.

The natural habitat is just beginning to find its balance.

The increased traffic, noise and lighting would shatter this recovery.

An unattended, upper parking lot that would abutt our quiet, residential neighborhood would be an attractive nuisance and a magnet for crime.

Night illumination would shatter the nighttime sky and the light standards destroy homeowners' views. The potential is great for rodent-attracting trash, alcohol/drug abuse and noise.

Ours is a family neighborhood.

Clover Heights is used every day by people of all ages. It is a safe place for the elderly to take their obligatory one-mile walks; for horseback riders to come down en route to the Equestrian Center. Children play on skateboards, bikes and on foot with their dogs creating a happy neighborhood environment.

As there are no sidewalks and the street is very narrow on a downhill grade, an

increase in traffic will inevitably cause accidents and, potentially, serious injuries.

Malibu's population is in deep decline.

Enrollment at the MMHS campus has been falling for over a decade and is less than half of what it was 20 years ago. The high school cannot even yield a football team.

The plan to place an additional 14-space parking lot in the field above the softball field with an entrance on Clover Heights is ill conceived and destructive to the neighborhood fabric.

I emphatically request you remove Parking Lot-F from your proposed plan.

Sincerely,

Charlotte Frieze Jones

Harvester Road

Malibu, CA

From:	Robert Brinkmann
To:	Miller, Patrina
Cc:	Upton, Carey
Subject:	Please don"t pave over paradise...
Date:	Wednesday, September 9, 2020 1:12:24 PM

Dear Mr. Miller and Mr. Upton,

I am writing to you as a neighbor of Malibu High, who is opposed to the proposed new parking lot on Clover Heights. Though our property is on Filaree Heights, it abuts the field between Clover and Filaree where the parking lot would be built. My concern is, that a dedicated parking lot would increase the traffic through an otherwise isolated residential neighborhood. In fact, the parking lot “destination” would alter the character of Clover Heights from a cul-de-sac to more of a regular traffic street, something I imagine the Clover Heights residents can’t be happy about.

It is not only Clover Heights resident, however, who will be affected. Our property overlooks Clover Heights and the field where the parking lot would be built, so the traffic would also affect us. The lighting, fencing and other infrastructure necessary to integrate the parking lot into the school property would severely impact the views and rural character of the area and place our yard in view of the parking lot and the parking lot in full view of our yard. (Have you ever heard of or seen a "beautiful" parking lot?)

We have no issue sharing our beautiful neighborhood with the school - in fact, we moved there because of it - however, our goal is a harmonious co-existence in which both neighbors and school give up a little to allow the other enjoyment of their property. I don’t think a parking lot would alleviate the parking, which is already happening on Clover Heights. Quite the opposite, it would formalize the idea of parking there and lead to more parking in the new spaces and on the street. The walkways, lights, trash cans and fences would destroy the natural beauty of the area - literally paving paradise and putting up a parking lot as the song lyrics suggest.

I sincerely hope that you will reconsider your plans and accommodate the community you not only share your space with but also serve. I consider myself a supporter of the school but also of the increasingly rare rural character of our community.

Sincerely,

Robert Brinkmann
5940 Filaree Heights
Malibu

Director of Photography

http://robertbrinkmann.com/
+1 (213) 718-5555

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

I am a resident of Malibu Park and live at 29711 Harvester Rd

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

1. A parking lot at the back of Malibu High School will bring additional traffic to many Malibu Park streets. This will impact traffic on Merritt, Busch, Harvester and Clover Heights. The Harvester roadway between Busch has a dangerous turn where cars often go over the non existent center yellow line and the roadway has heavy vegetation. There are no sidewalks and walkers, horses and dogs are often in the Roadway.

2. The high school has an access gate on Clover Heights for Students walking to school. There are no sidewalks on Clover Heights and for years children have walked in groups down the center of the road. to school. With additional motor vehicle traffic on Clover Heights it would not be safe for the students to walk to school without sidewalks.

3. The parking lot is in violation of the Coastal Commission permit for the school fields in 1990. The school has diverted the topography of a marked blue line stream to the West side of the school property and the Coastal Commission passed specific landscaping protocol which the school has ignored. The blue line stream was to be maintained and the property was to remain unaltered and planted in native wildflower vegetation. The school graded and altered water flow which has resulted in flooding on Clover Heights, the proposed parking area and the flooding of the school grounds The temporary mitigation by k rail on Clover Heights and around the school fields should only be considered an emergency measure to mitigate the poorly designed school drainage.

4. The building of a parking lot would need to meet state school regulations and be lighted. The school would be lighted up from the front on Morning View to Clover Heights and this extensive lighting on the school campus would be observable throughout Malibu Park at night. This kind of lighting would be in conflict with the intent of the Malibu Dark Skies ordinance

5. There is a riding trail from the Equestrian Center in the back of the school to Clover Heights and the Malibu Park neighborhood uses Clover Heights to access this trail to and from

the Equestrian Center. A parking lot in this location on Clover Heights would make the path to the trail much more dangerous for local Malibu Park Horse people to access the Equestrian Center

7. There is no parking on Clover Heights to facilitate emergency equipment to the back of the high school for serious injuries on the sports fields. The field itself is used to airlift sever injuries to the hospital. Clover Heights has also been used for open area emergency access to the field when Malibu Park residents have suffered a heart attack or other serious injury to Valley or UCLA medical facilities. Adding traffic and parking in this area would impact local Malibu first responder
emergency services.

8. A parking lot on Clover Heights would make it necessary for the School to provide additional security in an location the school does not currently have security personnel and not currently regularly monitored by limited High School Security. In the past the area behind the school has been an area of graffiti on the drain walls, trash not collected and the use of alcohol. A parking lot that is not monitored by security cameras and trash pick up would be problematic for all of our area residents. The school has never gone off campus to monitored traffic
from their school events or pick up trash in neighborhoods surrounding the campus.

9. Limiting the parking to 17 or 20 cars is not a valid solution for any kind of traffic mitigation, Malibu Residents have all seen what has happened with the overflow parking at our local pocketbeaches. When the lot is full the cars just park anywhere they can find a space. Limited parking spots does not control either the amount of cars parking at the back of the school or the traffic in Malibu
Park. The assertion that the space will be limited doesn't limit the parking at the rear of the school at all. We cant expect people who have driven to that location and find the parking lot full to then turn around
and try and find parking at the bigger parking lots elsewhere by the front of the school. It is reasonable to assume people will park where they can and the sheriffs will have to be used to monitor parking.

10 Clover Heights is a down slope street to the cul de sac behind the school and traffic drives extremely fast on this street making it very dangerous to walkers and traffic coming from the circle at the end. Additional traffic on Clover Heights would need speed bumps and extensive monitoring. It a irresponsible and dangerous decision for the school to put a parking area behind the school

For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME Alan Baron

ADDRESS 29711 Harvester Rd. Malibu, 90265

EMAIL aljoe@mac.com

From:	Katharine Marinaro
To:	Upton, Carey
Subject:	Additional parking off of CLOVER HEIGHTS.
Date:	Monday, August 24, 2020 1:18:48 PM

Hello,

I hope this email finds you well.

I am extremely concerned with the additional parking structure planned on Clover Heights. It is a bit confusing and I am asking for your clarification on the matter. Some residents seem to think this will not be built while others say it is in the plan to do so.

As a neighbor in the Malibu Park community for 23 years, I am deeply saddened to see potentially more traffic coming up and down Busch Drive. All three of my children are graduates of Malibu High School. We survived the parking situation just fine, albeit a bit of traffic but managed for 15 years. I am curious to know why putting in a new parking structure makes any sense at a time when enrollment is declining. Also, the new parking lot must be providing ample parking now.
The amount of traffic going up and down Busch is staggering. Not only from the rebuilds, but it is not a safe road anymore.
The dangerous cement and construction trucks speeding up and down every minute (I have on tape the activity going up and down) it is crazy.
We also have six rehabs scattered through out the MP area. With over 20 employees per rehab working out of these treatment centers, this puts 120 more cars on the roads daily in our area. You can't even ride a bike or walk safely here anymore.
The cars speeding is out of control and something I am dealing with as we speak with the City and the Public safety department.

Thank you for your time and I look forward to hearing back from you.

Katharine Marinaro
malibuvibes@gmail.com

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

I am a resident of Malibu Park and live at _____

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

1. A parking lot at the back of Malibu High School will bring additional traffic to many Malibu Park streets. This will impact traffic on Merritt, Busch, Harvester and Clover Heights. The Harvester roadway between Busch has a dangerous turn where cars often go over the non existent center yellow line and the roadway has heavy vegetation. There are no sidewalks and walkers, horses and dogs are often in the Roadway.

2. The high school has an access gate on Clover Heights for Students walking to school. There are no sidewalks on Clover Heights and for years children have walked in groups down the center of the road. to school. With additional motor vehicle traffic on Clover Heights it would not be safe for the students to walk to school without sidewalks.

3. The parking lot is in violation of the Coastal Commission permit for the school fields in 1990. The school has diverted the topography of a marked blue line stream to the West side of the school property and the Coastal Commission passed specific landscaping protocol which the school has ignored. The blue line stream was to be maintained and the property was to remain unaltered and planted in native wildflower vegetation. The school graded and altered water flow which has resulted in flooding on Clover Heights, the proposed parking area and the flooding of the school grounds The temporary mitigation by k rail on Clover Heights and around the school fields should only be considered an emergency measure to mitigate the poorly designed school drainage.

4. The building of a parking lot would need to meet state school regulations and be lighted. The school would be lighted up from the front on Morning View to Clover Heights and this extensive lighting on the school campus would be observable throughout Malibu Park at night. This kind of lighting would be in conflict with the intent of the Malibu Dark Skies ordinance

5. There is a riding trail from the Equestrian Center in the back of the school to Clover Heights and the Malibu Park neighborhood uses Clover Heights to access this trail to and from

the Equestrian Center. A parking lot in this location on Clover Heights would make the path to the trail much more dangerous for local Malibu Park Horse people to access the Equestrian Center

7. There is no parking on Clover Heights to facilitate emergency equipment to the back of the high school for serious injuries on the sports fields. The field itself is used to airlift sever injuries to the hospital. Clover Heights has also been used for open area emergency access to the field when Malibu Park residents have suffered a heart attack or other serious injury to Valley or UCLA medical facilities. Adding traffic and parking in this area would impact local Malibu first responder
emergency services.

8. A parking lot on Clover Heights would make it necessary for the School to provide additional security in an location the school does not currently have security personnel and not currently regularly monitored by limited High School Security. In the past the area behind the school has been an area of graffiti on the drain walls, trash not collected and the use of alcohol. A parking lot that is not monitored by security cameras and trash pick up would be problematic for all of our area residents. The school has never gone off campus to monitored traffic
from their school events or pick up trash in neighborhoods surrounding the campus.

9. Limiting the parking to 17 or 20 cars is not a valid solution for any kind of traffic mitigation, Malibu Residents have all seen what has happened with the overflow parking at our local pocketbeaches. When the lot is full the cars just park anywhere they can find a space. Limited parking spots does not control either the amount of cars parking at the back of the school or the traffic in Malibu
Park. The assertion that the space will be limited doesn't limit the parking at the rear of the school at all. We cant expect people who have driven to that location and find the parking lot full to then turn around
and try and find parking at the bigger parking lots elsewhere by the front of the school. It is reasonable to assume people will park where they can and the sheriffs will have to be used to monitor parking.

10 Clover Heights is a down slope street to the cul de sac behind the school and traffic drives extremely fast on this street making it very dangerous to walkers and traffic coming from the circle at the end. Additional traffic on Clover Heights would need speed bumps and extensive monitoring. It a irresponsible and dangerous decision for the school to put a parking area behind the school

For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME Brian Merick

ADDRESS 29245 Sea Lion Pl. Malibu CA 90265

EMAIL Merdog68@gmail.com

Mr. Cary Upton
School Facilities Manager
CUpton@smmusd.org

Re: Parking lot on Clover Heights

September 4, 2020

I live at 29840 Harvester Road, Malibu, California. I have been a resident of Malibu Park for twenty years. We lost our home and most of the homes in our neighborhood in the Woolsey Fire. Residents have started to rebuild but it will take time regain what was lost.
Please don't allow our neighborhood to lose its character by building another parking lot.

I am **OPPOSED** to putting in a parking lot behind the softball fields at the end of Clover Heights for the following reasons:

1. **SAFETY** A parking lot will bring additional traffic to many Malibu Park streets near the school. There are presently no sidewalks and having more cars in the neighborhood, especially on Clover Heights will make it more dangerous for children and adults walking to and from school. Clover Heights is a down slope street to the cul de sac behind the school and I have witnessed drivers going very fast downhill at this location.

2. **LIGHTS-** A parking lot would need to be lighted to meet state school regulations and this lighting would be in conflict with the Malibu Dark Skies Ordinance.
(Three lighted parking lots above Morning View were built right before the fire and the lighting from all of these parking lots will change the character of the neighborhood).

3. **EQUESTRIAN USE OF TRAIL AT END OF CLOVER HEIGHTS-**
There is a riding trail at the end of Clover Heights and putting in a parking lot at this location would make the path more dangerous for local Malibu Park horse people to access the Equestrian Center on their horses.

4. **LIMITING SPACES**- just because there are a few spaces doesn't mean that parking will be limited. When the available spaces are gone in the parking lot, people will park wherever they can; in front of people's houses, on the street and in the cul de sac.

5. **VIOLATION OF COASTAL COMMISSION PERMIT-** this parking lot is in violation of the 1990 Coastal Commission permit for the school field. . The school has diverted the topography of a marked blue line stream to the West side of the school property and the school has ignored landscaping protocol which was specifically passed by the Coastal Commission. The school graded and altered water flow which resulted in flooding on Clover Heights, the proposed parking area and the flooding of school grounds. The temporary mitigation by k rail on Clover Heights should only be considered an emergency measure to mitigate the poorly designed school drainage.

Kenneth Gable
29840 Harvester Road
Malibu, California

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

I am a resident of Malibu Park and live at 5901 Clover Heights

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

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4. The building of a parking lot would need to meet state school regulations and be lighted. The school would be lighted up from the front on Morning View to Clover Heights and this extensive lighting on the school campus would be observable throughout Malibu Park at night. This kind of lighting would be in conflict with the intent of the Malibu Dark Skies ordinance

5. There is a riding trail from the Equestrian Center in the back of the school to Clover Heights and the Malibu Park neighborhood uses Clover Heights to access this trail to and from

the Equestrian Center. A parking lot in this location on Clover Heights would make the path to the trail much more dangerous for local Malibu Park Horse people to access the Equestrian Center

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and try and find parking at the bigger parking lots elsewhere by the front of the school. It is reasonable to assume people will park where they can and the sheriffs will have to be used to monitor parking.

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For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME JAMES LIPPERT

ADDRESS 5901 CLOVER HEIGHTS MALIBU 90265

EMAIL CLUBCOLLECTORGOLF@YAHOO.COM

From:	J. L.
To:	Upton, Carey
Cc:	mpierson@malibucity.org; speak@malibucity.org; KFarrer@malibucity.org; rmullen@malibucity.org; JWagner@malibucity.org
Subject:	Malibu High School - 4 Story Additions
Date:	Sunday, August 23, 2020 11:03:17 AM

Cary,

I am a lifelong Malibu resident (48 years) and attended Malibu High School, it was Malibu Park Junior High at the time. I also attended Juan Cabrillo and Point Dume Elementary. I have seen the drastic changes to Malibu through the years and in my opinion it has not been a benefit to our community.
The addition of (2) 35+ feet tall buildings and a parking lot to Malibu High is another step in the wrong direction. Besides being well above the allowed height of the current building code, this construction will defy the Dark Sky ordinance and produce undue vehicular traffic to the Malibu Park community.
We need to go back to the days when Malibu was community, not a city. I strongly oppose the proposed additions to the school and believe this ill conceived plan needs to be reevaluated.

Thank You,
Jason LaBerge

From: Kelly Meyer
To: Upton, Carey; Miller, Patrina; Malibure@aol.com
Cc: SPeak@malibucity.org; MPierson@malibucity.org; JWagner@malibucity.org; KFarrer@malibucity.org; RMullen@malibucity.org
Subject: Malibu High-school Parking Lot -
Date: Wednesday, September 2, 2020 3:59:19 PM

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project.

September 1, 2020

I am a resident of Malibu Park and live at 5920 Clover Heights Ave.

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons and concerns. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

1. A parking lot at the back of Malibu High School will bring additional traffic to many Malibu Park streets. This will impact traffic on Merrit, Busch, Harvester and Clover Heights. The Harvester roadway between Busch has a dangerous turn where cars often go over the non-existent center yellow line and the roadway has heavy vegetation. There are no sidewalks and walker, horses and dogs are often in the Roadway.

2. The high school has an access gate on Clover Heights for Students walking to school. There are no sidewalks on Clover Heights and for years children have walked in groups down the center of the road to school. With additional motor vehicle traffic on Clover Heights it would not be safe for the students to walk to school without sidewalks.

3. The parking lot is in violation of the Coastal Commission permit for the school fields in 1990. The School has diverted the topography of a marked blue line stream to the West side of the school property and the Coast Commission passed specific landscaping protocol which the school has ignored. The blue line stream was to be maintained and the property was to remain unaltered and planted in native wildflower vegetation. The school graded and altered water flow which has resulted in flooding on Clover Heights, the proposed parking area and the flooding of the school grounds the temporary mitigation by K rail on Clover Heights and around the school fields should only be considered an emergency measure to mitigate the poorly designed school drainage.

4. The building of a parking lot would need to meet state regulations and be lighted. The school would be lighted up from the front on Morning View to Clover Heights and this extensive lighting on the school campus would be observable throughout Malibu Park at night. This kind of lighting would be in conflict with the intent of the Malibu Dark Skies ordinance.

5. There is a riding trail from the Equestrian Center in the back of the school to Clover Heights and the Malibu Park neighborhood uses Clover Heights to access this trail to and from the Equestrian Center. A parking lot in this location on Clover Heights would make the path to the trail much more dangerous for local Malibu Park Horse people to access the Equestrian Center.

6. There is no parking on Clover Heights to facilitate emergency equipment to the back of the high school for serious injuries on the sports fields. The field itself is used to airlift sever injuries to the hospital. Clover Heights has also been used for open emergency access to the field when Malibu Park residents have suffered a heart attack or other serious injury to Valley or UCLA medical facilities. Adding traffic and parking in this area would impact local Malibu first responder emergency services.

7. A parking lot on Clover Heights would make it necessary for the School to provide additional security in an location the school does not currently have security personnel and not currently regularly monitored by limited High School Security. In the past the area behind the school has been as area of graffiti on the drain walls, trash not collected and the use of alcohol. A parking lot that is not monitored by security cameras and trash pick-up would be problematic for all of our area residents. The school has never gone off campus to monitored traffic from their school events or pick up trash in the neighborhoods surrounding the campus.

8. Limiting the parking to 17 or 20 cars is not a valid solution for any kind of traffic mitigation, Malibu Residents have all seen what has happened with the overflow parking at our local pocket beaches. When the lot is full the cars just park anywhere they can find a space. Limited parking spots does not control either the amount of cars parking at the back of the school or the traffic in Malibu Park. The assertion that the space will be limited doesn't limit the parking at the rear of the school at all. We cannot expect people who have driven to that location and find parking lot full to then turn around and try and find parking at the bigger lots elsewhere by the front of the school. It is reasonable to assume people will park where they can and the sheriffs will have to be used to monitor parking.

9. Clove Heights is a down slope street to the cul de sac behind the school and traffic drives extremely fast on this street making it very dangerous to walkers and traffic coming from the circle at the end. Additional traffic on Clover Heights would need speed bumps and extensive monitoring. It is irresponsible and a dangerous decision for the school to put a parking area behind the school.

For these reason I oppose the construction of a parking lot behind the school on Clover Heights.

Kelly Meyer

5920 Clover Heights Ave
Malibu CA 90265

Kelly@meyerhome.info

From: Doron Chanin
To: Upton, Carey
Subject: MMHS Campus Specific Plan
Date: Monday, August 24, 2020 12:25:11 PM

Hi My name is Doron Chanin and my property at 5942 Filaree Heights Road, Malibu is directly above the proposed parking lot plan for Malibu High School. We are adamantly against this plan as it would adversely affect our neighborhood and our specific property as it would border this proposed parking lot. There are many reason that we are against it but mostly, for noise and air pollution, our yard faces the current open space and it would diminish our living quality not to mention it would be an eye sore as well. We really hope that you would reconsider this plan and use any other space that would not directly affect our neighborhood.

Thanks

Doron Chanin

From: malibure@aol.com,
To: malibure@aol.com,
Subject: introduction to school proposal
Date: Mon, Aug 24, 2020 12:47 pm

STOP THE PROPOSED SANTA MONICA MALIBU HIGH SCHOOL PARKING LOT IN MALIBU PARK.

My name is Terry Lucoff and I am writing you as a Malibu Park neighbor to stop the proposed parking lot on Clover Heights in Malibu Park. The SMMUSD has proposed a new parking lot at the back of Malibu High that will increase traffic in Malibu Park.

I have included the entire proposal for your review and a copy of a letter I have sent the District. You can use the letter I have written and sign your name or better yet write a letter with your own reasons why the parking at the back of Malibu High will hurt our Malibu Park community. Please dont just put this to the side. This is a urgent matter and I request your attention to it today. Many of our residents have not moved back to Malibu Park yet so your voice is very important

I am asking that you contact the school facilities manager Cary Upton at

CUpton@smmusd.org

and the principal of Malibu High School, Patrick Miller at

Pmiller@smmusd.org

and copy me with your letter to be presented at the Coastal Commission and City of Malibu Planning Commission meetings

Malibure@aol.com

If you have any questions please call me at 310-924-1045.
We all need to work together to keep Malibu Park safe and rural

BEST REGARDS
TERRY LUCOFF

310 924 1045 field contact

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

I am a resident of Malibu Park and live at 5845 Clover Heights

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

1. A parking lot at the back of Malibu High School will bring additional traffic to many Malibu Park streets. This will impact traffic on Merritt, Busch, Harvester and Clover Heights. The Harvester roadway between Busch has a dangerous turn where cars often go over the non existent center yellow line and the roadway has heavy vegetation. There are no sidewalks and walkers, horses and dogs are often in the Roadway.

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For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME NILS CARSON

ADDRESS 5845 CLOVER HEIGHTS, MALIBU, CA 90265

EMAIL nilscarson@mac.com

From: Hans Laetz
To: Upton, Carey; Craig Foster
Subject: Parking Lot F - As In Whjat The F
Date: Sunday, August 23, 2020 8:35:10 AM

I am writing not as reporter, and not as a parent, but as the veteran of 20 years of neighborhood battles.

The Malibu Park homeowners have been promised for decades that Clover Heights would not be used as a school parking or drop off accessway.

Those of us who have supported the school thru all those battles made sure that overwhelming desire of residents along Harvester were assured that school traffic would not be routed up there.

The sudden appearance of an NOP that includes parking lot F has just made us liars.

While putting 14 parking spaces up there may make sense from school planning perspectives, it flies into fierce neighborhood politics.

There have been no neighborhood discussions about adding parking on Clover Heights. No city discussions. No school board discussions. All along, Clover Heights has been taken off the table as a parking or circulation access.

We school supporters have to pass a bond issue out here. Neighborhood support is crucial. Parking Lot F just cut the limb out from under us.

How did this happen?

Hans Laetz

From:	Thomas Griskey
To:	Board of Education
Cc:	Terry Lucoff; Upton, Carey; Miller, Patrina; Debra Cole
Subject:	Parking Lot on Clover Heights Avenue
Date:	Monday, August 31, 2020 11:17:38 AM

SMMUSD Representative

We have been living on Clover Heights Avenue since 1972 and we are very familiar with the neighborhood and the traffic on our street.

Clover Heights has no sidewalks and connects with the equestrian trail as well as the schools. It is common to see pedestrian foot traffic on the street such as joggers, bicyclists, dog walkers, equestrians, school children and the school's cross country runners along with families and groups of people enjoying a stroll in the neighborhood.

It has come to our attention that SMMUSD is planning on adding a parking lot on Clover Heights, which would increase automobile traffic. More automobile traffic and pedestrian traffic don't go well together.

Walking in a relatively pollution free environment has health benefits with little or no impact on the environment. Adding a parking lot will add vehicle traffic to the street and would discourage pedestrians from using it. It will be detrimental to the local environment, will expose pedestrians to automobile emissions and potential pedestrian/vehicle accidents. Driving students may use this parking lot and have very little experience in driving which may put pedestrians in danger.

Also, Clover Heights is a drainage channel for water and debris, which makes it unusable and dangerous during heavy rains.

The student enrollment has dropped considerably, so we question the need for an additional parking lot.

In summary we recommend that the proposed parking lot on Clover Heights Avenue be deleted from SMMUSD plans.

Thomas & Anne Griskey
5840 Clover Heights Avenue
Malibu, Ca. 90265

From:	bill patterson
To:	Upton, Carey; Miller, Patrina; malibure@aol.com; bdillingham@manatt.com; philippe@maisondartistela.com; sahagii@aol.com
Subject:	parking structure on Clover Heights
Date:	Wednesday, September 2, 2020 12:35:27 PM

Hello,

It has been brought to our attention that SMMHS is planning on building a parking structure at the end of Clover Heights.

As 25 year+ residents of Malibu Park we are very familiar with the school (our daughter is a graduate) and the neighborhood.

The school would not think of ever closing off the sidewalks on Morning view in front of the school. Nor would it consider narrowing Morning view. Yet that is what you are proposing for our neighborhood behind the school since we have neither sidewalks or wide roads like the ingress to Morning View off the PCH.

Do you understand we have no sidewalks on Busch , Harvester, or any of the side streets like Clover Heights? You understand people still ride and walk horses down the middle of the road every day? The neighborhood is rural and just the lack of sidewalks and street lights makes this an extremely poor idea.

We, along with many of our neighbors also walk our dogs every day on Harvester and are already at risk for being hit by cars. The only place for any pedestrian to be is literally in the road! To add more traffic and especially kids and parents hurrying to and from school will create accidents and injuries and create more stress in our already stressed
(thank you Woolsey) neighborhood.

The two blind curves on Harvester are today extremely dangerous. Busch is also a dangerous and narrow road. Often experienced drivers can barely negotiate them safely.

This will have the opposite effect of its intention and create a constant threat to the safety of the children, parents and neighbors of Malibu park. Please stop considering this very poorly thought out idea.

Happy to quote the Joni Mitchell song about "Paving Paradise and Putting up a Parking Lot", but instead If you don't believe me I invite you to walk down Harvester and Busch at peak traffic now and feel the fear of a construction worker on a rebuild hurrying home in his truck. You will be terrified.

Thank You

William Patterson
5877bDeerhead Road.

From:	Thordis Carson
To:	Upton, Carey; Miller, Patrina
Cc:	Malibure@aol.com
Subject:	Proposed parking in Malibu Park (back of Malibu High School)
Date:	Thursday, September 3, 2020 11:03:24 AM
Attachments:	Thordis Carson Letter of Opposition to school parking.pdf

Cary Upton and Patrick Miller,

Attached is a letter originally drafted by Terry Lucoff as a sign of solidarity in this matter. We are vehemently opposed to this project. We have owned this property and lived here since 1956. We are not only the oldest (in age), but also in residency on this street. We have watched this area grow and develop and for that reason, know probably better than most, the impact that this parking lot will have on our neighborhood and our street. The proposed parking area behind the high school is ridiculous for many reasons.

1 Street will not handle increased traffic.

2. Overflow parking will cause people to park on the street, which cannot handle it.

3. General Malibu Park traffic will increase and impose additional traffic problems in our whole area.

4. Pedestrian traffic will increase causing potential accidents.

5. Residence will have a difficult time with ingress and ingress from their driveways from increased traffic, both from pedestrian and auto traffic. Street is not wide enough to safely pull out of driveways to see approaching traffic.

6. Lighting on the property will interfere with our property and neighborhood.

7. The school currently has plenty of land in which to configure additional land for parking, if needed.

8. Equestrians often use this street to access the Equestrian Park. Additional traffic will cause problems for them and the drivers.

Why not use this property as an agricultural area for the children to learn how to manage and grow crops. This would fit in with the environmental message that is being espoused to our children today and would teach them respect for the land and how much we depend on it.

PLEASE, PLEASE, PLEASE, DO NOT MAKE THIS PROPERTY INTO A PARKING LOT!!!

Respectfully submitted,

Alan and Thordis Carson
5845 Clover Heights Avenue
Malibu, Ca 90265

Sent from my iPad

From:	NILS CARSON
To:	Upton, Carey; Miller, Patrina
Cc:	Malibure@aol.com
Subject:	Proposed parking in Malibu Park (back of Malibu High School)
Date:	Friday, August 28, 2020 11:14:01 AM
Attachments:	Letter opposing Parking in back of Malibu High School.pdf

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Cary Upton and Patrick Miller,

I am attaching a letter originally drafted by Terry Lucoff as a sign of solidarity in this matter. However, we too do not agree or accept your proposed project plan.

The proposed parking area behind the high school is absolutely a non-starter, my family and I have lived in this neighborhood for 63 years. We are **EXTREMELY OPPOSED!**

We know how thing progress in planning as it relates to expansion, perhaps today is one number, however, as it is convenient to expand, then tomorrow will be another. Once in play no one can promise that expansion will not happen.

So again, **NO!**

This will negatively impact our neighborhood and our quality of life in multiple ways, traffic and light to name but a few.

A new parking lot was recently constructed on the back side of the football field, add to that, infrastructure is already there and will have little if any impact to the neighboring community. It also has a single point of entry/exit helping to create a better level of security to the campus.

Respectfully,

Nils Carson

From:	STEVEN COLE
To:	Upton, Carey
Cc:	Terry Lucoff
Subject:	Proposed parking lot on Clover Height
Date:	Thursday, August 27, 2020 7:39:00 PM
Attachments:	End of Clover Hts Feb 2020.png Clover Hts. Feb 2019.png

Dear Mr Upton,

We have been homeowners on Clover Heights Avenue in Malibu since 1985. We are concerned about the proposed Malibu Middle and High School Campus Specific Plan for which we recently received notice. Fortunately details of this plan have been elucidated by neighbors and by The Malibu Times.

Specifically, we feel that the plan to place an additional 14-space parking lot in the field above the softball field with an entrance on Clover Heights is ill-conceived for a number of reasons.

Clover Heights is a narrow dead-end street with a significant downslope. There are no sidewalks. Students in the neighborhood walk to and from school on it, and track and cross country athletes run on it after school. Kids skateboard on it. Horse riders in the neighborhood ride on it to access the the trail to the Equestrian Center. All of these users of the street would be imperiled by increased automobile traffic, especially automobiles driven by high school students.

In addition, Clover Heights is one of the natural drainage channels for the Malibu Park. Water coming off the foothills flows into a culvert above Cuthbert which travels under Harvester and then empties directly onto Clover Heights. Heavy rains after the Woolsey Fire rendered the street treacherous and impassable due to debris and high volumes of water. These rains also resulted in a tremendous amount of mud and debris piled up at the end of Clover Heights. Debris and mud can also be heavy in years with heavy rain in the absence of recent fire. Please note the amount of water and mud on the street in the attached pictures from February of 2019.

Congestion at the end of Clover Heights could also encumber access by emergency vehicles which occasionally transport medical and trauma victims to the upper soccer field for helicopter airlift.

We would also be concerned about additional lighting impacting the nighttime sky in the area, and about the potential for trash, alcohol/drug use and noise in this upper parking lot which abuts a quiet residential neighborhood.

Our understanding is that enrollment at the MMHS campus has been in steady decline for over a decade and is less than half of what it was 20 years ago, which begs the question of why the SMMUSD would be would be willing to add considerable jeopardy to the Malibu Park community in exchange for a small number of parking spaces.

We sincerely hope you will reconsider this part of the proposal.

Sincerely,

Steve and Debra Cole
5906 Clover Heights
Malibu

ROAD
CLOSED
CITY OF MALIBU

From:	Hans Laetz
To:	Craig Foster; Upton, Carey
Subject:	Re: Parking Lot F - As In What The F
Date:	Sunday, August 23, 2020 3:56:00 PM

Craig, the district has just quietly dropped a CEQA NOP document that proposes a 14 spot parking lot on the north side of MHS.

1. The EIR NOP just appeared at an obscure web site. No public announcement. The district has not disclosed this concept to anyone outside the school yard.

2. A new parking and drop-off/pickup area was added to a narrow dead end street without any neighborhood consultation.

3. A decades-long planning process at Malibu High resulted in city council-approved traffic pattern that specifically did not include vehicular access to school property from Merritt, Busch or Clover Heights.

4. "Requests from Little League parents" is not consensus. These requests were not released for response from people in the neighborhood to generate response.

5. Parents who support school rebuilding and who worked for bond passage - predicated on no vehicular access anywhere other than MVD - are now being publicly accused of misleading our neighbors.

6. Jan Mees brokered an agreement between the school community and the neighbors during the lights controversy: limited use of field lights, all parking on campus, all access off MVD, dark skies compliant.

7. Construction of the lot above the football field was sold to the community as the final parking solution, and parking and access off Clover Heights or Busch/Merritt was specifically rejected.

8. As I recall, the district was sued regarding parking lots, lights and gates, and came up with a legal agreement regarding gates and restricted use. Nothing about new lots was in that agreement, which was signed off on by the city. It was reasonable to assume the district would not walk away from that, and neighbors were told the plans approved by the city council for the new parking lot would be the end of parking or access expansion.

It would be a whole lot easier to support the district, and campaign for bond issues, if stuff like this did not come up.

This “expansion in scope” goes beyond what neighbors and the city council agreed to.

This puts those of us who have publicly campaigned for school bonds in an impossible place. We have told people a yes vote would not mean a new driveway or parking lot on the north end, or more development east of the school.

H
Sent from my iPhone

> On Aug 23, 2020, at 09:23, Craig Foster <chfoster.2012@icloud.com> wrote:
>

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

I am a resident of Malibu Park and live at 29711 Harvester Rd

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

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For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME Samantha Binah

ADDRESS 29711 Harvester Rd, Malibu CA 90265

EMAIL SbinahCgmail.com

From: t.griskey@verizon.net,
To: brd@smmusd.org,
Cc: malibure@aol.com, cupton@smmusd.org, pmiller@smmusd.org, debracole50@verizon.net,
Subject: Parking Lot on Clover Heights Avenue
Date: Mon, Aug 31, 2020 11:17 am

SMMUSD Representative

We have been living on Clover Heights Avenue since 1972 and we are very familiar with the neighborhood and the traffic on our street.

Clover Heights has no sidewalks and connects with the equestrian trail as well as the schools. It is common to see pedestrian foot traffic on the street such as joggers, bicyclists, dog walkers, equestrians, school children and the school's cross country runners along with families and groups of people enjoying a stroll in the neighborhood.

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Walking in a relatively pollution free environment has health benefits with little or no impact on the environment. Adding a parking lot will add vehicle traffic to the street and would discourage pedestrians from using it. It will be detrimental to the local environment, will expose pedestrians to automobile emissions and potential pedestrian/vehicle accidents. Driving students may use this parking lot and have very little experience in driving which may put pedestrians in danger.

Also, Clover Heights is a drainage channel for water and debris, which makes it unusable and dangerous during heavy rains.

The student enrollment has dropped considerably, so we question the need for an additional parking lot.

In summary we recommend that the proposed parking lot on Clover Heights Avenue be deleted from SMMUSD plans.

Thomas & Anne Griskey
5840 Clover Heights Avenue
Malibu, Ca. 90265

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

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I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

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2. The high school has an access gate on Clover Heights for Students walking to school. There are no sidewalks on Clover Heights and for years children have walked in groups down the center of the road. to school. With additional motor vehicle traffic on Clover Heights it would not be safe for the students to walk to school without sidewalks.

3. The parking lot is in violation of the Coastal Commission permit for the school fields in 1990. The school has diverted the topography of a marked blue line stream to the West side of the school property and the Coastal Commission passed specific landscaping protocol which the school has ignored. The blue line stream was to be maintained and the property was to remain unaltered and planted in native wildflower vegetation. The school graded and altered water flow which has resulted in flooding on Clover Heights, the proposed parking area and the flooding of the school grounds The temporary mitigation by k rail on Clover Heights and around the school fields should only be considered an emergency measure to mitigate the poorly designed school drainage.

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5. There is a riding trail from the Equestrian Center in the back of the school to Clover Heights and the Malibu Park neighborhood uses Clover Heights to access this trail to and from

the Equestrian Center. A parking lot in this location on Clover Heights would make the path to the trail much more dangerous for local Malibu Park Horse people to access the Equestrian Center

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from their school events or pick up trash in neighborhoods surrounding the campus.

9. Limiting the parking to 17 or 20 cars is not a valid solution for any kind of traffic mitigation, Malibu Residents have all seen what has happened with the overflow parking at our local pocketbeaches. When the lot is full the cars just park anywhere they can find a space. Limited parking spots does not control either the amount of cars parking at the back of the school or the traffic in Malibu
Park. The assertion that the space will be limited doesn't limit the parking at the rear of the school at all. We cant expect people who have driven to that location and find the parking lot full to then turn around
and try and find parking at the bigger parking lots elsewhere by the front of the school. It is reasonable to assume people will park where they can and the sheriffs will have to be used to monitor parking.

10 Clover Heights is a down slope street to the cul de sac behind the school and traffic drives extremely fast on this street making it very dangerous to walkers and traffic coming from the circle at the end. Additional traffic on Clover Heights would need speed bumps and extensive monitoring. It a irresponsible and dangerous decision for the school to put a parking area behind the school

For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME [illegible]

ADDRESS 3938 Filaree Hts

EMAIL Malibure@AOL.COM

August 29, 2020

Dear Mr Upton

I have lived on Clover Heights Avenue since 1999, and am one of 5 home owners whose homes burned to the ground in the Woolsey Fire.

I do not support the construction of a parking lot at the end of Clover Heights Avenue for the following reasons.

1) Most Malibu Park residents rebuilding/repairing homes after the fire were not duly informed of the proposed parking lot because we are still displaced, thus not receiving all of our mail and/or the Malibu Times. It was only by chance that a neighbor informed me. We cannot access a Zoom meeting if we don't know about it.

2) Clover Heights Avenue is not wide and is without sidewalks. The street is used by kids walking, skateboarding, and riding bikes to and from school. Walkers, runners and equestrians also use Clover Heights to access the equestrian trail. Additional car traffic is in conflict with how Clover Heights is and has been used. Safety for all will be compromised.

3) Overflow from a full parking lot will result in cars being parked up and down the street which the street cannot safely accommodate.

4) Rain water is diverted underneath Harvester Rd. and then dumped on to Clover Heights, bringing mud and debris, resulting in unsafe driving conditions. Refer to the Coles' pictures.

5) A lit parking lot will negatively impact the surrounding neighbors.

6) With the enrollment of Malibu High declining, is this parking lot really necessary?

Thank you for you consideration in this matter.

Vicky Arnold
5824 Clover Heights Avenue
Malibu, Ca 90265

MalibuRE@aol.com

310-924-1045 Cell

310-589-9843 FAX

Terry Lucoff

9/10/2020 ms brooks

From: malibure@aol.com,
To: malibure@aol.com,
Subject: ms brooks
Date: Thu, Sep 10, 2020 9:45 am

Hi Ms. Brooks

I was happy the City of Malibu had a representative at the meeting regarding the school last night.

As you can see the Malibu Park Community is united in its opposition to the parking lot for the school off Clover Heights.

I have included my letter with our reasons to allowing the school to have this lot in their development plans as dangerous and irresponsible to the Malibu Park neighbors, the equestrians and children walking to school.

The neighbors support walking access to the school from Clover Heights but not additional traffic.

If you have any questions I can be reached at 310-924-1045 and my e mail is malibure@aol.com

BEST REGARDS
TERRY LUCOFF

NUMBER OF PAGES INCLUDING THIS COVER LETTER

PLEASE CALL AND ASK SENDER FOR RE-TRANSMISSION IF YOUR COPY IS UNREADABLE OR INCOMPLETE

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

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NAME [redacted]

ADDRESS [redacted]

EMAIL [redacted]

From: malibure@aol.com,
To: malibure@aol.com,
Subject: introduction to school proposal
Date: Mon, Aug 24, 2020 12:47 pm

STOP THE PROPOSED SANTA MONICA MALIBU HIGH SCHOOL PARKING LOT IN MALIBU PARK.

My name is Terry Lucoff and I am writing you as a Malibu Park neighbor to stop the proposed parking lot on Clover Heights in Malibu Park. The SMMUSD has proposed a new parking lot at the back of Malibu High that will increase traffic in Malibu Park.

I have included the entire proposal for your review and a copy of a letter I have sent the District. You can use the letter I have written and sign your name or better yet write a letter with your own reasons why the parking at the back of Malibu High will hurt our Malibu Park community. Please dont just put this to the side. This is a urgent matter and I request your attention to it today. Many of our residents have not moved back to Malibu Park yet so your voice is very important

I am asking that you contact the school facilities manager Cary Upton at

CUpton@smmusd.org

and the principal of Malibu High School, Patrick Miller at

Pmiller@smmusd.org

and copy me with your letter to be presented at the Coastal Commission and City of Malibu Planning Commission meetings

Malibure@aol.com

If you have any questions please call me at 310-924-1045.
We all need to work together to keep Malibu Park safe and rural

BEST REGARDS
TERRY LUCOFF

310 924 1045 field contact

PETITION TO STOP PROPOSED CONSTRUCTION OF SANTA MONICA MALIBU HIGH SCHOOL PARKING LOT IN MALIBU PARK

We are long time residents of Malibu Park. Our address is 5940 Clover Heights Avenue.,we are the last property adjacent to the athletic fields at Malibu High at the end of the cul de sac.

We are writing to express our strong opposition to the proposed Parking Lot F - directly across the street from our house. For the following reasons, we believe the School Board should take off Lot F as a proposed additional parking area in their Campus Specific Plan and Local Coastal Amendment Project.

Ecologically, Malibu Park is only now finally showing some kinds of recovery since the Woolsey Fire. The hawks and the owls have found their way back to our neighborhood. One owl has even established her night quarters in the eucalyptus trees along Clover Heights adjacent to the property Lot F. Along with the coyotes these hawks and owls are helping to eradicate the rodents (gophers, rats, mice, rabbits, squirrels who have invaded since the fire. We are desperate to have this natural and healthy equilibrium back to our area.
The natural habitat is finding its balance. Increased traffic, noise and lighting will suffocate this recovery.

Safety wise, increased traffic of people loitering around the parking area will increase crime and trash. Already in the last number of years Malibu Park has suffered from a surge of thefts. Our street alone had two attempted break ins this month. As well, we often have to pick up trash and alcohol bottles left behind.

Malibu Park has suffered enough. Overdevelopment of an unattended parking lot creates a liability for Malibu High as well as for the safety of the surrounding neighbors. There are approximately 40 street parking spaces available for use on the street as it is now for the days of the sporting events which is most likely no more than 50 days per year. It makes no sense. The proposed parking lot of 14 spaces which would require lights and maintenance etc makes no sense when there are already approximately 40 spots available on the street as is currently.

Every day people, kids come down Clover Heights Ave. with their horses, on their skateboards, on foot, on bikes, with their dogs. This is a quiet, safe and narrow street. The addition of increased traffic will create a very unsafe environment for the pedestrians and neighborhood. Everyday there are kids walking to and from school up and down the street. There are no sidewalks and the street is very narrow on a downhill grade. This parking lot does not make sense for the neighborhood. Also the street regularly floods even in a mild rain.

Furthermore, it is our understanding that the population of Malibu High is drastically declining. Why then is there a need to build more parking in a residential area for a declining school population? Isn't there a more urgent need elsewhere to spend the funds allocated?

Additionally, Malibu Park already lost the battle with the football lights which were installed in the field a number of years ago. These are now defunct as there is more more football games at Malibu High. . Millions of dollars were spent and now it exists solely as an eyesore for the entire neighborhood. Additional night time lighting in a residential neighborhood would be a travesty and in conflict of the the intent of the Malibu Dark Sky ordinance.

Lastly, as autonomous vehicles will be commonplace in only a matter of years, urban planners are already considering the ways in which they are remaking cities. Parking lots for example will be reduced in size. Less people will be parking and for the cars that are self driving, they will require less space than traditional lots (cars can park closer together). In Boston, a recent study by the World Economic Forum has found that self driving vehicles will require about half the city's current parking. The future for all of our cities will be similar. Less cars and less parking lots. Malibu needs to modernize and this requires foresight and research and most importantly protection of our neighborhoods which are the heart of Malibu.

Following through with the construction of this superfluous additional parking lot - "Parking Lot F " is a dated and financially irresponsible, it is a danger to the ecosystem, and a severe safety hazard., as well as a liability for Malibu High School and headache for the Malibu Park neighborhood.

PLEASE DO WHAT IS RIGHT FOR THE COMMUNITY OF MALIBU PARK AND DO NOT BUILD THIS PARKING LOT.

Thank you for considering the voices of the community.

Respectfully yours,

Judith and Dominick Guillemot
Dominick Photography
dg@dominickphoto.com
dominickguillemot@icloud.com
www.dominickphoto.com
310.576.3033 tel
310.990.3033 mobile
Studio Manager: Danelle Rondberg
danelle@dominickphoto.com

From: danellerondberg@mac.com,
To: Cupton@smmusd.org, PMiller@smmusd.org,
Cc: malibure@aol.com,
Subject: PETITION TO STOP PROPOSE CONSTRUCTION OF PARKING LOT F
Date: Tue, Sep 8, 2020 5:04 pm

To Whom it may Concern:

My name is Danelle Rondberg and I am a Santa Monica resident who works in Malibu and spends a lot of time in Malibu Park. I often walk the trails adjacent to Malibu High School.
When I heard about the ridiculous proposal to create a parking lot at the end of Clover Heights Avenue, where I have spent a lot of time, I wanted to expressly share my opposition to the proposed PARKING LOT F

I believe the school board should delete the proposal to add PARKING LOT F to its agenda. My reasons include the following points:

Ecologically, Malibu Park is only now finally showing some kinds of recovery since the Woolsey Fire. The hawks and the owls have found their way back to our neighborhood. One owl has even established her night quarters in the eucalyptus trees along Clover Heights adjacent to the property Lot F. Along with the coyotes these hawks and owls are helping to eradicate the rodents (gophers, rats, mice, rabbits, squirrels) who have invaded since the fire. We are desperate to have this natural and healthy equilibrium back to our area. The natural habitat is finding its balance. Increased traffic, noise and lighting will suffocate this recovery.

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Malibu Park has suffered enough. Overdevelopment of an unattended parking lot creates a liability for Malibu High as well as for the safety of the surrounding neighbors. There are approximately 40 street parking spaces available for use on the street as it is now for the days of the sporting events which is most likely no more than 50 days per year. It makes no sense. The proposed parking lot of 14 spaces which would require lights and maintenance etc makes no sense when there are already approximately 40 spots available on the street as is currently.

Clover Heights Ave is a quiet and safe street. It is narrow, and on a downgrade and there are no sidewalks.
Every day neighbors and kids come down Clover Heights Ave. with their horses, on their skateboards, on foot, on bikes, with their dogs. As well, kids are walking to and from school up and down the street.
The addition of increased traffic will create a very unsafe environment for the pedestrians and neighborhood. As well, the street regularly floods even in a mild rain. More incoming and outgoing traffic does not make sense.

Furthermore, it is our understanding that the population of Malibu High is drastically declining. Why then is there a need to build more parking in a residential area for a declining school population? Isn't there a more urgent need elsewhere to spend the funds allocated?

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PLEASE DO WHAT IS RIGHT FOR THE COMMUNITY OF MALIBU PARK AND DO NOT BUILD THIS PARKING LOT.

Thank you for considering the voices of the community.

Danelle Rondberg
danellerondberg@mac.com

2035 4th Street #301C
Santa Monica, CA 90405

From: brinkco@gmail.com,
To: Pmiller@smmusd.org,
Cc: CUpton@smmusd.org,
Subject: Please don't pave over paradise...
Date: Wed, Sep 9, 2020 1:12 pm
Attachments:

Dear Mr. Miller and Mr. Upton,

I am writing to you as a neighbor of Malibu High, who is opposed to the proposed new parking lot on Clover Heights. Though our property is on Filaree Heights, it abuts the field between Clover and Filaree where the parking lot would be built. My concern is, that a dedicated parking lot would increase the traffic through an otherwise isolated residential neighborhood. In fact, the parking lot "destination" would alter the character of Clover Heights from a cul-de-sac to more of a regular traffic street, something I imagine the Clover Heights residents can't be happy about.

It is not only Clover Heights resident, however, who will be affected. Our property overlooks Clover Heights and the field where the parking lot would be built, so the traffic would also affect us. The lighting, fencing and other infrastructure necessary to integrate the parking lot into the school property would severely impact the views and rural character of the area and place our yard in view of the parking lot and the parking lot in full view of our yard. (Have you ever heard of or seen a "beautiful" parking lot?)

We have no issue sharing our beautiful neighborhood with the school - in fact, we moved there because of it - however, our goal is a harmonious co-existence in which both neighbors and school give up a little to allow the other enjoyment of their property. I don't think a parking lot would alleviate the parking, which is already happening on Clover Heights. Quite the opposite, it would formalize the idea of parking there and lead to more parking in the new spaces and on the street. The walkways, lights, trash cans and fences would destroy the natural beauty of the area - literally paving paradise and putting up a parking lot as the song lyrics suggest.

I sincerely hope that you will reconsider your plans and accommodate the community you not only share your space with but also serve. I consider myself a supporter of the school but also of the increasingly rare rural character of our community.

Sincerely,

Robert Brinkmann
5940 Filaree Heights
Malibu

ROBERT BRINKMANN

Director of Photography
http://robertbrinkmann.com/
+1 (213) 718-5555

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September 1, 2020

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NAME JAMES LIPPERT

ADDRESS 5901 CLOVER HEIGHTS MALIBU 90265

EMAIL CLUBCOLLECTORGOLF@YAHOO.COM

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NAME Samantha Binah

ADDRESS 29711 Harvester Rd, Malibu CA 90265

EMAIL SbinahCgmail.com

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

I am a resident of Malibu Park and live at 29711 Harvester Rd

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

1. A parking lot at the back of Malibu High School will bring additional traffic to many Malibu Park streets. This will impact traffic on Merritt, Busch, Harvester and Clover Heights. The Harvester roadway between Busch has a dangerous turn where cars often go over the non existent center yellow line and the roadway has heavy vegetation. There are no sidewalks and walkers, horses and dogs are often in the Roadway.

2. The high school has an access gate on Clover Heights for Students walking to school. There are no sidewalks on Clover Heights and for years children have walked in groups down the center of the road. to school. With additional motor vehicle traffic on Clover Heights it would not be safe for the students to walk to school without sidewalks.

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the Equestrian Center. A parking lot in this location on Clover Heights would make the path to the trail much more dangerous for local Malibu Park Horse people to access the Equestrian Center

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NAME Alan Baron

ADDRESS 29711 Harvester Rd. Malibu, 90265

EMAIL aljoe@mac.com

From: Kelly@meyerhome.info,
To: CUpton@smmusd.org, Pmiller@smmusd.org, Malibure@aol.com,
Cc: SPeak@malibucity.org, MPierson@malibucity.org, JWagner@malibucity.org, KFarrer@malibucity.org, RMullen@malibucity.org,
Subject: Malibu High-school Parking Lot -
Date: Wed, Sep 2, 2020 3:58 pm

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project.

September 1, 2020

I am a resident of Malibu Park and live at 5920 Clover Heights Ave.

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons and concerns. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

1. A parking lot at the back of Malibu High School will bring additional traffic to many Malibu Park streets. This will impact traffic on Merrit, Busch, Harvester and Clover Heights. The Harvester roadway between Busch has a dangerous turn where cars often go over the non-existent center yellow line and the roadway has heavy vegetation. There are no sidewalks and walker, horses and dogs are often in the Roadway.

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Kelly Meyer
5920 Clover Heights Ave
Malibu CA 90265

Kelly@meyerhome.info

From: billpcce@yahoo.com,

To: cupton@smmusd.org, pmiller@smmusd.org, malibure@aol.com, bdillingham@manatt.com, philippe@maisondartistela.com, sahagii@aol.com,

Subject: parking structure on Clover Heights

Date: Wed, Sep 2, 2020 12:35 pm

Hello,

It has been brought to our attention that SMMHS is planning on building a parking structure at the end of Clover Heights.

As 25 year+ residents of Malibu Park we are very familiar with the school (our daughter is a graduate) and the neighborhood.

The school would not think of ever closing off the sidewalks on Morning view in front of the school. Nor would it consider narrowing Morning view. Yet that is what you are proposing for our neighborhood behind the school since we have neither sidewalks or wide roads like the ingress to Morning View off the PCH.

Do you understand we have no sidewalks on Busch , Harvester, or any of the side streets like Clover Heights? You understand people still ride and walk horses down the middle of the road every day? The neighborhood is rural and just the lack of sidewalks and street lights makes this an extremely poor idea.

We, along with many of our neighbors also walk our dogs every day on Harvester and are already at risk for being hit by cars. The only place for any pedestrian to be is literally in the road! To add more traffic and especially kids and parents hurrying to and from school will create accidents and injuries and create more stress in our already stressed
(thank you Woolsey) neighborhood.

The two blind curves on Harvester are today extremely dangerous. Busch is also a dangerous and narrow road. Often experienced drivers can barely negotiate them safely.

This will have the opposite effect of its intention and create a constant threat to the safety of the children, parents and neighbors of Malibu park. Please stop considering this very poorly thought out idea.

Happy to quote the Joni Mitchell song about "Paving Paradise and Putting up a Parking Lot", but instead If you don't believe me I invite you to walk down Harvester and Busch at peak traffic now and feel the fear of a construction worker on a rebuild hurrying home in his truck. You will be terrified.

Thank You

William Patterson
5877bDeerhead Road.

To All Participants of the Proposed Santa Monica Malibu Unified School District Plan and Local Coast Plan Amendment Project

September 1, 2020

I am a resident of Malibu Park and live at 5845 Clover Heights

I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

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For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME Alan & Mordis Carson

ADDRESS 5845 Clover Heights

EMAIL Mordis @ earthlink.net

From: thordis@earthlink.net,
To: CUpton@smmusd.org, Pmiller@smmusd.org,
Cc: Malibure@aol.com,
Subject: Proposed parking in Malibu Park (back of Malibu High School)
Date: Thu, Sep 3, 2020 11:03 am
Attachments: Thordis Carson Letter of Opposition to school parking.pdf (1853K)

Cary Upton and Patrick Miller,

Attached is a letter originally drafted by Terry Lucoff as a sign of solidarity in this matter. We are vehemently opposed to this project. We have owned this property and lived here since 1956. We are not only the oldest (in age), but also in residency on this street. We have watched this area grow and develop and for that reason, know probably better than most, the impact that this parking lot will have on our neighborhood and our street. The proposed parking area behind the high school is ridiculous for many reasons.

1 Street will not handle increased traffic.

2. Overflow parking will cause people to park on the street, which cannot handle it.

3. General Malibu Park traffic will increase and impose additional traffic problems in our whole area.

4. Pedestrian traffic will increase causing potential accidents.

5. Residence will have a difficult time with ingress and ingress from their driveways from increased traffic, both from pedestrian and auto traffic. Street is not wide enough to safely pull out of driveways to see approaching traffic.

6. Lighting on the property will interfere with our property and neighborhood.

7. The school currently has plenty of land in which to configure additional land for parking, if needed.

8. Equestrians often use this street to access the Equestrian Park. Additional traffic will cause problems for them and the drivers.

Why not use this property as an agricultural area for the children to learn how to manage and grow crops. This would fit in with the environmental message that is being espoused to our children today and would teach them respect for the land and how much we depend on it.

PLEASE, PLEASE, PLEASE, DO NOT MAKE THIS PROPERTY INTO A PARKING LOT!!!

Respectfully submitted,

Alan and Thordis Carson
5845 Clover Heights Avenue
Malibu, Ca 90265

Mr. Cary Upton
School Facilities Manager
CUpton@smmusd.org

Re: Parking lot on Clover Heights

September 4, 2020

I live at 29840 Harvester Road, Malibu, California. I have been a resident of Malibu Park for
twenty years. We lost our home and most of the homes in our neighborhood in the Woolsey Fire. Residents have started to rebuild but it will take time regain what was lost.
Please don't allow our neighborhood to lose its character by building another parking lot.

I am **OPPOSED** to putting in a parking lot behind the softball fields at the end of Clover Heights
for the following reasons:

- **SAFETY** A parking lot will bring additional traffic to many Malibu Park streets near the school. There are presently no sidewalks and having more cars in the neighborhood, especially on Clover Heights will make it more dangerous for children and adults walking to and from school. Clover Heights is a down slope street to the cul de sac behind the school and I have witnessed drivers going very fast downhill at this location.

- **LIGHTS-** A parking lot would need to be lighted to meet state school regulations and this lighting would be in conflict with the Malibu Dark Skies Ordinance. (Three lighted parking lots above Morning View were built right before the fire and the lighting from all of these parking lots will change the character of the neighborhood).

- **EQUESTRIAN USE OF TRAIL AT END OF CLOVER HEIGHTS-**
  There is a riding trail at the end of Clover Heights and putting in a parking lot at this location would make the path more dangerous for local Malibu Park horse people to access the Equestrian Center on their horses.

- **LIMITING SPACES**- just because there are a few spaces doesn't mean that parking will be limited. When the available spaces are gone in the parking lot, people will park
  wherever they can; in front of people's houses, on the street and in the cul de

sac.

- **VIOLATION OF COASTAL COMMISSION PERMIT-** this parking lot is in violation of the 1990 Coastal Commission permit for the school field. . The school has diverted the topography of a marked blue line stream to the West side of the school property and the school has ignored landscaping protocol which was specifically passed by the Coastal Commission. The school graded and altered water flow which resulted in flooding on Clover Heights, the proposed parking area and the flooding of school grounds. The temporary mitigation by k rail on Clover Heights should only be considered an emergency measure to mitigate the poorly designed school drainage.

Carol Gable
29840 Harvester Road
Malibu, California

From: t.griskey@verizon.net,
To: brd@smmusd.org,
Cc: malibure@aol.com, cupton@smmusd.org, pmiller@smmusd.org, debracole50@verizon.net,
Subject: Parking Lot on Clover Heights Avenue
Date: Mon, Aug 31, 2020 11:17 am

SMMUSD Representative

We have been living on Clover Heights Avenue since 1972 and we are very familiar with the neighborhood and the traffic on our street.

Clover Heights has no sidewalks and connects with the equestrian trail as well as the schools. It is common to see pedestrian foot traffic on the street such as joggers, bicyclists, dog walkers, equestrians, school children and the school's cross country runners along with families and groups of people enjoying a stroll in the neighborhood.

It has come to our attention that SMMUSD is planning on adding a parking lot on Clover Heights, which would increase automobile traffic. More automobile traffic and pedestrian traffic don't go well together.

Walking in a relatively pollution free environment has health benefits with little or no impact on the environment. Adding a parking lot will add vehicle traffic to the street and would discourage pedestrians from using it. It will be detrimental to the local environment, will expose pedestrians to automobile emissions and potential pedestrian/vehicle accidents. Driving students may use this parking lot and have very little experience in driving which may put pedestrians in danger.

Also, Clover Heights is a drainage channel for water and debris, which makes it unusable and dangerous during heavy rains.

The student enrollment has dropped considerably, so we question the need for an additional parking lot.

In summary we recommend that the proposed parking lot on Clover Heights Avenue be deleted from SMMUSD plans.

Thomas & Anne Griskey
5840 Clover Heights Avenue
Malibu, Ca. 90265

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September 1, 2020

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EMAIL aljoe@mac.com

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EMAIL sbinah@gmail.com

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I am opposed to a parking lot behind the softball fields at the end of Clover Heights for the following reasons. I request the School Board to delete the parking lot from the Proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Amendment Project.

1. A parking lot at the back of Malibu High School will bring additional traffic to many Malibu Park streets. This will impact traffic on Merritt, Busch, Harvester and Clover Heights. The Harvester roadway between Busch has a dangerous turn where cars often go over the non existent center yellow line and the roadway has heavy vegetation. There are no sidewalks and walkers, horses and dogs are often in the Roadway.

2. The high school has an access gate on Clover Heights for Students walking to school. There are no sidewalks on Clover Heights and for years children have walked in groups down the center of the road. to school. With additional motor vehicle traffic on Clover Heights it would not be safe for the students to walk to school without sidewalks.

3. The parking lot is in violation of the Coastal Commission permit for the school fields in 1990. The school has diverted the topography of a marked blue line stream to the West side of the school property and the Coastal Commission passed specific landscaping protocol which the school has ignored. The blue line stream was to be maintained and the property was to remain unaltered and planted in native wildflower vegetation. The school graded and altered water flow which has resulted in flooding on Clover Heights, the proposed parking area and the flooding of the school grounds The temporary mitigation by k rail on Clover Heights and around the school fields should only be considered an emergency measure to mitigate the poorly designed school drainage.

4. The building of a parking lot would need to meet state school regulations and be lighted. The school would be lighted up from the front on Morning View to Clover Heights and this extensive lighting on the school campus would be observable throughout Malibu Park at night. This kind of lighting would be in conflict with the intent of the Malibu Dark Skies ordinance

5. There is a riding trail from the Equestrian Center in the back of the school to Clover Heights and the Malibu Park neighborhood uses Clover Heights to access this trail to and from

the Equestrian Center. A parking lot in this location on Clover Heights would make the path to the trail much more dangerous for local Malibu Park Horse people to access the Equestrian Center

7. There is no parking on Clover Heights to facilitate emergency equipment to the back of the high school for serious injuries on the sports fields. The field itself is used to airlift sever injuries to the hospital. Clover Heights has also been used for open area emergency access to the field when Malibu Park residents have suffered a heart attack or other serious injury to Valley or UCLA medical facilities. Adding traffic and parking in this area would impact local Malibu first responder
emergency services.

8. A parking lot on Clover Heights would make it necessary for the School to provide additional security in an location the school does not currently have security personnel and not currently regularly monitored by limited High School Security. In the past the area behind the school has been an area of graffiti on the drain walls, trash not collected and the use of alcohol. A parking lot that is not monitored by security cameras and trash pick up would be problematic for all of our area residents. The school has never gone off campus to monitored traffic
from their school events or pick up trash in neighborhoods surrounding the campus.

9. Limiting the parking to 17 or 20 cars is not a valid solution for any kind of traffic mitigation, Malibu Residents have all seen what has happened with the overflow parking at our local pocketbeaches. When the lot is full the cars just park anywhere they can find a space. Limited parking spots does not control either the amount of cars parking at the back of the school or the traffic in Malibu
Park. The assertion that the space will be limited doesn't limit the parking at the rear of the school at all. We cant expect people who have driven to that location and find the parking lot full to then turn around
and try and find parking at the bigger parking lots elsewhere by the front of the school. It is reasonable to assume people will park where they can and the sheriffs will have to be used to monitor parking.

10 Clover Heights is a down slope street to the cul de sac behind the school and traffic drives extremely fast on this street making it very dangerous to walkers and traffic coming from the circle at the end. Additional traffic on Clover Heights would need speed bumps and extensive monitoring. It a irresponsible and dangerous decision for the school to put a parking area behind the school

For these reasons I oppose the construction of a parking lot behind the school on Clover Heights

NAME JAMES LIPPERT

ADDRESS 5901 CLOVER HEIGHTS MALIBU 90265

EMAIL CLUBCOLLECTORGOLF@YAHOO.COM

COUNTY OF LOS ANGELES
FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(323) 881-2426
www.fire.lacounty.gov

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SECOND DISTRICT

SHEILA KUEHL
THIRD DISTRICT

JANICE HAHN
FOURTH DISTRICT

KATHRYN BARGER
FIFTH DISTRICT

SEP 08 2020 4:08:27

September 4, 2020

Carey Upton, Chief Operations Officer
Santa Monica-Malibu Unified School District
Planning Division
1651 16th Street
Santa Monica, CA 90404

Dear Mr. Upton:

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT, "MALIBU MIDDLE AND HIGH SCHOOL CAMPUS SPECIFIC PLAN," WOULD REDEVELOP AND MODERNIZE THE EXISTING MMHS CAMPUS AND FORMER JCES CAMPUS TO CREATE THREE DISTINCT AREAS: MIDDLE SCHOOL CORE, HIGH SCHOOL CORE, AND SHARED FACILITIES, LOCATED AT 30215 MORNING VIEW DRIVE, MALIBU, FFER 2020005824

The Notice of Preparation of an Environmental Impact Report has been reviewed by the Planning Division, Land Development Unit, Forestry Division, and Health Hazardous Materials Division of the County of Los Angeles Fire Department.

The following are their comments:

PLANNING DIVISION:

We have no comments.

For any questions regarding this response, please contact Loretta Bagwell, Planning Analyst, at (323) 881-2404 or Loretta.Bagwell@fire.lacounty.gov.

LAND DEVELOPMENT UNIT:

1. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows, and fire hydrants.

2. Every building constructed shall be accessible to Fire Department apparatus by way of access roadways with an all-weather surface. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building. The roadway shall provide approved signs and/or stripping stating "NO PARKING - FIRE LANE" and shall be maintained in accordance with the County of Los Angeles Fire Code.

3. This property is located within the area described by the Fire Department as a Fire Hazard Severity Zone. A "Fuel Modification Plan" shall be submitted to the Fuel Modification for review by the Fuel Modification Unit prior to public hearing. Please contact the Department's Fuel Modification Unit for details. The Fuel Modification Plan Review Unit is located at 605 North Angeleno Avenue in the City of Azusa, CA 91702-2904. They may be reached at (626) 969-5205 or visit https://www.fire.lacounty.gov/forestry-division/forestry-fuel-modification

The County of Los Angeles Fire Department's Land Development Unit appreciates the opportunity to comment on this project. Should any questions arise, please contact Wally Collins at (323) 890-4243 or Wally.Collins@fire.lacounty.gov.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

The statutory responsibilities of the County of Los Angeles Fire Department's Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones, archeological and cultural resources, and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed.

Under the Los Angeles County Oak tree Ordinance, a permit is required to cut, destroy, remove, relocate, inflict damage or encroach into the protected zone of any tree of the Oak genus which is 25 inches or more in circumference (eight inches in diameter), as measured 4 1/2 feet above mean natural grade.

If Oak trees are known to exist in the proposed project area further field studies should be conducted to determine the presence of this species on the project site.

The County of Los Angeles Fire Department's Forestry Division has no further comments regarding this project.

For any questions regarding this response, please contact Forestry Assistant, Joseph Brunet at (818) 890-5719.

HEALTH HAZARDOUS MATERIALS DIVISION:

The Health Hazardous Materials Division of the Los Angeles County Fire Department has no comments or requirements for the project at this time.

Please contact HHMD senior typist-clerk, Perla Garcia at (323) 890-4035 or Perla.garcia@fire.lacounty.gov if you have any questions.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

RONALD M. DURBIN, CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

RMD:ac

COUNTY OF LOS ANGELES
FIRE DEPARTMENT
FORESTRY DIVISION
5823 RICKENBACKER ROAD, ROOM #123
COMMERCE, CA 90040-4335

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Carey Upton, Chief Operations Officer
Santa Monica-Malibu Unified School District
Planning Division
1651 16th Street
Santa Monica, CA 90404

9040483801 C021

OFFICE OF THE SHERIFF

COUNTY OF LOS ANGELES

HALL OF JUSTICE

ALEX VILLANUEVA, SHERIFF

September 4, 2020

Carey Upton, Chief Operations Officer
Santa Monica-Malibu Unified School District
1651 16th Street
Santa Monica, California 90404

Dear Ms. Upton:

REVIEW COMMENTS
NOTICE OF PREPARATION OF
ENVIRONMENTAL IMPACT REPORT
MALIBU MIDDLE AND HIGH SCHOOL CAMPUS SPECIFIC PLAN
AND LOCAL COASTAL PLAN AMENDMENT PROJECT

Thank you for inviting the Los Angeles County Sheriff's Department (Department) to review and comment on the August 20, 2020, Notice of Preparation of an Environmental Impact Report (EIR) for the Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project (Project). The proposed Project site consists of the existing Malibu Equestrian Center in the eastern portion of the property, the existing Malibu Middle and High School (MMHS) campus in the center of the property, and the former Juan Cabrillo Elementary School campus in the western portion of the property. The proposed Project is located at 30215 Morning View Drive in the City of Malibu (City) and involves the development of 32 classrooms and 8 labs and a total of 190,967 square feet of building space which would result in a building space square footage increase after demolition of all 11 buildings on the former JCES campus and 7 buildings on the MMHS campus. Buildings A, B and E would remain with all other structures removed. No changes to the existing football/track, baseball, or softball fields would occur with the exception of the development of new field houses and additional parking adjacent to the softball field. A total of 451 parking spaces would be developed under the proposed Project.

The proposed Project is located within the service area of the Department's Malibu-Lost Hills Station (Station). As indicated on page 92 of the August 2020 Initial Study (IS), the Station generally concurs with its findings that the proposed Project would result in a potentially significant impact related to police protection due to the increase in the use of community facilities. Due to the nature of the proposed facilities, there is a potential that the proposed new conditions would have a substantial impact on law enforcement services requiring analysis on the anticipated participation and attendance to determine the impact. For the safety and security of the students and school staff, the Station recommends security measures be implemented during the site and building layout design. These include providing lighting and security cameras in open areas and parking lots; providing visibility of doors and windows from the street and between buildings; and installation of an illuminated building address or identification signs that are visible from the street for emergency responses. In addition, the Department generally prescribes to the principles of Crime Prevention Thru Environmental Design (CPTED). The goal of CPTED is to reduce opportunities for criminal activities by implementing physical design features that discourage anti-social behavior, while encouraging the legitimate use of the site. The overall tenets of CPTED include defensible space, territoriality, surveillance, lighting, landscaping, and physical security. With advanced notice, Station personnel can be available to discuss CPTED with the Project developer.

The Department has no further comment at this time, but will provide comments once the Draft EIR is released for public review and/or additional information on the proposed project becomes available.

For future reference, the Department provides the following updated address and contact information for all requests for review comments, law enforcement service information, California Environmental Quality Act documents and other related correspondence:

Tracey Jue, Director
Facilities Planning Bureau
Los Angeles County Sheriff's Department
211 West Temple Street
Los Angeles, California 90012

Attention: Planning Section

Thank you for including the Department in the environmental review process for the proposed Project. Should you have any questions regarding this matter, please contact me at (323) 526-5657, or your staff may contact Ms. Rochelle Campomanes of my staff, at (323) 526-5614.

Sincerely,

ALEX VILLANUEVA, SHERIFF

for

Tracey Jue, Director
Facilities Planning Bureau

CITY OF MALIBU
PUBLIC WORKS DEPARTMENT

FOR USE BY STAFF

*Permit#:*_____

*Received Date:*_____

TRAFFIC SCOPING/STUDY APPLICATION SUBMITTAL REQUIREMENTS

THIS FORM MUST BE SUBMITTED WITH FIRST PLAN CHECK:

Project No:_____ Schedule:_____(if applicable)

Project Description: _____

Name of Owner:_____

Signature:_____ Phone #:_____

Mailing Address:_____FAX number:_____

_____ Email Address:_____

Name of Applicant:_____Contact:_____

Authorized Signature:_____ Phone #:_____

Mailing Address:_____FAX number:_____

_____ EmailAddress:_____

Submittal Requirements

1. _____ 2 Sets Site Plan
2. _____ 2 Sets Traffic/Scoping Study
3. $_____ Fees (PW Engineering to Fill Out)

FIRST SUBMITTAL REQUIREMENTS

A. The City reserves the right to reject the submitted plan package without performing any plan checks if any of the required plans or information items are missing.

I, the undersigned engineer, do verify that all the items necessary for this project and checked above are attached.

Signature

Date

Civil Engineer's Stamp

Printed Name

Firm Name

Address

Phone Number

Fax

Email Address

ATTACHMENT A

SCOPING AGREEMENT FOR TRAFFIC MEMORANDUM OR TRAFFIC IMPACT ANALYSIS

This letter acknowledges the City Malibu Public Works Department requirements for the traffic impact analysis of the following project. The analysis must follow the latest City Traffic Impact Analysis Guidelines.

Case No. Related
Planning Case(s) No.
Project Name: Project
Location: Project
Description:

	Consultant	Developer
Name:		
Address:		
Telephone:		

A. Trip Generation Source: ITE *Trip Generation Manual,* most recent edition or Agreed upon Supplement

Existing Land Use _____ Proposed Land Use _____

Existing Zoning _____ Proposed Zoning _____

Total Daily Trips

	In	Out	Total
AM Trips			
PM Trips			

Internal Trip Allowance ☐ Yes ☐ No (% Trip Discount)

Pass-By Trip Allowance ☐ Yes ☐ No (% Trip Discount)

(Attach additional sheet if this is a multi-use site with a breakdown of trips generated)

B. Trip Geographic Distribution: N % S % E % W %
(See attached exhibit for detailed assignment)

C. Background Traffic

Project Completion Year: _____ Annual Ambient Growth Rate: %

Other area projects to be included:

Please contact the Public Works Department or use the most recently provided data

Model/Forecast methodology if required _____

D. Horizon Year Analysis: Does this project require a Horizon Year Analysis? ☐ Yes ☐ No

E. Study intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

1. _____ 5. _____
2. _____ 6. _____
3. _____ 7. _____
4. _____ 8. _____

F. Study Roadway Segments:

1. _____ 5. _____
2. _____ 6. _____
3. _____ 7. _____
4. _____ 8. _____

G. Other Jurisdictional Impacts

Is this project within any other Agency's Sphere of Influence or one-mile radius of boundaries? ☐ Yes ☐ No

If so, name of Jurisdiction: _____

H. Site Plan (please attach a legible 11'X17' copy)

I. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline)
(To be filled out by the Public Works Department)

_____

_____

Recommended by:

_____ _____
Consultant's Representative Date

Scoping Agreement Submitted on _____ Date

Scoping Agreement Resubmitted on _____ Date

Approved Scoping Agreement:

_____ _____
City of Malibu Public Works Department Date

City of Malibu

23825 Stuart Ranch Road · Malibu, California · 90265-4861
Phone (310) 456-2489 · Fax (310) 456-3356 · www.malibucity.org

Sent via email to cupton@smmusd.org

September 21, 2020

Carey Upton
Santa Monica-Malibu Unified School District
1651 16th Street
Santa Monica, CA 90404

RE: MMHS Campus Specific Plan and LCP Amendment Project
NOP Initial Study Comments

Dear Mr. Upton:

The City of Malibu's comments on the Notice of Preparation (NOP) for the MMHS Campus Specific Plan and Local Coastal Program (LCP) Amendment Project are provided below.

Geology

1. In the Environmental Analysis (Section 3) as it relates to geologic hazards, specifically fault surface rupture hazards, the Environmental Checklist (Section 2) indicates the hazard is identified as having a Less than Significant Impact and would not be studied further in the Environmental Impact Report (EIR). It should be noted that since Cityhood, the City of Malibu has employed a stricter, more conservative standard with regard to fault surface rupture hazards. This standard was derived from the 1990 Seismic Safety Element for Los Angeles County, and was modified after the California Geological Survey evaluated the Malibu Coast Fault Zone in 1994 in Fault Evaluation Report 229 (FER 229). It is discussed in the City's 2013 Geotechnical Guidelines, Section 5.3.1:

   5.3.1 Fault Rupture Evaluation

   The project engineering geologist should excavate trenches in a north-south direction across habitable building sites including single-family residences, multi-family residential units, guest houses, studios, and commercial buildings, to evaluate fault rupture hazards if the site lies:

   - *Within an Alquist-Priolo Fault Zone as defined by the CGS maps. These maps are available for review at City Hall; or*
   - *Within 500 feet of faults mapped in the CGS 1994 Fault Evaluation Report, FER-229 (Treiman,1994) for the Malibu Coast Fault Zone. A copy of this report is available for review at City Hall.*

One of the identified faults on the FER-229 map is the Escondido Thrust fault. It trends east-west and crosses through the entire site and some of the existing buildings on the project site appear to be within 500 feet of the mapped location of this fault. If previous studies or determinations relative to this fault have been completed, these studies should be provided and discussed in the EIR. In the review of Coastal Development Permit applications, the City must utilize the standards in the City's LCP. Strict application of the LCP standard would require a fault surface rupture hazard investigation to clear proposed building areas of the new project that are within 500 feet of the mapped location of the Escondido Thrust fault on FER-229. At this time and without further information, the fault should be further evaluated for the EIR.

Biology

2. In the Biology discussion the terms LCP, Land Use Plan (LUP) and Local Implementation Plan (LIP) are interchanged. Please note that the Local Coastal Program refers to the LUP and LIP. The LUP is the policy document. The LIP is the implementation plan. For instance, references to the Native Tree protection ordinance is in LIP Chapter 5 not the LUP. Also the reference to the LCP as the Local Coastal Plan should be changed to Local Coastal Program.

3. In the Biology discussion (f) the LCP is referred to as a conservation plan which it is not.

4. The Initial Study indicates at least three areas where drainage is to be directed to the ESHA stream. Evidence will need to be provided that there is no other alternative and such a design would require permits from California Fish and Wildlife, US Army Corps of Engineers and Regional Water Quality Control Board; as such, each of those agencies should be provided the Draft EIR for review and comment and listed as agencies where permits and approval will be required.

5. Please ensure that all biological studies and wetland delineations are included in the EIR.

Public Works

6. A Traffic Impact Analysis (TIA) will be required per the City of Malibu TIA Guidelines. The TIA shall be reviewed and approved by the Public Works Department prior to the issuance of the grading and or building permits. The applicant would also be required to construct the applicable mitigation measures recommended in the TIA. The traffic mitigation measures shall be constructed prior to occupancy of the first building.

The School District should consider the extent of the TIA to encompass all phases of a specific plan to the horizon year. The school site will be subjected to future growth which in return may require phased mitigation based on attendance or other factors to consider. The School District shall refer to the latest City of Malibu Traffic Memorandum and Traffic Impact Analysis Guidelines Dated 2019. This document, specifically Section 5, Required Scope, shall serve to assist the District on the best approach on creating a TIA document, including Sections: Study Facilities, Assessment of Proposed Project, Analysis Scenarios, etc. This document has quite a few updated sections that the School District will need to consider:

- Queuing Analysis Requirements;
- Deliveries and truck routes;
- Rideshare programs;

- Public Safety Issues;
- Pedestrian and Bicycle;
- Neighborhood circulation for all modes of transportation;
- Mitigation Measures, Infeasible Mitigation Measures, and Unmitigated Impacts.

While the number of students may not be expected to reach 1,200 in the very near future, the lifespan of the redeveloped middle and high school is important. The schools may choose to gradually increase the student population over the project lifespan or make projections if this is the direction. The TIA shall cover all scenarios.

This approach to the TIA will streamline the CEQA review for the subsequent phases of the specific plan or "master plan". When future CDP applications are submitted for the subsequent phases (over the next 10 years), initial studies will be required for the scope of work proposed in each phase, per Planning Department's requirements unless exempt.

Depending on the potential impacts identified within the forthcoming EIR, the School District will work with the Public Works Department on a final TIA scoping agreement. A sample scoping agreement is attached. The Vehicle Miles Traveled (VMT) reduction percentage will need to be further discussed between agencies: 0% to 15%, before proceeding with traffic analysis.

Parking Demand and internal / external parking circulation patterns shall be evaluated. Parking shall be well defined for all associated uses. Parking specifically for school use only and parking specifically for after school hours utilizing play fields or other on-site district facilities affecting surrounding neighborhood roads shall be analyzed.

7. The Proposed Project has identified that it would not impact the Malibu Equestrian Park located on District property adjacent to the campus. The City reserves the right to condition the project if the District requires modifications that affect any portion of the Park.

8. If the project through required TIA mitigations proposes to construct improvements within the City's right-of-way, the project will be required to meet the standard conditions and encroachment permit conditions from the Public Works Department as set by the Public Works Director. Prior to the Public Works Department's approval of any final plans for construction, the applicant shall obtain encroachment permits from the Public Works Department for the proposed work within the City's right-of-way.

9. Phasing: The project should analyze impacts and associated mitigations with all phased construction, including but not limited to all grading and drainage activities, excavation and truck hauling/export of materials, temporary staging, documenting existing pavement conditions of surrounding roadway network / pavement index / maintenance, trenching for site utilities, demolition and construction of the buildings, paving, and finishing.

10. The Project Site drains to the existing ESHA and drains to Morning View Drive. The project will require infiltration, retention, and treatment of runoff from the Proposed Project. Proposed impacts to Morning View Drive will be subjected to Public Works reviews.

11. The LCP ESHA Map shows a stream approximately 400 feet northwest of the campus. The stream consists of an underground pipe that flows under the school property that daylights into a natural streambed to the south of the school property. During the 2018/2019 rainy season the City

experienced high amounts of debris, mud, and rock within the upper watersheds that overwhelmed the District's existing drainage system. The District should analyze the impacts associated with storm debris events. Temporary measures may be recommended to protect school property.

Planning

12. The EIR should contain a project-level analysis of the first phase of the master plan, and programmatic analyses of subsequent phases, where project-level details are not available.

13. The master plan project should include a Specific Plan to address custom development standards for the phases of the project where they conflict with existing Malibu Municipal Code and LCP standards. The Specific Plan shall contain all custom development standards proposed for the project. References to variances should be removed from the CEQA documents. The EIR should analyze any potential impacts that would result from the custom development standards to be included in the Specific Plan.

14. Section 1.5.2 - *Other Required Permits and Approval:*
    a. The reference to Variances as a needed permit from the Planning Commission should be replaced with a Specific Plan. The Planning Commission will be the recommending body for the Specific Plan and the City Council an approving body.
    b. A Local Coastal Program Amendment (LCPA) and Zone Text amendment (ZTA) will be required and should be listed as required entitlements. The Planning Commission will be the recommending body for the LCPA and ZTA and the City Council an approving body.
    c. The California Coastal Commission should be listed as a certifying body for the LCPA and Specific Plan.

15. The EIR should analyze potential impacts to ESHA from placing new structures (buildings, parking lots, tennis courts, etc.) in the same location as existing buildings that do not meet the LIP required 100 foot ESHA setback.

16. The EIR should study restoration of degraded ESHA as a mitigation measure for any portions of the project that involve development that will not or cannot comply with the current LIP ESHA setback to demonstrate how the project is designed to avoid and minimize impacts. Any such standards and measures should be included in the proposed Specific Plan.

17. The EIR should discuss any potential impacts to wildlife movement from the proposed perimeter fencing. While the proposed chain link fencing is open and visually permeable, the EIR should address whether it would prevent wildlife from accessing the ESHA.

18. The EIR should identify and analyze any potential traffic, noise, lighting, and ESHA impacts from the proposed parking lot off Clover Heights Avenue.

19. The site plan used in the EIR should label all play fields /courts located on the site and identify whether they are existing or proposed.

20. The EIR should address potential aesthetic issues associated with building heights and lighting.

Should you have any questions concerning the City's comments, please contact the City's consulting project planner, Joyce Parker-Bozylinski at 805-368-7236 or jparkerbozylinski@gmail.com.

Sincerely,

Bonnie Blue
Planning Director

CC: File
Joyce Parker-Bozylinski

NATIVE AMERICAN HERITAGE COMMISSION

SEP 08 2020 AM09:29

August 25, 2020

Carey Upton
Santa Monica-Malibu Unified School District
1651 16th Street
Santa Monica, CA 90404

Re: 2020080350, Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project, Los Angeles County

Dear Mr. Upton:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
Russell Attebery
Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

a. A brief description of the project.

b. The lead agency contact information.

c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).

d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.

b. Recommended mitigation measures.

c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

a. Type of environmental review necessary.

b. Significance of the tribal cultural resources.

c. Significance of the project's impacts on tribal cultural resources.

d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.

b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or

b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

a. Avoidance and preservation of the resources in place, including, but not limited to:

i. Planning and construction to avoid the resources and protect the cultural and natural context.

ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:

i. Protecting the cultural character and integrity of the resource.

ii. Protecting the traditional use of the resource.

iii. Protecting the confidentiality of the resource.

c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).

e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).

f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.

b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.

c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

State of California
Native American Heritage Commission
1550 Harbor Blvd., Ste. 100
West Sacramento, CA 95691

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DEPARTMENT OF TRANSPORTATION
DISTRICT 7 – Office of Regional Planning
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Making Conservation a California Way of Life.

September 16, 2020

Carey Upton
Santa Monica-Malibu Unified School District
1651 16th Street
Santa Monica, CA 90404

RE: Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project – Notice of Preparation of Environmental Impact Report (NOP)
SCH # 2020080350
GTS # 07-LA-2020-03345
Vic. LA-1/PM: 55.772

Dear Carey Upton:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced NOP. The project would redevelop and modernize the existing Malibu Middle and High School (MMHS) campus and former Juan Cabrillo Elementary School (JCES) campus to create three distinct areas: Middle School Core, High School Core, and shared facilities. Implementation of the project would result in demolishing all 11 buildings on the former JCES campus and 7 buildings on the MMHS campus, for a total of 147,556 square feet of demolition. The project would result in 32 classrooms and 8 labs, for a total of 190,967 square feet of building space. After project completion, the MMHS campus will have a total of 47 classrooms and 12 labs, for a total of 240,650 square feet of building space. In addition, the project will provide 451 parking spaces. The Santa Monica-Malibu Unified School District is the Lead Agency under the California Environmental Quality Act (CEQA).

The project is located approximately 0.25 miles northeast of the Pacific Coast Highway (PCH). From reviewing the NOP, Caltrans has the following comments:

- As discussed in the Initial Study, Senate Bill 743 (2013) mandates that Vehicle Miles Traveled (VMT) be used as the primary metric in identifying transportation impacts of all future development projects under CEQA, starting July 1, 2020. For information on determining transportation impacts in terms of VMT on the State Highway System, see the *Technical Advisory on Evaluating Transportation Impacts in CEQA* by the California Governor's Office of Planning and Research (OPR), dated December 2018: http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf.
- The school district can also refer to Caltrans' updated *Vehicle Miles Traveled-Focused Transportation Impact Study Guide* (TISG), dated May 2020 and released on Caltrans' website in July 2020: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmt-focused-tisg-a11y.pdf. Caltrans' new TISG is largely based on OPR's 2018 Technical Advisory.
- The updated TISG states, "Additional future guidance will include the basis for requesting transportation impact analysis that is not based on VMT. This guidance will include a simplified safety analysis approach that reduces risks to all road users and that focuses on multi-modal

conflict analysis as well as access management issues." Since releasing the TISG, Caltrans has released interim safety analysis guidance, dated July 2020 and found here, for the school district's reference: https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/sb-743/2020-07-01-interim-ldigr-safety-guidance-a11y.pdf.

- Caltrans looks forward to reviewing the VMT analysis for this project. As discussed in Caltrans' new TISG, Caltrans strongly recommends undertaking project VMT analysis, significance determination, and potential mitigation in a manner consistent with OPR's Technical Advisory.

The following information is included for your consideration.

The mission of Caltrans is to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. Furthermore, Caltrans encourages Lead Agencies to implement Transportation Demand Management (TDM) strategies that reduce VMT and Greenhouse Gas (GHG) emissions. Thus, Caltrans supports the Transportation Demand Management (TDM) strategies this project has incorporated, such as a pedestrian trail system. Additional TDM strategies that the school district may want to consider integrating into this project in order to further reduce VMT include:

- Ensure that project driveway placements do not directly cause issues related to line of sight of pedestrians or bicyclists.
- Verify that no more parking than required by the local permitting agency is provided.
- Provide safe and secure bicycle parking for students and employees.

For more TDM options, please refer to:

- The 2010 *Quantifying Greenhouse Gas Mitigation Measures* report by the California Air Pollution Control Officers Association (CAPCOA), available at http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf, or
- *Integrating Demand Management into the Transportation Planning Process: A Desk Reference* (Chapter 8) by the Federal Highway Administration (FHWA), available at https://ops.fhwa.dot.gov/publications/fhwahop12035/index.htm.

Also, any transportation of heavy construction equipment and/or materials which requires use of oversized-transport vehicles on State highways will need a Caltrans transportation permit. Caltrans recommends that the project limit construction traffic to off-peak periods to minimize the potential impact on State facilities. If construction traffic is expected to cause delays on any State facilities, please submit a construction traffic control plan detailing these delays for Caltrans' review.

If you have any questions about these comments, please contact Emily Gibson, the project coordinator, at Emily.Gibson@dot.ca.gov, and refer to GTS # 07-LA-2020-03345.

Sincerely,

Miya Edmonson

MIYA EDMONSON
IGR/CEQA Branch Chief
cc: Scott Morgan, State Clearinghouse

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL:
cupton@smmusd.org
Carey Upton, Chief Operations Officer
Santa Monica-Malibu Unified School District
1651 16th Street
Santa Monica, CA 90404

September 8, 2020

Notice of Preparation of a Draft Environmental Impact Report for the Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project (Proposed Project)

South Coast Air Quality Management District (South Coast AQMD) staff appreciates the opportunity to comment on the above-mentioned document. Our comments are recommendations on the analysis of potential air quality impacts from the Proposed Project that should be included in the Draft Environmental Impact Report (EIR). Please send a copy of the Draft EIR upon its completion and public release directly to South Coast AQMD as copies of the Draft EIR submitted to the State Clearinghouse are not forwarded. **In addition, please send all appendices and technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all emission calculation spreadsheets, and air quality modeling and health risk assessment input and output files (not PDF files). Any delays in providing all supporting documentation for our review will require additional review time beyond the end of the comment period.**

CEQA Air Quality Analysis

Staff recommends that the Lead Agency use South Coast AQMD's CEQA Air Quality Handbook and website[1] as guidance when preparing the air quality and greenhouse gas analyses. It is also recommended that the Lead Agency use the CalEEMod[2] land use emissions software, which can estimate pollutant emissions from typical land use development and is the only software model maintained by the California Air Pollution Control Officers Association.

South Coast AQMD has developed both regional and localized significance thresholds. South Coast AQMD staff recommends that the Lead Agency quantify criteria pollutant emissions and compare the emissions to South Coast AQMD's CEQA regional pollutant emissions significance thresholds[3] and localized significance thresholds (LSTs)[4] to determine the Proposed Project's air quality impacts. The localized analysis can be conducted by either using the LST screening tables or performing dispersion modeling.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the Proposed Project and all air pollutant sources related to the Proposed Project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of

[1] South Coast AQMD's CEQA Handbook and other resources for preparing air quality analyses can be found at: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.
[2] CalEEMod is available free of charge at: www.caleemod.com.
[3] South Coast AQMD's CEQA regional pollutant emissions significance thresholds can be found at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.
[4] South Coast AQMD's guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips, and hauling trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers and air pollution control devices), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis. Furthermore, emissions from the overlapping construction and operational activities should be combined and compared to South Coast AQMD's regional air quality CEQA ***operational*** thresholds to determine the level of significance.

If the Proposed Project generates diesel emissions from long-term construction or attracts diesel-fueled vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the Lead Agency perform a mobile source health risk assessment[5].

The Proposed Project would include, among other things, construction of 431,717 square feet of new school facilities and may be subject to the consultation requirements in CEQA Guidelines Section 15186. For a search of South Coast AQMD permitted facilities, please fill out the "Grid Search Request Form[6]".

Mitigation Measures

In the event that the Proposed Project results in significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized to minimize these impacts. Any impacts resulting from mitigation measures must also be analyzed. Several resources to assist the Lead Agency with identifying potential mitigation measures for the Proposed Project include South Coast AQMD's CEQA Air Quality Handbook[1], South Coast AQMD's Mitigation Monitoring and Reporting Plan for the 2016 Air Quality Management Plan[7], and Southern California Association of Government's Mitigation Monitoring and Reporting Plan for the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy[8].

South Coast AQMD staff is available to work with the Lead Agency to ensure that air quality, greenhouse gas, and health risk impacts from the Proposed Project are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

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Control Number

[5] South Coast AQMD's guidance for performing a mobile source health risk assessment can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis.
[6] South Coast AQMD's Grid Search Request Form can be found at: http://www.aqmd.gov/docs/default-source/aqmd-forms/Permit/ab3205-request-form.pdf.
[7] South Coast AQMD's 2016 Air Quality Management Plan can be found at: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf (starting on page 86).
[8] Southern California Association of Governments' 2020-2045 RTP/SCS can be found at: https://www.connectsocal.org/Documents/PEIR/certified/Exhibit-A_ConnectSoCal_PEIR.pdf.

Appendix D Air Quality and Greenhouse Emissions Data

Appendices

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Air Quality and Greenhouse Gas Appendix

OTHER STATE REGULATIONS

US Mandatory Reporting Rule for GHGs (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 $MTCO_2e$ or more per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2021 to 2026)

The federal government issued new corporate average fuel economy standards in 2012 for model years 2017 to 2025 that required a fleet average of 54.5 miles per gallon in 2025. However, on March 30, 2020, the EPA finalized updated corporate average fuel economy and GHG emissions standards for passenger cars and light trucks and established new standards covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient Vehicles Final Rule for Model Years 2021 to 2026. However, a consortium of automakers and California have agreed on a voluntary framework to reduce emissions that can serve as an alternate path forward for clean vehicle standards nationwide. Automakers who agreed to the framework are Ford, Honda, BMW of North America, and Volkswagen Group of America. The framework supports continued annual reductions of vehicle GHG emissions through the 2026 model year, encourages innovation to accelerate the transition to electric vehicles, and gives industry the certainty needed to make investments and create jobs. The auto companies that are parties to the voluntary agreement will only sell cars in the United States that meet these standards (CARB 2019). In addition, per Executive Order 13990 issued by President Biden on January 20, 2021, the EPA is reconsidering the Safer Affordable Fuel Efficient Vehicles rule. The reconsideration process is ongoing with the planned public hearing on June 2, 2021, which also started the public comment period that ended on July 6, 2021.

EPA Regulation of Stationary Sources under the Clean Air Act (Ongoing)

Pursuant to its authority under the Clean Air Act, the EPA has been developing regulations for new, large, stationary sources of emissions such as power plants and refineries. Under former President Obama's 2013 Climate Action Plan, the EPA was directed to develop regulations for existing stationary sources as well. On June 19, 2019, the EPA issued the final Affordable Clean Energy rule, which became effective on August 19, 2019. This rule was crafted under the direction of President Trump's Energy Independence Executive Order. It officially rescinds the Clean Power Plan rule issued during the Obama Administration and sets emissions guidelines for states in developing plans to limit CO_2 emissions from coal-fired power plants.

Specific Regulations for the Transportation Sector

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduced GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and was anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implemented the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that set even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles (see also the discussion on the update to the corporate average fuel economy standards under "Federal," above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of ZE vehicles into a single package of standards. Under California's Advanced Clean

Car program, by 2025 new automobiles will emit 34 percent less GHG and 75 percent less smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the state set a new LCFS for transportation fuels sold in the state. Executive Order S-01-07 set a declining standard for GHG emissions measured in CO_2e gram per unit of fuel energy sold in California. The LCFS required a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applied to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Executive Order B-16-2012

On March 23, 2012, the State announced that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate ZE vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directed the number of ZE vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles were ZE by 2015 and at least 25 percent by 2020. The executive order also established a target for the transportation sector of reducing GHG emissions 80 percent below 1990 levels.

Executive Order N-79-20

On September 23, 2020, Governor Newsom signed Executive Order N-79-20 with the goal that 100 percent of in-state sales of new passenger cars and trucks will be ZE by 2035. Additionally, this Executive Order identified fleet goals of 100 percent ZE drayage trucks by 2035 and 100 percent ZE medium- and heavy-duty vehicles in the state by 2045, for all operations where feasible. Additionally, the Executive Order identifies a goal for the state to transition to 100 percent ZE off-road vehicles and equipment by 2035, where feasible.

Renewables Portfolio: Carbon Neutrality Regulations

Senate Bills 1078, 107, and X1-2 and Executive Order S-14-08

A major component of California's Renewable Energy Program is the renewables portfolio standard established under SBs 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08, signed in November 2008, expanded the State's renewable energy standard to 33 percent renewable power by 2020. This standard was adopted by the legislature in 2011 (SB X1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

Senate Bill 350 (de Leon) was signed into law September 2015 and established tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

Senate Bill 100

On September 10, 2018, Governor Brown signed SB 100, which replaced the SB 350 requirement of 45 percent renewable energy by 2027 with the requirement of 50 percent by 2026 and raised California's RPS requirements for 2050 from 50 percent to 60 percent. SB 100 established RPS requirements for publicly owned utilities that consist of 44 percent renewable energy by 2024, 52 percent by 2027, and 60 percent by 2030. The bill also established an overall state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18

Executive Order B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." Executive Order B-55-18 directs CARB to work with relevant state agencies to ensure future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning that not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that, by no later than 2045, the remaining emissions should be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

References

California Air Resources Board (CARB). 2019. California and Major Automakers Reach Groundbreaking Framework Agreement on Clean Emission Standards. Accessed September 5, 2019. https://ww2.arb.ca.gov/news/california-and-major-automakers-reach-groundbreaking-framework-agreement-clean-emission.

Emissions Worksheet

Regional Construction Emissions Worksheet (Phase 1):

Building and Asphalt Demolition		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022 Winter**						
	Off-Road	0.93	8.21	9.57	0.03	0.33	0.31
	Total	**0.93**	**8.21**	**9.57**	**0.03**	**0.33**	**0.31**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.04	0.03	0.36	0.00	0.10	0.03
	Total	**0.04**	**0.23**	**0.43**	**0.00**	**0.13**	**0.04**
TOTAL		***0.97***	***8.44***	***10.00***	***0.03***	***0.46***	***0.35***
Onsite	**2022**						
	Off-Road	0.93	8.21	9.57	0.03	0.33	0.31
	Total	**0.93**	**8.21**	**9.57**	**0.03**	**0.33**	**0.31**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.04	0.03	0.36	0.00	0.10	0.03
	Total	**0.04**	**0.23**	**0.43**	**0.00**	**0.13**	**0.04**
TOTAL		***0.97***	***8.44***	***10.00***	***0.03***	***0.46***	***0.35***

Building and Asphalt Demolition Debris Haul		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Winter						
	Fugitive Dust					0.94	0.14
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.94**	**0.14**
Offsite							
	Hauling	0.05	1.80	0.41	0.01	0.18	0.06
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.05**	**1.80**	**0.41**	**0.01**	**0.18**	**0.06**
TOTAL		***0.05***	***1.80***	***0.41***	***0.01***	***1.12***	***0.20***
Onsite	**2022**						
	Fugitive Dust	0.00	0.00	0.00	0.00	0.94	0.14
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.94**	**0.14**
Offsite							
	Hauling	0.05	1.80	0.41	0.01	0.18	0.06
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.05**	**1.80**	**0.41**	**0.01**	**0.18**	**0.06**
TOTAL		***0.05***	***1.80***	***0.41***	***0.01***	***1.12***	***0.20***

Building and Asphalt Demolition and Site Preparation		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022 Winter**						
	Off-Road	1.29	11.69	13.72	0.03	0.54	0.51
	Total	**1.29**	**11.69**	**13.72**	**0.03**	**0.54**	**0.51**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.06	0.04	0.54	0.00	0.16	0.04
	Total	**0.06**	**0.25**	**0.61**	**0.00**	**0.18**	**0.05**
TOTAL		***1.35***	***11.93***	***14.33***	***0.04***	***0.72***	***0.56***
Onsite	**2022**						
	Off-Road	1.29	11.69	13.72	0.03	0.54	0.51
	Total	**1.29**	**11.69**	**13.72**	**0.03**	**0.54**	**0.51**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.06	0.04	0.54	0.00	0.16	0.04
	Total	**0.06**	**0.25**	**0.61**	**0.00**	**0.18**	**0.05**
TOTAL		***1.35***	***11.93***	***14.33***	***0.04***	***0.72***	***0.56***

Rough Grading

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Fugitive Dust						3.48	1.51
	Off-Road		2.24	24.72	13.54	0.03	1.03	0.95
	Total		**2.24**	**24.72**	**13.54**	**0.03**	**4.51**	**2.46**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.20	0.07	0.00	0.03	0.01
	Worker		0.04	0.03	0.36	0.00	0.10	0.03
	Total		**0.04**	**0.23**	**0.43**	**0.00**	**0.13**	**0.04**
TOTAL			***2.28***	***24.95***	***13.97***	***0.03***	***4.64***	***2.50***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	3.48	1.51
	Off-Road		2.24	24.72	13.54	0.03	1.03	0.95
	Total		**2.24**	**24.72**	**13.54**	**0.03**	**4.51**	**2.46**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.01	0.20	0.07	0.00	0.03	0.01
	Worker		0.04	0.03	0.36	0.00	0.10	0.03
	Total		**0.04**	**0.23**	**0.43**	**0.00**	**0.13**	**0.04**
TOTAL			***2.28***	***24.95***	***13.97***	***0.03***	***4.64***	***2.50***

Rough Grading Soil Import

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Fugitive Dust						0.01	0.00
	Off-Road		0.36	3.48	4.15	0.01	0.21	0.19
	Total		**0.36**	**3.48**	**4.15**	**0.01**	**0.22**	**0.20**
Offsite								
	Hauling		0.16	5.97	1.36	0.02	0.60	0.19
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.02	0.01	0.18	0.00	0.05	0.01
	Total		**0.17**	**5.99**	**1.54**	**0.02**	**0.65**	**0.21**
TOTAL			***0.53***	***9.47***	***5.70***	***0.03***	***0.88***	***0.40***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	0.01	0.00
	Off-Road		0.36	3.48	4.15	0.01	0.21	0.19
	Total		**0.36**	**3.48**	**4.15**	**0.01**	**0.22**	**0.20**
Offsite								
	Hauling		0.16	5.97	1.36	0.02	0.60	0.19
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.02	0.01	0.18	0.00	0.05	0.01
	Total		**0.17**	**5.99**	**1.54**	**0.02**	**0.65**	**0.21**
TOTAL			***0.53***	***9.47***	***5.70***	***0.03***	***0.88***	***0.40***

Rough Grading Soil Export

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022** Winter						
	Fugitive Dust						0.04	0.01
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.01**
Offsite								
	Hauling		0.45	17.36	3.96	0.06	1.74	0.57
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.45**	**17.36**	**3.96**	**0.06**	**1.74**	**0.57**
TOTAL			***0.45***	***17.36***	***3.96***	***0.06***	***1.78***	***0.57***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	0.04	0.01
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.01**
Offsite								
	Hauling		0.45	17.36	3.96	0.06	1.74	0.57
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.45**	**17.36**	**3.96**	**0.06**	**1.74**	**0.57**
TOTAL			***0.45***	***17.36***	***3.96***	***0.06***	***1.78***	***0.57***

Utility Trenching

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022 Winter**						
	Off-Road	0.56	5.26	7.41	0.01	0.30	0.27
	Total	**0.56**	**5.26**	**7.41**	**0.01**	**0.30**	**0.27**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.03	0.02	0.29	0.00	0.08	0.02
	Total	**0.04**	**0.23**	**0.36**	**0.00**	**0.11**	**0.03**
TOTAL		***0.60***	***5.48***	***7.77***	***0.01***	***0.41***	***0.30***
Onsite	**2022**						
	Off-Road	0.56	5.26	7.41	0.01	0.30	0.27
	Total	**0.56**	**5.26**	**7.41**	**0.01**	**0.30**	**0.27**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.01	0.20	0.07	0.00	0.03	0.01
	Worker	0.03	0.02	0.29	0.00	0.08	0.02
	Total	**0.04**	**0.23**	**0.36**	**0.00**	**0.11**	**0.03**
TOTAL		***0.60***	***5.48***	***7.77***	***0.01***	***0.41***	***0.30***

Building Construction 1 2022

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022 Winter**						
	Off-Road	1.71	15.62	16.36	0.03	0.81	0.76
	Total	**1.71**	**15.62**	**16.36**	**0.03**	**0.81**	**0.76**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.09	2.35	0.80	0.01	0.30	0.10
	Worker	0.44	0.33	4.30	0.01	1.23	0.34
	Total	**0.53**	**2.68**	**5.10**	**0.02**	**1.53**	**0.44**
TOTAL		***2.24***	***18.29***	***21.46***	***0.05***	***2.34***	***1.20***
Onsite	**2022**						
	Off-Road	1.71	15.62	16.36	0.03	0.81	0.76
	Total	**1.71**	**15.62**	**16.36**	**0.03**	**0.81**	**0.76**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.09	2.35	0.80	0.01	0.30	0.10
	Worker	0.44	0.33	4.30	0.01	1.23	0.34
	Total	**0.53**	**2.68**	**5.10**	**0.02**	**1.53**	**0.44**
TOTAL		***2.24***	***18.29***	***21.46***	***0.05***	***2.34***	***1.20***

Building Construction 1 2023

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2023 Winter**						
	Off-Road	1.57	14.38	16.24	0.03	0.70	0.66
	Total	**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.05	1.85	0.71	0.01	0.28	0.09
	Worker	0.41	0.29	3.95	0.01	1.23	0.33
	Total	**0.46**	**2.14**	**4.66**	**0.02**	**1.52**	**0.42**
TOTAL		***2.03***	***16.53***	***20.90***	***0.05***	***2.22***	***1.08***
Onsite	**2023**						
	Off-Road	1.57	14.38	16.24	0.03	0.70	0.66
	Total	**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.05	1.85	0.71	0.01	0.28	0.09
	Worker	0.41	0.29	3.95	0.01	1.23	0.33
	Total	**0.46**	**2.14**	**4.66**	**0.02**	**1.52**	**0.42**
TOTAL		***2.03***	***16.53***	***20.90***	***0.05***	***2.22***	***1.08***

Building Construction and Fine Grading							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2023** Winter						
	Fugitive Dust					0.23	0.02
	Off-Road	2.11	20.65	19.79	0.04	0.94	0.88
	Total	**2.11**	**20.65**	**19.79**	**0.04**	**1.17**	**0.90**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.06	2.01	0.77	0.01	0.31	0.10
	Worker	0.41	0.29	3.95	0.01	1.23	0.33
	Total	**0.46**	**2.30**	**4.72**	**0.02**	**1.54**	**0.43**
TOTAL		***2.57***	***22.95***	***24.51***	***0.06***	***2.71***	***1.33***
Onsite	**2023**						
	Fugitive Dust	0.00	0.00	0.00	0.00	0.23	0.02
	Off-Road	2.11	20.65	19.79	0.04	0.94	0.88
	Total	**2.11**	**20.65**	**19.79**	**0.04**	**1.17**	**0.90**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.06	2.01	0.77	0.01	0.31	0.10
	Worker	0.41	0.29	3.95	0.01	1.23	0.33
	Total	**0.46**	**2.30**	**4.72**	**0.02**	**1.54**	**0.43**
TOTAL		***2.57***	***22.95***	***24.51***	***0.06***	***2.71***	***1.33***

Building Construction 2 2023							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2023 Winter**						
	Off-Road	1.57	14.38	16.24	0.03	0.70	0.66
	Total	**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.05	1.85	0.71	0.01	0.28	0.09
	Worker	0.41	0.29	3.95	0.01	1.23	0.33
	Total	**0.46**	**2.14**	**4.66**	**0.02**	**1.52**	**0.42**
TOTAL		***2.03***	***16.53***	***20.90***	***0.05***	***2.22***	***1.08***
Onsite	**2023**						
	Off-Road	1.57	14.38	16.24	0.03	0.70	0.66
	Total	**1.57**	**14.38**	**16.24**	**0.03**	**0.70**	**0.66**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.05	1.85	0.71	0.01	0.28	0.09
	Worker	0.41	0.29	3.95	0.01	1.23	0.33
	Total	**0.46**	**2.14**	**4.66**	**0.02**	**1.52**	**0.42**
TOTAL		***2.03***	***16.53***	***20.90***	***0.05***	***2.22***	***1.08***

Building Construction 2 2024							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024 Winter**						
	Off-Road	1.47	13.44	16.17	0.03	0.61	0.58
	Total	**1.47**	**13.44**	**16.17**	**0.03**	**0.61**	**0.58**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.05	1.85	0.69	0.01	0.28	0.09
	Worker	0.38	0.26	3.68	0.01	1.23	0.33
	Total	**0.43**	**2.11**	**4.37**	**0.02**	**1.52**	**0.42**
TOTAL		***1.90***	***15.56***	***20.53***	***0.05***	***2.13***	***1.00***
Onsite	**2024**						
	Off-Road	1.47	13.44	16.17	0.03	0.61	0.58
	Total	**1.47**	**13.44**	**16.17**	**0.03**	**0.61**	**0.58**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.05	1.85	0.69	0.01	0.28	0.09
	Worker	0.38	0.26	3.68	0.01	1.23	0.33
	Total	**0.43**	**2.11**	**4.37**	**0.02**	**1.52**	**0.42**
TOTAL		***1.90***	***15.56***	***20.53***	***0.05***	***2.13***	***1.00***

Architectural Coating

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024** Winter						
	Archit. Coating	7.59				0.00	0.00
	Off-Road	0.18	1.22	1.81	0.00	0.06	0.06
	Total	**7.77**	**1.22**	**1.81**	**0.00**	**0.06**	**0.06**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.08	0.05	0.74	0.00	0.25	0.07
	Total	**0.08**	**0.05**	**0.74**	**0.00**	**0.25**	**0.07**
TOTAL		***7.84***	***1.27***	***2.55***	***0.01***	***0.31***	***0.13***
Onsite	**2024**						
	Archit. Coating	7.59	0.00	0.00	0.00	0.00	0.00
	Off-Road	0.18	1.22	1.81	0.00	0.06	0.06
	Total	**7.77**	**1.22**	**1.81**	**0.00**	**0.06**	**0.06**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.08	0.05	0.74	0.00	0.25	0.07
	Total	**0.08**	**0.05**	**0.74**	**0.00**	**0.25**	**0.07**
TOTAL		***7.84***	***1.27***	***2.55***	***0.01***	***0.31***	***0.13***

Paving

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024** Winter						
	Off-Road	0.99	9.52	14.63	0.02	0.47	0.43
	Paving	0.12				0.00	0.00
	Total	**1.10**	**9.52**	**14.63**	**0.02**	**0.47**	**0.43**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.05	0.03	0.46	0.00	0.16	0.04
	Total	**0.05**	**0.03**	**0.46**	**0.00**	**0.16**	**0.04**
TOTAL		***1.15***	***9.56***	***15.09***	***0.02***	***0.62***	***0.47***
Onsite	**2024**						
	Off-Road	0.99	9.52	14.63	0.02	0.47	0.43
	Paving	0.12	0.00	0.00	0.00	0.00	0.00
	Total	**1.10**	**9.52**	**14.63**	**0.02**	**0.47**	**0.43**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.05	0.03	0.46	0.00	0.16	0.04
	Total	**0.05**	**0.03**	**0.46**	**0.00**	**0.16**	**0.04**
TOTAL		***1.15***	***9.56***	***15.09***	***0.02***	***0.62***	***0.47***

Finishing/Landscaping

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024 Winter**						
	Off-Road	0.18	1.40	3.27	0.01	0.07	0.06
	Total	**0.18**	**1.40**	**3.27**	**0.01**	**0.07**	**0.06**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.01	0.01	0.09	0.00	0.03	0.01
	Total	**0.01**	**0.01**	**0.09**	**0.00**	**0.03**	**0.01**
TOTAL		***0.19***	***1.41***	***3.36***	***0.01***	***0.10***	***0.07***
Onsite	**2024**						
	Off-Road	0.18	1.40	3.27	0.01	0.07	0.06
	Total	**0.18**	**1.40**	**3.27**	**0.01**	**0.07**	**0.06**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.01	0.01	0.09	0.00	0.03	0.01
	Total	**0.01**	**0.01**	**0.09**	**0.00**	**0.03**	**0.01**
TOTAL		***0.19***	***1.41***	***3.36***	***0.01***	***0.10***	***0.07***

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Building and Asphalt Demolition	*1*	*8*	*10*	*0*	*0*	*0*
Building and Asphalt Demolition and Debris Haul	*1*	*10*	*10*	*0*	*2*	*1*
Building and Asphalt Demolition, Debris Haul, and Site Preparation	*1*	*14*	*15*	*0*	*2*	*1*
Rough Grading and Soil Haul (Import/Export)	*3*	*52*	*24*	*0*	*7*	*3*
Utility Trenching	*1*	*5*	*8*	*0*	*0*	*0*
Utility Trenching and Building Construction 1 2022	*3*	*24*	*29*	*0*	*3*	*2*
Building Construction 1 2022	*2*	*18*	*21*	*0*	*2*	*1*
Building Construction 1 2023	*2*	*17*	*21*	*0*	*2*	*1*
Building Construction 2023 and Fine Grading	*3*	*23*	*25*	*0*	*3*	*1*
Building Construction 2 2023	*2*	*17*	*21*	*0*	*2*	*1*
Building Construction 2 2024	*2*	*16*	*21*	*0*	*2*	*1*
Architectural Coating	*8*	*1*	*3*	*0*	*0*	*0*
Paving	*1*	*10*	*15*	*0*	*1*	*0*
Finishing/Landscaping	*0*	*1*	*3*	*0*	*0*	*0*
MAX DAILY	**8**	**52**	**29**	**0**	**7**	**3**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

Construction LST Worksheet (Phase 1):

**NOx and CO LSTs based on 82 ft receptor (students), PM10 and PM2.5 LSTs based on 115 ft receptor (residences) as students would not be on campus 24hrs/day

Building and Asphalt Demolition					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	2022				
Off-Road		8.21	9.57	0.33	0.31
Total		**8.21**	**9.57**	**0.33**	**0.31**
TOTAL		***8.21***	***9.57***	***0.33***	***0.31***
Onsite	2022				
Off-Road		8.21	9.57	0.33	0.31
Total		**8.21**	**9.57**	**0.33**	**0.31**
TOTAL		***8.21***	***9.57***	***0.33***	***0.31***

Building and Asphalt Demolition Debris Haul					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	2022				
Fugitive Dust				0.94	0.14
Off-Road		0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.94**	**0.14**
TOTAL		***0.00***	***0.00***	***0.94***	***0.14***
Onsite	2022				
Fugitive Dust		0.00	0.00	0.94	0.14
Off-Road		0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.94**	**0.14**
TOTAL		***0.00***	***0.00***	***0.94***	***0.14***

Building and Asphalt Demolition and Site Preparation					
		NOx	CO	PM10 Total	PM2.5 Total
TOTAL		***0.00***	***0.00***	***0.00***	***0.00***
Onsite	2022				
Off-Road		11.69	13.72	0.54	0.51
Total		**11.69**	**13.72**	**0.54**	**0.51**
TOTAL		***11.69***	***13.72***	***0.54***	***0.51***
Onsite	2022				
Off-Road		11.69	13.72	0.54	0.51
Total		**11.69**	**13.72**	**0.54**	**0.51**
Offsite					
Hauling		0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**
TOTAL		***11.69***	***13.72***	***0.54***	***0.51***

Rough Grading					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	2022				
Fugitive Dust				3.48	1.51
Off-Road		24.72	13.54	1.03	0.95
Total		**24.72**	**13.54**	**4.51**	**2.46**
TOTAL		***24.72***	***13.54***	***4.51***	***2.46***
Onsite	2022				
Fugitive Dust		0.00	0.00	3.48	1.51
Off-Road		24.72	13.54	1.03	0.95
Total		**24.72**	**13.54**	**4.51**	**2.46**
TOTAL		***24.72***	***13.54***	***4.51***	***2.46***

Rough Grading Soil Import						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2022				
	Fugitive Dust				0.01	0.00
	Off-Road		3.48	4.15	0.21	0.19
	Total		**3.48**	**4.15**	**0.22**	**0.20**
TOTAL			***3.48***	***4.15***	***0.22***	***0.20***
Onsite		2022				
	Fugitive Dust		0.00	0.00	0.01	0.00
	Off-Road		3.48	4.15	0.21	0.19
	Total		**3.48**	**4.15**	**0.22**	**0.20**
TOTAL			***3.48***	***4.15***	***0.22***	***0.20***

Rough Grading Soil Export						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2022				
	Fugitive Dust				0.04	0.01
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.04**	**0.01**
TOTAL			***0.00***	***0.00***	***0.04***	***0.01***
Onsite		2022				
	Fugitive Dust		0.00	0.00	0.04	0.01
	Off-Road		0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.04**	**0.01**
TOTAL			***0.00***	***0.00***	***0.04***	***0.01***

Utility Trenching						
			NOx	CO	PM10 Total	PM2.5 Total
TOTAL			***0.00***	***0.00***	***0.00***	***0.00***
Onsite		2022				
	Off-Road		5.26	7.41	0.30	0.27
	Total		**5.26**	**7.41**	**0.30**	**0.27**
TOTAL			***5.26***	***7.41***	***0.30***	***0.27***
Onsite		2022				
	Off-Road		5.26	7.41	0.30	0.27
	Total		**5.26**	**7.41**	**0.30**	**0.27**
TOTAL			***5.26***	***7.41***	***0.30***	***0.27***

Building Construction 1 2022						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2022				
	Off-Road		15.62	16.36	0.81	0.76
	Total		**15.62**	**16.36**	**0.81**	**0.76**
TOTAL			***15.62***	***16.36***	***0.81***	***0.76***
Onsite		2022				
	Off-Road		15.62	16.36	0.81	0.76
	Total		**15.62**	**16.36**	**0.81**	**0.76**
TOTAL			***15.62***	***16.36***	***0.81***	***0.76***

Building Construction 1 2023						
			NOx	CO	PM10 Total	PM2.5 Total
Onsite		2023				
	Off-Road		14.38	16.24	0.70	0.66
	Total		**14.38**	**16.24**	**0.70**	**0.66**
TOTAL			***14.38***	***16.24***	***0.70***	***0.66***
Onsite		2023				
	Off-Road		14.38	16.24	0.70	0.66
	Total		**14.38**	**16.24**	**0.70**	**0.66**
TOTAL			***14.38***	***16.24***	***0.70***	***0.66***

Building Construction and Fine Grading					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2023**				
Fugitive Dust				0.23	0.02
Off-Road		20.65	19.79	0.94	0.88
Total		**20.65**	**19.79**	**1.17**	**0.90**
TOTAL		***20.65***	***19.79***	***1.17***	***0.90***
Onsite	**2023**				
Fugitive Dust		0.00	0.00	0.23	0.02
Off-Road		20.65	19.79	0.94	0.88
Total		**20.65**	**19.79**	**1.17**	**0.90**
TOTAL		***20.65***	***19.79***	***1.17***	***0.90***

Building Construction 2 2023				
	NOx	CO	PM10 Total	PM2.5 Total
Onsite **2023**				
Off-Road	14.38	16.24	0.70	0.66
Total	**14.38**	**16.24**	**0.70**	**0.66**
TOTAL	***14.38***	***16.24***	***0.70***	***0.66***
Onsite **2023**				
Off-Road	14.38	16.24	0.70	0.66
Total	**14.38**	**16.24**	**0.70**	**0.66**
TOTAL	***14.38***	***16.24***	***0.70***	***0.66***

Building Construction 2 2024				
	NOx	CO	PM10 Total	PM2.5 Total
Onsite **2024**				
Off-Road	13.44	16.17	0.61	0.58
Total	**13.44**	**16.17**	**0.61**	**0.58**
TOTAL	***13.44***	***16.17***	***0.61***	***0.58***
Onsite **2024**				
Off-Road	13.44	16.17	0.61	0.58
Total	**13.44**	**16.17**	**0.61**	**0.58**
TOTAL	***13.44***	***16.17***	***0.61***	***0.58***

Architectural Coating				
	NOx	CO	PM10 Total	PM2.5 Total
Onsite **2024**				
Archit. Coating			0.00	0.00
Off-Road	1.22	1.81	0.06	0.06
Total	**1.22**	**1.81**	**0.06**	**0.06**
TOTAL	***1.22***	***1.81***	***0.06***	***0.06***
Onsite **2024**				
Archit. Coating	0.00	0.00	0.00	0.00
Off-Road	1.22	1.81	0.06	0.06
Total	**1.22**	**1.81**	**0.06**	**0.06**
TOTAL	***1.22***	***1.81***	***0.06***	***0.06***

Paving

		NOx	CO	PM10 Total	PM2.5 Total
TOTAL		***0.00***	***0.00***	***0.00***	***0.00***
Onsite	**2024**				
Off-Road		9.52	14.63	0.47	0.43
Paving				0.00	0.00
Total		**9.52**	**14.63**	**0.47**	**0.43**
TOTAL		***9.52***	***14.63***	***0.47***	***0.43***
Onsite	**2024**				
Off-Road		9.52	14.63	0.47	0.43
Paving		0.00	0.00	0.00	0.00
Total		**9.52**	**14.63**	**0.47**	**0.43**
TOTAL		***9.52***	***14.63***	***0.47***	***0.43***

Finishing/Landscaping

		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Off-Road		1.40	3.27	0.07	0.06
Total		**1.40**	**3.27**	**0.07**	**0.06**
TOTAL		***1.40***	***3.27***	***0.07***	***0.06***
Onsite	**2024**				
Off-Road		1.40	3.27	0.07	0.06
Total		**1.40**	**3.27**	**0.07**	**0.06**
TOTAL		***1.40***	***3.27***	***0.07***	***0.06***

	NOx	**CO**	**PM10 Total**	**PM2.5 Total**
Building and Asphalt Demolition	***8***	***10***	***0.33***	***0.31***
≤1.00 Acre LST	***103***	***562***	***7.22***	***3.40***
Exceeds LST?	***no***	***no***	***no***	***no***
Building and Asphalt Demolition and Debris Haul	***8***	***10***	***1.27***	***0.46***
≤1.00 Acre LST	***103***	***562***	***7.22***	***3.40***
Exceeds LST?	***no***	***no***	***no***	***no***
Building and Asphalt Demolition, Debris Haul, and Site Preparation	***12***	***14***	***1.48***	***0.65***
≤1.00 Acre LST	***103***	***562***	***7.22***	***3.40***
Exceeds LST?	***no***	***no***	***no***	***no***
Rough Grading and Soil Haul (Import/Export)	***28***	***18***	***4.78***	***2.67***
2.50 Acre LST	***159***	***944***	***13.33***	***4.80***
Exceeds LST?	***no***	***no***	***no***	***no***
Utility Trenching	***5***	***7***	***0.30***	***0.27***
≤1.00 Acre LST	***103***	***562***	***7.22***	***3.40***
Exceeds LST?	***no***	***no***	***no***	***no***
Utility Trenching and Building Construction 1 2022	***21***	***24***	***1.11***	***1.03***
1.81 Acre LST	***139***	***777***	***10.48***	***4.21***
Exceeds LST?	***no***	***no***	***no***	***no***
Building Construction 1 2022	***16***	***16***	***0.81***	***0.76***
1.31 Acre LST	***117***	***645***	***8.47***	***3.71***
Exceeds LST?	***no***	***no***	***no***	***no***

Building Construction 1 2023	*14*	*16*	*0.70*	*0.66*
1.31 Acre LST	*117*	*645*	*8.47*	*3.71*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2023 and Fine Grading	*21*	*20*	*1.17*	*0.90*
1.81 Acre LST	*139*	*777*	*10.48*	*4.21*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2 2023	*14*	*16*	*0.70*	*0.66*
1.31 Acre LST	*117*	*645*	*8.47*	*3.71*
Exceeds LST?	*no*	*no*	*no*	*no*
Building Construction 2 2024	*13*	*16*	*0.61*	*0.58*
1.31 Acre LST	*117*	*645*	*8.47*	*3.71*
Exceeds LST?	*no*	*no*	*no*	*no*
Architectural Coating	*1*	*2*	*0.06*	*0.06*
≤1.00 Acre LST	*103*	*562*	*7.22*	*3.40*
Exceeds LST?	*no*	*no*	*no*	*no*
Paving	*10*	*15*	*0.47*	*0.43*
≤1.00 Acre LST	*103*	*562*	*7.22*	*3.40*
Exceeds LST?	*no*	*no*	*no*	*no*
Finishing/Landscaping	*1*	*3*	*0.07*	*0.06*
≤1.00 Acre LST	*103*	*562*	*7.22*	*3.40*
Exceeds LST?	*no*	*no*	*no*	*no*

Regional Construction Emissions Worksheet (Phase 2-Phase 4B):

Building and Asphalt Demolition		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024 Winter**						
	Off-Road	2.24	20.88	19.71	0.04	0.96	0.89
	Total	**2.24**	**20.88**	**19.71**	**0.04**	**0.96**	**0.89**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.16	0.06	0.00	0.02	0.01
	Worker	0.05	0.03	0.47	0.00	0.16	0.04
	Total	**0.05**	**0.19**	**0.53**	**0.00**	**0.18**	**0.05**
TOTAL		***2.30***	***21.07***	***20.23***	***0.04***	***1.14***	***0.94***
Onsite	**2024**						
	Off-Road	2.24	20.88	19.71	0.04	0.96	0.89
	Total	**2.24**	**20.88**	**19.71**	**0.04**	**0.96**	**0.89**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.16	0.06	0.00	0.02	0.01
	Worker	0.05	0.03	0.47	0.00	0.16	0.04
	Total	**0.05**	**0.19**	**0.53**	**0.00**	**0.18**	**0.05**
TOTAL		***2.30***	***21.07***	***20.23***	***0.04***	***1.14***	***0.94***

Building and Asphalt Demolition Debris Haul		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2022** Winter						
	Fugitive Dust					1.37	0.21
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**1.37**	**0.21**
Offsite							
	Hauling	0.03	2.05	0.54	0.01	0.26	0.08
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.03**	**2.05**	**0.54**	**0.01**	**0.26**	**0.08**
TOTAL		***0.03***	***2.05***	***0.54***	***0.01***	***1.62***	***0.29***
Onsite	**2022**						
	Fugitive Dust	0.00	0.00	0.00	0.00	1.37	0.21
	Off-Road	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.00**	**0.00**	**0.00**	**0.00**	**1.37**	**0.21**
Offsite							
	Hauling	0.03	2.05	0.54	0.01	0.26	0.08
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**0.03**	**2.05**	**0.54**	**0.01**	**0.26**	**0.08**
TOTAL		***0.03***	***2.05***	***0.54***	***0.01***	***1.62***	***0.29***

Rough Grading		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024** Winter						
	Fugitive Dust					3.03	1.46
	Off-Road	1.66	17.03	14.76	0.03	0.72	0.67
	Total	**1.66**	**17.03**	**14.76**	**0.03**	**3.75**	**2.13**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.16	0.06	0.00	0.02	0.01
	Worker	0.05	0.03	0.47	0.00	0.16	0.04
	Total	**0.05**	**0.19**	**0.53**	**0.00**	**0.18**	**0.05**
TOTAL		***1.71***	***17.23***	***15.28***	***0.03***	***3.93***	***2.18***
Onsite	**2024**						
	Fugitive Dust	0.00	0.00	0.00	0.00	3.03	1.46
	Off-Road	1.66	17.03	14.76	0.03	0.72	0.67
	Total	**1.66**	**17.03**	**14.76**	**0.03**	**3.75**	**2.13**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.16	0.06	0.00	0.02	0.01
	Worker	0.05	0.03	0.47	0.00	0.16	0.04
	Total	**0.05**	**0.19**	**0.53**	**0.00**	**0.18**	**0.05**
TOTAL		***1.71***	***17.23***	***15.28***	***0.03***	***3.93***	***2.18***

Rough Grading Soil Haul

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022 Winter**						
	Fugitive Dust						0.03	0.00
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**0.03**	**0.00**
Offsite								
	Hauling		0.13	9.08	2.39	0.04	1.14	0.35
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.13**	**9.08**	**2.39**	**0.04**	**1.14**	**0.35**
TOTAL			***0.13***	***9.08***	***2.39***	***0.04***	***1.17***	***0.36***
Onsite		**2022**						
	Fugitive Dust		0.00	0.00	0.00	0.00	0.03	0.00
	Off-Road		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.00**	**0.00**	**0.00**	**0.00**	**0.03**	**0.00**
Offsite								
	Hauling		0.13	9.08	2.39	0.04	1.14	0.35
	Vendor		0.00	0.00	0.00	0.00	0.00	0.00
	Worker		0.00	0.00	0.00	0.00	0.00	0.00
	Total		**0.13**	**9.08**	**2.39**	**0.04**	**1.14**	**0.35**
TOTAL			***0.13***	***9.08***	***2.39***	***0.04***	***1.17***	***0.36***

Building Construction 2024

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2022 Winter**						
	Off-Road		1.47	13.44	16.17	0.03	0.61	0.58
	Total		**1.47**	**13.44**	**16.17**	**0.03**	**0.61**	**0.58**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.06	2.21	0.83	0.01	0.34	0.11
	Worker		0.45	0.31	4.38	0.01	1.46	0.40
	Total		**0.51**	**2.53**	**5.20**	**0.02**	**1.80**	**0.50**
TOTAL			***1.98***	***15.97***	***21.37***	***0.05***	***2.42***	***1.08***
Onsite		**2022**						
	Off-Road		1.47	13.44	16.17	0.03	0.61	0.58
	Total		**1.47**	**13.44**	**16.17**	**0.03**	**0.61**	**0.58**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.06	2.21	0.83	0.01	0.34	0.11
	Worker		0.45	0.31	4.38	0.01	1.46	0.40
	Total		**0.51**	**2.53**	**5.20**	**0.02**	**1.80**	**0.50**
TOTAL			***1.98***	***15.97***	***21.37***	***0.05***	***2.42***	***1.08***

Building Construction 2025

			ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite		**2025 Winter**						
	Off-Road		1.37	12.47	16.08	0.03	0.53	0.50
	Total		**1.37**	**12.47**	**16.08**	**0.03**	**0.53**	**0.50**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.06	2.20	0.81	0.01	0.34	0.11
	Worker		0.43	0.28	4.08	0.01	1.46	0.40
	Total		**0.48**	**2.48**	**4.89**	**0.02**	**1.80**	**0.50**
TOTAL			***1.85***	***14.95***	***20.98***	***0.05***	***2.33***	***1.00***
Onsite		**2025**						
	Off-Road		1.37	12.47	16.08	0.03	0.53	0.50
	Total		**1.37**	**12.47**	**16.08**	**0.03**	**0.53**	**0.50**
Offsite								
	Hauling		0.00	0.00	0.00	0.00	0.00	0.00
	Vendor		0.06	2.20	0.81	0.01	0.34	0.11
	Worker		0.43	0.28	4.08	0.01	1.46	0.40
	Total		**0.48**	**2.48**	**4.89**	**0.02**	**1.80**	**0.50**
TOTAL			***1.85***	***14.95***	***20.98***	***0.05***	***2.33***	***1.00***

Building Construction 2026

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2026 Winter**						
Off-Road		1.37	12.47	16.08	0.03	0.53	0.50
Total		**1.37**	**12.47**	**16.08**	**0.03**	**0.53**	**0.50**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.06	2.19	0.80	0.01	0.34	0.11
Worker		0.40	0.25	3.84	0.01	1.46	0.40
Total		**0.46**	**2.44**	**4.64**	**0.02**	**1.80**	**0.50**
TOTAL		***1.83***	***14.91***	***20.72***	***0.05***	***2.33***	***1.00***
Onsite	**2026**						
Off-Road		1.37	12.47	16.08	0.03	0.53	0.50
Total		**1.37**	**12.47**	**16.08**	**0.03**	**0.53**	**0.50**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.06	2.19	0.80	0.01	0.34	0.11
Worker		0.40	0.25	3.84	0.01	1.46	0.40
Total		**0.46**	**2.44**	**4.64**	**0.02**	**1.80**	**0.50**
TOTAL		***1.83***	***14.91***	***20.72***	***0.05***	***2.33***	***1.00***

Architectural Coating

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024** Winter						
Archit. Coating		24.68				0.00	0.00
Off-Road		0.17	1.15	1.81	0.00	0.05	0.05
Total		**24.85**	**1.15**	**1.81**	**0.00**	**0.05**	**0.05**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.08	0.05	0.76	0.00	0.29	0.08
Total		**0.08**	**0.05**	**0.76**	**0.00**	**0.29**	**0.08**
TOTAL		***24.93***	***1.20***	***2.57***	***0.01***	***0.34***	***0.13***
Onsite	**2024**						
Archit. Coating		24.68	0.00	0.00	0.00	0.00	0.00
Off-Road		0.17	1.15	1.81	0.00	0.05	0.05
Total		**24.85**	**1.15**	**1.81**	**0.00**	**0.05**	**0.05**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.08	0.05	0.76	0.00	0.29	0.08
Total		**0.08**	**0.05**	**0.76**	**0.00**	**0.29**	**0.08**
TOTAL		***24.93***	***1.20***	***2.57***	***0.01***	***0.34***	***0.13***

Paving

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024** Winter						
Off-Road		0.92	8.58	14.58	0.02	0.42	0.39
Paving		0.21				0.00	0.00
Total		**1.12**	**8.58**	**14.58**	**0.02**	**0.42**	**0.39**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.04	0.03	0.41	0.00	0.16	0.04
Total		**0.04**	**0.03**	**0.41**	**0.00**	**0.16**	**0.04**
TOTAL		***1.17***	***8.61***	***14.99***	***0.02***	***0.57***	***0.43***
Onsite	**2024**						
Off-Road		0.92	8.58	14.58	0.02	0.42	0.39
Paving		0.21	0.00	0.00	0.00	0.00	0.00
Total		**1.12**	**8.58**	**14.58**	**0.02**	**0.42**	**0.39**
Offsite							
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.04	0.03	0.41	0.00	0.16	0.04
Total		**0.04**	**0.03**	**0.41**	**0.00**	**0.16**	**0.04**
TOTAL		***1.17***	***8.61***	***14.99***	***0.02***	***0.57***	***0.43***

Finishing/Landscaping							
		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite	**2024 Winter**						
	Off-Road	0.17	1.22	3.26	0.01	0.06	0.06
	Total	**0.17**	**1.22**	**3.26**	**0.01**	**0.06**	**0.06**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.01	0.01	0.08	0.00	0.03	0.01
	Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.03**	**0.01**
TOTAL		***0.18***	***1.23***	***3.34***	***0.01***	***0.09***	***0.06***
Onsite	**2024**						
	Off-Road	0.17	1.22	3.26	0.01	0.06	0.06
	Total	**0.17**	**1.22**	**3.26**	**0.01**	**0.06**	**0.06**
Offsite							
	Hauling	0.00	0.00	0.00	0.00	0.00	0.00
	Vendor	0.00	0.00	0.00	0.00	0.00	0.00
	Worker	0.01	0.01	0.08	0.00	0.03	0.01
	Total	**0.01**	**0.01**	**0.08**	**0.00**	**0.03**	**0.01**
TOTAL		***0.18***	***1.23***	***3.34***	***0.01***	***0.09***	***0.06***

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Building and Asphalt Demolition and Debris Haul	***2***	***23***	***21***	***0***	***3***	***1***
Rough Grading and Soil Haul	***2***	***26***	***18***	***0***	***5***	***3***
Building Construction 2024	***2***	***16***	***21***	***0***	***2***	***1***
Building Construction 2025	***2***	***15***	***21***	***0***	***2***	***1***
Building Construction 2026	***2***	***15***	***21***	***0***	***2***	***1***
Architectural Coating	***25***	***1***	***3***	***0***	***0***	***0***
Paving	***1***	***9***	***15***	***0***	***1***	***0***
Finishing/Landscaping	***0***	***1***	***3***	***0***	***0***	***0***
MAX DAILY	**25**	**26**	**21**	**0**	**5**	**3**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	**No**	No	No	No	No	No

Construction LST Worksheet (Phase 2-Phase 4B):

Building and Asphalt Demolition					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Off-Road		20.88	19.71	0.96	0.89
Total		**20.88**	**19.71**	**0.96**	**0.89**
TOTAL		***20.88***	***19.71***	***0.96***	***0.89***
Onsite	**2024**				
Off-Road		20.88	19.71	0.96	0.89
Total		**20.88**	**19.71**	**0.96**	**0.89**
TOTAL		***20.88***	***19.71***	***0.96***	***0.89***

Building and Asphalt Demolition Debris Haul					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2022**				
Fugitive Dust				1.37	0.21
Off-Road		0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**1.37**	**0.21**
TOTAL		***0.00***	***0.00***	***1.37***	***0.21***
Onsite	**2022**				
Fugitive Dust		0.00	0.00	1.37	0.21
Off-Road		0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**1.37**	**0.21**
TOTAL		***0.00***	***0.00***	***1.37***	***0.21***

Rough Grading					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Fugitive Dust				3.03	1.46
Off-Road		17.03	14.76	0.72	0.67
Total		**17.03**	**14.76**	**3.75**	**2.13**
TOTAL		***17.03***	***14.76***	***3.75***	***2.13***
Onsite	**2024**				
Fugitive Dust		0.00	0.00	3.03	1.46
Off-Road		17.03	14.76	0.72	0.67
Total		**17.03**	**14.76**	**3.75**	**2.13**
TOTAL		***17.03***	***14.76***	***3.75***	***2.13***

Rough Grading Soil Haul					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2022**				
Fugitive Dust				0.03	0.00
Off-Road		0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.03**	**0.00**
TOTAL		***0.00***	***0.00***	***0.03***	***0.00***
Onsite	**2022**				
Fugitive Dust		0.00	0.00	0.03	0.00
Off-Road		0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.03**	**0.00**
TOTAL		***0.00***	***0.00***	***0.03***	***0.00***

Building Construction 2024					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2022**				
Off-Road		13.44	16.17	0.61	0.58
Total		**13.44**	**16.17**	**0.61**	**0.58**
TOTAL		***13.44***	***16.17***	***0.61***	***0.58***
Onsite	**2022**				
Off-Road		13.44	16.17	0.61	0.58
Total		**13.44**	**16.17**	**0.61**	**0.58**
TOTAL		***13.44***	***16.17***	***0.61***	***0.58***

Building Construction 2025					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2025**				
Off-Road		12.47	16.08	0.53	0.50
Total		**12.47**	**16.08**	**0.53**	**0.50**
TOTAL		***12.47***	***16.08***	***0.53***	***0.50***
Onsite	**2025**				
Off-Road		12.47	16.08	0.53	0.50
Total		**12.47**	**16.08**	**0.53**	**0.50**
TOTAL		***12.47***	***16.08***	***0.53***	***0.50***

Building Construction 2026					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2026**				
Off-Road		12.47	16.08	0.53	0.50
Total		**12.47**	**16.08**	**0.53**	**0.50**
TOTAL		***12.47***	***16.08***	***0.53***	***0.50***
Onsite	**2026**				
Off-Road		12.47	16.08	0.53	0.50
Total		**12.47**	**16.08**	**0.53**	**0.50**
TOTAL		***12.47***	***16.08***	***0.53***	***0.50***

Architectural Coating					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Archit. Coating				0.00	0.00
Off-Road		1.15	1.81	0.05	0.05
Total		**1.15**	**1.81**	**0.05**	**0.05**
TOTAL		***1.15***	***1.81***	***0.05***	***0.05***
Onsite	**2024**				
Archit. Coating		0.00	0.00	0.00	0.00
Off-Road		1.15	1.81	0.05	0.05
Total		**1.15**	**1.81**	**0.05**	**0.05**
TOTAL		***1.15***	***1.81***	***0.05***	***0.05***

Paving					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Off-Road		8.58	14.58	0.42	0.39
Paving				0.00	0.00
Total		**8.58**	**14.58**	**0.42**	**0.39**
TOTAL		***8.58***	***14.58***	***0.42***	***0.39***
Onsite	**2024**				
Off-Road		8.58	14.58	0.42	0.39
Paving		0.00	0.00	0.00	0.00
Total		**8.58**	**14.58**	**0.42**	**0.39**
TOTAL		***8.58***	***14.58***	***0.42***	***0.39***

Finishing/Landscaping

		NOx	CO	PM10 Total	PM2.5 Total
Onsite	**2024**				
Off-Road		1.22	3.26	0.06	0.06
Total		**1.22**	**3.26**	**0.06**	**0.06**
TOTAL		***1.22***	***3.26***	***0.06***	***0.06***
Onsite	**2024**				
Off-Road		1.22	3.26	0.06	0.06
Total		**1.22**	**3.26**	**0.06**	**0.06**
TOTAL		***1.22***	***3.26***	***0.06***	***0.06***

	NOx	**CO**	**PM10 Total**	**PM2.5 Total**
Building and Asphalt Demolition and Debris Haul	***21***	***20***	***2.33***	***1.10***
≤1.00 Acre LST	***103***	***562***	***4.00***	***3.00***
Exceeds LST?	***no***	***no***	***no***	***no***
Rough Grading and Soil Haul	***17***	***15***	***3.78***	***2.13***
2.50 Acre LST	***159***	***944***	***7.16***	***4.33***
Exceeds LST?	***no***	***no***	***no***	***no***
Building Construction 2024	***13***	***16***	***0.61***	***0.58***
1.31 Acre LST	***117***	***645***	***4.62***	***3.31***
Exceeds LST?	***no***	***no***	***no***	***no***
Building Construction 2025	***12***	***16***	***0.53***	***0.50***
1.31 Acre LST	***117***	***645***	***4.62***	***3.31***
Exceeds LST?	***no***	***no***	***no***	***no***
Building Construction 2026	***12***	***16***	***0.53***	***0.50***
1.31 Acre LST	***117***	***645***	***4.62***	***3.31***
Exceeds LST?	***no***	***no***	***no***	***no***
Architectural Coating	***1***	***2***	***0.05***	***0.05***
≤1.00 Acre LST	***103***	***562***	***4.00***	***3.00***
Exceeds LST?	***no***	***no***	***no***	***no***
Paving	***9***	***15***	***0.42***	***0.39***
≤1.00 Acre LST	***103***	***562***	***4.00***	***3.00***
Exceeds LST?	***no***	***no***	***no***	***no***
Finishing/Landscaping	***1***	***3***	***0.06***	***0.06***
≤1.00 Acre LST	***103***	***562***	***4.00***	***3.00***
Exceeds LST?	***no***	***no***	***no***	***no***

Regional Operation Emissions Worksheet[1]

[1] CalEEMod, Version 2020.4

Existing Conditions (2021)

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	4.05	0.00	0.20	0.00	0.00	0.00
Energy	0.06	0.56	0.47	0.00	0.04	0.04
Mobile*	0.00	0.00	0.00	0.00	0.00	0.00
Total	**4.11**	**0.56**	**0.67**	**0.00**	**0.04**	**0.04**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	4.05	0.00	0.20	0.00	0.00	0.00
Energy	0.06	0.56	0.47	0.00	0.04	0.04
Mobile*	0.00	0.00	0.00	0.00	0.00	0.00
Total	**4.11**	**0.56**	**0.67**	**0.00**	**0.04**	**0.04**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	4.05	0.00	0.20	0.00	0.00	0.00
Energy	0.06	0.56	0.47	0.00	0.04	0.04
Mobile	0.00	0.00	0.00	0.00	0.00	0.00
Total	**4.11**	**0.56**	**0.67**	**0.00**	**0.04**	**0.04**

** To provide a direct comparison to existing and Proposed Project energy use, this model does not account for mobile emissions*

Proposed Project (Phase 1 New Buildings + Remaining Buildings Operations)

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	4.56	0.00	0.19	0.00	0.00	0.00
Energy	0.07	0.62	0.52	0.00	0.05	0.05
Mobile	0.00	0.00	0.00	0.00	0.00	0.00
Total	**4.63**	**0.62**	**0.71**	**0.00**	**0.05**	**0.05**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	4.56	0.00	0.19	0.00	0.00	0.00
Energy	0.07	0.62	0.52	0.00	0.05	0.05
Mobile	0.00	0.00	0.00	0.00	0.00	0.00
Total	**4.63**	**0.62**	**0.71**	**0.00**	**0.05**	**0.05**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	5	0	0	0	0	0
Energy	0	1	1	0	0	0
Mobile	0	0	0	0	0	0
Total	**5**	**1**	**1**	**0**	**0**	**0**
Net Change	**0.52**	**0.06**	**0.04**	**0.00**	**0.00**	**0.00**

Regional Thresholds (lb/day)	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

Proposed Project (Phase 2-4B New Buildings + Remaining Buildings Operations)

Summer

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	5.73	0.00	0.19	0.00	0.00	0.00
Energy	0.08	0.76	0.64	0.00	0.06	0.06
Mobile	0.00	0.00	0.00	0.00	0.00	0.00
Total	**5.82**	**0.76**	**0.83**	**0.00**	**0.06**	**0.06**

Winter

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	5.73	0.00	0.19	0.00	0.00	0.00
Energy	0.08	0.76	0.64	0.00	0.06	0.06
Mobile	0.00	0.00	0.00	0.00	0.00	0.00
Total	**5.82**	**0.76**	**0.83**	**0.00**	**0.06**	**0.06**

Max Daily

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Area	6	0	0	0	0	0
Energy	0	1	1	0	0	0
Mobile	0	0	0	0	0	0
Total	**6**	**1**	**1**	**0**	**0**	**0**
Net Change	**1.70**	**0.20**	**0.16**	**0.00**	**0.02**	**0.02**

Regional Thresholds (lb/day)	**55**	**55**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

GHG Emissions Inventory

Proposed Project Buildout

Construction[1]

Phase 1 Construction

	$MTCO_2e$
2022	425
2023	592
2024	208
Total Construction	**1,225**
30-Year Amortization[2]	**41**

Phase 2-4 (Programmatic) Construction

	$MTCO_2e$
2024	375
2025	593
2026	206
Total Construction (per Phase)	**1,173**
Number of Applicable Phases[3]	4
Phase 1 Construction Emissions	1,225
Total Construction Emissions	5,919
30-Year Amortization[2]	197

[1] CalEEMod, Version 2020.4

[2] Total construction emissions are amortized over 30 years per SCAQMD methodology; SCAQMD. 2009, November 19. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 14. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf?sfvrsn=2.

[3] Accounts for Phase 2 and Phase 3 construction activities as well as the first and second set of Phase 4 activities

Operations[1]

	$MTCO_2e$/Year[2]		$MTCO_2e$/Year[2]	
	Phase 1 Operations	**%**	**Phase 2-4 Operations**	**%**
Area	0	0%	0	0%
Energy	423	91%	507	72%
Mobile[3]	0	0%	0	0%
Solid Waste[3]	0	0%	0	0%
Water[3]	0	0%	0	0%
Amortized Construction Emissions	41	9%	197	28%
	463	100%	**705**	100%
South Coast AQMD Bright-Line Screening Threshold	**3,000**		**3,000**	
Exceed Threshold?	**No**		**No**	

[1] CalEEMod, Version 2020.4

[2] $MTCO_2e$=metric tons of carbon dioxide equivalent.

[3] Model assumes that there would not be an increase in student capacity, based on information provided by the District

Assumptions Worksheet

CalEEMod Inputs- Malibu Middle and High School Campus Specific Plan Project (Phase 1), Construction

Name:	Malibu Middle and High School Campus Specific Plan and LCP Amendment Project (Phase 1)
Project Number:	SMM-06.0
Project Location:	30215 Morning View Dr, Malibu, CA 90265
County/Air Basin:	Los Angeles
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2024
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	2

Project Site Acreage	21.64
Disturbed Site Acreage	5.72

Project Components	SQFT	Tons
Demolition		
Building Demolition	40,000	1,840
Asphalt Demolition*	209,000	3,096

Project Components	SQFT	Acres	Number of Stories	
Building C: Student Support Services, Administrative and Campus Support	68,019	0.78	2	
TOTAL BUILDING SQFT	**68,019**	**0.78**		
Parking Lot	61,600	1.41	154	total stalls
Total Other Asphalt Surfaces	21,502	0.49		
Additional Non-Asphalt Surfaces	131,889	3.03		
Subtotal Other	**214,991**	**4.94**		
Total	**283,010**	**5.72**		

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Educational	High School	68.019	1000 sqft	0.78	68,019
Parking	Parking Lot	61.600	1000 sqft	1.41	61,600
Parking	Other Asphalt Surfaces	21.502	1000 sqft	0.49	21,502
Parking*	Other Non-asphalt Surfaces	131.889	1000 sqft	3.03	131,889
				5.72	

Demolition[1]

Component		Amount to be Demolished (Tons)	Haul Truck Capacity (tons)	Haul Distance (miles)	Total Trip Ends	Duration (days)
	Building	1,840	20	20	184	48
	Asphalt	3,096	20	20	310	48
Total		4,936			494	

Soil Haul [1]

Construction Activities	Volume (CY)	Haul Truck Capacity (cy)	Haul Distance (miles)	Total Trip Ends	Duration (days)
Rough Grading (Import)	10,530	16	20	1,333	39
Rough Grading (Export)	30,600	16	20	3,873	39

[1] Haul Distance based provided by the Applicant

Architectural Coating

	Percent Painted	
Interior Painted:	50%	
Exterior Painted:	40%	

Rule 1113

Interior Paint VOC content:	50	grams per liter
Exterior Paing VOC content:	50	grams per liter

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
High School	68,019	2.0	136,038	51,014	13,604
			136,038	**51,014**	**13,604**
Parking					
Parking Lot	61,600	6%	3,696	-	3,696
			3,696		**3,696**

[1]CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[2] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[3] Assumes that all parking, non-parking asphalt, and turf areas will be striped. CalEEMod methodology assumes 6% of surface area is striped.

Construction Mitigation

SCAQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
	PM25:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph

SCAQMD Rule 1186

	Clean Paved Road	9	% PM Reduction

Southern California Edison Carbon Intensity Factors

CO2:[1,2]	509.98	pounds per megawatt hour
CH4:[3]	0.033	pound per megawatt hour
N2O:[3]	0.004	pound per megawatt hour

[1] Based on CO2e intensity factor of 512 pounds per megawatt hour; Southern California Edison. 2021. 2020 Sustainability Report.

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).

Construction Activities and Schedule Assumptions: Malibu Middle and High School Campus Specific Plan Project

* based on information provided by the District

		Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Building and Asphalt Demolition	Demolition	6/1/2022	8/15/2022	54
Building and Asphalt Demolition Debris Haul	Demolition	6/25/2022	8/31/2022	48
Building and Asphalt Demolition and Site Preparation	Site Preparation	8/16/2022	8/31/2022	12
Rough Grading	Grading	9/7/2022	10/31/2022	39
Rough Grading Soil Import	Grading	9/7/2022	10/31/2022	39
Rough Grading Soil Export	Grading	9/7/2022	10/31/2022	39
Utility Trenching	Trenching	11/1/2022	12/14/2022	32
Building Construction 1	Building Construction	12/15/2022	11/9/2023	236
Building Construction and Fine Grading	Grading	11/10/2023	11/24/2023	11
Building Construction 2	Building Construction	11/25/2023	3/31/2024	90
Architectural Coating	Architectural Coating	4/1/2024	4/30/2024	22
Paving	Paving	5/1/2024	6/30/2024	43
Finishing/Landscaping	Trenching	7/1/2024	8/31/2024	45

Overlapping Construction Schedule

Building and Asphalt Demolition	6/1/2022	6/24/2022	18
Building and Asphalt Demolition and Debris Haul	6/25/2022	8/15/2022	36
Building and Asphalt Demolition, Debris Haul, and Site Preparation	8/16/2022	8/31/2022	12
Rough Grading and Soil Haul (Import/Export)	9/7/2022	10/31/2022	39
Utility Trenching	11/1/2022	11/30/2022	22
Utility Trenching and Building Construction	12/1/2022	12/14/2022	10
Building Construction 1 2022	12/15/2022	12/31/2022	12
Building Construction 1 2023	1/1/2023	11/9/2023	224
Building Construction 2023 and Fine Grading	11/10/2023	11/24/2023	11
Building Construction 2 2023	11/25/2023	12/31/2023	25
Building Construction 2 2024	1/1/2024	3/31/2024	65
Architectural Coating	4/1/2024	4/30/2024	22
Paving	5/1/2024	6/30/2024	43
Finishing/Landscaping	7/1/2024	8/31/2024	45

CalEEMod Construction Off-Road Equipment Inputs

**Based on CalEEMod defaults, assumed equipment would not be shared for most conservative result*

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

Construction Equipment Details						
Equipment	**model**	**# of Equipment**	**hr/day**	**hp**	**load factor***	**total trips**
Building and Asphalt Demolition						
Skid steer	6500 Cat 242D	1	8	74	0.3685	
Excavators	Volvo 380E	2	8	303	0.38	
Generator		1	8	84	0.74	
Water Truck		1	8			
Worker Trips						10
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						4
**demolition equipment provided by construction manage*						
Building and Asphalt Demolition haul						
No additional equipment for Demolition Debris Haul						
Worker Trips						0
Vendor Trips						0
Hauling Trips						494
Building and Asphalt Demolition and Site Preparation						
Skid steer	6500 Cat 242D	1	8	74	0.3685	
Excavators	Volvo 380E	2	8	303	0.38	
Generator		1	8	84	0.74	
Loader		1	8	97	0.3685	
Street Sweeper		1	8	64	0.4556	
Worker Trips						15
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						4
** overlapping equipment for demolition and excavation activities provided by construction manage*						
Rough Grading						
Blade		1	8	187	0.41	
Dozer		1	8	247	0.4	
Scraper		1	8	367	0.4824	
Roller		1	8	80	0.3752	
Worker Trips						10
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						4
**rough grading equipment provided by construction manage*						
Rough Grading Import						
Skiploader		1	8	97	0.37	
Street Sweeper		1	8	64	0.4556	
Worker Trips						5
Vendor Trips						0
Hauling Trips						1,333
**import equipment provided by construction manage*						
Rough Grading Export						
Equipment overlaps with Rough Grading, no additional equipment for Soil Haul						
Worker Trips						0
Vendor Trips						0
Hauling Trips						3,873
Utilities Trenching						
Excavator		1	8	158	0.3819	
Loader		1	8	97	0.3685	
Street Sweeper		1	8	64	0.4556	
Worker Trips						8
Vendor Trips						0
Hauling Trips						0
Water Trucks (Added to Vendor Trips)						4
** assumes same equipment as excavation activities, provided by construction manage*						

Building Construction							
	Cranes		1	7	231	0.29	
	Forklifts		3	8	89	0.2	
	Generator Sets		1	8	84	0.74	
	Tractors/Loaders/Backhoes		3	7	97	0.37	
	Welders		1	8	46	0.45	
	Worker Trips						119
	Vendor Trips						46
	Hauling Trips						0

** CalEEMod Default equipment*

Building Construction and Fine Grading							
	Blade		1	8	187	0.41	
	Roller		1	8	80	0.3752	
	Cranes		1	7	231	0.29	
	Forklifts		3	8	89	0.2	
	Generator Sets		1	8	84	0.74	
	Tractors/Loaders/Backhoes		3	7	97	0.37	
	Welders		1	8	46	0.45	
	Worker Trips						119
	Vendor Trips						46
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						4

**finish grade site equipment provided by construction manage*

**worker and vendor trips overlap with building construction trip*

Paving							
	Pavers		2	8	130	0.42	
	Paving Equipment		2	8	132	0.36	
	Rollers		2	8	80	0.38	
	Worker Trips						15
	Vendor Trips						0
	Hauling Trips						0

** CalEEMod Default equipment*

Architectural Coating (surface lots, etc…)							
	Air Compressors		1	6	78	0.48	
	Worker Trips						24
	Vendor Trips						0
	Hauling Trips						0

** CalEEMod Default equipment*

Finishing/Landscaping							
	Excavators		1	8	158	0.3819	
	Worker Trips						3
	Vendor Trips						0
	Hauling Trips						0

assumes 1 excavator based on projects of similar size

Demo Haul Trip Calculation

*Conversion factors**

0.046	ton/SF
1.2641662	tons/cy
20	tons
15.82070459	CY
0.791035229	CY/ton

Building	BSF Demo	Tons/SF	Tons	Haul Truck (CY)	Haul Truck (Ton)	Round Trips	Total Trip Ends
Combined Building Demo	40,000	0.046	1840	16	20.00	92	184

*CalEEMod User's Guide Version 2016.3.2, Appendix A

Pavement Volume to Weight Conversion

Component	Total SF of Area[1]	Assumed Thickness (foot)[2]	Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[3]	AC Mass (lbs)	AC Mass (tons)
Asphalt Demo	209,000	0.333	69,667	89	6,192,593	3096.30
Total	209,000					3,096

[1] Based on aerial image of existing project site.

[2] Pavements and Surface Materials. Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Connecticut Cooperative Extension System, 1999.

[3] https://www.calrecycle.ca.gov/swfacilities/cdi/Tools/Calculations

Phase Name	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Haul Truck Trip Ends	Total Trip Ends Per Day	Start Date	End Date	Workdays
Building and Asphalt Demolition	10	4	0	0	14	6/1/2022	8/15/2022	54
Building and Asphalt Demolition Debris Haul	0	0	11	494	11	6/25/2022	8/31/2022	48
Building and Asphalt Demolition and Site Preparation	15	4	0	0	19	8/16/2022	8/31/2022	12
Rough Grading	10	4	0	0	14	9/7/2022	10/31/2022	39
Rough Grading Soil Import	5	0	35	1,333	40	9/7/2022	10/31/2022	39
Rough Grading Soil Export	0	0	100	3,873	100	9/7/2022	10/31/2022	39
Utility Trenching	8	4	0	0	12	11/1/2022	12/14/2022	32
Building Construction 1	119	46	0	0	165	12/15/2022	11/9/2023	236
Building Construction and Fine Grading	119	50	0	0	169	11/10/2023	11/24/2023	11
Building Construction 2	119	46	0	0	165	11/25/2023	3/31/2024	90
Architectural Coating	24	0	0	0	24	4/1/2024	4/30/2024	22
Paving	15	0	0	0	15	5/1/2024	6/30/2024	43
Finishing/Landscaping	3	0	0	0	3	7/1/2024	8/31/2024	45

Construction Activity (Overlapping)	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Trip Ends Per Day	Start Date	End Date	Workdays
Building and Asphalt Demolition	10	4	0	14	6/1/2022	6/24/2022	18
Building and Asphalt Demolition and Debris Haul	10	4	11	25	6/25/2022	8/15/2022	36
Building and Asphalt Demolition, Debris Haul, and Site Preparation	15	4	11	30	8/16/2022	8/31/2022	12
Rough Grading and Soil Haul (Import/Export)	15	4	135	154	9/7/2022	10/31/2022	39
Utility Trenching	8	4	0	12	9/7/2022	10/31/2022	39
Utility Trenching and Building Construction	127	50	0	177	12/1/2022	12/14/2022	10
Building Construction 1 2022	119	46	0	165	12/15/2022	12/31/2022	12
Building Construction 1 2023	119	46	0	165	1/1/2023	11/9/2023	224
Building Construction 2023 and Fine Grading	119	50	0	169	11/10/2023	11/24/2023	11
Building Construction 2 2023	119	46	0	165	11/25/2023	12/31/2023	25
Building Construction 2 2024	119	46	0	165	1/1/2024	3/31/2024	65
Architectural Coating	24	0	0	24	4/1/2024	4/30/2024	22
Paving	15	0	0	15	5/1/2024	6/30/2024	43
Finishing/Landscaping	3	0	0	3	7/1/2024	8/31/2024	45
Maximum Daily Trips	**127**	**50**	**135**	**177**			

CalEEMod Inputs- Malibu Middle and High School Campus Specific Plan Project (Program-Level), Construction

Name:	Malibu Middle and High School Campus Specific Plan and LCP Amendment Project (Program-Level)
Project Number:	SMM-06.0
Project Location:	30215 Morning View Dr, Malibu, CA 90265
County/Air Basin:	Los Angeles
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2026
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	2

Acreage Disturbed Per Phase*				
Phase 2	**Phase 3**	**Phase 4A**	**Phase 4B**	**TOTAL**
4.01	3.32	7.05	1.54	15.92

** model uses the acreage of the largest phase to represent the worst case phase overall*

Demolition (Phase 4A)	SQFT	Tons
Building Demolition	69,581	3,201
Asphalt Demolition*	237,633	3,520

** assumes that asphalt area is the total Phase 4A area minus building demolition area*

New Construction (Phase 3)			
Buildings	**Number of Stories**	**SQFT**	**Acres**
Building J: Gymnasium/ PE	2	36,708	0.42
Building L: Aquatics Center/Field House	2	9,249	0.11
Building M: Upper Field House	2	2,055	0.02
Bus Depot	2	10,000	0.11
TOTAL BUILDING SQFT		**58,012**	**0.67**
Parking*	**Number of Stalls**	**SQFT**	**Acres**
Parking Lot E	32	12,800	0.29
Parking Lot F	14	5,600	0.13
TOTAL PARKING SQFT		**18,400**	**0.42**
Additional Surface Area*			
Other Asphalt Area		129,904	2.98
Other Non-Asphalt Area		129,904	2.98
TOTAL NON-PARKING SURFACE SQFT		**259,808**	**5.96**
TOTAL NEW CONSTRUCTION		**307,214**	**7.05**

**CalEEMod default area per stall is 400 sqft*

***assumes half of remaining surface area will be asphalt and half will be non-asphalt surfaces*

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Educational	High School	58.012	1000 sqft	0.67	58,012
Parking	Surface Parking	18.400	1000 sqft	0.42	18,400
Parking	Other Asphalt Surfaces	129.904	1000 sqft	2.98	129,904
Parking*	Other Non-asphalt Surfaces	129.904	1000 sqft	2.98	129,904
				7.05	

Demolition[1]

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (tons)	Haul Distance (miles)	Total Trip Ends	Duration (days)
Building	3,201	20	20	321	48
Asphalt	3,520	20	20	353	48
Total	6,721			674	

Soil Haul [1]

Construction Activities	Volume (CY)	Haul Truck Capacity (cy)	Haul Distance (miles)	Total Trip Ends	Duration (days)
Rough Grading (Export)	34,135	16	20	4,321	65

Architectural Coating

	Percent Painted	
Interior Painted:	100%	
Exterior Painted:	100%	

CalEEMod Default

Interior Paint VOC content:	100	grams per liter
Exterior Paing VOC content:	100	grams per liter

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
High School	58,012	2.0	116,024	87,018	29,006
			116,024	**87,018**	**29,006**
Parking					
Parking Lot	18,400	6%	1,104	-	1,104
			1,104		**1,104**

[1] CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[2] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[3] Assumes that all parking, non-parking asphalt, and turf areas will be striped. CalEEMod methodology assumes 6% of surface area is striped.

Construction Mitigation

SCAQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
	PM25:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph

SCAQMD Rule 1186

	Clean Paved Road	9	% PM Reduction

Southern California Edison Carbon Intensity Factors

CO2:[1,2]	509.98	pounds per megawatt hour
CH4:[3]	0.033	pound per megawatt hour
N2O:[3]	0.004	pound per megawatt hour

[1] Based on CO2e intensity factor of 512 pounds per megawatt hour; Southern California Edison. 2021. 2020 Sustainability Report.

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265
Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).		

Construction Activities and Schedule Assumptions: Malibu Middle and High School Campus Specific Plan Project

* based on information provided by the District

		Construction Schedule		
Construction Activities	**Phase Type**	**Start Date**	**End Date**	**CalEEMod Duration (Workday)**
Building and Asphalt Demolition	Demolition	7/1/2024	8/30/2024	45
Building and Asphalt Demolition Debris Haul	Demolition	7/1/2024	8/30/2024	45
Rough Grading	Grading	9/1/2024	11/30/2024	65
Rough Grading Soil Haul	Grading	9/1/2024	11/30/2024	65
Building Construction	Building Construction	12/1/2024	3/31/2026	347
Architectural Coating	Architectural Coating	4/1/2026	4/30/2026	22
Paving	Paving	5/1/2026	6/30/2026	43
Finishing/Landscaping	Trenching	7/1/2026	8/31/2026	44

CalEEMod Construction Off-Road Equipment Inputs

**Based on CalEEMod defaults, assumed equipment would not be shared for most conservative result*

General Construction Hours: 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

Construction Equipment Details							
	Equipment	**model**	**# of Equipment**	**hr/day**	**hp**	**load factor***	**total trips**
Building and Asphalt Demolition							
	Concrete/Industrial Saws		1	8	81	0.73	
	Excavators		3	8	158	0.38	
	Rubber Tired Dozers		2	8	247	0.4	
	Worker Trips						15
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						4
**demolition equipment provided by construction manage*							
Building and Asphalt Demolition Haul							
	No additional equipment for Demolition Debris Haul						
	Worker Trips						0
	Vendor Trips						0
	Hauling Trips						674
Rough Grading							
	Excavators		1	8	158	0.38	
	Graders		1	8	187	0.41	
	Rubber Tired Dozers		1	8	247	0.4	
	Tractors/Loaders/Backhoes		3	8	97	0.37	
	Worker Trips						15
	Vendor Trips						0
	Hauling Trips						0
	Water Trucks (Added to Vendor Trips)						4
Rough Grading Soil Haul							
	no additional equipment for Rough Grading Soil Haul						
	Worker Trips						0
	Vendor Trips						0
	Hauling Trips						4,321
Building Construction							
	Cranes		1	7	231	0.29	
	Forklifts		3	8	89	0.2	
	Generator Sets		1	8	84	0.74	
	Tractors/Loaders/Backhoes		3	7	97	0.37	
	Welders		1	8	46	0.45	
	Worker Trips						141
	Vendor Trips						55
	Hauling Trips						0
Architectural Coating (surface lots, etc…)							
	Air Compressors		1	6	78	0.48	
	Worker Trips						28
	Vendor Trips						0
	Hauling Trips						0
Paving							
	Pavers		2	8	130	0.42	
	Paving Equipment		2	8	132	0.36	
	Rollers		2	8	80	0.38	
	Worker Trips						15
	Vendor Trips						0
	Hauling Trips						0
Finishing/Landscaping							
	Excavators		1	8	158	0.3819	
	Worker Trips						3
	Vendor Trips						0
	Hauling Trips						0
assumes 1 excavator based on projects of similar size							

Demo Haul Trip Calculation

*Conversion factors**

0.046	ton/SF
1.2641662	tons/cy
20	tons
15.82070459	CY
0.791035229	CY/ton

Building	BSF Demo	Tons/SF	Tons	Haul Truck (CY)	Haul Truck (Ton)	Round Trips	Total Trip Ends
Combined Building Demo	69,581	0.046	3200.726	16	20.00	160	320

*CalEEMod User's Guide Version 2016.3.2, Appendix A

Pavement Volume to Weight Conversion

Component	Total SF of Area[1]	Assumed Thickness (foot)[2]	Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[3]	AC Mass (lbs)	AC Mass (tons)
Asphalt Demo	237,633	0.333	79,211	89	7,040,978	3520.49
Total	237,633					3,520

[1] Based on aerial image of existing project site.

[2] Pavements and Surface Materials. Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Connecticut Cooperative Extension System, 1999.

[3] https://www.calrecycle.ca.gov/swfacilities/cdi/Tools/Calculations

Phase Name	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Haul Truck Trip Ends	Total Trip Ends Per Day	Start Date	End Date	Workdays
Building and Asphalt Demolition	15	4	0	0	19	7/1/2024	8/30/2024	45
Building and Asphalt Demolition Debris Haul	0	0	15	674	15	7/1/2024	8/30/2024	45
Rough Grading	15	4	0	0	19	9/1/2024	11/30/2024	65
Rough Grading Soil Haul	0	0	67	4321	67	9/1/2024	11/30/2024	65
Building Construction	141	55	0	0	196	12/1/2024	3/31/2026	347
Architectural Coating	28	0	0	0	28	4/1/2026	4/30/2026	22
Paving	15	0	0	0	15	5/1/2026	6/30/2026	43
Finishing/Landscaping	3	0	0	0	3	7/1/2026	8/31/2026	44

Construction Activity (Overlapping)	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Trip Ends Per Day	Start Date	End Date	Workdays
Building and Asphalt Demolition and Debris Haul	15	4	15	34	7/1/2024	8/30/2024	45
Rough Grading and Soil Haul	15	4	67	86	9/1/2024	11/30/2024	65
Building Construction	141	55	0	196	12/1/2024	3/31/2026	347
Architectural Coating	28	0	0	28	4/1/2026	4/30/2026	22
Paving	15	0	0	15	5/1/2026	6/30/2026	43
Finishing/Landscaping	3	0	0	3	7/1/2026	8/31/2026	44
Maximum Daily Trips	**141**	**55**	**67**	**196**			

CalEEMod Inputs- Malibu Middle and High School Campus Specific Plan Project, Existing Conditions

Name:	Malibu Middle and High School Campus Specific Plan and LCP Amendment Project
Project Number:	SMM-06.0
Project Location:	30215 Morning View Dr, Malibu, CA 90265
County/Air Basin:	Los Angeles
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2023
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	2

Project Site Acreage	87.00
Disturbed Site Acreage	40.00

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Educational	Elementary School	42.314	1000 sqft	0.97	42,314
Educational	Junior High School	112.590	1000 sqft	2.58	112,590
Parking	Parking Lot	375.000	spaces	3.44	150,000
Parking [2]	Other Asphalt Surfaces	300.992	1000 sqft	6.91	300,992
Parking [2]	Other Non-asphalt Surfaces	1,136.504	1000 sqft	26.09	1,136,504
				40.00	

Trips

For the purposes of Proposed Project energy use comparison, this model does not account for vehicle trips

Water Use

For the purposes of Proposed Project energy use comparison, this model does not account for water use

Solid Waste

For the purposes of Proposed Project energy use comparison, this model does not account for solid waste generation

Architectural Coating

	Percent Painted
Interior Painted:	100%
Exterior Painted:	100%

CalEEMod Default

Interior Paint VOC content:	100	grams per liter
Exterior Paing VOC content:	100	grams per liter

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
Elementary School	42,314	2.0	84,628	63,471	21,157
High School	112,590	2.0	225,180	168,885	56,295
			309,808	**232,356**	**77,452**
Parking					
Parking Lot	150,000	6%	9,000	-	9,000
			9,000		**9,000**

[1]CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[2] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[3] Assumes that all parking, non-parking asphalt, and turf areas will be striped. CalEEMod methodology assumes 6% of surface area is striped.

Electricity (Buildings)

Existing Energy

Existing non-residential modeled using historic energy demand rates in CalEEMod. Modeling is conservative because the net increase in energy use due to the project is likely smaller than reflected due to improved building energy efficiency between the project and existing land uses.

Default CalEEMod Energy Use (Historical)

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
Elementary School	**2.46**	1.51	3.30	**12.37**	1.03
Junior High School	**2.46**	1.51	3.30	**12.37**	1.03
Other Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Other Non-Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Parking Lot	**0.00**	0.00	0.88	**0.00**	0.00

Southern California Edison Carbon Intensity Factors

CO2:[1,2]	509.98	pounds per megawatt hour
CH4:[3]	0.033	pound per megawatt hour
N2O:[3]	0.004	pound per megawatt hour

[1] Based on CO2e intensity factor of 512 pounds per megawatt hour; Southern California Edison. 2021. 2020 Sustainability Report.

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007 Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).

CalEEMod Inputs- Malibu Middle and High School Campus Specific Plan Project (Phase 1), Operations

Name:	Malibu Middle and High School Campus Specific Plan and LCP Amendment Project
Project Number:	SMM-06.0
Project Location:	30215 Morning View Dr, Malibu, CA 90265
County/Air Basin:	Los Angeles
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2024
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	2

Project Site Acreage	87
Disturbed Site Acreage	40

Operational Buildings	**Number of Stories**	**SQFT**	**Acres**
Existing School Use[1]			
Existing School	2	112,590	1.29
New High School Land Use			
Building C: Student Support Services, Administrative and Campus Support	2	68,019	0.78
TOTAL BUILDING SQFT		**180,609**	**2.07**
Parking[2]	**Number of Stalls**	**SQFT**	**Acres**
Existing Parking[3]	338	135,200	3.10
New Parking	154	61,600	1.41
TOTAL PARKING SQFT		**196,800**	**4.52**
Additional Surface Area			
Other Non-Asphalt Area[4]		1,136,504	26.09
Other Asphalt Area [5]		318,792	7.32
TOTAL NON-PARKING SURFACE SQFT		**1,455,296**	**33.41**
		605,896	**13.91**

[1] *Because CalEEMod default energy rates are the same for middle school and high school uses, model considers all existing school buildings operational in Phase 1 as a middle school land use*

[2] *CalEEMod default area per stall is 400 sqft*

[3] *37 parking spaces were removed during Phase 1*

[4] *assumes that hardscape/landscape area will be the same as area modeled in existing condtions*

[5] *other asphalt area is assumed to be disturbed site acreage minus non-asphalt area*

CalEEMod Land Use Inputs

Land Use Type	**Land Use Subtype**	**Unit Amount**	**Size Metric**	**Lot Acreage**	**Land Use Square Feet**
Educational	High School	68.019	1000 sqft	0.78	68,019
Educational	Junior High School	112.590	1000 sqft	1.29	112,590
Parking	Parking Lot	196.800	1000 sqft	4.52	196,800
Parking 2	Other Asphalt Surfaces	318.792	1000 sqft	7.32	318,792
Parking 2	Other Non-asphalt Surfaces	1,136.504	1000 sqft	26.09	1,136,504
				40.00	

Trips

Because student capacity is not anticipated to increase, the proposed project would not result in additional trips. See Section 5.14,*Transportation.*

Water Use

[1] Because student capacity is not anticipated to increase, the proposed project would not result in additional water or wastewater use. See Section 5.15,*Utilities and Service Systems.*

Solid Waste

Because student capacity is not anticipated to increase, the proposed project would not result in additional solid waste generation. See Section 5.15,*Utilities and Service Systems.*

Electricity (Buildings)

Default CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
High School	**1.69**	1.51	2.68	**10.71**	1.03
Junior High School	**2.46**	1.51	3.30	**12.37**	1.03
Other Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Other Non-Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Parking Lot	**0.00**	0.00	0.35	**0.00**	0.00

**Middle school land use represents the historical building energy rates for existing school building.*

Architectural Coating

	Existing Buildings Percent Painted	Phase 1 Building Percent Painted
Interior Painted:	100%	50%
Exterior Painted:	100%	40%

Rule 1113

Interior Paint VOC content:	50	grams per liter
Exterior Paing VOC content:	50	grams per liter

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
Middle School	112,590	2.0	225,180	168,885	56,295
High School	68,019	2.0	136,038	51,014	13,604
			361,218	**219,899**	**69,899**
Parking					
Parking Lot	196,800	6%	11,808	-	11,808
			11,808		**11,808**

[1] CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[2] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[3] Assumes that all parking, non-parking asphalt, and turf areas will be striped. CalEEMod methodology assumes 6% of surface area is striped.

Southern California Edison Carbon Intensity Factors

CO2:[1,2]	509.98	pounds per megawatt hour
CH4:[3]	0.033	pound per megawatt hour
N2O:[3]	0.004	pound per megawatt hour

[1] Based on CO2e intensity factor of 512 pounds per megawatt hour; Southern California Edison. 2021. 2020 Sustainability Report.

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)

	AR4	AR5
CO_2	1	1
CH_4	25	28
N_2O	298	265

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).

CalEEMod Inputs- Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B), Operations

Name:	Malibu Middle and High School Campus Specific Plan and LCP Amendment Project
Project Number:	SMM-06.0
Project Location:	30215 Morning View Dr, Malibu, CA 90265
County/Air Basin:	Los Angeles
Climate Zone:	8
Land Use Setting:	Urban
Operational Year:	2031
Utility Company:	Southern California Edison
Air Basin:	South Coast Air Basin
Air District:	SCAQMD
SRA:	2

Project Site Acreage	87
Disturbed Site Acreage	40

Operational Buildings	**Number of Stories**	**SQFT**	**Acres**
Middle School Land Use			
Middle School Core	2	22,376	0.26
Existing Building A/B	2	35,315	0.41
Existing Building E	2	13,515	0.16
Middle School Total		**71,206**	**0.82**
High School Land Use			
High School Core	2	104,727	1.20
Bus Depot	1	10,900	0.25
Shared Amenities	2	46,492	0.53
High School Total		**162,119**	**1.99**
TOTAL BUILDING SQFT		**233,325**	**2.80**
Parking	**Number of Stalls**	**SQFT**	**Acres**
Campus Parking[1]	412	164,800	3.78
Bus Depot Parking [2]		102,801	2.36
TOTAL PARKING SQFT		**267,601**	**6.14**
Additional Surface Area*			
Other Non-Asphalt Area[3]		1,136,504	26.09
Other Asphalt Area [4]		216,183	4.96
TOTAL NON-PARKING SURFACE SQFT		**1,352,687**	**31.05**
		605,896	**13.91**

[2] *CalEEMod default area per stall is 400 sqft*

[2] *based on Google Earth estimates*

[3] *assumes that hardscape/landscape area will be the same as area modeled in existing condtions*

[4] *other asphalt area is assumed to be total non-parking surface area minus non-asphalt area*

CalEEMod Land Use Inputs

Land Use	Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Existing/New Middle School Buildings	Educational	Junior High School	71.206	1000 sqft	0.82	71,206
New High School Buildings	Educational[1]	High School	162.119	1000 sqft	1.99	162,119
Parking Lot	Parking [2]	Parking Lot	267.601	1000 sqft	6.14	267,601
Non-Parking Asphalt	Parking [2]	Other Asphalt Surfaces	216.183	1000 sqft	4.96	216,183
Hardscape/Landscape	Parking [2]	Other Non-asphalt Surfaces	1,136.504	1000 sqft	26.09	1,136,504
					40.00	

Trips

Because student capacity is not anticipated to increase, the proposed project would not result in additional trips. See Section 5.14, *Transportation.*

Water Use

[1] Because student capacity is not anticipated to increase, the proposed project would not result in additional water or wastewater use. See Section 5.15, *Utilities and Service Systems.*

Solid Waste

Because student capacity is not anticipated to increase, the proposed project would not result in additional solid waste generation. See Section 5.15, *Utilities and Service Systems.*

Electricity (Buildings)

Default CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
High School	**1.69**	1.51	2.68	**10.71**	1.03
Junior High School	**1.69**	1.51	2.68	**10.71**	1.03
Parking Lot	**0.00**	0.00	0.00	**0.00**	0.00
Other Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Other Non-asphalt Surfaces	**0.00**	0.00	0.35	**0.00**	0.00

Remaining Historical Uses

Middle School	**2.46**	1.51	3.30	**12.37**	1.03

Land Use Type	Remaining Historical Land Uses	New Land Uses	Total
Middle School	48,830.00	22,376.00	71,206.00

Adjusted CalEEMod Energy Use

Land Use Subtype	Title-24 Electricity Energy Intensity (kWhr/size/year)*	Nontitle-24 Electricity Energy Intensity (kWhr/size/year)	Lighting Energy Intensity (KWhr/size/year)	Title-24 Natural Gas Energy Intensity (KBTU/size/year)*	Nontitle-24 Natural Gas Energy Intensity (KBTU/size/year)
High School	**1.69**	1.51	2.68	**10.71**	1.03
Junior High School	**2.22**	1.51	3.11	**11.85**	1.03
Parking Lot	**0.00**	0.00	0.00	**0.00**	0.00
Other Asphalt Surfaces	**0.00**	0.00	0.00	**0.00**	0.00
Other Non-asphalt Surfaces	**0.00**	0.00	0.35	**0.00**	0.00

** adjusted CalEEMod Energy use reflects blended CalEEMod default energy rates for historical (existing school buildings) and new uses (new school buildings)*

Architectural Coating

	Existing Buildings Percent Painted	Phase 1 Building Percent Painted	Phase 2-4B Building Percent Painted
Interior Painted:	100%	50%	100%
Exterior Painted:	100%	40%	100%

CalEEMod Defaults

Interior Paint VOC content:	100	grams per liter
Exterior Paing VOC content:	100	grams per liter

Structures	Land Use Square Feet	CalEEMod Factor[2]	Total Paintable Surface Area	Paintable Interior Area[1]	Paintable Exterior Area[1]
Non-Residential Structures					
Existing Buildings	48,830	2.0	97,660	73,245	24,415
Phase 1 New Buildings	68,019	2.0	136,038	51,014	13,604
Phase 2-4B New Buildings	116,476	2.0	232,952	174,714	58,238
	233,325		466,650	**298,973**	**96,257**
Parking					
Parking Lot	267,601	6%	16,056	-	16,056
			16,056		**16,056**

[1]CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively.

[2] The program assumes the total surface for painting equals 2.7 times the floor square footage for residential and 2 times that for nonresidential square footage defined by the user.

[3] Assumes that all parking, non-parking asphalt, and turf areas will be striped. CalEEMod methodology assumes 6% of surface area is striped.

Southern California Edison Carbon Intensity Factors

CO2:[1,2]	509.98	pounds per megawatt hour
CH4:[3]	0.033	pound per megawatt hour
N2O:[3]	0.004	pound per megawatt hour

[1] Based on CO2e intensity factor of 512 pounds per megawatt hour; Southern California Edison. 2021. 2020 Sustainability Report.

[2] Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report: Climate Change 2007.

[3] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265
Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).		

CalEEMod Construction Model

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Other Asphalt Surfaces	21.50	1000sqft	0.49	21,502.00	0
Other Non-Asphalt Surfaces	131.89	1000sqft	3.03	131,888.50	0
Parking Lot	61.60	1000sqft	1.41	61,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustinability Report

Land Use - 2 story Building C

Construction Phase - based on construction schedule confirmed by construction manager for Phase 1

Off-road Equipment -

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - no additional equipment required for demolition haul

Off-road Equipment -

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment -

Off-road Equipment - overlapping phase: grading equipment from applicant, CalEEMod default builing construction equipment

Off-road Equipment - based on project of similar size

Off-road Equipment -

Off-road Equipment - based on info provided by construction manager

Off-road Equipment - no additional equipment required for rough grading soil haul (overlaps equipment with rough grading phase)

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on equipment provided by construction manager

Off-road Equipment -

Trips and VMT - assumes 4 vt/water truck/day for demo, site prep, and grading phases, see assumptions file for hauling calculations

Demolition -

Grading -

Architectural Coating - SCAQMD Rule 1113, coating area based on info from applicant

Vehicle Trips -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rules 403 and 1186

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	34,010.00	13,604.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	102,029.00	51,014.00
tblArchitecturalCoating	ConstArea_Parking	12,899.00	3,696.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	54.00
tblConstructionPhase	NumDays	20.00	48.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	230.00	236.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	30,600.00
tblGrading	MaterialImported	0.00	10,530.00
tblLandUse	LandUseSquareFeet	68,020.00	68,019.00
tblLandUse	LandUseSquareFeet	21,500.00	21,502.00
tblLandUse	LandUseSquareFeet	131,890.00	131,888.50
tblLandUse	LotAcreage	1.56	0.78
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	488.00	494.00
tblTripsAndVMT	HaulingTripNumber	1,316.00	1,333.00
tblTripsAndVMT	HaulingTripNumber	3,825.00	3,873.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	28.00	119.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2022	3.2774	50.8520	23.5797	0.1239	10.7922	1.4133	12.2054	4.2498	1.3064	5.5562	0.0000	13,066.8097	13,066.8097	1.6994	1.4577	13,543.6970
2023	2.5483	22.8327	24.8330	0.0573	2.1807	0.9567	3.1374	0.5022	0.8952	1.3975	0.0000	5,641.6748	5,641.6748	0.9609	0.1714	5,716.7850
2024	7.8379	15.4500	20.8326	0.0468	1.6248	0.6299	2.2547	0.4376	0.5925	1.0301	0.0000	4,619.5209	4,619.5209	0.7174	0.1562	4,682.6149
Maximum	**7.8379**	**50.8520**	**24.8330**	**0.1239**	**10.7922**	**1.4133**	**12.2054**	**4.2498**	**1.3064**	**5.5562**	**0.0000**	**13,066.8097**	**13,066.8097**	**1.6994**	**1.4577**	**13,543.6970**

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					
2022	3.2774	50.8520	23.5797	0.1239	5.8884	1.4133	7.3016	2.1706	1.3064	3.4770	0.0000	13,066.8097	13,066.8097	1.6994	1.4577	13,543.6970
2023	2.5483	22.8327	24.8330	0.0573	1.7525	0.9567	2.7092	0.4389	0.8952	1.3341	0.0000	5,641.6748	5,641.6748	0.9609	0.1714	5,716.7850
2024	7.8379	15.4500	20.8326	0.0468	1.5018	0.6299	2.1317	0.4074	0.5925	0.9999	0.0000	4,619.5209	4,619.5209	0.7174	0.1562	4,682.6149
Maximum	**7.8379**	**50.8520**	**24.8330**	**0.1239**	**5.8884**	**1.4133**	**7.3016**	**2.1706**	**1.3064**	**3.4770**	**0.0000**	**13,066.8097**	**13,066.8097**	**1.6994**	**1.4577**	**13,543.6970**

	ROG	NOx	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**	**37.37**	**0.00**	**31.00**	**41.87**	**0.00**	**27.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building and Asphalt Demolition	Demolition	6/1/2022	8/15/2022	5	54	
2	Building and Asphalt Demolition Debris Haul	Demolition	6/25/2022	8/31/2022	5	48	
3	Building and Asphalt Demolition and Site Preparation	Demolition	8/16/2022	8/31/2022	5	12	
4	Rough Grading	Grading	9/7/2022	10/31/2022	5	39	
5	Rough Grading Soil Import	Grading	9/7/2022	10/31/2022	5	39	
6	Rough Grading Soil Export	Grading	9/7/2022	10/31/2022	5	39	
7	Utility Trenching	Trenching	11/1/2022	12/14/2022	5	32	
8	Building Construction 1	Building Construction	12/15/2022	11/9/2023	5	236	
9	Building Construction and Fine Grading	Grading	11/10/2023	11/24/2023	5	11	
10	Building Construction 2	Building Construction	11/25/2023	3/31/2024	5	90	
11	Architectural Coating	Architectural Coating	4/1/2024	4/30/2024	5	22	
12	Paving	Paving	5/1/2024	6/28/2024	5	43	
13	Finishing/Landscaping	Trenching	7/1/2024	8/30/2024	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 78

Acres of Paving: 4.93

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 51,014; Non-Residential Outdoor: 13,604; Striped Parking Area: 3,696

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition	Excavators	2	8.00	303	0.38

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building and Asphalt Demolition	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition and Site Preparation	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition and Site Preparation	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition and Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition and Site Preparation	Sweepers/Scrubbers	1	8.00	64	0.46
Building and Asphalt Demolition and Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading	Excavators	0	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rollers	1	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Scrapers	1	8.00	367	0.48
Rough Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Rough Grading Soil Import	Excavators	0	8.00	158	0.38
Rough Grading Soil Import	Graders	0	8.00	187	0.41
Rough Grading Soil Import	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Import	Sweepers/Scrubbers	1	8.00	64	0.46
Rough Grading Soil Import	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading Soil Export	Excavators	0	8.00	158	0.38
Rough Grading Soil Export	Graders	0	8.00	187	0.41
Rough Grading Soil Export	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Export	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Utility Trenching	Excavators	1	8.00	158	0.38
Utility Trenching	Sweepers/Scrubbers	1	8.00	64	0.46
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1	Cranes	1	7.00	231	0.29
Building Construction 1	Forklifts	3	8.00	89	0.20
Building Construction 1	Generator Sets	1	8.00	84	0.74
Building Construction 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 1	Welders	1	8.00	46	0.45
Building Construction and Fine Grading	Cranes	1	7.00	231	0.29
Building Construction and Fine Grading	Excavators	0	8.00	158	0.38
Building Construction and Fine Grading	Forklifts	3	8.00	89	0.20
Building Construction and Fine Grading	Generator Sets	1	8.00	84	0.74
Building Construction and Fine Grading	Graders	1	8.00	187	0.41
Building Construction and Fine Grading	Rollers	1	8.00	80	0.38
Building Construction and Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction and Fine Grading	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction and Fine Grading	Welders	1	8.00	46	0.45
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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
Building and Asphalt Demolition	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	494.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition and Site	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Import	2	5.00	0.00	1,333.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Export	0	0.00	0.00	3,873.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	8.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction and Fine Grading	11	119.00	50.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9289	8.2089	9.5654	0.0287		0.3280	0.3280		0.3135	0.3135		2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.9289**	**8.2089**	**9.5654**	**0.0287**		**0.3280**	**0.3280**		**0.3135**	**0.3135**		**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.9289	8.2089	9.5654	0.0287		0.3280	0.3280		0.3135	0.3135	0.0000	2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.9289**	**8.2089**	**9.5654**	**0.0287**		**0.3280**	**0.3280**		**0.3135**	**0.3135**	**0.0000**	**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.2005	0.0000	2.2005	0.3332	0.0000	0.3332			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.2005**	**0.0000**	**2.2005**	**0.3332**	**0.0000**	**0.3332**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0480	1.7285	0.4030	6.4000e-003	0.1801	0.0128	0.1930	0.0494	0.0123	0.0617		700.6316	700.6316	0.0372	0.1112	734.6888
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
Worker	0.0000	0.0000	0.0000	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	**0.0480**	**1.7285**	**0.4030**	**6.4000e-003**	**0.1801**	**0.0128**	**0.1930**	**0.0494**	**0.0123**	**0.0617**		**700.6316**	**700.6316**	**0.0372**	**0.1112**	**734.6888**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.9407	0.0000	0.9407	0.1424	0.0000	0.1424			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.9407**	**0.0000**	**0.9407**	**0.1424**	**0.0000**	**0.1424**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0480	1.7285	0.4030	6.4000e-003	0.1679	0.0128	0.1807	0.0464	0.0123	0.0587		700.6316	700.6316	0.0372	0.1112	734.6888
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
Worker	0.0000	0.0000	0.0000	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	**0.0480**	**1.7285**	**0.4030**	**6.4000e-003**	**0.1679**	**0.0128**	**0.1807**	**0.0464**	**0.0123**	**0.0587**		**700.6316**	**700.6316**	**0.0372**	**0.1112**	**734.6888**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2870	11.6874	13.7204	0.0343		0.5386	0.5386		0.5073	0.5073		3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**1.2870**	**11.6874**	**13.7204**	**0.0343**		**0.5386**	**0.5386**		**0.5073**	**0.5073**		**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0519	0.0379	0.5904	1.5300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		155.0163	155.0163	4.2200e-003	3.7500e-003	156.2404
Total	**0.0598**	**0.2338**	**0.6576**	**2.3100e-003**	**0.1933**	**2.9400e-003**	**0.1962**	**0.0519**	**2.7800e-003**	**0.0546**		**239.2009**	**239.2009**	**7.0300e-003**	**0.0159**	**244.1105**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.2870	11.6874	13.7204	0.0343		0.5386	0.5386		0.5073	0.5073	0.0000	3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**1.2870**	**11.6874**	**13.7204**	**0.0343**		**0.5386**	**0.5386**		**0.5073**	**0.5073**	**0.0000**	**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0519	0.0379	0.5904	1.5300e-003	0.1546	1.0700e-003	0.1556	0.0413	9.9000e-004	0.0422		155.0163	155.0163	4.2200e-003	3.7500e-003	156.2404
Total	**0.0598**	**0.2338**	**0.6576**	**2.3100e-003**	**0.1785**	**2.9400e-003**	**0.1815**	**0.0482**	**2.7800e-003**	**0.0510**		**239.2009**	**239.2009**	**7.0300e-003**	**0.0159**	**244.1105**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	2.2376	24.7206	13.5399	0.0330		1.0332	1.0332		0.9505	0.9505		3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**2.2376**	**24.7206**	**13.5399**	**0.0330**	**8.1431**	**1.0332**	**9.1763**	**3.5393**	**0.9505**	**4.4898**		**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					3.4812	0.0000	3.4812	1.5130	0.0000	1.5130			0.0000			0.0000
Off-Road	2.2376	24.7206	13.5399	0.0330		1.0332	1.0332		0.9505	0.9505	0.0000	3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**2.2376**	**24.7206**	**13.5399**	**0.0330**	**3.4812**	**1.0332**	**4.5143**	**1.5130**	**0.9505**	**2.4635**	**0.0000**	**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0305	0.0000	0.0305	4.6200e-003	0.0000	4.6200e-003			0.0000			0.0000
Off-Road	0.3581	3.4785	4.1549	5.6500e-003		0.2106	0.2106		0.1938	0.1938		547.4154	547.4154	0.1771		551.8415
Total	**0.3581**	**3.4785**	**4.1549**	**5.6500e-003**	**0.0305**	**0.2106**	**0.2412**	**4.6200e-003**	**0.1938**	**0.1984**		**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1592	5.7404	1.3385	0.0212	0.5983	0.0427	0.6409	0.1640	0.0408	0.2048		2,326.8561	2,326.8561	0.1236	0.3692	2,439.9631
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
Worker	0.0173	0.0126	0.1968	5.1000e-004	0.0559	3.6000e-004	0.0563	0.0148	3.3000e-004	0.0152		51.6721	51.6721	1.4100e-003	1.2500e-003	52.0801
Total	**0.1765**	**5.7530**	**1.5352**	**0.0218**	**0.6542**	**0.0430**	**0.6972**	**0.1789**	**0.0411**	**0.2200**		**2,378.5282**	**2,378.5282**	**0.1250**	**0.3704**	**2,492.0433**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0131	0.0000	0.0131	1.9800e-003	0.0000	1.9800e-003			0.0000			0.0000
Off-Road	0.3581	3.4785	4.1549	5.6500e-003		0.2106	0.2106		0.1938	0.1938	0.0000	547.4154	547.4154	0.1771		551.8415
Total	**0.3581**	**3.4785**	**4.1549**	**5.6500e-003**	**0.0131**	**0.2106**	**0.2237**	**1.9800e-003**	**0.1938**	**0.1958**	**0.0000**	**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1592	5.7404	1.3385	0.0212	0.5576	0.0427	0.6002	0.1540	0.0408	0.1949		2,326.8561	2,326.8561	0.1236	0.3692	2,439.9631
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
Worker	0.0173	0.0126	0.1968	5.1000e-004	0.0515	3.6000e-004	0.0519	0.0138	3.3000e-004	0.0141		51.6721	51.6721	1.4100e-003	1.2500e-003	52.0801
Total	**0.1765**	**5.7530**	**1.5352**	**0.0218**	**0.6091**	**0.0430**	**0.6521**	**0.1678**	**0.0411**	**0.2089**		**2,378.5282**	**2,378.5282**	**0.1250**	**0.3704**	**2,492.0433**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0887	0.0000	0.0887	0.0134	0.0000	0.0134			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0887**	**0.0000**	**0.0887**	**0.0134**	**0.0000**	**0.0134**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4627	16.6786	3.8888	0.0617	1.7383	0.1239	1.8622	0.4766	0.1186	0.5951		6,760.6253	6,760.6253	0.3591	1.0727	7,089.2552
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
Worker	0.0000	0.0000	0.0000	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	**0.4627**	**16.6786**	**3.8888**	**0.0617**	**1.7383**	**0.1239**	**1.8622**	**0.4766**	**0.1186**	**0.5951**		**6,760.6253**	**6,760.6253**	**0.3591**	**1.0727**	**7,089.2552**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0379	0.0000	0.0379	5.7400e-003	0.0000	5.7400e-003			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0379**	**0.0000**	**0.0379**	**5.7400e-003**	**0.0000**	**5.7400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4627	16.6786	3.8888	0.0617	1.6201	0.1239	1.7440	0.4476	0.1186	0.5661		6,760.6253	6,760.6253	0.3591	1.0727	7,089.2552
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
Worker	0.0000	0.0000	0.0000	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	**0.4627**	**16.6786**	**3.8888**	**0.0617**	**1.6201**	**0.1239**	**1.7440**	**0.4476**	**0.1186**	**0.5661**		**6,760.6253**	**6,760.6253**	**0.3591**	**1.0727**	**7,089.2552**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5605	5.2555	7.4101	0.0108		0.2965	0.2965		0.2728	0.2728		1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.5605**	**5.2555**	**7.4101**	**0.0108**		**0.2965**	**0.2965**		**0.2728**	**0.2728**		**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.0356**	**0.2162**	**0.3821**	**1.6000e-003**	**0.1150**	**2.4400e-003**	**0.1175**	**0.0311**	**2.3200e-003**	**0.0334**		**166.8600**	**166.8600**	**5.0600e-003**	**0.0141**	**171.1983**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.5605	5.2555	7.4101	0.0108		0.2965	0.2965		0.2728	0.2728	0.0000	1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.5605**	**5.2555**	**7.4101**	**0.0108**		**0.2965**	**0.2965**		**0.2728**	**0.2728**	**0.0000**	**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0824	5.7000e-004	0.0830	0.0220	5.3000e-004	0.0225		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.0356**	**0.2162**	**0.3821**	**1.6000e-003**	**0.1064**	**2.4400e-003**	**0.1089**	**0.0290**	**2.3200e-003**	**0.0313**		**166.8600**	**166.8600**	**5.0600e-003**	**0.0141**	**171.1983**

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0905	2.2533	0.7726	9.0100e-003	0.2947	0.0215	0.3161	0.0848	0.0205	0.1054		968.1233	968.1233	0.0324	0.1395	1,010.5056
Worker	0.4117	0.3006	4.6836	0.0122	1.3301	8.5100e-003	1.3387	0.3528	7.8300e-003	0.3606		1,229.7959	1,229.7959	0.0335	0.0298	1,239.5072
Total	**0.5022**	**2.5538**	**5.4562**	**0.0212**	**1.6248**	**0.0300**	**1.6548**	**0.4376**	**0.0284**	**0.4660**		**2,197.9192**	**2,197.9192**	**0.0659**	**0.1693**	**2,250.0128**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0905	2.2533	0.7726	9.0100e-003	0.2758	0.0215	0.2972	0.0802	0.0205	0.1007		968.1233	968.1233	0.0324	0.1395	1,010.5056
Worker	0.4117	0.3006	4.6836	0.0122	1.2261	8.5100e-003	1.2346	0.3272	7.8300e-003	0.3351		1,229.7959	1,229.7959	0.0335	0.0298	1,239.5072
Total	**0.5022**	**2.5538**	**5.4562**	**0.0212**	**1.5018**	**0.0300**	**1.5318**	**0.4074**	**0.0284**	**0.4358**		**2,197.9192**	**2,197.9192**	**0.0659**	**0.1693**	**2,250.0128**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2947	8.8800e-003	0.3035	0.0848	8.4900e-003	0.0933		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2758	8.8800e-003	0.2846	0.0802	8.4900e-003	0.0887		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.5018**	**0.0169**	**1.5187**	**0.4074**	**0.0159**	**0.4233**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.10 Building Construction and Fine Grading - 2023

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	2.1099	20.6480	19.7889	0.0362		0.9391	0.9391		0.8786	0.8786		3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**2.1099**	**20.6480**	**19.7889**	**0.0362**	**0.5303**	**0.9391**	**1.4693**	**0.0573**	**0.8786**	**0.9359**		**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0576	1.9192	0.7435	9.3100e-003	0.3203	9.6500e-003	0.3299	0.0922	9.2300e-003	0.1015		1,001.4124	1,001.4124	0.0336	0.1440	1,045.1555
Worker	0.3808	0.2655	4.3007	0.0118	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4384**	**2.1847**	**5.0442**	**0.0211**	**1.6504**	**0.0177**	**1.6681**	**0.4450**	**0.0166**	**0.4616**		**2,191.5021**	**2,191.5021**	**0.0636**	**0.1714**	**2,244.1798**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.2267	0.0000	0.2267	0.0245	0.0000	0.0245			0.0000			0.0000
Off-Road	2.1099	20.6480	19.7889	0.0362		0.9391	0.9391		0.8786	0.8786	0.0000	3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**2.1099**	**20.6480**	**19.7889**	**0.0362**	**0.2267**	**0.9391**	**1.1658**	**0.0245**	**0.8786**	**0.9031**	**0.0000**	**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0576	1.9192	0.7435	9.3100e-003	0.2998	9.6500e-003	0.3094	0.0872	9.2300e-003	0.0964		1,001.4124	1,001.4124	0.0336	0.1440	1,045.1555
Worker	0.3808	0.2655	4.3007	0.0118	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4384**	**2.1847**	**5.0442**	**0.0211**	**1.5258**	**0.0177**	**1.5435**	**0.4144**	**0.0166**	**0.4310**		**2,191.5021**	**2,191.5021**	**0.0636**	**0.1714**	**2,244.1798**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2947	8.8800e-003	0.3035	0.0848	8.4900e-003	0.0933		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2758	8.8800e-003	0.2846	0.0802	8.4900e-003	0.0887		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.5018**	**0.0169**	**1.5187**	**0.4074**	**0.0159**	**0.4233**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0513	1.7692	0.6695	8.4300e-003	0.2947	8.9400e-003	0.3036	0.0848	8.5500e-003	0.0934		907.4632	907.4632	0.0310	0.1306	947.1584
Worker	0.3548	0.2370	3.9963	0.0114	1.3301	7.6600e-003	1.3378	0.3528	7.0500e-003	0.3598		1,156.3588	1,156.3588	0.0272	0.0255	1,164.6488
Total	**0.4061**	**2.0062**	**4.6658**	**0.0199**	**1.6248**	**0.0166**	**1.6414**	**0.4376**	**0.0156**	**0.4532**		**2,063.8220**	**2,063.8220**	**0.0581**	**0.1562**	**2,111.8072**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0513	1.7692	0.6695	8.4300e-003	0.2758	8.9400e-003	0.2847	0.0802	8.5500e-003	0.0888		907.4632	907.4632	0.0310	0.1306	947.1584
Worker	0.3548	0.2370	3.9963	0.0114	1.2261	7.6600e-003	1.2337	0.3272	7.0500e-003	0.3343		1,156.3588	1,156.3588	0.0272	0.0255	1,164.6488
Total	**0.4061**	**2.0062**	**4.6658**	**0.0199**	**1.5018**	**0.0166**	**1.5184**	**0.4074**	**0.0156**	**0.4230**		**2,063.8220**	**2,063.8220**	**0.0581**	**0.1562**	**2,111.8072**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.12 Architectural Coating - 2024

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**7.7664**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0716	0.0478	0.8060	2.3100e-003	0.2683	1.5400e-003	0.2698	0.0711	1.4200e-003	0.0726		233.2152	233.2152	5.4800e-003	5.1500e-003	234.8872
Total	**0.0716**	**0.0478**	**0.8060**	**2.3100e-003**	**0.2683**	**1.5400e-003**	**0.2698**	**0.0711**	**1.4200e-003**	**0.0726**		**233.2152**	**233.2152**	**5.4800e-003**	**5.1500e-003**	**234.8872**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**7.7664**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0716	0.0478	0.8060	2.3100e-003	0.2473	1.5400e-003	0.2488	0.0660	1.4200e-003	0.0674		233.2152	233.2152	5.4800e-003	5.1500e-003	234.8872
Total	**0.0716**	**0.0478**	**0.8060**	**2.3100e-003**	**0.2473**	**1.5400e-003**	**0.2488**	**0.0660**	**1.4200e-003**	**0.0674**		**233.2152**	**233.2152**	**5.4800e-003**	**5.1500e-003**	**234.8872**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.13 Paving - 2024

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	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1039**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0447	0.0299	0.5037	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		145.7595	145.7595	3.4200e-003	3.2200e-003	146.8045
Total	**0.0447**	**0.0299**	**0.5037**	**1.4400e-003**	**0.1677**	**9.7000e-004**	**0.1686**	**0.0445**	**8.9000e-004**	**0.0454**		**145.7595**	**145.7595**	**3.4200e-003**	**3.2200e-003**	**146.8045**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1039**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0447	0.0299	0.5037	1.4400e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		145.7595	145.7595	3.4200e-003	3.2200e-003	146.8045
Total	**0.0447**	**0.0299**	**0.5037**	**1.4400e-003**	**0.1546**	**9.7000e-004**	**0.1555**	**0.0413**	**8.9000e-004**	**0.0421**		**145.7595**	**145.7595**	**3.4200e-003**	**3.2200e-003**	**146.8045**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.14 Finishing/Landscaping - 2024

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	0.1803	1.4029	3.2650	5.1700e-003		0.0691	0.0691		0.0636	0.0636		500.2654	500.2654	0.1618		504.3103
Total	**0.1803**	**1.4029**	**3.2650**	**5.1700e-003**		**0.0691**	**0.0691**		**0.0636**	**0.0636**		**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	8.9400e-003	5.9700e-003	0.1008	2.9000e-004	0.0335	1.9000e-004	0.0337	8.8900e-003	1.8000e-004	9.0700e-003		29.1519	29.1519	6.8000e-004	6.4000e-004	29.3609
Total	**8.9400e-003**	**5.9700e-003**	**0.1008**	**2.9000e-004**	**0.0335**	**1.9000e-004**	**0.0337**	**8.8900e-003**	**1.8000e-004**	**9.0700e-003**		**29.1519**	**29.1519**	**6.8000e-004**	**6.4000e-004**	**29.3609**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.1803	1.4029	3.2650	5.1700e-003		0.0691	0.0691		0.0636	0.0636	0.0000	500.2654	500.2654	0.1618		504.3103
Total	**0.1803**	**1.4029**	**3.2650**	**5.1700e-003**		**0.0691**	**0.0691**		**0.0636**	**0.0636**	**0.0000**	**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	8.9400e-003	5.9700e-003	0.1008	2.9000e-004	0.0309	1.9000e-004	0.0311	8.2500e-003	1.8000e-004	8.4300e-003		29.1519	29.1519	6.8000e-004	6.4000e-004	29.3609
Total	**8.9400e-003**	**5.9700e-003**	**0.1008**	**2.9000e-004**	**0.0309**	**1.9000e-004**	**0.0311**	**8.2500e-003**	**1.8000e-004**	**8.4300e-003**		**29.1519**	**29.1519**	**6.8000e-004**	**6.4000e-004**	**29.3609**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Other Asphalt Surfaces	21.50	1000sqft	0.49	21,502.00	0
Other Non-Asphalt Surfaces	131.89	1000sqft	3.03	131,888.50	0
Parking Lot	61.60	1000sqft	1.41	61,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustinability Report

Land Use - 2 story Building C

Construction Phase - based on construction schedule confirmed by construction manager for Phase 1

Off-road Equipment -

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - no additional equipment required for demolition haul

Off-road Equipment -

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment -

Off-road Equipment - overlapping phase: grading equipment from applicant, CalEEMod default builing construction equipment

Off-road Equipment - based on project of similar size

Off-road Equipment -

Off-road Equipment - based on info provided by construction manager

Off-road Equipment - no additional equipment required for rough grading soil haul (overlaps equipment with rough grading phase)

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on equipment provided by construction manager

Off-road Equipment -

Trips and VMT - assumes 4 vt/water truck/day for demo, site prep, and grading phases, see assumptions file for hauling calculations

Demolition -

Grading -

Architectural Coating - SCAQMD Rule 1113, coating area based on info from applicant

Vehicle Trips -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rules 403 and 1186

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	34,010.00	13,604.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	102,029.00	51,014.00
tblArchitecturalCoating	ConstArea_Parking	12,899.00	3,696.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	54.00
tblConstructionPhase	NumDays	20.00	48.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	230.00	236.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	30,600.00
tblGrading	MaterialImported	0.00	10,530.00
tblLandUse	LandUseSquareFeet	68,020.00	68,019.00
tblLandUse	LandUseSquareFeet	21,500.00	21,502.00
tblLandUse	LandUseSquareFeet	131,890.00	131,888.50
tblLandUse	LotAcreage	1.56	0.78
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	488.00	494.00
tblTripsAndVMT	HaulingTripNumber	1,316.00	1,333.00
tblTripsAndVMT	HaulingTripNumber	3,825.00	3,873.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	28.00	119.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2022	3.2660	51.7738	23.6257	0.1238	10.7922	1.4136	12.2058	4.2498	1.3067	5.5565	0.0000	13,061.3095	13,061.3095	1.6986	1.4585	13,538.3993
2023	2.5747	22.9507	24.5087	0.0567	2.1807	0.9568	3.1374	0.5022	0.8953	1.3975	0.0000	5,580.6251	5,580.6251	0.9611	0.1737	5,656.4141
2024	7.8435	15.5578	20.5340	0.0462	1.6248	0.6300	2.2548	0.4376	0.5926	1.0302	0.0000	4,560.2265	4,560.2265	0.7174	0.1582	4,623.9452
Maximum	**7.8435**	**51.7738**	**24.5087**	**0.1238**	**10.7922**	**1.4136**	**12.2058**	**4.2498**	**1.3067**	**5.5565**	**0.0000**	**13,061.3095**	**13,061.3095**	**1.6986**	**1.4585**	**13,538.3993**

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					
2022	3.2660	51.7738	23.6257	0.1238	5.8884	1.4136	7.3020	2.1706	1.3067	3.4773	0.0000	13,061.3095	13,061.3095	1.6986	1.4585	13,538.3993
2023	2.5747	22.9507	24.5087	0.0567	1.7525	0.9568	2.7093	0.4389	0.8953	1.3341	0.0000	5,580.6251	5,580.6251	0.9611	0.1737	5,656.4141
2024	7.8435	15.5578	20.5340	0.0462	1.5018	0.6300	2.1318	0.4074	0.5926	1.0000	0.0000	4,560.2265	4,560.2265	0.7174	0.1582	4,623.9452
Maximum	**7.8435**	**51.7738**	**24.5087**	**0.1238**	**5.8884**	**1.4136**	**7.3020**	**2.1706**	**1.3067**	**3.4773**	**0.0000**	**13,061.3095**	**13,061.3095**	**1.6986**	**1.4585**	**13,538.3993**

	ROG	NOx	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**	**37.37**	**0.00**	**31.00**	**41.87**	**0.00**	**27.21**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building and Asphalt Demolition	Demolition	6/1/2022	8/15/2022	5	54	
2	Building and Asphalt Demolition Debris Haul	Demolition	6/25/2022	8/31/2022	5	48	
3	Building and Asphalt Demolition and Site Preparation	Demolition	8/16/2022	8/31/2022	5	12	
4	Rough Grading	Grading	9/7/2022	10/31/2022	5	39	
5	Rough Grading Soil Import	Grading	9/7/2022	10/31/2022	5	39	
6	Rough Grading Soil Export	Grading	9/7/2022	10/31/2022	5	39	
7	Utility Trenching	Trenching	11/1/2022	12/14/2022	5	32	
8	Building Construction 1	Building Construction	12/15/2022	11/9/2023	5	236	
9	Building Construction and Fine Grading	Grading	11/10/2023	11/24/2023	5	11	
10	Building Construction 2	Building Construction	11/25/2023	3/31/2024	5	90	
11	Architectural Coating	Architectural Coating	4/1/2024	4/30/2024	5	22	
12	Paving	Paving	5/1/2024	6/28/2024	5	43	
13	Finishing/Landscaping	Trenching	7/1/2024	8/30/2024	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 78

Acres of Paving: 4.93

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 51,014; Non-Residential Outdoor: 13,604; Striped Parking Area: 3,696

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building and Asphalt Demolition	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition and Site Preparation	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition and Site Preparation	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition and Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition and Site Preparation	Sweepers/Scrubbers	1	8.00	64	0.46
Building and Asphalt Demolition and Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading	Excavators	0	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rollers	1	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Scrapers	1	8.00	367	0.48
Rough Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Rough Grading Soil Import	Excavators	0	8.00	158	0.38
Rough Grading Soil Import	Graders	0	8.00	187	0.41
Rough Grading Soil Import	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Import	Sweepers/Scrubbers	1	8.00	64	0.46
Rough Grading Soil Import	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading Soil Export	Excavators	0	8.00	158	0.38
Rough Grading Soil Export	Graders	0	8.00	187	0.41
Rough Grading Soil Export	Rubber Tired Dozers	0	8.00	247	0.40

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Rough Grading Soil Export	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Utility Trenching	Excavators	1	8.00	158	0.38
Utility Trenching	Sweepers/Scrubbers	1	8.00	64	0.46
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1	Cranes	1	7.00	231	0.29
Building Construction 1	Forklifts	3	8.00	89	0.20
Building Construction 1	Generator Sets	1	8.00	84	0.74
Building Construction 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 1	Welders	1	8.00	46	0.45
Building Construction and Fine Grading	Cranes	1	7.00	231	0.29
Building Construction and Fine Grading	Excavators	0	8.00	158	0.38
Building Construction and Fine Grading	Forklifts	3	8.00	89	0.20
Building Construction and Fine Grading	Generator Sets	1	8.00	84	0.74
Building Construction and Fine Grading	Graders	1	8.00	187	0.41
Building Construction and Fine Grading	Rollers	1	8.00	80	0.38
Building Construction and Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction and Fine Grading	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction and Fine Grading	Welders	1	8.00	46	0.45
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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
Building and Asphalt Demolition	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	494.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition and Site	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Import	2	5.00	0.00	1,333.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Export	0	0.00	0.00	3,873.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	8.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction and Fine Grading	11	119.00	50.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9289	8.2089	9.5654	0.0287		0.3280	0.3280		0.3135	0.3135		2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.9289**	**8.2089**	**9.5654**	**0.0287**		**0.3280**	**0.3280**		**0.3135**	**0.3135**		**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.9289	8.2089	9.5654	0.0287		0.3280	0.3280		0.3135	0.3135	0.0000	2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.9289**	**8.2089**	**9.5654**	**0.0287**		**0.3280**	**0.3280**		**0.3135**	**0.3135**	**0.0000**	**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.2005	0.0000	2.2005	0.3332	0.0000	0.3332			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.2005**	**0.0000**	**2.2005**	**0.3332**	**0.0000**	**0.3332**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0468	1.7986	0.4101	6.4000e-003	0.1801	0.0129	0.1930	0.0494	0.0123	0.0617		700.8369	700.8369	0.0372	0.1112	734.9035
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
Worker	0.0000	0.0000	0.0000	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	**0.0468**	**1.7986**	**0.4101**	**6.4000e-003**	**0.1801**	**0.0129**	**0.1930**	**0.0494**	**0.0123**	**0.0617**		**700.8369**	**700.8369**	**0.0372**	**0.1112**	**734.9035**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.9407	0.0000	0.9407	0.1424	0.0000	0.1424			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.9407**	**0.0000**	**0.9407**	**0.1424**	**0.0000**	**0.1424**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0468	1.7986	0.4101	6.4000e-003	0.1679	0.0129	0.1808	0.0464	0.0123	0.0587		700.8369	700.8369	0.0372	0.1112	734.9035
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
Worker	0.0000	0.0000	0.0000	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	**0.0468**	**1.7986**	**0.4101**	**6.4000e-003**	**0.1679**	**0.0129**	**0.1808**	**0.0464**	**0.0123**	**0.0587**		**700.8369**	**700.8369**	**0.0372**	**0.1112**	**734.9035**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2870	11.6874	13.7204	0.0343		0.5386	0.5386		0.5073	0.5073		3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**1.2870**	**11.6874**	**13.7204**	**0.0343**		**0.5386**	**0.5386**		**0.5073**	**0.5073**		**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0556	0.0419	0.5421	1.4500e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		146.8205	146.8205	4.2700e-003	4.0100e-003	148.1225
Total	**0.0633**	**0.2459**	**0.6116**	**2.2300e-003**	**0.1933**	**2.9400e-003**	**0.1962**	**0.0519**	**2.7800e-003**	**0.0546**		**231.0367**	**231.0367**	**7.0700e-003**	**0.0162**	**236.0286**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.2870	11.6874	13.7204	0.0343		0.5386	0.5386		0.5073	0.5073	0.0000	3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**1.2870**	**11.6874**	**13.7204**	**0.0343**		**0.5386**	**0.5386**		**0.5073**	**0.5073**	**0.0000**	**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0556	0.0419	0.5421	1.4500e-003	0.1546	1.0700e-003	0.1556	0.0413	9.9000e-004	0.0422		146.8205	146.8205	4.2700e-003	4.0100e-003	148.1225
Total	**0.0633**	**0.2459**	**0.6116**	**2.2300e-003**	**0.1785**	**2.9400e-003**	**0.1815**	**0.0482**	**2.7800e-003**	**0.0510**		**231.0367**	**231.0367**	**7.0700e-003**	**0.0162**	**236.0286**

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	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					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	2.2376	24.7206	13.5399	0.0330		1.0332	1.0332		0.9505	0.9505		3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**2.2376**	**24.7206**	**13.5399**	**0.0330**	**8.1431**	**1.0332**	**9.1763**	**3.5393**	**0.9505**	**4.4898**		**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					3.4812	0.0000	3.4812	1.5130	0.0000	1.5130			0.0000			0.0000
Off-Road	2.2376	24.7206	13.5399	0.0330		1.0332	1.0332		0.9505	0.9505	0.0000	3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**2.2376**	**24.7206**	**13.5399**	**0.0330**	**3.4812**	**1.0332**	**4.5143**	**1.5130**	**0.9505**	**2.4635**	**0.0000**	**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0305	0.0000	0.0305	4.6200e-003	0.0000	4.6200e-003			0.0000			0.0000
Off-Road	0.3581	3.4785	4.1549	5.6500e-003		0.2106	0.2106		0.1938	0.1938		547.4154	547.4154	0.1771		551.8415
Total	**0.3581**	**3.4785**	**4.1549**	**5.6500e-003**	**0.0305**	**0.2106**	**0.2412**	**4.6200e-003**	**0.1938**	**0.1984**		**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1554	5.9734	1.3620	0.0213	0.5983	0.0427	0.6410	0.1640	0.0409	0.2049		2,327.5382	2,327.5382	0.1234	0.3693	2,440.6760
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
Worker	0.0185	0.0140	0.1807	4.8000e-004	0.0559	3.6000e-004	0.0563	0.0148	3.3000e-004	0.0152		48.9402	48.9402	1.4200e-003	1.3400e-003	49.3742
Total	**0.1739**	**5.9873**	**1.5427**	**0.0217**	**0.6542**	**0.0431**	**0.6973**	**0.1789**	**0.0412**	**0.2201**		**2,376.4784**	**2,376.4784**	**0.1248**	**0.3707**	**2,490.0502**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0131	0.0000	0.0131	1.9800e-003	0.0000	1.9800e-003			0.0000			0.0000
Off-Road	0.3581	3.4785	4.1549	5.6500e-003		0.2106	0.2106		0.1938	0.1938	0.0000	547.4154	547.4154	0.1771		551.8415
Total	**0.3581**	**3.4785**	**4.1549**	**5.6500e-003**	**0.0131**	**0.2106**	**0.2237**	**1.9800e-003**	**0.1938**	**0.1958**	**0.0000**	**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1554	5.9734	1.3620	0.0213	0.5576	0.0427	0.6003	0.1540	0.0409	0.1949		2,327.5382	2,327.5382	0.1234	0.3693	2,440.6760
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
Worker	0.0185	0.0140	0.1807	4.8000e-004	0.0515	3.6000e-004	0.0519	0.0138	3.3000e-004	0.0141		48.9402	48.9402	1.4200e-003	1.3400e-003	49.3742
Total	**0.1739**	**5.9873**	**1.5427**	**0.0217**	**0.6091**	**0.0431**	**0.6522**	**0.1678**	**0.0412**	**0.2090**		**2,376.4784**	**2,376.4784**	**0.1248**	**0.3707**	**2,490.0502**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0887	0.0000	0.0887	0.0134	0.0000	0.0134			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0887**	**0.0000**	**0.0887**	**0.0134**	**0.0000**	**0.0134**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4516	17.3555	3.9573	0.0617	1.7383	0.1242	1.8624	0.4766	0.1188	0.5954		6,762.6072	6,762.6072	0.3585	1.0730	7,091.3265
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
Worker	0.0000	0.0000	0.0000	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	**0.4516**	**17.3555**	**3.9573**	**0.0617**	**1.7383**	**0.1242**	**1.8624**	**0.4766**	**0.1188**	**0.5954**		**6,762.6072**	**6,762.6072**	**0.3585**	**1.0730**	**7,091.3265**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0379	0.0000	0.0379	5.7400e-003	0.0000	5.7400e-003			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0379**	**0.0000**	**0.0379**	**5.7400e-003**	**0.0000**	**5.7400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4516	17.3555	3.9573	0.0617	1.6201	0.1242	1.7443	0.4476	0.1188	0.5664		6,762.6072	6,762.6072	0.3585	1.0730	7,091.3265
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
Worker	0.0000	0.0000	0.0000	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	**0.4516**	**17.3555**	**3.9573**	**0.0617**	**1.6201**	**0.1242**	**1.7443**	**0.4476**	**0.1188**	**0.5664**		**6,762.6072**	**6,762.6072**	**0.3585**	**1.0730**	**7,091.3265**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5605	5.2555	7.4101	0.0108		0.2965	0.2965		0.2728	0.2728		1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.5605**	**5.2555**	**7.4101**	**0.0108**		**0.2965**	**0.2965**		**0.2728**	**0.2728**		**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.0374**	**0.2263**	**0.3586**	**1.5500e-003**	**0.1150**	**2.4400e-003**	**0.1175**	**0.0311**	**2.3200e-003**	**0.0334**		**162.5205**	**162.5205**	**5.0800e-003**	**0.0143**	**166.9048**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.5605	5.2555	7.4101	0.0108		0.2965	0.2965		0.2728	0.2728	0.0000	1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.5605**	**5.2555**	**7.4101**	**0.0108**		**0.2965**	**0.2965**		**0.2728**	**0.2728**	**0.0000**	**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0824	5.7000e-004	0.0830	0.0220	5.3000e-004	0.0225		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.0374**	**0.2263**	**0.3586**	**1.5500e-003**	**0.1064**	**2.4400e-003**	**0.1089**	**0.0290**	**2.3200e-003**	**0.0313**		**162.5205**	**162.5205**	**5.0800e-003**	**0.0143**	**166.9048**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0894	2.3462	0.7993	9.0100e-003	0.2947	0.0215	0.3162	0.0848	0.0206	0.1055		968.4871	968.4871	0.0323	0.1397	1,010.9204
Worker	0.4408	0.3321	4.3003	0.0115	1.3301	8.5100e-003	1.3387	0.3528	7.8300e-003	0.3606		1,164.7758	1,164.7758	0.0339	0.0318	1,175.1053
Total	**0.5302**	**2.6783**	**5.0995**	**0.0205**	**1.6248**	**0.0301**	**1.6548**	**0.4376**	**0.0284**	**0.4660**		**2,133.2628**	**2,133.2628**	**0.0662**	**0.1715**	**2,186.0257**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0894	2.3462	0.7993	9.0100e-003	0.2758	0.0215	0.2973	0.0802	0.0206	0.1008		968.4871	968.4871	0.0323	0.1397	1,010.9204
Worker	0.4408	0.3321	4.3003	0.0115	1.2261	8.5100e-003	1.2346	0.3272	7.8300e-003	0.3351		1,164.7758	1,164.7758	0.0339	0.0318	1,175.1053
Total	**0.5302**	**2.6783**	**5.0995**	**0.0205**	**1.5018**	**0.0301**	**1.5319**	**0.4074**	**0.0284**	**0.4359**		**2,133.2628**	**2,133.2628**	**0.0662**	**0.1715**	**2,186.0257**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2947	8.9300e-003	0.3036	0.0848	8.5400e-003	0.0934		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2758	8.9300e-003	0.2847	0.0802	8.5400e-003	0.0888		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.5018**	**0.0169**	**1.5188**	**0.4074**	**0.0159**	**0.4233**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.10 Building Construction and Fine Grading - 2023

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	2.1099	20.6480	19.7889	0.0362		0.9391	0.9391		0.8786	0.8786		3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**2.1099**	**20.6480**	**19.7889**	**0.0362**	**0.5303**	**0.9391**	**1.4693**	**0.0573**	**0.8786**	**0.9359**		**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0556	2.0094	0.7669	9.3200e-003	0.3203	9.7100e-003	0.3300	0.0922	9.2900e-003	0.1015		1,003.1015	1,003.1015	0.0334	0.1444	1,046.9555
Worker	0.4092	0.2933	3.9530	0.0112	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4648**	**2.3026**	**4.7199**	**0.0205**	**1.6504**	**0.0177**	**1.6681**	**0.4450**	**0.0167**	**0.4616**		**2,130.4523**	**2,130.4523**	**0.0638**	**0.1737**	**2,183.8090**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.2267	0.0000	0.2267	0.0245	0.0000	0.0245			0.0000			0.0000
Off-Road	2.1099	20.6480	19.7889	0.0362		0.9391	0.9391		0.8786	0.8786	0.0000	3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**2.1099**	**20.6480**	**19.7889**	**0.0362**	**0.2267**	**0.9391**	**1.1658**	**0.0245**	**0.8786**	**0.9031**	**0.0000**	**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0556	2.0094	0.7669	9.3200e-003	0.2998	9.7100e-003	0.3095	0.0872	9.2900e-003	0.0965		1,003.1015	1,003.1015	0.0334	0.1444	1,046.9555
Worker	0.4092	0.2933	3.9530	0.0112	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4648**	**2.3026**	**4.7199**	**0.0205**	**1.5258**	**0.0177**	**1.5435**	**0.4144**	**0.0167**	**0.4310**		**2,130.4523**	**2,130.4523**	**0.0638**	**0.1737**	**2,183.8090**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2947	8.9300e-003	0.3036	0.0848	8.5400e-003	0.0934		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2758	8.9300e-003	0.2847	0.0802	8.5400e-003	0.0888		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.5018**	**0.0169**	**1.5188**	**0.4074**	**0.0159**	**0.4233**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0494	1.8524	0.6907	8.4400e-003	0.2947	8.9900e-003	0.3036	0.0848	8.6000e-003	0.0934		909.0259	909.0259	0.0309	0.1310	948.8201
Worker	0.3825	0.2617	3.6765	0.0108	1.3301	7.6600e-003	1.3378	0.3528	7.0500e-003	0.3598		1,095.5016	1,095.5016	0.0276	0.0273	1,104.3175
Total	**0.4319**	**2.1141**	**4.3672**	**0.0193**	**1.6248**	**0.0167**	**1.6414**	**0.4376**	**0.0157**	**0.4533**		**2,004.5276**	**2,004.5276**	**0.0584**	**0.1582**	**2,053.1375**

Date: 7/28/2021 11:30 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0494	1.8524	0.6907	8.4400e-003	0.2758	8.9900e-003	0.2848	0.0802	8.6000e-003	0.0888		909.0259	909.0259	0.0309	0.1310	948.8201
Worker	0.3825	0.2617	3.6765	0.0108	1.2261	7.6600e-003	1.2337	0.3272	7.0500e-003	0.3343		1,095.5016	1,095.5016	0.0276	0.0273	1,104.3175
Total	**0.4319**	**2.1141**	**4.3672**	**0.0193**	**1.5018**	**0.0167**	**1.5185**	**0.4074**	**0.0157**	**0.4231**		**2,004.5276**	**2,004.5276**	**0.0584**	**0.1582**	**2,053.1375**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.12 Architectural Coating - 2024

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**7.7664**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0771	0.0528	0.7415	2.1900e-003	0.2683	1.5400e-003	0.2698	0.0711	1.4200e-003	0.0726		220.9415	220.9415	5.5600e-003	5.5000e-003	222.7195
Total	**0.0771**	**0.0528**	**0.7415**	**2.1900e-003**	**0.2683**	**1.5400e-003**	**0.2698**	**0.0711**	**1.4200e-003**	**0.0726**		**220.9415**	**220.9415**	**5.5600e-003**	**5.5000e-003**	**222.7195**

Date: 7/28/2021 11:30 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**7.7664**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0771	0.0528	0.7415	2.1900e-003	0.2473	1.5400e-003	0.2488	0.0660	1.4200e-003	0.0674		220.9415	220.9415	5.5600e-003	5.5000e-003	222.7195
Total	**0.0771**	**0.0528**	**0.7415**	**2.1900e-003**	**0.2473**	**1.5400e-003**	**0.2488**	**0.0660**	**1.4200e-003**	**0.0674**		**220.9415**	**220.9415**	**5.5600e-003**	**5.5000e-003**	**222.7195**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.13 Paving - 2024

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	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1039**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0482	0.0330	0.4634	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		138.0884	138.0884	3.4700e-003	3.4400e-003	139.1997
Total	**0.0482**	**0.0330**	**0.4634**	**1.3700e-003**	**0.1677**	**9.7000e-004**	**0.1686**	**0.0445**	**8.9000e-004**	**0.0454**		**138.0884**	**138.0884**	**3.4700e-003**	**3.4400e-003**	**139.1997**

Date: 7/28/2021 11:30 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1039**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0482	0.0330	0.4634	1.3700e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		138.0884	138.0884	3.4700e-003	3.4400e-003	139.1997
Total	**0.0482**	**0.0330**	**0.4634**	**1.3700e-003**	**0.1546**	**9.7000e-004**	**0.1555**	**0.0413**	**8.9000e-004**	**0.0421**		**138.0884**	**138.0884**	**3.4700e-003**	**3.4400e-003**	**139.1997**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.14 Finishing/Landscaping - 2024

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	0.1803	1.4029	3.2650	5.1700e-003		0.0691	0.0691		0.0636	0.0636		500.2654	500.2654	0.1618		504.3103
Total	**0.1803**	**1.4029**	**3.2650**	**5.1700e-003**		**0.0691**	**0.0691**		**0.0636**	**0.0636**		**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	9.6400e-003	6.6000e-003	0.0927	2.7000e-004	0.0335	1.9000e-004	0.0337	8.8900e-003	1.8000e-004	9.0700e-003		27.6177	27.6177	6.9000e-004	6.9000e-004	27.8399
Total	**9.6400e-003**	**6.6000e-003**	**0.0927**	**2.7000e-004**	**0.0335**	**1.9000e-004**	**0.0337**	**8.8900e-003**	**1.8000e-004**	**9.0700e-003**		**27.6177**	**27.6177**	**6.9000e-004**	**6.9000e-004**	**27.8399**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.1803	1.4029	3.2650	5.1700e-003		0.0691	0.0691		0.0636	0.0636	0.0000	500.2654	500.2654	0.1618		504.3103
Total	**0.1803**	**1.4029**	**3.2650**	**5.1700e-003**		**0.0691**	**0.0691**		**0.0636**	**0.0636**	**0.0000**	**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	9.6400e-003	6.6000e-003	0.0927	2.7000e-004	0.0309	1.9000e-004	0.0311	8.2500e-003	1.8000e-004	8.4300e-003		27.6177	27.6177	6.9000e-004	6.9000e-004	27.8399
Total	**9.6400e-003**	**6.6000e-003**	**0.0927**	**2.7000e-004**	**0.0309**	**1.9000e-004**	**0.0311**	**8.2500e-003**	**1.8000e-004**	**8.4300e-003**		**27.6177**	**27.6177**	**6.9000e-004**	**6.9000e-004**	**27.8399**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Other Asphalt Surfaces	21.50	1000sqft	0.49	21,502.00	0
Other Non-Asphalt Surfaces	131.89	1000sqft	3.03	131,888.50	0
Parking Lot	61.60	1000sqft	1.41	61,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustinability Report

Land Use - 2 story Building C

Construction Phase - based on construction schedule confirmed by construction manager for Phase 1

Off-road Equipment -

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - no additional equipment required for demolition haul

Off-road Equipment -

Off-road Equipment -

Date: 7/28/2021 11:27 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment - overlapping phase: grading equipment from applicant, CalEEMod default builing construction equipment

Off-road Equipment - based on project of similar size

Off-road Equipment -

Off-road Equipment - based on info provided by construction manager

Off-road Equipment - no additional equipment required for rough grading soil haul (overlaps equipment with rough grading phase)

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on equipment provided by construction manager

Off-road Equipment -

Trips and VMT - assumes 4 vt/water truck/day for demo, site prep, and grading phases, see assumptions file for hauling calculations

Demolition -

Grading -

Architectural Coating - SCAQMD Rule 1113, coating area based on info from applicant

Vehicle Trips -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rules 403 and 1186

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	34,010.00	13,604.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	102,029.00	51,014.00
tblArchitecturalCoating	ConstArea_Parking	12,899.00	3,696.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	54.00
tblConstructionPhase	NumDays	20.00	48.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	230.00	236.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	30,600.00
tblGrading	MaterialImported	0.00	10,530.00
tblLandUse	LandUseSquareFeet	68,020.00	68,019.00
tblLandUse	LandUseSquareFeet	21,500.00	21,502.00
tblLandUse	LandUseSquareFeet	131,890.00	131,888.50
tblLandUse	LotAcreage	1.56	0.78
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	488.00	494.00
tblTripsAndVMT	HaulingTripNumber	1,316.00	1,333.00
tblTripsAndVMT	HaulingTripNumber	3,825.00	3,873.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	28.00	119.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2022	0.1220	1.5561	1.0796	4.0900e-003	0.2828	0.0499	0.3327	0.0962	0.0465	0.1427	0.0000	380.8488	380.8488	0.0623	0.0298	391.2899
2023	0.2633	2.1853	2.7488	6.1400e-003	0.2103	0.0945	0.3048	0.0563	0.0889	0.1451	0.0000	549.8774	549.8774	0.0804	0.0192	557.6135
2024	0.1761	0.7572	1.0986	2.2100e-003	0.0590	0.0328	0.0918	0.0159	0.0307	0.0465	0.0000	196.5258	196.5258	0.0371	4.8100e-003	198.8862
Maximum	**0.2633**	**2.1853**	**2.7488**	**6.1400e-003**	**0.2828**	**0.0945**	**0.3327**	**0.0962**	**0.0889**	**0.1451**	**0.0000**	**549.8774**	**549.8774**	**0.0804**	**0.0298**	**557.6135**

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					
2022	0.1220	1.5561	1.0796	4.0900e-003	0.1555	0.0499	0.2054	0.0507	0.0465	0.0972	0.0000	380.8486	380.8486	0.0623	0.0298	391.2897
2023	0.2633	2.1853	2.7488	6.1400e-003	0.1930	0.0945	0.2874	0.0522	0.0889	0.1411	0.0000	549.8771	549.8771	0.0804	0.0192	557.6131
2024	0.1761	0.7572	1.0986	2.2100e-003	0.0545	0.0328	0.0873	0.0148	0.0307	0.0455	0.0000	196.5257	196.5257	0.0371	4.8100e-003	198.8861
Maximum	**0.2633**	**2.1853**	**2.7488**	**6.1400e-003**	**0.1930**	**0.0945**	**0.2874**	**0.0522**	**0.0889**	**0.1411**	**0.0000**	**549.8771**	**549.8771**	**0.0804**	**0.0298**	**557.6131**

	ROG	NOx	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**	**27.00**	**0.00**	**20.44**	**30.06**	**0.00**	**15.13**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2022	8-31-2022	0.7825	0.7825
2	9-1-2022	11-30-2022	1.6769	1.6769
3	12-1-2022	2-28-2023	0.5461	0.5461
4	3-1-2023	5-31-2023	0.6068	0.6068
5	6-1-2023	8-31-2023	0.6053	0.6053
6	9-1-2023	11-30-2023	0.6390	0.6390
7	12-1-2023	2-29-2024	0.5797	0.5797
8	3-1-2024	5-31-2024	0.4094	0.4094
9	6-1-2024	8-31-2024	0.1418	0.1418
		Highest	1.6769	1.6769

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building and Asphalt Demolition	Demolition	6/1/2022	8/15/2022	5	54	
2	Building and Asphalt Demolition Debris Haul	Demolition	6/25/2022	8/31/2022	5	48	
3	Building and Asphalt Demolition and Site Preparation	Demolition	8/16/2022	8/31/2022	5	12	
4	Rough Grading	Grading	9/7/2022	10/31/2022	5	39	
5	Rough Grading Soil Import	Grading	9/7/2022	10/31/2022	5	39	
6	Rough Grading Soil Export	Grading	9/7/2022	10/31/2022	5	39	
7	Utility Trenching	Trenching	11/1/2022	12/14/2022	5	32	
8	Building Construction 1	Building Construction	12/15/2022	11/9/2023	5	236	
9	Building Construction and Fine Grading	Grading	11/10/2023	11/24/2023	5	11	
10	Building Construction 2	Building Construction	11/25/2023	3/31/2024	5	90	
11	Architectural Coating	Architectural Coating	4/1/2024	4/30/2024	5	22	
12	Paving	Paving	5/1/2024	6/28/2024	5	43	
13	Finishing/Landscaping	Trenching	7/1/2024	8/30/2024	5	45	

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 78

Acres of Paving: 4.93

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 51,014; Non-Residential Outdoor: 13,604; Striped Parking Area: 3,696 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition and Site Preparation	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition and Site Preparation	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition and Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition and Site Preparation	Sweepers/Scrubbers	1	8.00	64	0.46
Building and Asphalt Demolition and Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading	Excavators	0	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rollers	1	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Scrapers	1	8.00	367	0.48
Rough Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Rough Grading Soil Import	Excavators	0	8.00	158	0.38
Rough Grading Soil Import	Graders	0	8.00	187	0.41
Rough Grading Soil Import	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Import	Sweepers/Scrubbers	1	8.00	64	0.46
Rough Grading Soil Import	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading Soil Export	Excavators	0	8.00	158	0.38
Rough Grading Soil Export	Graders	0	8.00	187	0.41
Rough Grading Soil Export	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Export	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Utility Trenching	Excavators	1	8.00	158	0.38
Utility Trenching	Sweepers/Scrubbers	1	8.00	64	0.46
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1	Cranes	1	7.00	231	0.29
Building Construction 1	Forklifts	3	8.00	89	0.20
Building Construction 1	Generator Sets	1	8.00	84	0.74
Building Construction 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 1	Welders	1	8.00	46	0.45
Building Construction and Fine Grading	Cranes	1	7.00	231	0.29
Building Construction and Fine Grading	Excavators	0	8.00	158	0.38
Building Construction and Fine Grading	Forklifts	3	8.00	89	0.20
Building Construction and Fine Grading	Generator Sets	1	8.00	84	0.74
Building Construction and Fine Grading	Graders	1	8.00	187	0.41
Building Construction and Fine Grading	Rollers	1	8.00	80	0.38
Building Construction and Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction and Fine Grading	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction and Fine Grading	Welders	1	8.00	46	0.45
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

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
Building and Asphalt Demolition	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	494.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition and Site	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Import	2	5.00	0.00	1,333.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Export	0	0.00	0.00	3,873.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	8.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction and Fine Grading	11	119.00	50.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0251	0.2216	0.2583	7.7000e-004		8.8600e-003	8.8600e-003		8.4700e-003	8.4700e-003	0.0000	67.5759	67.5759	0.0176	0.0000	68.0170
Total	**0.0251**	**0.2216**	**0.2583**	**7.7000e-004**		**8.8600e-003**	**8.8600e-003**		**8.4700e-003**	**8.4700e-003**	**0.0000**	**67.5759**	**67.5759**	**0.0176**	**0.0000**	**68.0170**

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	2.1000e-004	5.5500e-003	1.8400e-003	2.0000e-005	6.8000e-004	5.0000e-005	7.3000e-004	2.0000e-004	5.0000e-005	2.4000e-004	0.0000	2.0624	2.0624	7.0000e-005	3.0000e-004	2.1527
Worker	9.2000e-004	7.7000e-004	0.0100	3.0000e-005	2.9600e-003	2.0000e-005	2.9800e-003	7.9000e-004	2.0000e-005	8.0000e-004	0.0000	2.4334	2.4334	7.0000e-005	7.0000e-005	2.4549
Total	**1.1300e-003**	**6.3200e-003**	**0.0119**	**5.0000e-005**	**3.6400e-003**	**7.0000e-005**	**3.7100e-003**	**9.9000e-004**	**7.0000e-005**	**1.0400e-003**	**0.0000**	**4.4957**	**4.4957**	**1.4000e-004**	**3.7000e-004**	**4.6076**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0251	0.2216	0.2583	7.7000e-004		8.8600e-003	8.8600e-003		8.4700e-003	8.4700e-003	0.0000	67.5758	67.5758	0.0176	0.0000	68.0169
Total	**0.0251**	**0.2216**	**0.2583**	**7.7000e-004**		**8.8600e-003**	**8.8600e-003**		**8.4700e-003**	**8.4700e-003**	**0.0000**	**67.5758**	**67.5758**	**0.0176**	**0.0000**	**68.0169**

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	2.1000e-004	5.5500e-003	1.8400e-003	2.0000e-005	6.4000e-004	5.0000e-005	6.9000e-004	1.9000e-004	5.0000e-005	2.3000e-004	0.0000	2.0624	2.0624	7.0000e-005	3.0000e-004	2.1527
Worker	9.2000e-004	7.7000e-004	0.0100	3.0000e-005	2.7300e-003	2.0000e-005	2.7500e-003	7.3000e-004	2.0000e-005	7.5000e-004	0.0000	2.4334	2.4334	7.0000e-005	7.0000e-005	2.4549
Total	**1.1300e-003**	**6.3200e-003**	**0.0119**	**5.0000e-005**	**3.3700e-003**	**7.0000e-005**	**3.4400e-003**	**9.2000e-004**	**7.0000e-005**	**9.8000e-004**	**0.0000**	**4.4957**	**4.4957**	**1.4000e-004**	**3.7000e-004**	**4.6076**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0528	0.0000	0.0528	8.0000e-003	0.0000	8.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0528**	**0.0000**	**0.0528**	**8.0000e-003**	**0.0000**	**8.0000e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0437	9.7400e-003	1.5000e-004	4.2500e-003	3.1000e-004	4.5600e-003	1.1700e-003	3.0000e-004	1.4600e-003	0.0000	15.2563	15.2563	8.1000e-004	2.4200e-003	15.9979
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	0.0000	0.0000	0.0000	0.0000	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	**1.1400e-003**	**0.0437**	**9.7400e-003**	**1.5000e-004**	**4.2500e-003**	**3.1000e-004**	**4.5600e-003**	**1.1700e-003**	**3.0000e-004**	**1.4600e-003**	**0.0000**	**15.2563**	**15.2563**	**8.1000e-004**	**2.4200e-003**	**15.9979**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0226	0.0000	0.0226	3.4200e-003	0.0000	3.4200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0226**	**0.0000**	**0.0226**	**3.4200e-003**	**0.0000**	**3.4200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0437	9.7400e-003	1.5000e-004	3.9600e-003	3.1000e-004	4.2700e-003	1.1000e-003	3.0000e-004	1.3900e-003	0.0000	15.2563	15.2563	8.1000e-004	2.4200e-003	15.9979
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	0.0000	0.0000	0.0000	0.0000	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	**1.1400e-003**	**0.0437**	**9.7400e-003**	**1.5000e-004**	**3.9600e-003**	**3.1000e-004**	**4.2700e-003**	**1.1000e-003**	**3.0000e-004**	**1.3900e-003**	**0.0000**	**15.2563**	**15.2563**	**8.1000e-004**	**2.4200e-003**	**15.9979**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.7200e-003	0.0701	0.0823	2.1000e-004		3.2300e-003	3.2300e-003		3.0400e-003	3.0400e-003	0.0000	17.9965	17.9965	4.8800e-003	0.0000	18.1186
Total	**7.7200e-003**	**0.0701**	**0.0823**	**2.1000e-004**		**3.2300e-003**	**3.2300e-003**		**3.0400e-003**	**3.0400e-003**	**0.0000**	**17.9965**	**17.9965**	**4.8800e-003**	**0.0000**	**18.1186**

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	5.0000e-005	1.2300e-003	4.1000e-004	0.0000	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4583	0.4583	2.0000e-005	7.0000e-005	0.4784
Worker	3.1000e-004	2.6000e-004	3.3400e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8111	0.8111	2.0000e-005	2.0000e-005	0.8183
Total	**3.6000e-004**	**1.4900e-003**	**3.7500e-003**	**1.0000e-005**	**1.1400e-003**	**2.0000e-005**	**1.1500e-003**	**3.0000e-004**	**2.0000e-005**	**3.2000e-004**	**0.0000**	**1.2694**	**1.2694**	**4.0000e-005**	**9.0000e-005**	**1.2967**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.7200e-003	0.0701	0.0823	2.1000e-004		3.2300e-003	3.2300e-003		3.0400e-003	3.0400e-003	0.0000	17.9965	17.9965	4.8800e-003	0.0000	18.1186
Total	**7.7200e-003**	**0.0701**	**0.0823**	**2.1000e-004**		**3.2300e-003**	**3.2300e-003**		**3.0400e-003**	**3.0400e-003**	**0.0000**	**17.9965**	**17.9965**	**4.8800e-003**	**0.0000**	**18.1186**

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	5.0000e-005	1.2300e-003	4.1000e-004	0.0000	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4583	0.4583	2.0000e-005	7.0000e-005	0.4784
Worker	3.1000e-004	2.6000e-004	3.3400e-003	1.0000e-005	9.1000e-004	1.0000e-005	9.2000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	0.8111	0.8111	2.0000e-005	2.0000e-005	0.8183
Total	**3.6000e-004**	**1.4900e-003**	**3.7500e-003**	**1.0000e-005**	**1.0500e-003**	**2.0000e-005**	**1.0700e-003**	**2.8000e-004**	**2.0000e-005**	**3.0000e-004**	**0.0000**	**1.2694**	**1.2694**	**4.0000e-005**	**9.0000e-005**	**1.2967**

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	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					0.1588	0.0000	0.1588	0.0690	0.0000	0.0690	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0436	0.4821	0.2640	6.4000e-004		0.0202	0.0202		0.0185	0.0185	0.0000	56.4794	56.4794	0.0183	0.0000	56.9361
Total	**0.0436**	**0.4821**	**0.2640**	**6.4000e-004**	**0.1588**	**0.0202**	**0.1789**	**0.0690**	**0.0185**	**0.0876**	**0.0000**	**56.4794**	**56.4794**	**0.0183**	**0.0000**	**56.9361**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	4.0100e-003	1.3300e-003	2.0000e-005	4.9000e-004	4.0000e-005	5.3000e-004	1.4000e-004	3.0000e-005	1.8000e-004	0.0000	1.4895	1.4895	5.0000e-005	2.1000e-004	1.5547
Worker	6.7000e-004	5.6000e-004	7.2300e-003	2.0000e-005	2.1400e-003	1.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7574	1.7574	5.0000e-005	5.0000e-005	1.7730
Total	**8.2000e-004**	**4.5700e-003**	**8.5600e-003**	**4.0000e-005**	**2.6300e-003**	**5.0000e-005**	**2.6800e-003**	**7.1000e-004**	**4.0000e-005**	**7.6000e-004**	**0.0000**	**3.2469**	**3.2469**	**1.0000e-004**	**2.6000e-004**	**3.3277**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0679	0.0000	0.0679	0.0295	0.0000	0.0295	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0436	0.4821	0.2640	6.4000e-004		0.0202	0.0202		0.0185	0.0185	0.0000	56.4793	56.4793	0.0183	0.0000	56.9360
Total	**0.0436**	**0.4821**	**0.2640**	**6.4000e-004**	**0.0679**	**0.0202**	**0.0880**	**0.0295**	**0.0185**	**0.0480**	**0.0000**	**56.4793**	**56.4793**	**0.0183**	**0.0000**	**56.9360**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	4.0100e-003	1.3300e-003	2.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	3.0000e-005	1.7000e-004	0.0000	1.4895	1.4895	5.0000e-005	2.1000e-004	1.5547
Worker	6.7000e-004	5.6000e-004	7.2300e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9800e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.7574	1.7574	5.0000e-005	5.0000e-005	1.7730
Total	**8.2000e-004**	**4.5700e-003**	**8.5600e-003**	**4.0000e-005**	**2.4300e-003**	**5.0000e-005**	**2.4800e-003**	**6.6000e-004**	**4.0000e-005**	**7.1000e-004**	**0.0000**	**3.2469**	**3.2469**	**1.0000e-004**	**2.6000e-004**	**3.3277**

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

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Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	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					6.0000e-004	0.0000	6.0000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9800e-003	0.0678	0.0810	1.1000e-004		4.1100e-003	4.1100e-003		3.7800e-003	3.7800e-003	0.0000	9.6838	9.6838	3.1300e-003	0.0000	9.7621
Total	**6.9800e-003**	**0.0678**	**0.0810**	**1.1000e-004**	**6.0000e-004**	**4.1100e-003**	**4.7100e-003**	**9.0000e-005**	**3.7800e-003**	**3.8700e-003**	**0.0000**	**9.6838**	**9.6838**	**3.1300e-003**	**0.0000**	**9.7621**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0700e-003	0.1179	0.0263	4.1000e-004	0.0115	8.3000e-004	0.0123	3.1500e-003	8.0000e-004	3.9500e-003	0.0000	41.1674	41.1674	2.1800e-003	6.5300e-003	43.1685
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.8000e-004	3.6100e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8787	0.8787	3.0000e-005	2.0000e-005	0.8865
Total	**3.4000e-003**	**0.1182**	**0.0299**	**4.2000e-004**	**0.0125**	**8.4000e-004**	**0.0134**	**3.4300e-003**	**8.1000e-004**	**4.2400e-003**	**0.0000**	**42.0461**	**42.0461**	**2.2100e-003**	**6.5500e-003**	**44.0550**

Mitigated Construction On-Site

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	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					2.5000e-004	0.0000	2.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9800e-003	0.0678	0.0810	1.1000e-004		4.1100e-003	4.1100e-003		3.7800e-003	3.7800e-003	0.0000	9.6838	9.6838	3.1300e-003	0.0000	9.7621
Total	**6.9800e-003**	**0.0678**	**0.0810**	**1.1000e-004**	**2.5000e-004**	**4.1100e-003**	**4.3600e-003**	**4.0000e-005**	**3.7800e-003**	**3.8200e-003**	**0.0000**	**9.6838**	**9.6838**	**3.1300e-003**	**0.0000**	**9.7621**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0700e-003	0.1179	0.0263	4.1000e-004	0.0107	8.3000e-004	0.0115	2.9600e-003	8.0000e-004	3.7600e-003	0.0000	41.1674	41.1674	2.1800e-003	6.5300e-003	43.1685
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.8000e-004	3.6100e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8787	0.8787	3.0000e-005	2.0000e-005	0.8865
Total	**3.4000e-003**	**0.1182**	**0.0299**	**4.2000e-004**	**0.0117**	**8.4000e-004**	**0.0125**	**3.2200e-003**	**8.1000e-004**	**4.0300e-003**	**0.0000**	**42.0461**	**42.0461**	**2.2100e-003**	**6.5500e-003**	**44.0550**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7300e-003	0.0000	1.7300e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7300e-003**	**0.0000**	**1.7300e-003**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	8.9300e-003	0.3426	0.0764	1.2000e-003	0.0333	2.4200e-003	0.0357	9.1500e-003	2.3100e-003	0.0115	0.0000	119.6108	119.6108	6.3500e-003	0.0190	125.4252
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	0.0000	0.0000	0.0000	0.0000	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	**8.9300e-003**	**0.3426**	**0.0764**	**1.2000e-003**	**0.0333**	**2.4200e-003**	**0.0357**	**9.1500e-003**	**2.3100e-003**	**0.0115**	**0.0000**	**119.6108**	**119.6108**	**6.3500e-003**	**0.0190**	**125.4252**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					7.4000e-004	0.0000	7.4000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**7.4000e-004**	**0.0000**	**7.4000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	8.9300e-003	0.3426	0.0764	1.2000e-003	0.0311	2.4200e-003	0.0335	8.6000e-003	2.3100e-003	0.0109	0.0000	119.6108	119.6108	6.3500e-003	0.0190	125.4252
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	0.0000	0.0000	0.0000	0.0000	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	**8.9300e-003**	**0.3426**	**0.0764**	**1.2000e-003**	**0.0311**	**2.4200e-003**	**0.0335**	**8.6000e-003**	**2.3100e-003**	**0.0109**	**0.0000**	**119.6108**	**119.6108**	**6.3500e-003**	**0.0190**	**125.4252**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.9700e-003	0.0841	0.1186	1.7000e-004		4.7400e-003	4.7400e-003		4.3600e-003	4.3600e-003	0.0000	15.2034	15.2034	4.9200e-003	0.0000	15.3263
Total	**8.9700e-003**	**0.0841**	**0.1186**	**1.7000e-004**		**4.7400e-003**	**4.7400e-003**		**4.3600e-003**	**4.3600e-003**	**0.0000**	**15.2034**	**15.2034**	**4.9200e-003**	**0.0000**	**15.3263**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.2900e-003	1.0900e-003	1.0000e-005	4.0000e-004	3.0000e-005	4.3000e-004	1.2000e-004	3.0000e-005	1.5000e-004	0.0000	1.2221	1.2221	4.0000e-005	1.8000e-004	1.2757
Worker	4.4000e-004	3.7000e-004	4.7500e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.1536	1.1536	3.0000e-005	3.0000e-005	1.1638
Total	**5.6000e-004**	**3.6600e-003**	**5.8400e-003**	**2.0000e-005**	**1.8000e-003**	**4.0000e-005**	**1.8400e-003**	**4.9000e-004**	**4.0000e-005**	**5.3000e-004**	**0.0000**	**2.3757**	**2.3757**	**7.0000e-005**	**2.1000e-004**	**2.4395**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	8.9700e-003	0.0841	0.1186	1.7000e-004		4.7400e-003	4.7400e-003		4.3600e-003	4.3600e-003	0.0000	15.2034	15.2034	4.9200e-003	0.0000	15.3263
Total	**8.9700e-003**	**0.0841**	**0.1186**	**1.7000e-004**		**4.7400e-003**	**4.7400e-003**		**4.3600e-003**	**4.3600e-003**	**0.0000**	**15.2034**	**15.2034**	**4.9200e-003**	**0.0000**	**15.3263**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.2900e-003	1.0900e-003	1.0000e-005	3.8000e-004	3.0000e-005	4.1000e-004	1.1000e-004	3.0000e-005	1.4000e-004	0.0000	1.2221	1.2221	4.0000e-005	1.8000e-004	1.2757
Worker	4.4000e-004	3.7000e-004	4.7500e-003	1.0000e-005	1.2900e-003	1.0000e-005	1.3000e-003	3.5000e-004	1.0000e-005	3.5000e-004	0.0000	1.1536	1.1536	3.0000e-005	3.0000e-005	1.1638
Total	**5.6000e-004**	**3.6600e-003**	**5.8400e-003**	**2.0000e-005**	**1.6700e-003**	**4.0000e-005**	**1.7100e-003**	**4.6000e-004**	**4.0000e-005**	**4.9000e-004**	**0.0000**	**2.3757**	**2.3757**	**7.0000e-005**	**2.1000e-004**	**2.4395**

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	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	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

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	5.4000e-004	0.0142	4.7100e-003	5.0000e-005	1.7400e-003	1.3000e-004	1.8700e-003	5.0000e-004	1.2000e-004	6.3000e-004	0.0000	5.2704	5.2704	1.8000e-004	7.6000e-004	5.5014
Worker	2.4500e-003	2.0400e-003	0.0265	7.0000e-005	7.8200e-003	5.0000e-005	7.8800e-003	2.0800e-003	5.0000e-005	2.1300e-003	0.0000	6.4349	6.4349	1.8000e-004	1.8000e-004	6.4919
Total	**2.9900e-003**	**0.0162**	**0.0312**	**1.2000e-004**	**9.5600e-003**	**1.8000e-004**	**9.7500e-003**	**2.5800e-003**	**1.7000e-004**	**2.7600e-003**	**0.0000**	**11.7053**	**11.7053**	**3.6000e-004**	**9.4000e-004**	**11.9933**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

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	5.4000e-004	0.0142	4.7100e-003	5.0000e-005	1.6300e-003	1.3000e-004	1.7600e-003	4.7000e-004	1.2000e-004	6.0000e-004	0.0000	5.2704	5.2704	1.8000e-004	7.6000e-004	5.5014
Worker	2.4500e-003	2.0400e-003	0.0265	7.0000e-005	7.2100e-003	5.0000e-005	7.2600e-003	1.9300e-003	5.0000e-005	1.9800e-003	0.0000	6.4349	6.4349	1.8000e-004	1.8000e-004	6.4919
Total	**2.9900e-003**	**0.0162**	**0.0312**	**1.2000e-004**	**8.8400e-003**	**1.8000e-004**	**9.0200e-003**	**2.4000e-003**	**1.7000e-004**	**2.5800e-003**	**0.0000**	**11.7053**	**11.7053**	**3.6000e-004**	**9.4000e-004**	**11.9933**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2023

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	0.1762	1.6111	1.8193	3.0200e-003		0.0784	0.0784		0.0737	0.0737	0.0000	259.6213	259.6213	0.0618	0.0000	261.1653
Total	**0.1762**	**1.6111**	**1.8193**	**3.0200e-003**		**0.0784**	**0.0784**		**0.0737**	**0.0737**	**0.0000**	**259.6213**	**259.6213**	**0.0618**	**0.0000**	**261.1653**

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	5.8200e-003	0.2076	0.0777	9.6000e-004	0.0325	1.0000e-003	0.0335	9.3700e-003	9.5000e-004	0.0103	0.0000	93.6748	93.6748	3.1300e-003	0.0135	97.7705
Worker	0.0423	0.0336	0.4541	1.2700e-003	0.1461	9.0000e-004	0.1469	0.0388	8.3000e-004	0.0396	0.0000	116.2527	116.2527	3.0900e-003	3.0300e-003	117.2317
Total	**0.0481**	**0.2412**	**0.5318**	**2.2300e-003**	**0.1785**	**1.9000e-003**	**0.1804**	**0.0482**	**1.7800e-003**	**0.0500**	**0.0000**	**209.9275**	**209.9275**	**6.2200e-003**	**0.0165**	**215.0022**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.1762	1.6111	1.8193	3.0200e-003		0.0784	0.0784		0.0737	0.0737	0.0000	259.6210	259.6210	0.0618	0.0000	261.1650
Total	**0.1762**	**1.6111**	**1.8193**	**3.0200e-003**		**0.0784**	**0.0784**		**0.0737**	**0.0737**	**0.0000**	**259.6210**	**259.6210**	**0.0618**	**0.0000**	**261.1650**

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	5.8200e-003	0.2076	0.0777	9.6000e-004	0.0304	1.0000e-003	0.0314	8.8600e-003	9.5000e-004	9.8200e-003	0.0000	93.6748	93.6748	3.1300e-003	0.0135	97.7705
Worker	0.0423	0.0336	0.4541	1.2700e-003	0.1347	9.0000e-004	0.1356	0.0360	8.3000e-004	0.0368	0.0000	116.2527	116.2527	3.0900e-003	3.0300e-003	117.2317
Total	**0.0481**	**0.2412**	**0.5318**	**2.2300e-003**	**0.1651**	**1.9000e-003**	**0.1670**	**0.0449**	**1.7800e-003**	**0.0466**	**0.0000**	**209.9275**	**209.9275**	**6.2200e-003**	**0.0165**	**215.0022**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.10 Building Construction and Fine Grading - 2023

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					2.9200e-003	0.0000	2.9200e-003	3.1000e-004	0.0000	3.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0116	0.1136	0.1088	2.0000e-004		5.1600e-003	5.1600e-003		4.8300e-003	4.8300e-003	0.0000	17.2147	17.2147	4.4800e-003	0.0000	17.3266
Total	**0.0116**	**0.1136**	**0.1088**	**2.0000e-004**	**2.9200e-003**	**5.1600e-003**	**8.0800e-003**	**3.1000e-004**	**4.8300e-003**	**5.1400e-003**	**0.0000**	**17.2147**	**17.2147**	**4.4800e-003**	**0.0000**	**17.3266**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0111	4.1500e-003	5.0000e-005	1.7300e-003	5.0000e-005	1.7900e-003	5.0000e-004	5.0000e-005	5.5000e-004	0.0000	5.0001	5.0001	1.7000e-004	7.2000e-004	5.2187
Worker	2.0800e-003	1.6500e-003	0.0223	6.0000e-005	7.1700e-003	4.0000e-005	7.2200e-003	1.9000e-003	4.0000e-005	1.9500e-003	0.0000	5.7088	5.7088	1.5000e-004	1.5000e-004	5.7569
Total	**2.3900e-003**	**0.0127**	**0.0265**	**1.1000e-004**	**8.9000e-003**	**9.0000e-005**	**9.0100e-003**	**2.4000e-003**	**9.0000e-005**	**2.5000e-003**	**0.0000**	**10.7090**	**10.7090**	**3.2000e-004**	**8.7000e-004**	**10.9757**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					1.2500e-003	0.0000	1.2500e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0116	0.1136	0.1088	2.0000e-004		5.1600e-003	5.1600e-003		4.8300e-003	4.8300e-003	0.0000	17.2147	17.2147	4.4800e-003	0.0000	17.3266
Total	**0.0116**	**0.1136**	**0.1088**	**2.0000e-004**	**1.2500e-003**	**5.1600e-003**	**6.4100e-003**	**1.3000e-004**	**4.8300e-003**	**4.9600e-003**	**0.0000**	**17.2147**	**17.2147**	**4.4800e-003**	**0.0000**	**17.3266**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0111	4.1500e-003	5.0000e-005	1.6200e-003	5.0000e-005	1.6800e-003	4.7000e-004	5.0000e-005	5.2000e-004	0.0000	5.0001	5.0001	1.7000e-004	7.2000e-004	5.2187
Worker	2.0800e-003	1.6500e-003	0.0223	6.0000e-005	6.6100e-003	4.0000e-005	6.6600e-003	1.7700e-003	4.0000e-005	1.8100e-003	0.0000	5.7088	5.7088	1.5000e-004	1.5000e-004	5.7569
Total	**2.3900e-003**	**0.0127**	**0.0265**	**1.1000e-004**	**8.2300e-003**	**9.0000e-005**	**8.3400e-003**	**2.2400e-003**	**9.0000e-005**	**2.3300e-003**	**0.0000**	**10.7090**	**10.7090**	**3.2000e-004**	**8.7000e-004**	**10.9757**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2023

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	0.0197	0.1798	0.2031	3.4000e-004		8.7500e-003	8.7500e-003		8.2300e-003	8.2300e-003	0.0000	28.9756	28.9756	6.8900e-003	0.0000	29.1479
Total	**0.0197**	**0.1798**	**0.2031**	**3.4000e-004**		**8.7500e-003**	**8.7500e-003**		**8.2300e-003**	**8.2300e-003**	**0.0000**	**28.9756**	**28.9756**	**6.8900e-003**	**0.0000**	**29.1479**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5000e-004	0.0232	8.6700e-003	1.1000e-004	3.6200e-003	1.1000e-004	3.7400e-003	1.0500e-003	1.1000e-004	1.1500e-003	0.0000	10.4548	10.4548	3.5000e-004	1.5000e-003	10.9119
Worker	4.7200e-003	3.7500e-003	0.0507	1.4000e-004	0.0163	1.0000e-004	0.0164	4.3300e-003	9.0000e-005	4.4200e-003	0.0000	12.9746	12.9746	3.5000e-004	3.4000e-004	13.0839
Total	**5.3700e-003**	**0.0269**	**0.0594**	**2.5000e-004**	**0.0199**	**2.1000e-004**	**0.0201**	**5.3800e-003**	**2.0000e-004**	**5.5700e-003**	**0.0000**	**23.4294**	**23.4294**	**7.0000e-004**	**1.8400e-003**	**23.9958**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0197	0.1798	0.2031	3.4000e-004		8.7500e-003	8.7500e-003		8.2300e-003	8.2300e-003	0.0000	28.9756	28.9756	6.8900e-003	0.0000	29.1479
Total	**0.0197**	**0.1798**	**0.2031**	**3.4000e-004**		**8.7500e-003**	**8.7500e-003**		**8.2300e-003**	**8.2300e-003**	**0.0000**	**28.9756**	**28.9756**	**6.8900e-003**	**0.0000**	**29.1479**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5000e-004	0.0232	8.6700e-003	1.1000e-004	3.3900e-003	1.1000e-004	3.5000e-003	9.9000e-004	1.1000e-004	1.1000e-003	0.0000	10.4548	10.4548	3.5000e-004	1.5000e-003	10.9119
Worker	4.7200e-003	3.7500e-003	0.0507	1.4000e-004	0.0150	1.0000e-004	0.0151	4.0200e-003	9.0000e-005	4.1100e-003	0.0000	12.9746	12.9746	3.5000e-004	3.4000e-004	13.0839
Total	**5.3700e-003**	**0.0269**	**0.0594**	**2.5000e-004**	**0.0184**	**2.1000e-004**	**0.0186**	**5.0100e-003**	**2.0000e-004**	**5.2100e-003**	**0.0000**	**23.4294**	**23.4294**	**7.0000e-004**	**1.8400e-003**	**23.9958**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2024

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	0.0478	0.4369	0.5254	8.8000e-004		0.0199	0.0199		0.0188	0.0188	0.0000	75.3510	75.3510	0.0178	0.0000	75.7964
Total	**0.0478**	**0.4369**	**0.5254**	**8.8000e-004**		**0.0199**	**0.0199**		**0.0188**	**0.0188**	**0.0000**	**75.3510**	**75.3510**	**0.0178**	**0.0000**	**75.7964**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6400e-003	0.0604	0.0221	2.7000e-004	9.4200e-003	2.9000e-004	9.7100e-003	2.7200e-003	2.8000e-004	3.0000e-003	0.0000	26.7746	26.7746	9.1000e-004	3.8600e-003	27.9468
Worker	0.0115	8.6900e-003	0.1225	3.6000e-004	0.0424	2.5000e-004	0.0426	0.0113	2.3000e-004	0.0115	0.0000	32.7802	32.7802	8.1000e-004	8.2000e-004	33.0437
Total	**0.0131**	**0.0691**	**0.1446**	**6.3000e-004**	**0.0518**	**5.4000e-004**	**0.0523**	**0.0140**	**5.1000e-004**	**0.0145**	**0.0000**	**59.5548**	**59.5548**	**1.7200e-003**	**4.6800e-003**	**60.9905**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0478	0.4369	0.5254	8.8000e-004		0.0199	0.0199		0.0188	0.0188	0.0000	75.3509	75.3509	0.0178	0.0000	75.7963
Total	**0.0478**	**0.4369**	**0.5254**	**8.8000e-004**		**0.0199**	**0.0199**		**0.0188**	**0.0188**	**0.0000**	**75.3509**	**75.3509**	**0.0178**	**0.0000**	**75.7963**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6400e-003	0.0604	0.0221	2.7000e-004	8.8200e-003	2.9000e-004	9.1100e-003	2.5700e-003	2.8000e-004	2.8500e-003	0.0000	26.7746	26.7746	9.1000e-004	3.8600e-003	27.9468
Worker	0.0115	8.6900e-003	0.1225	3.6000e-004	0.0391	2.5000e-004	0.0393	0.0104	2.3000e-004	0.0107	0.0000	32.7802	32.7802	8.1000e-004	8.2000e-004	33.0437
Total	**0.0131**	**0.0691**	**0.1446**	**6.3000e-004**	**0.0479**	**5.4000e-004**	**0.0484**	**0.0130**	**5.1000e-004**	**0.0135**	**0.0000**	**59.5548**	**59.5548**	**1.7200e-003**	**4.6800e-003**	**60.9905**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.12 Architectural Coating - 2024

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	0.0834					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9900e-003	0.0134	0.0199	3.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	2.8086	2.8086	1.6000e-004	0.0000	2.8125
Total	**0.0854**	**0.0134**	**0.0199**	**3.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**	**0.0000**	**2.8086**	**2.8086**	**1.6000e-004**	**0.0000**	**2.8125**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	8.3600e-003	2.0000e-005	2.8900e-003	2.0000e-005	2.9100e-003	7.7000e-004	2.0000e-005	7.8000e-004	0.0000	2.2376	2.2376	6.0000e-005	6.0000e-005	2.2556
Total	**7.8000e-004**	**5.9000e-004**	**8.3600e-003**	**2.0000e-005**	**2.8900e-003**	**2.0000e-005**	**2.9100e-003**	**7.7000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.2376**	**2.2376**	**6.0000e-005**	**6.0000e-005**	**2.2556**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0834					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9900e-003	0.0134	0.0199	3.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	2.8086	2.8086	1.6000e-004	0.0000	2.8125
Total	**0.0854**	**0.0134**	**0.0199**	**3.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**	**0.0000**	**2.8086**	**2.8086**	**1.6000e-004**	**0.0000**	**2.8125**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	8.3600e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.2376	2.2376	6.0000e-005	6.0000e-005	2.2556
Total	**7.8000e-004**	**5.9000e-004**	**8.3600e-003**	**2.0000e-005**	**2.6700e-003**	**2.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.3000e-004**	**0.0000**	**2.2376**	**2.2376**	**6.0000e-005**	**6.0000e-005**	**2.2556**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.13 Paving - 2024

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	0.0213	0.2048	0.3145	4.9000e-004		0.0101	0.0101		9.2700e-003	9.2700e-003	0.0000	43.0570	43.0570	0.0139	0.0000	43.4052
Paving	2.4900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0237**	**0.2048**	**0.3145**	**4.9000e-004**		**0.0101**	**0.0101**		**9.2700e-003**	**9.2700e-003**	**0.0000**	**43.0570**	**43.0570**	**0.0139**	**0.0000**	**43.4052**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	7.2000e-004	0.0102	3.0000e-005	3.5300e-003	2.0000e-005	3.5500e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.7335	2.7335	7.0000e-005	7.0000e-005	2.7554
Total	**9.5000e-004**	**7.2000e-004**	**0.0102**	**3.0000e-005**	**3.5300e-003**	**2.0000e-005**	**3.5500e-003**	**9.4000e-004**	**2.0000e-005**	**9.6000e-004**	**0.0000**	**2.7335**	**2.7335**	**7.0000e-005**	**7.0000e-005**	**2.7554**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0213	0.2048	0.3145	4.9000e-004		0.0101	0.0101		9.2700e-003	9.2700e-003	0.0000	43.0570	43.0570	0.0139	0.0000	43.4051
Paving	2.4900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0237**	**0.2048**	**0.3145**	**4.9000e-004**		**0.0101**	**0.0101**		**9.2700e-003**	**9.2700e-003**	**0.0000**	**43.0570**	**43.0570**	**0.0139**	**0.0000**	**43.4051**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	7.2000e-004	0.0102	3.0000e-005	3.2600e-003	2.0000e-005	3.2800e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.7335	2.7335	7.0000e-005	7.0000e-005	2.7554
Total	**9.5000e-004**	**7.2000e-004**	**0.0102**	**3.0000e-005**	**3.2600e-003**	**2.0000e-005**	**3.2800e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.7335**	**2.7335**	**7.0000e-005**	**7.0000e-005**	**2.7554**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.14 Finishing/Landscaping - 2024

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	4.0600e-003	0.0316	0.0735	1.2000e-004		1.5500e-003	1.5500e-003		1.4300e-003	1.4300e-003	0.0000	10.2112	10.2112	3.3000e-003	0.0000	10.2938
Total	**4.0600e-003**	**0.0316**	**0.0735**	**1.2000e-004**		**1.5500e-003**	**1.5500e-003**		**1.4300e-003**	**1.4300e-003**	**0.0000**	**10.2112**	**10.2112**	**3.3000e-003**	**0.0000**	**10.2938**

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	2.0000e-004	1.5000e-004	2.1400e-003	1.0000e-005	7.4000e-004	0.0000	7.4000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5721	0.5721	1.0000e-005	1.0000e-005	0.5767
Total	**2.0000e-004**	**1.5000e-004**	**2.1400e-003**	**1.0000e-005**	**7.4000e-004**	**0.0000**	**7.4000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5721**	**0.5721**	**1.0000e-005**	**1.0000e-005**	**0.5767**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	4.0600e-003	0.0316	0.0735	1.2000e-004		1.5500e-003	1.5500e-003		1.4300e-003	1.4300e-003	0.0000	10.2112	10.2112	3.3000e-003	0.0000	10.2938
Total	**4.0600e-003**	**0.0316**	**0.0735**	**1.2000e-004**		**1.5500e-003**	**1.5500e-003**		**1.4300e-003**	**1.4300e-003**	**0.0000**	**10.2112**	**10.2112**	**3.3000e-003**	**0.0000**	**10.2938**

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	2.0000e-004	1.5000e-004	2.1400e-003	1.0000e-005	6.8000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5721	0.5721	1.0000e-005	1.0000e-005	0.5767
Total	**2.0000e-004**	**1.5000e-004**	**2.1400e-003**	**1.0000e-005**	**6.8000e-004**	**0.0000**	**6.9000e-004**	**1.8000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5721**	**0.5721**	**1.0000e-005**	**1.0000e-005**	**0.5767**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	58.01	1000sqft	0.67	58,012.00	0
Other Asphalt Surfaces	129.90	1000sqft	2.98	129,904.00	0
Other Non-Asphalt Surfaces	129.90	1000sqft	2.98	129,904.00	0
Parking Lot	18.40	1000sqft	0.42	18,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.983	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2020 SCE Sustainability Report

Land Use - school buildings are 2 stories

Construction Phase - based on data provided by District

Off-road Equipment -

Off-road Equipment - no additional equipment for Demolition Debris Haul

Off-road Equipment -

Off-road Equipment - assumes 1 excavator based on projects of similar size

Off-road Equipment -

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment -

Off-road Equipment - no additional equipment for soil haul

Trips and VMT - assumes 4 vt per water truck per day, see assumptions file for P2-4B hauling calculations

Demolition -

Grading -

Architectural Coating - only accounts for parking area

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	16,692.00	1,104.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	230.00	347.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	34,135.00
tblLandUse	LandUseSquareFeet	58,010.00	58,012.00
tblLandUse	LandUseSquareFeet	129,900.00	129,904.00
tblLandUse	LandUseSquareFeet	129,900.00	129,904.00
tblLandUse	LotAcreage	1.33	0.67
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.983
tblTripsAndVMT	HaulingTripNumber	665.00	674.00
tblTripsAndVMT	HaulingTripNumber	4,267.00	4,321.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

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					
2024	2.3252	25.9116	21.7232	0.0701	8.4989	0.9743	9.2803	3.8046	0.9057	4.5255	0.0000	7,312.4329	7,312.4329	1.1729	0.6836	7,545.4804
2025	1.8207	14.8276	21.3028	0.0499	1.9284	0.5470	2.4753	0.5194	0.5145	1.0339	0.0000	4,986.0865	4,986.0865	0.6673	0.1817	5,056.9215
2026	24.9211	14.7890	21.0230	0.0493	1.9284	0.5465	2.4749	0.5194	0.5141	1.0335	0.0000	4,935.6010	4,935.6010	0.7165	0.1773	5,005.0664
Maximum	**24.9211**	**25.9116**	**21.7232**	**0.0701**	**8.4989**	**0.9743**	**9.2803**	**3.8046**	**0.9057**	**4.5255**	**0.0000**	**7,312.4329**	**7,312.4329**	**1.1729**	**0.6836**	**7,545.4804**

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					
2024	2.3252	25.9116	21.7232	0.0701	4.3163	0.9743	5.0976	1.8158	0.9057	2.5366	0.0000	7,312.4329	7,312.4329	1.1729	0.6836	7,545.4804
2025	1.8207	14.8276	21.3028	0.0499	1.7825	0.5470	2.3294	0.4836	0.5145	0.9981	0.0000	4,986.0865	4,986.0865	0.6673	0.1817	5,056.9215

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2026	24.9211	14.7890	21.0230	0.0493	1.7825	0.5465	2.3290	0.4836	0.5141	0.9977	0.0000	4,935.6010	4,935.6010	0.7165	0.1773	5,005.0664
Maximum	**24.9211**	**25.9116**	**21.7232**	**0.0701**	**4.3163**	**0.9743**	**5.0976**	**1.8158**	**0.9057**	**2.5366**	**0.0000**	**7,312.4329**	**7,312.4329**	**1.1729**	**0.6836**	**7,545.4804**

	ROG	NOx	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**	**36.21**	**0.00**	**31.44**	**42.54**	**0.00**	**31.25**	**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	Building and Asphalt Demolition	Demolition	7/1/2024	8/30/2024	5	45	a
2	Building and Asphalt Demolition Debris Haul	Demolition	7/1/2024	8/30/2024	5	45	b
3	Rough Grading	Grading	9/1/2024	11/30/2024	5	65	c
4	Rough Grading Soil Haul	Grading	9/1/2024	11/30/2024	5	65	d
5	Building Construction	Building Construction	12/1/2024	3/31/2026	5	347	e
6	Architectural Coating	Architectural Coating	4/1/2026	4/30/2026	5	22	f
7	Paving	Paving	5/1/2026	6/30/2026	5	43	g
8	Finishing/Landscaping	Trenching	7/1/2026	8/31/2026	5	44	h

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 65

Acres of Paving: 6.38

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 87,018; Non-Residential Outdoor: 29,006; Striped Parking Area: 1,104

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building and Asphalt Demolition	Excavators	3	8.00	158	0.38
Building and Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading	Excavators	1	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Rough Grading Soil Haul	Excavators	0	8.00	158	0.38
Rough Grading Soil Haul	Graders	0	8.00	187	0.41
Rough Grading Soil Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

Trips and VMT

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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
Building and Asphalt Demolition	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	674.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Haul	0	0.00	0.00	4,321.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	141.00	55.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	28.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building and Asphalt Demolition - 2024

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	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.4600e-003	0.1539	0.0582	7.3000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		78.9098	78.9098	2.6900e-003	0.0114	82.3616
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
Total	**0.0492**	**0.1838**	**0.5642**	**2.1700e-003**	**0.1933**	**1.7500e-003**	**0.1950**	**0.0519**	**1.6300e-003**	**0.0535**		**227.6707**	**227.6707**	**6.1100e-003**	**0.0146**	**232.1674**

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	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.4600e-003	0.1539	0.0582	7.3000e-004	0.0240	7.8000e-004	0.0248	6.9700e-003	7.4000e-004	7.7200e-003		78.9098	78.9098	2.6900e-003	0.0114	82.3616
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
Total	**0.0492**	**0.1838**	**0.5642**	**2.1700e-003**	**0.1785**	**1.7500e-003**	**0.1803**	**0.0482**	**1.6300e-003**	**0.0499**		**227.6707**	**227.6707**	**6.1100e-003**	**0.0146**	**232.1674**

3.3 Building and Asphalt Demolition Debris Haul - 2024

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					3.1961	0.0000	3.1961	0.4839	0.0000	0.4839			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.1961**	**0.0000**	**3.1961**	**0.4839**	**0.0000**	**0.4839**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0323	1.9595	0.5309	8.6200e-003	0.2622	0.0124	0.2746	0.0719	0.0119	0.0838		948.9312	948.9312	0.0535	0.1507	995.1916
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
Worker	0.0000	0.0000	0.0000	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	**0.0323**	**1.9595**	**0.5309**	**8.6200e-003**	**0.2622**	**0.0124**	**0.2746**	**0.0719**	**0.0119**	**0.0838**		**948.9312**	**948.9312**	**0.0535**	**0.1507**	**995.1916**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3663	0.0000	1.3663	0.2069	0.0000	0.2069			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.3663**	**0.0000**	**1.3663**	**0.2069**	**0.0000**	**0.2069**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0323	1.9595	0.5309	8.6200e-003	0.2444	0.0124	0.2568	0.0675	0.0119	0.0794		948.9312	948.9312	0.0535	0.1507	995.1916
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
Worker	0.0000	0.0000	0.0000	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	**0.0323**	**1.9595**	**0.5309**	**8.6200e-003**	**0.2444**	**0.0124**	**0.2568**	**0.0675**	**0.0119**	**0.0794**		**948.9312**	**948.9312**	**0.0535**	**0.1507**	**995.1916**

3.4 Rough Grading - 2024

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					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665		2,873.0541	2,873.0541	0.9292		2,896.2842
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**7.0826**	**0.7244**	**7.8070**	**3.4247**	**0.6665**	**4.0912**		**2,873.0541**	**2,873.0541**	**0.9292**		**2,896.2842**

Date: 7/28/2021 10:04 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.4600e-003	0.1539	0.0582	7.3000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.4000e-004	8.1200e-003		78.9098	78.9098	2.6900e-003	0.0114	82.3616
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
Total	**0.0492**	**0.1838**	**0.5642**	**2.1700e-003**	**0.1933**	**1.7500e-003**	**0.1950**	**0.0519**	**1.6300e-003**	**0.0535**		**227.6707**	**227.6707**	**6.1100e-003**	**0.0146**	**232.1674**

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665	0.0000	2,873.0541	2,873.0541	0.9292		2,896.2842
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**3.0278**	**0.7244**	**3.7522**	**1.4641**	**0.6665**	**2.1305**	**0.0000**	**2,873.0541**	**2,873.0541**	**0.9292**		**2,896.2842**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.4600e-003	0.1539	0.0582	7.3000e-004	0.0240	7.8000e-004	0.0248	6.9700e-003	7.4000e-004	7.7200e-003		78.9098	78.9098	2.6900e-003	0.0114	82.3616
Worker	0.0448	0.0299	0.5060	1.4400e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		148.7609	148.7609	3.4200e-003	3.2200e-003	149.8058
Total	**0.0492**	**0.1838**	**0.5642**	**2.1700e-003**	**0.1785**	**1.7500e-003**	**0.1803**	**0.0482**	**1.6300e-003**	**0.0499**		**227.6707**	**227.6707**	**6.1100e-003**	**0.0146**	**232.1674**

3.5 Rough Grading Soil Haul - 2024

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					0.0594	0.0000	0.0594	8.9900e-003	0.0000	8.9900e-003			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0594**	**0.0000**	**0.0594**	**8.9900e-003**	**0.0000**	**8.9900e-003**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Date: 7/28/2021 10:04 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.1432	8.6969	2.3562	0.0383	1.1637	0.0552	1.2188	0.3190	0.0528	0.3718		4,211.7082	4,211.7082	0.2376	0.6691	4,417.0288
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
Worker	0.0000	0.0000	0.0000	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	**0.1432**	**8.6969**	**2.3562**	**0.0383**	**1.1637**	**0.0552**	**1.2188**	**0.3190**	**0.0528**	**0.3718**		**4,211.7082**	**4,211.7082**	**0.2376**	**0.6691**	**4,417.0288**

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					0.0254	0.0000	0.0254	3.8400e-003	0.0000	3.8400e-003			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0254**	**0.0000**	**0.0254**	**3.8400e-003**	**0.0000**	**3.8400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.1432	8.6969	2.3562	0.0383	1.0846	0.0552	1.1397	0.2996	0.0528	0.3524		4,211.7082	4,211.7082	0.2376	0.6691	4,417.0288
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
Worker	0.0000	0.0000	0.0000	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	**0.1432**	**8.6969**	**2.3562**	**0.0383**	**1.0846**	**0.0552**	**1.1397**	**0.2996**	**0.0528**	**0.3524**		**4,211.7082**	**4,211.7082**	**0.2376**	**0.6691**	**4,417.0288**

3.6 Building Construction - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Date: 7/28/2021 10:04 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0614	2.1154	0.8004	0.0101	0.3523	0.0107	0.3630	0.1014	0.0102	0.1117		1,085.0103	1,085.0103	0.0371	0.1562	1,132.4720
Worker	0.4208	0.2811	4.7559	0.0136	1.5761	9.1200e-003	1.5852	0.4180	8.4000e-003	0.4264		1,398.3520	1,398.3520	0.0322	0.0303	1,408.1745
Total	**0.4822**	**2.3965**	**5.5564**	**0.0236**	**1.9284**	**0.0198**	**1.9482**	**0.5194**	**0.0186**	**0.5380**		**2,483.3623**	**2,483.3623**	**0.0692**	**0.1864**	**2,540.6466**

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0614	2.1154	0.8004	0.0101	0.3297	0.0107	0.3404	0.0959	0.0102	0.1061		1,085.0103	1,085.0103	0.0371	0.1562	1,132.4720
Worker	0.4208	0.2811	4.7559	0.0136	1.4527	9.1200e-003	1.4619	0.3877	8.4000e-003	0.3961		1,398.3520	1,398.3520	0.0322	0.0303	1,408.1745
Total	**0.4822**	**2.3965**	**5.5564**	**0.0236**	**1.7825**	**0.0198**	**1.8023**	**0.4836**	**0.0186**	**0.5022**		**2,483.3623**	**2,483.3623**	**0.0692**	**0.1864**	**2,540.6466**

3.6 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0597	2.1054	0.7857	9.8800e-003	0.3523	0.0107	0.3630	0.1014	0.0103	0.1117		1,065.4759	1,065.4759	0.0373	0.1535	1,112.1387
Worker	0.3936	0.2526	4.4324	0.0131	1.5761	8.7000e-003	1.5848	0.4180	8.0100e-003	0.4260		1,364.1363	1,364.1363	0.0290	0.0283	1,373.2847
Total	**0.4533**	**2.3580**	**5.2181**	**0.0230**	**1.9284**	**0.0194**	**1.9478**	**0.5194**	**0.0183**	**0.5377**		**2,429.6122**	**2,429.6122**	**0.0663**	**0.1817**	**2,485.4234**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0597	2.1054	0.7857	9.8800e-003	0.3297	0.0107	0.3405	0.0959	0.0103	0.1062		1,065.4759	1,065.4759	0.0373	0.1535	1,112.1387
Worker	0.3936	0.2526	4.4324	0.0131	1.4527	8.7000e-003	1.4614	0.3877	8.0100e-003	0.3957		1,364.1363	1,364.1363	0.0290	0.0283	1,373.2847
Total	**0.4533**	**2.3580**	**5.2181**	**0.0230**	**1.7825**	**0.0194**	**1.8019**	**0.4836**	**0.0183**	**0.5019**		**2,429.6122**	**2,429.6122**	**0.0663**	**0.1817**	**2,485.4234**

3.6 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0582	2.0900	0.7746	9.6900e-003	0.3523	0.0107	0.3630	0.1014	0.0102	0.1117		1,045.7008	1,045.7008	0.0376	0.1507	1,091.5458
Worker	0.3703	0.2293	4.1638	0.0127	1.5761	8.2600e-003	1.5843	0.4180	7.6000e-003	0.4256		1,333.4258	1,333.4258	0.0263	0.0266	1,342.0225
Total	**0.4284**	**2.3193**	**4.9384**	**0.0224**	**1.9284**	**0.0190**	**1.9473**	**0.5194**	**0.0178**	**0.5373**		**2,379.1267**	**2,379.1267**	**0.0639**	**0.1773**	**2,433.5683**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0582	2.0900	0.7746	9.6900e-003	0.3297	0.0107	0.3404	0.0959	0.0102	0.1061		1,045.7008	1,045.7008	0.0376	0.1507	1,091.5458
Worker	0.3703	0.2293	4.1638	0.0127	1.4527	8.2600e-003	1.4610	0.3877	7.6000e-003	0.3953		1,333.4258	1,333.4258	0.0263	0.0266	1,342.0225
Total	**0.4284**	**2.3193**	**4.9384**	**0.0224**	**1.7825**	**0.0190**	**1.8014**	**0.4836**	**0.0178**	**0.5014**		**2,379.1267**	**2,379.1267**	**0.0639**	**0.1773**	**2,433.5683**

3.7 Architectural Coating - 2026

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	24.6767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**24.8476**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0735	0.0455	0.8269	2.5200e-003	0.3130	1.6400e-003	0.3146	0.0830	1.5100e-003	0.0845		264.7938	264.7938	5.2300e-003	5.2900e-003	266.5009
Total	**0.0735**	**0.0455**	**0.8269**	**2.5200e-003**	**0.3130**	**1.6400e-003**	**0.3146**	**0.0830**	**1.5100e-003**	**0.0845**		**264.7938**	**264.7938**	**5.2300e-003**	**5.2900e-003**	**266.5009**

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	24.6767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**24.8476**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0735	0.0455	0.8269	2.5200e-003	0.2885	1.6400e-003	0.2901	0.0770	1.5100e-003	0.0785		264.7938	264.7938	5.2300e-003	5.2900e-003	266.5009
Total	**0.0735**	**0.0455**	**0.8269**	**2.5200e-003**	**0.2885**	**1.6400e-003**	**0.2901**	**0.0770**	**1.5100e-003**	**0.0785**		**264.7938**	**264.7938**	**5.2300e-003**	**5.2900e-003**	**266.5009**

3.8 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.2072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1223**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0394	0.0244	0.4430	1.3500e-003	0.1677	8.8000e-004	0.1685	0.0445	8.1000e-004	0.0453		141.8538	141.8538	2.8000e-003	2.8300e-003	142.7684
Total	**0.0394**	**0.0244**	**0.4430**	**1.3500e-003**	**0.1677**	**8.8000e-004**	**0.1685**	**0.0445**	**8.1000e-004**	**0.0453**		**141.8538**	**141.8538**	**2.8000e-003**	**2.8300e-003**	**142.7684**

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.2072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1223**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0394	0.0244	0.4430	1.3500e-003	0.1546	8.8000e-004	0.1554	0.0413	8.1000e-004	0.0421		141.8538	141.8538	2.8000e-003	2.8300e-003	142.7684
Total	**0.0394**	**0.0244**	**0.4430**	**1.3500e-003**	**0.1546**	**8.8000e-004**	**0.1554**	**0.0413**	**8.1000e-004**	**0.0421**		**141.8538**	**141.8538**	**2.8000e-003**	**2.8300e-003**	**142.7684**

3.9 Finishing/Landscaping - 2026

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	0.1671	1.2217	3.2594	5.1700e-003		0.0599	0.0599		0.0551	0.0551		500.3379	500.3379	0.1618		504.3834
Total	**0.1671**	**1.2217**	**3.2594**	**5.1700e-003**		**0.0599**	**0.0599**		**0.0551**	**0.0551**		**500.3379**	**500.3379**	**0.1618**		**504.3834**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	7.8800e-003	4.8800e-003	0.0886	2.7000e-004	0.0335	1.8000e-004	0.0337	8.8900e-003	1.6000e-004	9.0500e-003		28.3708	28.3708	5.6000e-004	5.7000e-004	28.5537
Total	**7.8800e-003**	**4.8800e-003**	**0.0886**	**2.7000e-004**	**0.0335**	**1.8000e-004**	**0.0337**	**8.8900e-003**	**1.6000e-004**	**9.0500e-003**		**28.3708**	**28.3708**	**5.6000e-004**	**5.7000e-004**	**28.5537**

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	0.1671	1.2217	3.2594	5.1700e-003		0.0599	0.0599		0.0551	0.0551	0.0000	500.3379	500.3379	0.1618		504.3834
Total	**0.1671**	**1.2217**	**3.2594**	**5.1700e-003**		**0.0599**	**0.0599**		**0.0551**	**0.0551**	**0.0000**	**500.3379**	**500.3379**	**0.1618**		**504.3834**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	7.8800e-003	4.8800e-003	0.0886	2.7000e-004	0.0309	1.8000e-004	0.0311	8.2500e-003	1.6000e-004	8.4100e-003		28.3708	28.3708	5.6000e-004	5.7000e-004	28.5537
Total	**7.8800e-003**	**4.8800e-003**	**0.0886**	**2.7000e-004**	**0.0309**	**1.8000e-004**	**0.0311**	**8.2500e-003**	**1.6000e-004**	**8.4100e-003**		**28.3708**	**28.3708**	**5.6000e-004**	**5.7000e-004**	**28.5537**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	58.01	1000sqft	0.67	58,012.00	0
Other Asphalt Surfaces	129.90	1000sqft	2.98	129,904.00	0
Other Non-Asphalt Surfaces	129.90	1000sqft	2.98	129,904.00	0
Parking Lot	18.40	1000sqft	0.42	18,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.983	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2020 SCE Sustainability Report

Land Use - school buildings are 2 stories

Construction Phase - based on data provided by District

Off-road Equipment -

Off-road Equipment - no additional equipment for Demolition Debris Haul

Off-road Equipment -

Off-road Equipment - assumes 1 excavator based on projects of similar size

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - no additional equipment for soil haul

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Trips and VMT - assumes 4 vt per water truck per day, see assumptions file for P2-4B hauling calculations

Demolition -

Grading -

Architectural Coating - only accounts for parking area

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	16,692.00	1,104.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	230.00	347.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	34,135.00
tblLandUse	LandUseSquareFeet	58,010.00	58,012.00
tblLandUse	LandUseSquareFeet	129,900.00	129,904.00
tblLandUse	LandUseSquareFeet	129,900.00	129,904.00
tblLandUse	LotAcreage	1.33	0.67
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblProjectCharacteristics	CO2IntensityFactor	390.98	509.983
tblTripsAndVMT	HaulingTripNumber	665.00	674.00
tblTripsAndVMT	HaulingTripNumber	4,267.00	4,321.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

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					
2024	2.3265	26.3058	21.3680	0.0701	8.4989	0.9744	9.2804	3.8046	0.9058	4.5256	0.0000	7,309.2397	7,309.2397	1.1725	0.6846	7,542.5677
2025	1.8504	14.9530	20.9764	0.0493	1.9284	0.5470	2.4754	0.5194	0.5146	1.0340	0.0000	4,916.3096	4,916.3096	0.6676	0.1840	4,987.8395
2026	24.9274	14.9114	20.7198	0.0487	1.9284	0.5466	2.4749	0.5194	0.5141	1.0336	0.0000	4,867.5440	4,867.5440	0.7166	0.1795	4,937.6662
Maximum	**24.9274**	**26.3058**	**21.3680**	**0.0701**	**8.4989**	**0.9744**	**9.2804**	**3.8046**	**0.9058**	**4.5256**	**0.0000**	**7,309.2397**	**7,309.2397**	**1.1725**	**0.6846**	**7,542.5677**

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					
2024	2.3265	26.3058	21.3680	0.0701	4.3163	0.9744	5.0978	1.8158	0.9058	2.5368	0.0000	7,309.2397	7,309.2397	1.1725	0.6846	7,542.5677
2025	1.8504	14.9530	20.9764	0.0493	1.7825	0.5470	2.3295	0.4836	0.5146	0.9982	0.0000	4,916.3096	4,916.3096	0.6676	0.1840	4,987.8395
2026	24.9274	14.9114	20.7198	0.0487	1.7825	0.5466	2.3290	0.4836	0.5141	0.9978	0.0000	4,867.5440	4,867.5440	0.7166	0.1795	4,937.6662
Maximum	**24.9274**	**26.3058**	**21.3680**	**0.0701**	**4.3163**	**0.9744**	**5.0978**	**1.8158**	**0.9058**	**2.5368**	**0.0000**	**7,309.2397**	**7,309.2397**	**1.1725**	**0.6846**	**7,542.5677**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	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**	**36.21**	**0.00**	**31.44**	**42.54**	**0.00**	**31.25**	**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	Building and Asphalt Demolition	Demolition	7/1/2024	8/30/2024	5	45	a
2	Building and Asphalt Demolition Debris Haul	Demolition	7/1/2024	8/30/2024	5	45	b
3	Rough Grading	Grading	9/1/2024	11/30/2024	5	65	c
4	Rough Grading Soil Haul	Grading	9/1/2024	11/30/2024	5	65	d
5	Building Construction	Building Construction	12/1/2024	3/31/2026	5	347	e
6	Architectural Coating	Architectural Coating	4/1/2026	4/30/2026	5	22	f
7	Paving	Paving	5/1/2026	6/30/2026	5	43	g
8	Finishing/Landscaping	Trenching	7/1/2026	8/31/2026	5	44	h

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 65

Acres of Paving: 6.38

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 87,018; Non-Residential Outdoor: 29,006; Striped Parking Area: 1,104

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building and Asphalt Demolition	Excavators	3	8.00	158	0.38
Building and Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading	Excavators	1	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Rough Grading Soil Haul	Excavators	0	8.00	158	0.38
Rough Grading Soil Haul	Graders	0	8.00	187	0.41
Rough Grading Soil Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

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
Building and Asphalt Demolition	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	674.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Haul	0	0.00	0.00	4,321.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction		9	141.00	55.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating		1	28.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving		6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping		1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building and Asphalt Demolition - 2024

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	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922		3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**		**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.3000e-003	0.1611	0.0601	7.3000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		79.0457	79.0457	2.6800e-003	0.0114	82.5061
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
Total	**0.0526**	**0.1941**	**0.5255**	**2.1000e-003**	**0.1933**	**1.7500e-003**	**0.1950**	**0.0519**	**1.6400e-003**	**0.0535**		**219.9767**	**219.9767**	**6.1500e-003**	**0.0148**	**224.5483**

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	2.2437	20.8781	19.7073	0.0388		0.9602	0.9602		0.8922	0.8922	0.0000	3,747.4228	3,747.4228	1.0485		3,773.6345
Total	**2.2437**	**20.8781**	**19.7073**	**0.0388**		**0.9602**	**0.9602**		**0.8922**	**0.8922**	**0.0000**	**3,747.4228**	**3,747.4228**	**1.0485**		**3,773.6345**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.3000e-003	0.1611	0.0601	7.3000e-004	0.0240	7.8000e-004	0.0248	6.9700e-003	7.5000e-004	7.7200e-003		79.0457	79.0457	2.6800e-003	0.0114	82.5061
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
Total	**0.0526**	**0.1941**	**0.5255**	**2.1000e-003**	**0.1785**	**1.7500e-003**	**0.1803**	**0.0482**	**1.6400e-003**	**0.0499**		**219.9767**	**219.9767**	**6.1500e-003**	**0.0148**	**224.5483**

3.3 Building and Asphalt Demolition Debris Haul - 2024

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					3.1961	0.0000	3.1961	0.4839	0.0000	0.4839			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.1961**	**0.0000**	**3.1961**	**0.4839**	**0.0000**	**0.4839**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0302	2.0460	0.5380	8.6300e-003	0.2622	0.0125	0.2746	0.0719	0.0119	0.0838		949.9453	949.9453	0.0534	0.1509	996.2520
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
Worker	0.0000	0.0000	0.0000	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	**0.0302**	**2.0460**	**0.5380**	**8.6300e-003**	**0.2622**	**0.0125**	**0.2746**	**0.0719**	**0.0119**	**0.0838**		**949.9453**	**949.9453**	**0.0534**	**0.1509**	**996.2520**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3663	0.0000	1.3663	0.2069	0.0000	0.2069			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.3663**	**0.0000**	**1.3663**	**0.2069**	**0.0000**	**0.2069**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0302	2.0460	0.5380	8.6300e-003	0.2444	0.0125	0.2568	0.0675	0.0119	0.0794		949.9453	949.9453	0.0534	0.1509	996.2520
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
Worker	0.0000	0.0000	0.0000	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	**0.0302**	**2.0460**	**0.5380**	**8.6300e-003**	**0.2444**	**0.0125**	**0.2568**	**0.0675**	**0.0119**	**0.0794**		**949.9453**	**949.9453**	**0.0534**	**0.1509**	**996.2520**

3.4 Rough Grading - 2024

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					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665		2,873.0541	2,873.0541	0.9292		2,896.2842
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**7.0826**	**0.7244**	**7.8070**	**3.4247**	**0.6665**	**4.0912**		**2,873.0541**	**2,873.0541**	**0.9292**		**2,896.2842**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.3000e-003	0.1611	0.0601	7.3000e-004	0.0256	7.8000e-004	0.0264	7.3800e-003	7.5000e-004	8.1300e-003		79.0457	79.0457	2.6800e-003	0.0114	82.5061
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
Total	**0.0526**	**0.1941**	**0.5255**	**2.1000e-003**	**0.1933**	**1.7500e-003**	**0.1950**	**0.0519**	**1.6400e-003**	**0.0535**		**219.9767**	**219.9767**	**6.1500e-003**	**0.0148**	**224.5483**

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.6617	17.0310	14.7594	0.0297		0.7244	0.7244		0.6665	0.6665	0.0000	2,873.0541	2,873.0541	0.9292		2,896.2842
Total	**1.6617**	**17.0310**	**14.7594**	**0.0297**	**3.0278**	**0.7244**	**3.7522**	**1.4641**	**0.6665**	**2.1305**	**0.0000**	**2,873.0541**	**2,873.0541**	**0.9292**		**2,896.2842**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	4.3000e-003	0.1611	0.0601	7.3000e-004	0.0240	7.8000e-004	0.0248	6.9700e-003	7.5000e-004	7.7200e-003		79.0457	79.0457	2.6800e-003	0.0114	82.5061
Worker	0.0483	0.0330	0.4655	1.3700e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		140.9310	140.9310	3.4700e-003	3.4400e-003	142.0422
Total	**0.0526**	**0.1941**	**0.5255**	**2.1000e-003**	**0.1785**	**1.7500e-003**	**0.1803**	**0.0482**	**1.6400e-003**	**0.0499**		**219.9767**	**219.9767**	**6.1500e-003**	**0.0148**	**224.5483**

3.5 Rough Grading Soil Haul - 2024

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					0.0594	0.0000	0.0594	8.9900e-003	0.0000	8.9900e-003			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0594**	**0.0000**	**0.0594**	**8.9900e-003**	**0.0000**	**8.9900e-003**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.1339	9.0807	2.3878	0.0383	1.1637	0.0553	1.2190	0.3190	0.0529	0.3720		4,216.2089	4,216.2089	0.2371	0.6698	4,421.7352
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
Worker	0.0000	0.0000	0.0000	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	**0.1339**	**9.0807**	**2.3878**	**0.0383**	**1.1637**	**0.0553**	**1.2190**	**0.3190**	**0.0529**	**0.3720**		**4,216.2089**	**4,216.2089**	**0.2371**	**0.6698**	**4,421.7352**

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					0.0254	0.0000	0.0254	3.8400e-003	0.0000	3.8400e-003			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0254**	**0.0000**	**0.0254**	**3.8400e-003**	**0.0000**	**3.8400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.1339	9.0807	2.3878	0.0383	1.0846	0.0553	1.1399	0.2996	0.0529	0.3525		4,216.2089	4,216.2089	0.2371	0.6698	4,421.7352
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
Worker	0.0000	0.0000	0.0000	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	**0.1339**	**9.0807**	**2.3878**	**0.0383**	**1.0846**	**0.0553**	**1.1399**	**0.2996**	**0.0529**	**0.3525**		**4,216.2089**	**4,216.2089**	**0.2371**	**0.6698**	**4,421.7352**

3.6 Building Construction - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0591	2.2148	0.8258	0.0101	0.3523	0.0108	0.3631	0.1014	0.0103	0.1117		1,086.8788	1,086.8788	0.0369	0.1566	1,134.4588
Worker	0.4537	0.3104	4.3753	0.0128	1.5761	9.1200e-003	1.5852	0.4180	8.4000e-003	0.4264		1,324.7512	1,324.7512	0.0327	0.0323	1,335.1969
Total	**0.5128**	**2.5252**	**5.2012**	**0.0229**	**1.9284**	**0.0199**	**1.9482**	**0.5194**	**0.0187**	**0.5381**		**2,411.6301**	**2,411.6301**	**0.0695**	**0.1889**	**2,469.6557**

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0591	2.2148	0.8258	0.0101	0.3297	0.0108	0.3405	0.0959	0.0103	0.1062		1,086.8788	1,086.8788	0.0369	0.1566	1,134.4588
Worker	0.4537	0.3104	4.3753	0.0128	1.4527	9.1200e-003	1.4619	0.3877	8.4000e-003	0.3961		1,324.7512	1,324.7512	0.0327	0.0323	1,335.1969
Total	**0.5128**	**2.5252**	**5.2012**	**0.0229**	**1.7825**	**0.0199**	**1.8023**	**0.4836**	**0.0187**	**0.5023**		**2,411.6301**	**2,411.6301**	**0.0695**	**0.1889**	**2,469.6557**

3.6 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

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Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0573	2.2045	0.8109	9.9000e-003	0.3523	0.0108	0.3631	0.1014	0.0103	0.1118		1,067.3437	1,067.3437	0.0372	0.1539	1,114.1215
Worker	0.4257	0.2789	4.0808	0.0124	1.5761	8.7000e-003	1.5848	0.4180	8.0100e-003	0.4260		1,292.4916	1,292.4916	0.0295	0.0302	1,302.2200
Total	**0.4830**	**2.4833**	**4.8917**	**0.0223**	**1.9284**	**0.0195**	**1.9478**	**0.5194**	**0.0183**	**0.5377**		**2,359.8352**	**2,359.8352**	**0.0666**	**0.1840**	**2,416.3414**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0573	2.2045	0.8109	9.9000e-003	0.3297	0.0108	0.3405	0.0959	0.0103	0.1062		1,067.3437	1,067.3437	0.0372	0.1539	1,114.1215
Worker	0.4257	0.2789	4.0808	0.0124	1.4527	8.7000e-003	1.4614	0.3877	8.0100e-003	0.3957		1,292.4916	1,292.4916	0.0295	0.0302	1,302.2200
Total	**0.4830**	**2.4833**	**4.8917**	**0.0223**	**1.7825**	**0.0195**	**1.8019**	**0.4836**	**0.0183**	**0.5019**		**2,359.8352**	**2,359.8352**	**0.0666**	**0.1840**	**2,416.3414**

3.6 Building Construction - 2026

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0557	2.1885	0.7994	9.7100e-003	0.3523	0.0107	0.3631	0.1014	0.0103	0.1117		1,047.5633	1,047.5633	0.0374	0.1511	1,093.5203
Worker	0.4019	0.2531	3.8357	0.0120	1.5761	8.2600e-003	1.5843	0.4180	7.6000e-003	0.4256		1,263.5064	1,263.5064	0.0268	0.0284	1,272.6478
Total	**0.4576**	**2.4417**	**4.6351**	**0.0217**	**1.9284**	**0.0190**	**1.9474**	**0.5194**	**0.0179**	**0.5373**		**2,311.0697**	**2,311.0697**	**0.0642**	**0.1795**	**2,366.1682**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000
Vendor	0.0557	2.1885	0.7994	9.7100e-003	0.3297	0.0107	0.3405	0.0959	0.0103	0.1062		1,047.5633	1,047.5633	0.0374	0.1511	1,093.5203
Worker	0.4019	0.2531	3.8357	0.0120	1.4527	8.2600e-003	1.4610	0.3877	7.6000e-003	0.3953		1,263.5064	1,263.5064	0.0268	0.0284	1,272.6478
Total	**0.4576**	**2.4417**	**4.6351**	**0.0217**	**1.7825**	**0.0190**	**1.8015**	**0.4836**	**0.0179**	**0.5015**		**2,311.0697**	**2,311.0697**	**0.0642**	**0.1795**	**2,366.1682**

3.7 Architectural Coating - 2026

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	24.6767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**24.8476**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0798	0.0503	0.7617	2.3900e-003	0.3130	1.6400e-003	0.3146	0.0830	1.5100e-003	0.0845		250.9091	250.9091	5.3200e-003	5.6500e-003	252.7244
Total	**0.0798**	**0.0503**	**0.7617**	**2.3900e-003**	**0.3130**	**1.6400e-003**	**0.3146**	**0.0830**	**1.5100e-003**	**0.0845**		**250.9091**	**250.9091**	**5.3200e-003**	**5.6500e-003**	**252.7244**

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	24.6767					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**24.8476**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0798	0.0503	0.7617	2.3900e-003	0.2885	1.6400e-003	0.2901	0.0770	1.5100e-003	0.0785		250.9091	250.9091	5.3200e-003	5.6500e-003	252.7244
Total	**0.0798**	**0.0503**	**0.7617**	**2.3900e-003**	**0.2885**	**1.6400e-003**	**0.2901**	**0.0770**	**1.5100e-003**	**0.0785**		**250.9091**	**250.9091**	**5.3200e-003**	**5.6500e-003**	**252.7244**

3.8 Paving - 2026

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.2072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1223**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0428	0.0269	0.4081	1.2800e-003	0.1677	8.8000e-004	0.1685	0.0445	8.1000e-004	0.0453		134.4156	134.4156	2.8500e-003	3.0200e-003	135.3881
Total	**0.0428**	**0.0269**	**0.4081**	**1.2800e-003**	**0.1677**	**8.8000e-004**	**0.1685**	**0.0445**	**8.1000e-004**	**0.0453**		**134.4156**	**134.4156**	**2.8500e-003**	**3.0200e-003**	**135.3881**

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.2072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1223**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	0.0428	0.0269	0.4081	1.2800e-003	0.1546	8.8000e-004	0.1554	0.0413	8.1000e-004	0.0421		134.4156	134.4156	2.8500e-003	3.0200e-003	135.3881
Total	**0.0428**	**0.0269**	**0.4081**	**1.2800e-003**	**0.1546**	**8.8000e-004**	**0.1554**	**0.0413**	**8.1000e-004**	**0.0421**		**134.4156**	**134.4156**	**2.8500e-003**	**3.0200e-003**	**135.3881**

3.9 Finishing/Landscaping - 2026

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	0.1671	1.2217	3.2594	5.1700e-003		0.0599	0.0599		0.0551	0.0551		500.3379	500.3379	0.1618		504.3834
Total	**0.1671**	**1.2217**	**3.2594**	**5.1700e-003**		**0.0599**	**0.0599**		**0.0551**	**0.0551**		**500.3379**	**500.3379**	**0.1618**		**504.3834**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	8.5500e-003	5.3900e-003	0.0816	2.6000e-004	0.0335	1.8000e-004	0.0337	8.8900e-003	1.6000e-004	9.0500e-003		26.8831	26.8831	5.7000e-004	6.0000e-004	27.0776
Total	**8.5500e-003**	**5.3900e-003**	**0.0816**	**2.6000e-004**	**0.0335**	**1.8000e-004**	**0.0337**	**8.8900e-003**	**1.6000e-004**	**9.0500e-003**		**26.8831**	**26.8831**	**5.7000e-004**	**6.0000e-004**	**27.0776**

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	0.1671	1.2217	3.2594	5.1700e-003		0.0599	0.0599		0.0551	0.0551	0.0000	500.3379	500.3379	0.1618		504.3834
Total	**0.1671**	**1.2217**	**3.2594**	**5.1700e-003**		**0.0599**	**0.0599**		**0.0551**	**0.0551**	**0.0000**	**500.3379**	**500.3379**	**0.1618**		**504.3834**

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Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	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
Worker	8.5500e-003	5.3900e-003	0.0816	2.6000e-004	0.0309	1.8000e-004	0.0311	8.2500e-003	1.6000e-004	8.4100e-003		26.8831	26.8831	5.7000e-004	6.0000e-004	27.0776
Total	**8.5500e-003**	**5.3900e-003**	**0.0816**	**2.6000e-004**	**0.0309**	**1.8000e-004**	**0.0311**	**8.2500e-003**	**1.6000e-004**	**8.4100e-003**		**26.8831**	**26.8831**	**5.7000e-004**	**6.0000e-004**	**27.0776**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	58.01	1000sqft	0.67	58,012.00	0
Other Asphalt Surfaces	129.90	1000sqft	2.98	129,904.00	0
Other Non-Asphalt Surfaces	129.90	1000sqft	2.98	129,904.00	0
Parking Lot	18.40	1000sqft	0.42	18,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.983	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2020 SCE Sustainability Report

Land Use - school buildings are 2 stories

Construction Phase - based on data provided by District

Off-road Equipment -

Off-road Equipment - no additional equipment for Demolition Debris Haul

Off-road Equipment -

Off-road Equipment - assumes 1 excavator based on projects of similar size

Off-road Equipment -

Off-road Equipment -

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Off-road Equipment - no additional equipment for soil haul

Trips and VMT - assumes 4 vt per water truck per day, see assumptions file for P2-4B hauling calculations

Demolition -

Grading -

Architectural Coating - only accounts for parking area

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	16,692.00	1,104.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	20.00	65.00
tblConstructionPhase	NumDays	230.00	347.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	34,135.00
tblLandUse	LandUseSquareFeet	58,010.00	58,012.00
tblLandUse	LandUseSquareFeet	129,900.00	129,904.00
tblLandUse	LandUseSquareFeet	129,900.00	129,904.00
tblLandUse	LotAcreage	1.33	0.67
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblProjectCharacteristics	CO2IntensityFactor	390.98	509.983
tblTripsAndVMT	HaulingTripNumber	665.00	674.00
tblTripsAndVMT	HaulingTripNumber	4,267.00	4,321.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00

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					
2024	0.1339	1.5541	1.2777	3.9400e-003	0.3782	0.0543	0.4325	0.1427	0.0504	0.1931	0.0000	365.6402	365.6402	0.0639	0.0254	374.8206
2025	0.2371	1.9529	2.7491	6.4500e-003	0.2469	0.0714	0.3183	0.0666	0.0672	0.1338	0.0000	584.1757	584.1757	0.0790	0.0218	592.6546
2026	0.3603	0.7028	1.0902	2.2600e-003	0.0682	0.0284	0.0966	0.0184	0.0266	0.0449	0.0000	203.3989	203.3989	0.0367	5.3500e-003	205.9110
Maximum	**0.3603**	**1.9529**	**2.7491**	**6.4500e-003**	**0.3782**	**0.0714**	**0.4325**	**0.1427**	**0.0672**	**0.1931**	**0.0000**	**584.1757**	**584.1757**	**0.0790**	**0.0254**	**592.6546**

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					
2024	0.1339	1.5541	1.2777	3.9400e-003	0.1989	0.0543	0.2532	0.0713	0.0504	0.1217	0.0000	365.6399	365.6399	0.0639	0.0254	374.8204
2025	0.2371	1.9529	2.7491	6.4500e-003	0.2283	0.0714	0.2996	0.0620	0.0672	0.1292	0.0000	584.1753	584.1753	0.0790	0.0218	592.6542
2026	0.3603	0.7028	1.0902	2.2600e-003	0.0630	0.0284	0.0914	0.0171	0.0266	0.0436	0.0000	203.3988	203.3988	0.0367	5.3500e-003	205.9109
Maximum	**0.3603**	**1.9529**	**2.7491**	**6.4500e-003**	**0.2283**	**0.0714**	**0.2996**	**0.0713**	**0.0672**	**0.1292**	**0.0000**	**584.1753**	**584.1753**	**0.0790**	**0.0254**	**592.6542**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	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	29.29	0.00	23.97	33.93	0.00	20.78	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	7-1-2024	9-30-2024	0.9878	0.9878
2	10-1-2024	12-31-2024	1.0129	1.0129
3	1-1-2025	3-31-2025	0.5401	0.5401
4	4-1-2025	6-30-2025	0.5411	0.5411
5	7-1-2025	9-30-2025	0.5470	0.5470
6	10-1-2025	12-31-2025	0.5521	0.5521
7	1-1-2026	3-31-2026	0.5380	0.5380
8	4-1-2026	6-30-2026	0.4926	0.4926
9	7-1-2026	9-30-2026	0.0310	0.0310
		Highest	1.0129	1.0129

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building and Asphalt Demolition	Demolition	7/1/2024	8/30/2024	5	45	a
2	Building and Asphalt Demolition Debris Haul	Demolition	7/1/2024	8/30/2024	5	45	b
3	Rough Grading	Grading	9/1/2024	11/30/2024	5	65	c
4	Rough Grading Soil Haul	Grading	9/1/2024	11/30/2024	5	65	d
5	Building Construction	Building Construction	12/1/2024	3/31/2026	5	347	e
6	Architectural Coating	Architectural Coating	4/1/2026	4/30/2026	5	22	f
7	Paving	Paving	5/1/2026	6/30/2026	5	43	g
8	Finishing/Landscaping	Trenching	7/1/2026	8/31/2026	5	44	h

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 65

Acres of Paving: 6.38

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 87,018; Non-Residential Outdoor: 29,006; Striped Parking Area: 1,104 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building and Asphalt Demolition	Excavators	3	8.00	158	0.38
Building and Asphalt Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading	Excavators	1	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Rough Grading Soil Haul	Excavators	0	8.00	158	0.38
Rough Grading Soil Haul	Graders	0	8.00	187	0.41
Rough Grading Soil Haul	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Haul	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

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
Building and Asphalt Demolition	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	674.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Haul	0	0.00	0.00	4,321.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	141.00	55.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	28.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Building and Asphalt Demolition - 2024

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	0.0505	0.4698	0.4434	8.7000e-004		0.0216	0.0216		0.0201	0.0201	0.0000	76.4911	76.4911	0.0214	0.0000	77.0261
Total	**0.0505**	**0.4698**	**0.4434**	**8.7000e-004**		**0.0216**	**0.0216**		**0.0201**	**0.0201**	**0.0000**	**76.4911**	**76.4911**	**0.0214**	**0.0000**	**77.0261**

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Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.6300e-003	1.3300e-003	2.0000e-005	5.7000e-004	2.0000e-005	5.8000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	1.6119	1.6119	5.0000e-005	2.3000e-004	1.6824
Worker	1.0000e-003	7.6000e-004	0.0107	3.0000e-005	3.7000e-003	2.0000e-005	3.7200e-003	9.8000e-004	2.0000e-005	1.0000e-003	0.0000	2.9195	2.9195	7.0000e-005	7.0000e-005	2.9425
Total	**1.1000e-003**	**4.3900e-003**	**0.0121**	**5.0000e-005**	**4.2700e-003**	**4.0000e-005**	**4.3000e-003**	**1.1400e-003**	**4.0000e-005**	**1.1800e-003**	**0.0000**	**4.5313**	**4.5313**	**1.2000e-004**	**3.0000e-004**	**4.6249**

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	0.0505	0.4698	0.4434	8.7000e-004		0.0216	0.0216		0.0201	0.0201	0.0000	76.4910	76.4910	0.0214	0.0000	77.0260
Total	**0.0505**	**0.4698**	**0.4434**	**8.7000e-004**		**0.0216**	**0.0216**		**0.0201**	**0.0201**	**0.0000**	**76.4910**	**76.4910**	**0.0214**	**0.0000**	**77.0260**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	3.6300e-003	1.3300e-003	2.0000e-005	5.3000e-004	2.0000e-005	5.5000e-004	1.5000e-004	2.0000e-005	1.7000e-004	0.0000	1.6119	1.6119	5.0000e-005	2.3000e-004	1.6824
Worker	1.0000e-003	7.6000e-004	0.0107	3.0000e-005	3.4100e-003	2.0000e-005	3.4300e-003	9.1000e-004	2.0000e-005	9.3000e-004	0.0000	2.9195	2.9195	7.0000e-005	7.0000e-005	2.9425
Total	**1.1000e-003**	**4.3900e-003**	**0.0121**	**5.0000e-005**	**3.9400e-003**	**4.0000e-005**	**3.9800e-003**	**1.0600e-003**	**4.0000e-005**	**1.1000e-003**	**0.0000**	**4.5313**	**4.5313**	**1.2000e-004**	**3.0000e-004**	**4.6249**

3.3 Building and Asphalt Demolition Debris Haul - 2024

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					0.0719	0.0000	0.0719	0.0109	0.0000	0.0109	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0719**	**0.0000**	**0.0719**	**0.0109**	**0.0000**	**0.0109**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	7.1000e-004	0.0465	0.0120	1.9000e-004	5.8000e-003	2.8000e-004	6.0800e-003	1.5900e-003	2.7000e-004	1.8600e-003	0.0000	19.3780	19.3780	1.0900e-003	3.0800e-003	20.3226
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	0.0000	0.0000	0.0000	0.0000	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	**7.1000e-004**	**0.0465**	**0.0120**	**1.9000e-004**	**5.8000e-003**	**2.8000e-004**	**6.0800e-003**	**1.5900e-003**	**2.7000e-004**	**1.8600e-003**	**0.0000**	**19.3780**	**19.3780**	**1.0900e-003**	**3.0800e-003**	**20.3226**

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					0.0307	0.0000	0.0307	4.6500e-003	0.0000	4.6500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0307**	**0.0000**	**0.0307**	**4.6500e-003**	**0.0000**	**4.6500e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	7.1000e-004	0.0465	0.0120	1.9000e-004	5.4100e-003	2.8000e-004	5.6900e-003	1.5000e-003	2.7000e-004	1.7600e-003	0.0000	19.3780	19.3780	1.0900e-003	3.0800e-003	20.3226
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	0.0000	0.0000	0.0000	0.0000	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	**7.1000e-004**	**0.0465**	**0.0120**	**1.9000e-004**	**5.4100e-003**	**2.8000e-004**	**5.6900e-003**	**1.5000e-003**	**2.7000e-004**	**1.7600e-003**	**0.0000**	**19.3780**	**19.3780**	**1.0900e-003**	**3.0800e-003**	**20.3226**

3.4 Rough Grading - 2024

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					0.2302	0.0000	0.2302	0.1113	0.0000	0.1113	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0540	0.5535	0.4797	9.6000e-004		0.0235	0.0235		0.0217	0.0217	0.0000	84.7077	84.7077	0.0274	0.0000	85.3926
Total	**0.0540**	**0.5535**	**0.4797**	**9.6000e-004**	**0.2302**	**0.0235**	**0.2537**	**0.1113**	**0.0217**	**0.1330**	**0.0000**	**84.7077**	**84.7077**	**0.0274**	**0.0000**	**85.3926**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	5.2500e-003	1.9200e-003	2.0000e-005	8.2000e-004	3.0000e-005	8.4000e-004	2.4000e-004	2.0000e-005	2.6000e-004	0.0000	2.3282	2.3282	8.0000e-005	3.4000e-004	2.4302
Worker	1.4400e-003	1.1000e-003	0.0155	5.0000e-005	5.3400e-003	3.0000e-005	5.3700e-003	1.4200e-003	3.0000e-005	1.4500e-003	0.0000	4.2170	4.2170	1.0000e-004	1.0000e-004	4.2502
Total	**1.5800e-003**	**6.3500e-003**	**0.0174**	**7.0000e-005**	**6.1600e-003**	**6.0000e-005**	**6.2100e-003**	**1.6600e-003**	**5.0000e-005**	**1.7100e-003**	**0.0000**	**6.5453**	**6.5453**	**1.8000e-004**	**4.4000e-004**	**6.6804**

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					0.0984	0.0000	0.0984	0.0476	0.0000	0.0476	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0540	0.5535	0.4797	9.6000e-004		0.0235	0.0235		0.0217	0.0217	0.0000	84.7076	84.7076	0.0274	0.0000	85.3925
Total	**0.0540**	**0.5535**	**0.4797**	**9.6000e-004**	**0.0984**	**0.0235**	**0.1219**	**0.0476**	**0.0217**	**0.0692**	**0.0000**	**84.7076**	**84.7076**	**0.0274**	**0.0000**	**85.3925**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4000e-004	5.2500e-003	1.9200e-003	2.0000e-005	7.7000e-004	3.0000e-005	7.9000e-004	2.2000e-004	2.0000e-005	2.5000e-004	0.0000	2.3282	2.3282	8.0000e-005	3.4000e-004	2.4302
Worker	1.4400e-003	1.1000e-003	0.0155	5.0000e-005	4.9300e-003	3.0000e-005	4.9600e-003	1.3200e-003	3.0000e-005	1.3500e-003	0.0000	4.2170	4.2170	1.0000e-004	1.0000e-004	4.2502
Total	**1.5800e-003**	**6.3500e-003**	**0.0174**	**7.0000e-005**	**5.7000e-003**	**6.0000e-005**	**5.7500e-003**	**1.5400e-003**	**5.0000e-005**	**1.6000e-003**	**0.0000**	**6.5453**	**6.5453**	**1.8000e-004**	**4.4000e-004**	**6.6804**

3.5 Rough Grading Soil Haul - 2024

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					1.9300e-003	0.0000	1.9300e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.9300e-003**	**0.0000**	**1.9300e-003**	**2.9000e-004**	**0.0000**	**2.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	4.5300e-003	0.2979	0.0770	1.2400e-003	0.0372	1.7900e-003	0.0390	0.0102	1.7200e-003	0.0119	0.0000	124.2316	124.2316	7.0000e-003	0.0197	130.2879
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	0.0000	0.0000	0.0000	0.0000	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	**4.5300e-003**	**0.2979**	**0.0770**	**1.2400e-003**	**0.0372**	**1.7900e-003**	**0.0390**	**0.0102**	**1.7200e-003**	**0.0119**	**0.0000**	**124.2316**	**124.2316**	**7.0000e-003**	**0.0197**	**130.2879**

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					8.3000e-004	0.0000	8.3000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.3000e-004**	**0.0000**	**8.3000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	4.5300e-003	0.2979	0.0770	1.2400e-003	0.0347	1.7900e-003	0.0365	9.5900e-003	1.7200e-003	0.0113	0.0000	124.2316	124.2316	7.0000e-003	0.0197	130.2879
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	0.0000	0.0000	0.0000	0.0000	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	**4.5300e-003**	**0.2979**	**0.0770**	**1.2400e-003**	**0.0347**	**1.7900e-003**	**0.0365**	**9.5900e-003**	**1.7200e-003**	**0.0113**	**0.0000**	**124.2316**	**124.2316**	**7.0000e-003**	**0.0197**	**130.2879**

3.6 Building Construction - 2024

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	0.0162	0.1479	0.1778	3.0000e-004		6.7500e-003	6.7500e-003		6.3500e-003	6.3500e-003	0.0000	25.5034	25.5034	6.0300e-003	0.0000	25.6542
Total	**0.0162**	**0.1479**	**0.1778**	**3.0000e-004**		**6.7500e-003**	**6.7500e-003**		**6.3500e-003**	**6.3500e-003**	**0.0000**	**25.5034**	**25.5034**	**6.0300e-003**	**0.0000**	**25.6542**

Unmitigated Construction Off-Site

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6000e-004	0.0244	8.9300e-003	1.1000e-004	3.8100e-003	1.2000e-004	3.9300e-003	1.1000e-003	1.1000e-004	1.2100e-003	0.0000	10.8352	10.8352	3.7000e-004	1.5600e-003	11.3096
Worker	4.6000e-003	3.4900e-003	0.0494	1.4000e-004	0.0170	1.0000e-004	0.0171	4.5100e-003	9.0000e-005	4.6100e-003	0.0000	13.4166	13.4166	3.3000e-004	3.3000e-004	13.5223
Total	**5.2600e-003**	**0.0279**	**0.0583**	**2.5000e-004**	**0.0208**	**2.2000e-004**	**0.0210**	**5.6100e-003**	**2.0000e-004**	**5.8200e-003**	**0.0000**	**24.2518**	**24.2518**	**7.0000e-004**	**1.8900e-003**	**24.8319**

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	0.0162	0.1479	0.1778	3.0000e-004		6.7500e-003	6.7500e-003		6.3500e-003	6.3500e-003	0.0000	25.5034	25.5034	6.0300e-003	0.0000	25.6541
Total	**0.0162**	**0.1479**	**0.1778**	**3.0000e-004**		**6.7500e-003**	**6.7500e-003**		**6.3500e-003**	**6.3500e-003**	**0.0000**	**25.5034**	**25.5034**	**6.0300e-003**	**0.0000**	**25.6541**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.6000e-004	0.0244	8.9300e-003	1.1000e-004	3.5700e-003	1.2000e-004	3.6900e-003	1.0400e-003	1.1000e-004	1.1500e-003	0.0000	10.8352	10.8352	3.7000e-004	1.5600e-003	11.3096
Worker	4.6000e-003	3.4900e-003	0.0494	1.4000e-004	0.0157	1.0000e-004	0.0158	4.1900e-003	9.0000e-005	4.2800e-003	0.0000	13.4166	13.4166	3.3000e-004	3.3000e-004	13.5223
Total	**5.2600e-003**	**0.0279**	**0.0583**	**2.5000e-004**	**0.0192**	**2.2000e-004**	**0.0195**	**5.2300e-003**	**2.0000e-004**	**5.4300e-003**	**0.0000**	**24.2518**	**24.2518**	**7.0000e-004**	**1.8900e-003**	**24.8319**

3.6 Building Construction - 2025

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	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.6300e-003	0.2885	0.1041	1.2900e-003	0.0452	1.4000e-003	0.0466	0.0131	1.3400e-003	0.0144	0.0000	126.2323	126.2323	4.4100e-003	0.0182	131.7649
Worker	0.0511	0.0372	0.5460	1.6400e-003	0.2016	1.1400e-003	0.2028	0.0536	1.0500e-003	0.0546	0.0000	155.2886	155.2886	3.4900e-003	3.6300e-003	156.4562
Total	**0.0587**	**0.3256**	**0.6501**	**2.9300e-003**	**0.2469**	**2.5400e-003**	**0.2494**	**0.0666**	**2.3900e-003**	**0.0690**	**0.0000**	**281.5208**	**281.5208**	**7.9000e-003**	**0.0218**	**288.2211**

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	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.6300e-003	0.2885	0.1041	1.2900e-003	0.0424	1.4000e-003	0.0438	0.0124	1.3400e-003	0.0137	0.0000	126.2323	126.2323	4.4100e-003	0.0182	131.7649
Worker	0.0511	0.0372	0.5460	1.6400e-003	0.1859	1.1400e-003	0.1870	0.0497	1.0500e-003	0.0507	0.0000	155.2886	155.2886	3.4900e-003	3.6300e-003	156.4562
Total	**0.0587**	**0.3256**	**0.6501**	**2.9300e-003**	**0.2283**	**2.5400e-003**	**0.2308**	**0.0620**	**2.3900e-003**	**0.0644**	**0.0000**	**281.5208**	**281.5208**	**7.9000e-003**	**0.0218**	**288.2211**

3.6 Building Construction - 2026

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	0.0438	0.3990	0.5147	8.6000e-004		0.0169	0.0169		0.0159	0.0159	0.0000	74.2142	74.2142	0.0175	0.0000	74.6504
Total	**0.0438**	**0.3990**	**0.5147**	**8.6000e-004**		**0.0169**	**0.0169**		**0.0159**	**0.0159**	**0.0000**	**74.2142**	**74.2142**	**0.0175**	**0.0000**	**74.6504**

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Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8200e-003	0.0702	0.0252	3.1000e-004	0.0111	3.4000e-004	0.0114	3.2000e-003	3.3000e-004	3.5300e-003	0.0000	30.3794	30.3794	1.0900e-003	4.3800e-003	31.7122
Worker	0.0118	8.2700e-003	0.1258	3.9000e-004	0.0494	2.6000e-004	0.0497	0.0131	2.4000e-004	0.0134	0.0000	37.2235	37.2235	7.8000e-004	8.4000e-004	37.4926
Total	**0.0136**	**0.0785**	**0.1510**	**7.0000e-004**	**0.0605**	**6.0000e-004**	**0.0612**	**0.0163**	**5.7000e-004**	**0.0169**	**0.0000**	**67.6029**	**67.6029**	**1.8700e-003**	**5.2200e-003**	**69.2048**

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	0.0438	0.3990	0.5147	8.6000e-004		0.0169	0.0169		0.0159	0.0159	0.0000	74.2141	74.2141	0.0175	0.0000	74.6503
Total	**0.0438**	**0.3990**	**0.5147**	**8.6000e-004**		**0.0169**	**0.0169**		**0.0159**	**0.0159**	**0.0000**	**74.2141**	**74.2141**	**0.0175**	**0.0000**	**74.6503**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.8200e-003	0.0702	0.0252	3.1000e-004	0.0104	3.4000e-004	0.0107	3.0300e-003	3.3000e-004	3.3600e-003	0.0000	30.3794	30.3794	1.0900e-003	4.3800e-003	31.7122
Worker	0.0118	8.2700e-003	0.1258	3.9000e-004	0.0456	2.6000e-004	0.0459	0.0122	2.4000e-004	0.0124	0.0000	37.2235	37.2235	7.8000e-004	8.4000e-004	37.4926
Total	**0.0136**	**0.0785**	**0.1510**	**7.0000e-004**	**0.0560**	**6.0000e-004**	**0.0566**	**0.0152**	**5.7000e-004**	**0.0158**	**0.0000**	**67.6029**	**67.6029**	**1.8700e-003**	**5.2200e-003**	**69.2048**

3.7 Architectural Coating - 2026

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	0.2714					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0126	0.0199	3.0000e-005		5.7000e-004	5.7000e-004		5.7000e-004	5.7000e-004	0.0000	2.8086	2.8086	1.5000e-004	0.0000	2.8124
Total	**0.2733**	**0.0126**	**0.0199**	**3.0000e-005**		**5.7000e-004**	**5.7000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**2.8086**	**2.8086**	**1.5000e-004**	**0.0000**	**2.8124**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	8.0000e-004	5.6000e-004	8.5900e-003	3.0000e-005	3.3800e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.1000e-004	0.0000	2.5410	2.5410	5.0000e-005	6.0000e-005	2.5593
Total	**8.0000e-004**	**5.6000e-004**	**8.5900e-003**	**3.0000e-005**	**3.3800e-003**	**2.0000e-005**	**3.3900e-003**	**9.0000e-004**	**2.0000e-005**	**9.1000e-004**	**0.0000**	**2.5410**	**2.5410**	**5.0000e-005**	**6.0000e-005**	**2.5593**

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	0.2714					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0126	0.0199	3.0000e-005		5.7000e-004	5.7000e-004		5.7000e-004	5.7000e-004	0.0000	2.8086	2.8086	1.5000e-004	0.0000	2.8124
Total	**0.2733**	**0.0126**	**0.0199**	**3.0000e-005**		**5.7000e-004**	**5.7000e-004**		**5.7000e-004**	**5.7000e-004**	**0.0000**	**2.8086**	**2.8086**	**1.5000e-004**	**0.0000**	**2.8124**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	8.0000e-004	5.6000e-004	8.5900e-003	3.0000e-005	3.1100e-003	2.0000e-005	3.1300e-003	8.3000e-004	2.0000e-005	8.5000e-004	0.0000	2.5410	2.5410	5.0000e-005	6.0000e-005	2.5593
Total	**8.0000e-004**	**5.6000e-004**	**8.5900e-003**	**3.0000e-005**	**3.1100e-003**	**2.0000e-005**	**3.1300e-003**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**0.0000**	**2.5410**	**2.5410**	**5.0000e-005**	**6.0000e-005**	**2.5593**

3.8 Paving - 2026

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	0.0197	0.1845	0.3134	4.9000e-004		9.0000e-003	9.0000e-003		8.2800e-003	8.2800e-003	0.0000	43.0414	43.0414	0.0139	0.0000	43.3894
Paving	4.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0241**	**0.1845**	**0.3134**	**4.9000e-004**		**9.0000e-003**	**9.0000e-003**		**8.2800e-003**	**8.2800e-003**	**0.0000**	**43.0414**	**43.0414**	**0.0139**	**0.0000**	**43.3894**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	8.4000e-004	5.9000e-004	8.9900e-003	3.0000e-005	3.5300e-003	2.0000e-005	3.5500e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.6606	2.6606	6.0000e-005	6.0000e-005	2.6798
Total	**8.4000e-004**	**5.9000e-004**	**8.9900e-003**	**3.0000e-005**	**3.5300e-003**	**2.0000e-005**	**3.5500e-003**	**9.4000e-004**	**2.0000e-005**	**9.6000e-004**	**0.0000**	**2.6606**	**2.6606**	**6.0000e-005**	**6.0000e-005**	**2.6798**

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	0.0197	0.1845	0.3134	4.9000e-004		9.0000e-003	9.0000e-003		8.2800e-003	8.2800e-003	0.0000	43.0414	43.0414	0.0139	0.0000	43.3894
Paving	4.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0241**	**0.1845**	**0.3134**	**4.9000e-004**		**9.0000e-003**	**9.0000e-003**		**8.2800e-003**	**8.2800e-003**	**0.0000**	**43.0414**	**43.0414**	**0.0139**	**0.0000**	**43.3894**

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	8.4000e-004	5.9000e-004	8.9900e-003	3.0000e-005	3.2600e-003	2.0000e-005	3.2800e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.6606	2.6606	6.0000e-005	6.0000e-005	2.6798
Total	**8.4000e-004**	**5.9000e-004**	**8.9900e-003**	**3.0000e-005**	**3.2600e-003**	**2.0000e-005**	**3.2800e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.6606**	**2.6606**	**6.0000e-005**	**6.0000e-005**	**2.6798**

3.9 Finishing/Landscaping - 2026

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	3.6800e-003	0.0269	0.0717	1.1000e-004		1.3200e-003	1.3200e-003		1.2100e-003	1.2100e-003	0.0000	9.9858	9.9858	3.2300e-003	0.0000	10.0665
Total	**3.6800e-003**	**0.0269**	**0.0717**	**1.1000e-004**		**1.3200e-003**	**1.3200e-003**		**1.2100e-003**	**1.2100e-003**	**0.0000**	**9.9858**	**9.9858**	**3.2300e-003**	**0.0000**	**10.0665**

Date: 7/28/2021 9:57 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.7000e-004	1.2000e-004	1.8400e-003	1.0000e-005	7.2000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.5445	0.5445	1.0000e-005	1.0000e-005	0.5484
Total	**1.7000e-004**	**1.2000e-004**	**1.8400e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5445**	**0.5445**	**1.0000e-005**	**1.0000e-005**	**0.5484**

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	3.6800e-003	0.0269	0.0717	1.1000e-004		1.3200e-003	1.3200e-003		1.2100e-003	1.2100e-003	0.0000	9.9858	9.9858	3.2300e-003	0.0000	10.0665
Total	**3.6800e-003**	**0.0269**	**0.0717**	**1.1000e-004**		**1.3200e-003**	**1.3200e-003**		**1.2100e-003**	**1.2100e-003**	**0.0000**	**9.9858**	**9.9858**	**3.2300e-003**	**0.0000**	**10.0665**

Date: 7/28/2021 9:57 AM

Malibu Middle and High School Campus Specific Plan Project (Phase 2-4B) Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.7000e-004	1.2000e-004	1.8400e-003	1.0000e-005	6.7000e-004	0.0000	6.7000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5445	0.5445	1.0000e-005	1.0000e-005	0.5484
Total	**1.7000e-004**	**1.2000e-004**	**1.8400e-003**	**1.0000e-005**	**6.7000e-004**	**0.0000**	**6.7000e-004**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5445**	**0.5445**	**1.0000e-005**	**1.0000e-005**	**0.5484**

CalEEMod Mitigated Construction Model

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Other Asphalt Surfaces	21.50	1000sqft	0.49	21,502.00	0
Other Non-Asphalt Surfaces	131.89	1000sqft	3.03	131,888.50	0
Parking Lot	61.60	1000sqft	1.41	61,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustinability Report

Land Use - 2 story Building C

Construction Phase - based on construction schedule confirmed by construction manager for Phase 1

Off-road Equipment -

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - no additional equipment required for demolition haul

Off-road Equipment -

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment -

Off-road Equipment - overlapping phase: grading equipment from applicant, CalEEMod default builing construction equipment

Off-road Equipment - based on project of similar size

Off-road Equipment -

Off-road Equipment - based on info provided by construction manager

Off-road Equipment - no additional equipment required for rough grading soil haul (overlaps equipment with rough grading phase)

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on equipment provided by construction manager

Off-road Equipment -

Trips and VMT - assumes 4 vt/water truck/day for demo, site prep, and grading phases, see assumptions file for hauling calculations

Demolition -

Grading -

Architectural Coating - SCAQMD Rule 1113, coating area based on info from applicant

Vehicle Trips -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rules 403 and 1186

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	34,010.00	13,604.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	102,029.00	51,014.00
tblArchitecturalCoating	ConstArea_Parking	12,899.00	3,696.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	54.00
tblConstructionPhase	NumDays	20.00	48.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	230.00	236.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	30,600.00
tblGrading	MaterialImported	0.00	10,530.00
tblLandUse	LandUseSquareFeet	68,020.00	68,019.00
tblLandUse	LandUseSquareFeet	21,500.00	21,502.00
tblLandUse	LandUseSquareFeet	131,890.00	131,888.50
tblLandUse	LotAcreage	1.56	0.78
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	488.00	494.00
tblTripsAndVMT	HaulingTripNumber	1,316.00	1,333.00
tblTripsAndVMT	HaulingTripNumber	3,825.00	3,873.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	28.00	119.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2022	3.2774	50.8520	23.5797	0.1239	10.7922	1.4133	12.2054	4.2498	1.3064	5.5562	0.0000	13,066.8097	13,066.8097	1.6994	1.4577	13,543.6970
2023	2.5483	22.8327	24.8330	0.0573	2.1807	0.9567	3.1374	0.5022	0.8952	1.3975	0.0000	5,641.6748	5,641.6748	0.9609	0.1714	5,716.7850
2024	7.8379	15.4500	20.8326	0.0468	1.6248	0.6299	2.2547	0.4376	0.5925	1.0301	0.0000	4,619.5209	4,619.5209	0.7174	0.1562	4,682.6149
Maximum	**7.8379**	**50.8520**	**24.8330**	**0.1239**	**10.7922**	**1.4133**	**12.2054**	**4.2498**	**1.3064**	**5.5562**	**0.0000**	**13,066.8097**	**13,066.8097**	**1.6994**	**1.4577**	**13,543.6970**

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					
2022	1.3687	34.5777	28.2563	0.1239	5.8884	0.2866	6.1750	2.1706	0.2793	2.4498	0.0000	13,066.8097	13,066.8097	1.6994	1.4577	13,543.6970
2023	1.3497	15.7480	28.5986	0.0573	1.7525	0.1258	1.8782	0.4389	0.1247	0.5636	0.0000	5,641.6748	5,641.6748	0.9609	0.1714	5,716.7850
2024	7.7116	12.6380	22.7064	0.0468	1.5018	0.1019	1.6038	0.4074	0.1009	0.5083	0.0000	4,619.5209	4,619.5209	0.7174	0.1562	4,682.6149
Maximum	**7.7116**	**34.5777**	**28.5986**	**0.1239**	**5.8884**	**0.2866**	**6.1750**	**2.1706**	**0.2793**	**2.4498**	**0.0000**	**13,066.8097**	**13,066.8097**	**1.6994**	**1.4577**	**13,543.6970**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	**23.67**	**29.36**	**-14.90**	**0.00**	**37.37**	**82.86**	**45.12**	**41.87**	**81.93**	**55.89**	**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	Building and Asphalt Demolition	Demolition	6/1/2022	8/15/2022	5	54	
2	Building and Asphalt Demolition Debris Haul	Demolition	6/25/2022	8/31/2022	5	48	
3	Building and Asphalt Demolition and Site Preparation	Demolition	8/16/2022	8/31/2022	5	12	
4	Rough Grading	Grading	9/7/2022	10/31/2022	5	39	
5	Rough Grading Soil Import	Grading	9/7/2022	10/31/2022	5	39	
6	Rough Grading Soil Export	Grading	9/7/2022	10/31/2022	5	39	
7	Utility Trenching	Trenching	11/1/2022	12/14/2022	5	32	
8	Building Construction 1	Building Construction	12/15/2022	11/9/2023	5	236	
9	Building Construction and Fine Grading	Grading	11/10/2023	11/24/2023	5	11	
10	Building Construction 2	Building Construction	11/25/2023	3/31/2024	5	90	
11	Architectural Coating	Architectural Coating	4/1/2024	4/30/2024	5	22	
12	Paving	Paving	5/1/2024	6/28/2024	5	43	
13	Finishing/Landscaping	Trenching	7/1/2024	8/30/2024	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 78

Acres of Paving: 4.93

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 51,014; Non-Residential Outdoor: 13,604; Striped Parking Area: 3,696

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition and Site Preparation	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition and Site Preparation	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition and Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition and Site Preparation	Sweepers/Scrubbers	1	8.00	64	0.46
Building and Asphalt Demolition and Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading	Excavators	0	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rollers	1	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Scrapers	1	8.00	367	0.48
Rough Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Rough Grading Soil Import	Excavators	0	8.00	158	0.38
Rough Grading Soil Import	Graders	0	8.00	187	0.41
Rough Grading Soil Import	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Import	Sweepers/Scrubbers	1	8.00	64	0.46

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Rough Grading Soil Import	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading Soil Export	Excavators	0	8.00	158	0.38
Rough Grading Soil Export	Graders	0	8.00	187	0.41
Rough Grading Soil Export	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Export	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Utility Trenching	Excavators	1	8.00	158	0.38
Utility Trenching	Sweepers/Scrubbers	1	8.00	64	0.46
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1	Cranes	1	7.00	231	0.29
Building Construction 1	Forklifts	3	8.00	89	0.20
Building Construction 1	Generator Sets	1	8.00	84	0.74
Building Construction 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 1	Welders	1	8.00	46	0.45
Building Construction and Fine Grading	Cranes	1	7.00	231	0.29
Building Construction and Fine Grading	Excavators	0	8.00	158	0.38
Building Construction and Fine Grading	Forklifts	3	8.00	89	0.20
Building Construction and Fine Grading	Generator Sets	1	8.00	84	0.74
Building Construction and Fine Grading	Graders	1	8.00	187	0.41
Building Construction and Fine Grading	Rollers	1	8.00	80	0.38
Building Construction and Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction and Fine Grading	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction and Fine Grading	Welders	1	8.00	46	0.45
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

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
Building and Asphalt Demolition	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	494.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition and Site	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Import	2	5.00	0.00	1,333.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Export	0	0.00	0.00	3,873.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	8.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction and Fine Grading	11	119.00	50.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9289	8.2089	9.5654	0.0287		0.3280	0.3280		0.3135	0.3135		2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.9289**	**8.2089**	**9.5654**	**0.0287**		**0.3280**	**0.3280**		**0.3135**	**0.3135**		**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.5035	8.9085	16.4029	0.0287		0.0954	0.0954		0.0954	0.0954	0.0000	2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.5035**	**8.9085**	**16.4029**	**0.0287**		**0.0954**	**0.0954**		**0.0954**	**0.0954**	**0.0000**	**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.2005	0.0000	2.2005	0.3332	0.0000	0.3332			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.2005**	**0.0000**	**2.2005**	**0.3332**	**0.0000**	**0.3332**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0480	1.7285	0.4030	6.4000e-003	0.1801	0.0128	0.1930	0.0494	0.0123	0.0617		700.6316	700.6316	0.0372	0.1112	734.6888
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
Worker	0.0000	0.0000	0.0000	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	**0.0480**	**1.7285**	**0.4030**	**6.4000e-003**	**0.1801**	**0.0128**	**0.1930**	**0.0494**	**0.0123**	**0.0617**		**700.6316**	**700.6316**	**0.0372**	**0.1112**	**734.6888**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.9407	0.0000	0.9407	0.1424	0.0000	0.1424			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.9407**	**0.0000**	**0.9407**	**0.1424**	**0.0000**	**0.1424**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0480	1.7285	0.4030	6.4000e-003	0.1679	0.0128	0.1807	0.0464	0.0123	0.0587		700.6316	700.6316	0.0372	0.1112	734.6888
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
Worker	0.0000	0.0000	0.0000	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	**0.0480**	**1.7285**	**0.4030**	**6.4000e-003**	**0.1679**	**0.0128**	**0.1807**	**0.0464**	**0.0123**	**0.0587**		**700.6316**	**700.6316**	**0.0372**	**0.1112**	**734.6888**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2870	11.6874	13.7204	0.0343		0.5386	0.5386		0.5073	0.5073		3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**1.2870**	**11.6874**	**13.7204**	**0.0343**		**0.5386**	**0.5386**		**0.5073**	**0.5073**		**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0519	0.0379	0.5904	1.5300e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		155.0163	155.0163	4.2200e-003	3.7500e-003	156.2404
Total	**0.0598**	**0.2338**	**0.6576**	**2.3100e-003**	**0.1933**	**2.9400e-003**	**0.1962**	**0.0519**	**2.7800e-003**	**0.0546**		**239.2009**	**239.2009**	**7.0300e-003**	**0.0159**	**244.1105**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.6354	11.6858	20.6661	0.0343		0.1586	0.1586		0.1586	0.1586	0.0000	3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**0.6354**	**11.6858**	**20.6661**	**0.0343**		**0.1586**	**0.1586**		**0.1586**	**0.1586**	**0.0000**	**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0519	0.0379	0.5904	1.5300e-003	0.1546	1.0700e-003	0.1556	0.0413	9.9000e-004	0.0422		155.0163	155.0163	4.2200e-003	3.7500e-003	156.2404
Total	**0.0598**	**0.2338**	**0.6576**	**2.3100e-003**	**0.1785**	**2.9400e-003**	**0.1815**	**0.0482**	**2.7800e-003**	**0.0510**		**239.2009**	**239.2009**	**7.0300e-003**	**0.0159**	**244.1105**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	2.2376	24.7206	13.5399	0.0330		1.0332	1.0332		0.9505	0.9505		3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**2.2376**	**24.7206**	**13.5399**	**0.0330**	**8.1431**	**1.0332**	**9.1763**	**3.5393**	**0.9505**	**4.4898**		**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					3.4812	0.0000	3.4812	1.5130	0.0000	1.5130			0.0000			0.0000
Off-Road	0.5551	9.1476	18.1082	0.0330		0.0539	0.0539		0.0539	0.0539	0.0000	3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**0.5551**	**9.1476**	**18.1082**	**0.0330**	**3.4812**	**0.0539**	**3.5351**	**1.5130**	**0.0539**	**1.5669**	**0.0000**	**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0346	0.0253	0.3936	1.0200e-003	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		103.3442	103.3442	2.8200e-003	2.5000e-003	104.1603
Total	**0.0425**	**0.2212**	**0.4608**	**1.8000e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**187.5288**	**187.5288**	**5.6300e-003**	**0.0146**	**192.0303**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0305	0.0000	0.0305	4.6200e-003	0.0000	4.6200e-003			0.0000			0.0000
Off-Road	0.3581	3.4785	4.1549	5.6500e-003		0.2106	0.2106		0.1938	0.1938		547.4154	547.4154	0.1771		551.8415
Total	**0.3581**	**3.4785**	**4.1549**	**5.6500e-003**	**0.0305**	**0.2106**	**0.2412**	**4.6200e-003**	**0.1938**	**0.1984**		**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1592	5.7404	1.3385	0.0212	0.5983	0.0427	0.6409	0.1640	0.0408	0.2048		2,326.8561	2,326.8561	0.1236	0.3692	2,439.9631
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
Worker	0.0173	0.0126	0.1968	5.1000e-004	0.0559	3.6000e-004	0.0563	0.0148	3.3000e-004	0.0152		51.6721	51.6721	1.4100e-003	1.2500e-003	52.0801
Total	**0.1765**	**5.7530**	**1.5352**	**0.0218**	**0.6542**	**0.0430**	**0.6972**	**0.1789**	**0.0411**	**0.2200**		**2,378.5282**	**2,378.5282**	**0.1250**	**0.3704**	**2,492.0433**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0131	0.0000	0.0131	1.9800e-003	0.0000	1.9800e-003			0.0000			0.0000
Off-Road	0.1319	2.7773	4.2632	5.6500e-003		0.0632	0.0632		0.0632	0.0632	0.0000	547.4154	547.4154	0.1771		551.8415
Total	**0.1319**	**2.7773**	**4.2632**	**5.6500e-003**	**0.0131**	**0.0632**	**0.0763**	**1.9800e-003**	**0.0632**	**0.0652**	**0.0000**	**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1592	5.7404	1.3385	0.0212	0.5576	0.0427	0.6002	0.1540	0.0408	0.1949		2,326.8561	2,326.8561	0.1236	0.3692	2,439.9631
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
Worker	0.0173	0.0126	0.1968	5.1000e-004	0.0515	3.6000e-004	0.0519	0.0138	3.3000e-004	0.0141		51.6721	51.6721	1.4100e-003	1.2500e-003	52.0801
Total	**0.1765**	**5.7530**	**1.5352**	**0.0218**	**0.6091**	**0.0430**	**0.6521**	**0.1678**	**0.0411**	**0.2089**		**2,378.5282**	**2,378.5282**	**0.1250**	**0.3704**	**2,492.0433**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0887	0.0000	0.0887	0.0134	0.0000	0.0134			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0887**	**0.0000**	**0.0887**	**0.0134**	**0.0000**	**0.0134**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4627	16.6786	3.8888	0.0617	1.7383	0.1239	1.8622	0.4766	0.1186	0.5951		6,760.6253	6,760.6253	0.3591	1.0727	7,089.2552
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
Worker	0.0000	0.0000	0.0000	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	**0.4627**	**16.6786**	**3.8888**	**0.0617**	**1.7383**	**0.1239**	**1.8622**	**0.4766**	**0.1186**	**0.5951**		**6,760.6253**	**6,760.6253**	**0.3591**	**1.0727**	**7,089.2552**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0379	0.0000	0.0379	5.7400e-003	0.0000	5.7400e-003			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0379**	**0.0000**	**0.0379**	**5.7400e-003**	**0.0000**	**5.7400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4627	16.6786	3.8888	0.0617	1.6201	0.1239	1.7440	0.4476	0.1186	0.5661		6,760.6253	6,760.6253	0.3591	1.0727	7,089.2552
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
Worker	0.0000	0.0000	0.0000	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	**0.4627**	**16.6786**	**3.8888**	**0.0617**	**1.6201**	**0.1239**	**1.7440**	**0.4476**	**0.1186**	**0.5661**		**6,760.6253**	**6,760.6253**	**0.3591**	**1.0727**	**7,089.2552**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5605	5.2555	7.4101	0.0108		0.2965	0.2965		0.2728	0.2728		1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.5605**	**5.2555**	**7.4101**	**0.0108**		**0.2965**	**0.2965**		**0.2728**	**0.2728**		**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.0356**	**0.2162**	**0.3821**	**1.6000e-003**	**0.1150**	**2.4400e-003**	**0.1175**	**0.0311**	**2.3200e-003**	**0.0334**		**166.8600**	**166.8600**	**5.0600e-003**	**0.0141**	**171.1983**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.1955	5.0540	8.1813	0.0108		0.0717	0.0717		0.0717	0.0717	0.0000	1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.1955**	**5.0540**	**8.1813**	**0.0108**		**0.0717**	**0.0717**		**0.0717**	**0.0717**	**0.0000**	**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.8700e-003	0.1959	0.0672	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7600e-003		84.1846	84.1846	2.8100e-003	0.0121	87.8701
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0824	5.7000e-004	0.0830	0.0220	5.3000e-004	0.0225		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.0356**	**0.2162**	**0.3821**	**1.6000e-003**	**0.1064**	**2.4400e-003**	**0.1089**	**0.0290**	**2.3200e-003**	**0.0313**		**166.8600**	**166.8600**	**5.0600e-003**	**0.0141**	**171.1983**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0905	2.2533	0.7726	9.0100e-003	0.2947	0.0215	0.3161	0.0848	0.0205	0.1054		968.1233	968.1233	0.0324	0.1395	1,010.5056
Worker	0.4117	0.3006	4.6836	0.0122	1.3301	8.5100e-003	1.3387	0.3528	7.8300e-003	0.3606		1,229.7959	1,229.7959	0.0335	0.0298	1,239.5072
Total	**0.5022**	**2.5538**	**5.4562**	**0.0212**	**1.6248**	**0.0300**	**1.6548**	**0.4376**	**0.0284**	**0.4660**		**2,197.9192**	**2,197.9192**	**0.0659**	**0.1693**	**2,250.0128**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7664	10.7139	18.0727	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.7664**	**10.7139**	**18.0727**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0905	2.2533	0.7726	9.0100e-003	0.2758	0.0215	0.2972	0.0802	0.0205	0.1007		968.1233	968.1233	0.0324	0.1395	1,010.5056
Worker	0.4117	0.3006	4.6836	0.0122	1.2261	8.5100e-003	1.2346	0.3272	7.8300e-003	0.3351		1,229.7959	1,229.7959	0.0335	0.0298	1,239.5072
Total	**0.5022**	**2.5538**	**5.4562**	**0.0212**	**1.5018**	**0.0300**	**1.5318**	**0.4074**	**0.0284**	**0.4358**		**2,197.9192**	**2,197.9192**	**0.0659**	**0.1693**	**2,250.0128**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2947	8.8800e-003	0.3035	0.0848	8.4900e-003	0.0933		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7441	10.6716	18.0549	0.0269		0.0930	0.0930		0.0930	0.0930	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.7441**	**10.6716**	**18.0549**	**0.0269**		**0.0930**	**0.0930**		**0.0930**	**0.0930**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2758	8.8800e-003	0.2846	0.0802	8.4900e-003	0.0887		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.5018**	**0.0169**	**1.5187**	**0.4074**	**0.0159**	**0.4233**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.10 Building Construction and Fine Grading - 2023

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	2.1099	20.6480	19.7889	0.0362		0.9391	0.9391		0.8786	0.8786		3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**2.1099**	**20.6480**	**19.7889**	**0.0362**	**0.5303**	**0.9391**	**1.4693**	**0.0573**	**0.8786**	**0.9359**		**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0576	1.9192	0.7435	9.3100e-003	0.3203	9.6500e-003	0.3299	0.0922	9.2300e-003	0.1015		1,001.4124	1,001.4124	0.0336	0.1440	1,045.1555
Worker	0.3808	0.2655	4.3007	0.0118	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4384**	**2.1847**	**5.0442**	**0.0211**	**1.6504**	**0.0177**	**1.6681**	**0.4450**	**0.0166**	**0.4616**		**2,191.5021**	**2,191.5021**	**0.0636**	**0.1714**	**2,244.1798**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.2267	0.0000	0.2267	0.0245	0.0000	0.0245			0.0000			0.0000
Off-Road	0.9113	13.5634	23.5545	0.0362		0.1081	0.1081		0.1081	0.1081	0.0000	3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**0.9113**	**13.5634**	**23.5545**	**0.0362**	**0.2267**	**0.1081**	**0.3348**	**0.0245**	**0.1081**	**0.1326**	**0.0000**	**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0576	1.9192	0.7435	9.3100e-003	0.2998	9.6500e-003	0.3094	0.0872	9.2300e-003	0.0964		1,001.4124	1,001.4124	0.0336	0.1440	1,045.1555
Worker	0.3808	0.2655	4.3007	0.0118	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4384**	**2.1847**	**5.0442**	**0.0211**	**1.5258**	**0.0177**	**1.5435**	**0.4144**	**0.0166**	**0.4310**		**2,191.5021**	**2,191.5021**	**0.0636**	**0.1714**	**2,244.1798**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2947	8.8800e-003	0.3035	0.0848	8.4900e-003	0.0933		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7441	10.6716	18.0549	0.0269		0.0930	0.0930		0.0930	0.0930	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.7441**	**10.6716**	**18.0549**	**0.0269**		**0.0930**	**0.0930**		**0.0930**	**0.0930**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0530	1.7656	0.6840	8.5600e-003	0.2758	8.8800e-003	0.2846	0.0802	8.4900e-003	0.0887		921.2994	921.2994	0.0309	0.1325	961.5431
Worker	0.3808	0.2655	4.3007	0.0118	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,190.0897	1,190.0897	0.0300	0.0275	1,199.0243
Total	**0.4338**	**2.0311**	**4.9847**	**0.0203**	**1.5018**	**0.0169**	**1.5187**	**0.4074**	**0.0159**	**0.4233**		**2,111.3891**	**2,111.3891**	**0.0609**	**0.1599**	**2,160.5674**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0513	1.7692	0.6695	8.4300e-003	0.2947	8.9400e-003	0.3036	0.0848	8.5500e-003	0.0934		907.4632	907.4632	0.0310	0.1306	947.1584
Worker	0.3548	0.2370	3.9963	0.0114	1.3301	7.6600e-003	1.3378	0.3528	7.0500e-003	0.3598		1,156.3588	1,156.3588	0.0272	0.0255	1,164.6488
Total	**0.4061**	**2.0062**	**4.6658**	**0.0199**	**1.6248**	**0.0166**	**1.6414**	**0.4376**	**0.0156**	**0.4532**		**2,063.8220**	**2,063.8220**	**0.0581**	**0.1562**	**2,111.8072**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7255	10.6318	18.0406	0.0270		0.0853	0.0853		0.0853	0.0853	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.7255**	**10.6318**	**18.0406**	**0.0270**		**0.0853**	**0.0853**		**0.0853**	**0.0853**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0513	1.7692	0.6695	8.4300e-003	0.2758	8.9400e-003	0.2847	0.0802	8.5500e-003	0.0888		907.4632	907.4632	0.0310	0.1306	947.1584
Worker	0.3548	0.2370	3.9963	0.0114	1.2261	7.6600e-003	1.2337	0.3272	7.0500e-003	0.3343		1,156.3588	1,156.3588	0.0272	0.0255	1,164.6488
Total	**0.4061**	**2.0062**	**4.6658**	**0.0199**	**1.5018**	**0.0166**	**1.5184**	**0.4074**	**0.0156**	**0.4230**		**2,063.8220**	**2,063.8220**	**0.0581**	**0.1562**	**2,111.8072**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.12 Architectural Coating - 2024

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**7.7664**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0716	0.0478	0.8060	2.3100e-003	0.2683	1.5400e-003	0.2698	0.0711	1.4200e-003	0.0726		233.2152	233.2152	5.4800e-003	5.1500e-003	234.8872
Total	**0.0716**	**0.0478**	**0.8060**	**2.3100e-003**	**0.2683**	**1.5400e-003**	**0.2698**	**0.0711**	**1.4200e-003**	**0.0726**		**233.2152**	**233.2152**	**5.4800e-003**	**5.1500e-003**	**234.8872**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0545	1.0598	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**7.6401**	**1.0598**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0716	0.0478	0.8060	2.3100e-003	0.2473	1.5400e-003	0.2488	0.0660	1.4200e-003	0.0674		233.2152	233.2152	5.4800e-003	5.1500e-003	234.8872
Total	**0.0716**	**0.0478**	**0.8060**	**2.3100e-003**	**0.2473**	**1.5400e-003**	**0.2488**	**0.0660**	**1.4200e-003**	**0.0674**		**233.2152**	**233.2152**	**5.4800e-003**	**5.1500e-003**	**234.8872**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.13 Paving - 2024

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	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1039**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0447	0.0299	0.5037	1.4400e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		145.7595	145.7595	3.4200e-003	3.2200e-003	146.8045
Total	**0.0447**	**0.0299**	**0.5037**	**1.4400e-003**	**0.1677**	**9.7000e-004**	**0.1686**	**0.0445**	**8.9000e-004**	**0.0454**		**145.7595**	**145.7595**	**3.4200e-003**	**3.2200e-003**	**146.8045**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.3341	10.0395	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4499**	**10.0395**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0447	0.0299	0.5037	1.4400e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		145.7595	145.7595	3.4200e-003	3.2200e-003	146.8045
Total	**0.0447**	**0.0299**	**0.5037**	**1.4400e-003**	**0.1546**	**9.7000e-004**	**0.1555**	**0.0413**	**8.9000e-004**	**0.0421**		**145.7595**	**145.7595**	**3.4200e-003**	**3.2200e-003**	**146.8045**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.14 Finishing/Landscaping - 2024

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	0.1803	1.4029	3.2650	5.1700e-003		0.0691	0.0691		0.0636	0.0636		500.2654	500.2654	0.1618		504.3103
Total	**0.1803**	**1.4029**	**3.2650**	**5.1700e-003**		**0.0691**	**0.0691**		**0.0636**	**0.0636**		**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	8.9400e-003	5.9700e-003	0.1008	2.9000e-004	0.0335	1.9000e-004	0.0337	8.8900e-003	1.8000e-004	9.0700e-003		29.1519	29.1519	6.8000e-004	6.4000e-004	29.3609
Total	**8.9400e-003**	**5.9700e-003**	**0.1008**	**2.9000e-004**	**0.0335**	**1.9000e-004**	**0.0337**	**8.8900e-003**	**1.8000e-004**	**9.0700e-003**		**29.1519**	**29.1519**	**6.8000e-004**	**6.4000e-004**	**29.3609**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0635	2.2767	3.9180	5.1700e-003		8.4700e-003	8.4700e-003		8.4700e-003	8.4700e-003	0.0000	500.2654	500.2654	0.1618		504.3103
Total	**0.0635**	**2.2767**	**3.9180**	**5.1700e-003**		**8.4700e-003**	**8.4700e-003**		**8.4700e-003**	**8.4700e-003**	**0.0000**	**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	8.9400e-003	5.9700e-003	0.1008	2.9000e-004	0.0309	1.9000e-004	0.0311	8.2500e-003	1.8000e-004	8.4300e-003		29.1519	29.1519	6.8000e-004	6.4000e-004	29.3609
Total	**8.9400e-003**	**5.9700e-003**	**0.1008**	**2.9000e-004**	**0.0309**	**1.9000e-004**	**0.0311**	**8.2500e-003**	**1.8000e-004**	**8.4300e-003**		**29.1519**	**29.1519**	**6.8000e-004**	**6.4000e-004**	**29.3609**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Other Asphalt Surfaces	21.50	1000sqft	0.49	21,502.00	0
Other Non-Asphalt Surfaces	131.89	1000sqft	3.03	131,888.50	0
Parking Lot	61.60	1000sqft	1.41	61,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustinability Report

Land Use - 2 story Building C

Construction Phase - based on construction schedule confirmed by construction manager for Phase 1

Off-road Equipment -

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - no additional equipment required for demolition haul

Off-road Equipment -

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment -

Off-road Equipment - overlapping phase: grading equipment from applicant, CalEEMod default builing construction equipment

Off-road Equipment - based on project of similar size

Off-road Equipment -

Off-road Equipment - based on info provided by construction manager

Off-road Equipment - no additional equipment required for rough grading soil haul (overlaps equipment with rough grading phase)

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on equipment provided by construction manager

Off-road Equipment -

Trips and VMT - assumes 4 vt/water truck/day for demo, site prep, and grading phases, see assumptions file for hauling calculations

Demolition -

Grading -

Architectural Coating - SCAQMD Rule 1113, coating area based on info from applicant

Vehicle Trips -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rules 403 and 1186

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	34,010.00	13,604.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	102,029.00	51,014.00
tblArchitecturalCoating	ConstArea_Parking	12,899.00	3,696.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	54.00
tblConstructionPhase	NumDays	20.00	48.00
tblConstructionPhase	NumDays	20.00	12.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	230.00	236.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	30,600.00
tblGrading	MaterialImported	0.00	10,530.00
tblLandUse	LandUseSquareFeet	68,020.00	68,019.00
tblLandUse	LandUseSquareFeet	21,500.00	21,502.00
tblLandUse	LandUseSquareFeet	131,890.00	131,888.50
tblLandUse	LotAcreage	1.56	0.78
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	488.00	494.00
tblTripsAndVMT	HaulingTripNumber	1,316.00	1,333.00
tblTripsAndVMT	HaulingTripNumber	3,825.00	3,873.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	28.00	119.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					
2022	3.2660	51.7738	23.6257	0.1238	10.7922	1.4136	12.2058	4.2498	1.3067	5.5565	0.0000	13,061.3095	13,061.3095	1.6986	1.4585	13,538.3993
2023	2.5747	22.9507	24.5087	0.0567	2.1807	0.9568	3.1374	0.5022	0.8953	1.3975	0.0000	5,580.6251	5,580.6251	0.9611	0.1737	5,656.4141
2024	7.8435	15.5578	20.5340	0.0462	1.6248	0.6300	2.2548	0.4376	0.5926	1.0302	0.0000	4,560.2265	4,560.2265	0.7174	0.1582	4,623.9452
Maximum	**7.8435**	**51.7738**	**24.5087**	**0.1238**	**10.7922**	**1.4136**	**12.2058**	**4.2498**	**1.3067**	**5.5565**	**0.0000**	**13,061.3095**	**13,061.3095**	**1.6986**	**1.4585**	**13,538.3993**

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					
2022	1.3574	35.4996	28.3023	0.1238	5.8884	0.2870	6.1753	2.1706	0.2796	2.4502	0.0000	13,061.3095	13,061.3095	1.6986	1.4585	13,538.3993
2023	1.3761	15.8660	28.2743	0.0567	1.7525	0.1258	1.8783	0.4389	0.1248	0.5636	0.0000	5,580.6251	5,580.6251	0.9611	0.1737	5,656.4141
2024	7.7172	12.7459	22.4078	0.0462	1.5018	0.1020	1.6038	0.4074	0.1010	0.5084	0.0000	4,560.2265	4,560.2265	0.7174	0.1582	4,623.9452
Maximum	**7.7172**	**35.4996**	**28.3023**	**0.1238**	**5.8884**	**0.2870**	**6.1753**	**2.1706**	**0.2796**	**2.4502**	**0.0000**	**13,061.3095**	**13,061.3095**	**1.6986**	**1.4585**	**13,538.3993**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	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	**23.63**	**28.99**	**-15.02**	**0.00**	**37.37**	**82.84**	**45.12**	**41.87**	**81.92**	**55.89**	**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	Building and Asphalt Demolition	Demolition	6/1/2022	8/15/2022	5	54	
2	Building and Asphalt Demolition Debris Haul	Demolition	6/25/2022	8/31/2022	5	48	
3	Building and Asphalt Demolition and Site Preparation	Demolition	8/16/2022	8/31/2022	5	12	
4	Rough Grading	Grading	9/7/2022	10/31/2022	5	39	
5	Rough Grading Soil Import	Grading	9/7/2022	10/31/2022	5	39	
6	Rough Grading Soil Export	Grading	9/7/2022	10/31/2022	5	39	
7	Utility Trenching	Trenching	11/1/2022	12/14/2022	5	32	
8	Building Construction 1	Building Construction	12/15/2022	11/9/2023	5	236	
9	Building Construction and Fine Grading	Grading	11/10/2023	11/24/2023	5	11	
10	Building Construction 2	Building Construction	11/25/2023	3/31/2024	5	90	
11	Architectural Coating	Architectural Coating	4/1/2024	4/30/2024	5	22	
12	Paving	Paving	5/1/2024	6/28/2024	5	43	
13	Finishing/Landscaping	Trenching	7/1/2024	8/30/2024	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 78

Acres of Paving: 4.93

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 51,014; Non-Residential Outdoor: 13,604; Striped Parking Area: 3,696

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition and Site Preparation	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition and Site Preparation	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition and Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition and Site Preparation	Sweepers/Scrubbers	1	8.00	64	0.46
Building and Asphalt Demolition and Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading	Excavators	0	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rollers	1	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Scrapers	1	8.00	367	0.48
Rough Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Rough Grading Soil Import	Excavators	0	8.00	158	0.38
Rough Grading Soil Import	Graders	0	8.00	187	0.41
Rough Grading Soil Import	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Import	Sweepers/Scrubbers	1	8.00	64	0.46

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Rough Grading Soil Import	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading Soil Export	Excavators	0	8.00	158	0.38
Rough Grading Soil Export	Graders	0	8.00	187	0.41
Rough Grading Soil Export	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Export	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Utility Trenching	Excavators	1	8.00	158	0.38
Utility Trenching	Sweepers/Scrubbers	1	8.00	64	0.46
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1	Cranes	1	7.00	231	0.29
Building Construction 1	Forklifts	3	8.00	89	0.20
Building Construction 1	Generator Sets	1	8.00	84	0.74
Building Construction 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 1	Welders	1	8.00	46	0.45
Building Construction and Fine Grading	Cranes	1	7.00	231	0.29
Building Construction and Fine Grading	Excavators	0	8.00	158	0.38
Building Construction and Fine Grading	Forklifts	3	8.00	89	0.20
Building Construction and Fine Grading	Generator Sets	1	8.00	84	0.74
Building Construction and Fine Grading	Graders	1	8.00	187	0.41
Building Construction and Fine Grading	Rollers	1	8.00	80	0.38
Building Construction and Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction and Fine Grading	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction and Fine Grading	Welders	1	8.00	46	0.45
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Finishing/Landscaping	Excavators	1	8.00	158	0.38

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
Building and Asphalt Demolition	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	494.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition and Site	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Import	2	5.00	0.00	1,333.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Export	0	0.00	0.00	3,873.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	8.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction and Fine Grading	11	119.00	50.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9289	8.2089	9.5654	0.0287		0.3280	0.3280		0.3135	0.3135		2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.9289**	**8.2089**	**9.5654**	**0.0287**		**0.3280**	**0.3280**		**0.3135**	**0.3135**		**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.5035	8.9085	16.4029	0.0287		0.0954	0.0954		0.0954	0.0954	0.0000	2,758.8753	2,758.8753	0.7204		2,776.8846
Total	**0.5035**	**8.9085**	**16.4029**	**0.0287**		**0.0954**	**0.0954**		**0.0954**	**0.0954**	**0.0000**	**2,758.8753**	**2,758.8753**	**0.7204**		**2,776.8846**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.2005	0.0000	2.2005	0.3332	0.0000	0.3332			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.2005**	**0.0000**	**2.2005**	**0.3332**	**0.0000**	**0.3332**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0468	1.7986	0.4101	6.4000e-003	0.1801	0.0129	0.1930	0.0494	0.0123	0.0617		700.8369	700.8369	0.0372	0.1112	734.9035
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
Worker	0.0000	0.0000	0.0000	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	**0.0468**	**1.7986**	**0.4101**	**6.4000e-003**	**0.1801**	**0.0129**	**0.1930**	**0.0494**	**0.0123**	**0.0617**		**700.8369**	**700.8369**	**0.0372**	**0.1112**	**734.9035**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.9407	0.0000	0.9407	0.1424	0.0000	0.1424			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.9407**	**0.0000**	**0.9407**	**0.1424**	**0.0000**	**0.1424**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0468	1.7986	0.4101	6.4000e-003	0.1679	0.0129	0.1808	0.0464	0.0123	0.0587		700.8369	700.8369	0.0372	0.1112	734.9035
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
Worker	0.0000	0.0000	0.0000	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	**0.0468**	**1.7986**	**0.4101**	**6.4000e-003**	**0.1679**	**0.0129**	**0.1808**	**0.0464**	**0.0123**	**0.0587**		**700.8369**	**700.8369**	**0.0372**	**0.1112**	**734.9035**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2870	11.6874	13.7204	0.0343		0.5386	0.5386		0.5073	0.5073		3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**1.2870**	**11.6874**	**13.7204**	**0.0343**		**0.5386**	**0.5386**		**0.5073**	**0.5073**		**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0556	0.0419	0.5421	1.4500e-003	0.1677	1.0700e-003	0.1687	0.0445	9.9000e-004	0.0455		146.8205	146.8205	4.2700e-003	4.0100e-003	148.1225
Total	**0.0633**	**0.2459**	**0.6116**	**2.2300e-003**	**0.1933**	**2.9400e-003**	**0.1962**	**0.0519**	**2.7800e-003**	**0.0546**		**231.0367**	**231.0367**	**7.0700e-003**	**0.0162**	**236.0286**

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Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.6354	11.6858	20.6661	0.0343		0.1586	0.1586		0.1586	0.1586	0.0000	3,306.2906	3,306.2906	0.8974		3,328.7261
Total	**0.6354**	**11.6858**	**20.6661**	**0.0343**		**0.1586**	**0.1586**		**0.1586**	**0.1586**	**0.0000**	**3,306.2906**	**3,306.2906**	**0.8974**		**3,328.7261**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0556	0.0419	0.5421	1.4500e-003	0.1546	1.0700e-003	0.1556	0.0413	9.9000e-004	0.0422		146.8205	146.8205	4.2700e-003	4.0100e-003	148.1225
Total	**0.0633**	**0.2459**	**0.6116**	**2.2300e-003**	**0.1785**	**2.9400e-003**	**0.1815**	**0.0482**	**2.7800e-003**	**0.0510**		**231.0367**	**231.0367**	**7.0700e-003**	**0.0162**	**236.0286**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1431	0.0000	8.1431	3.5393	0.0000	3.5393			0.0000			0.0000
Off-Road	2.2376	24.7206	13.5399	0.0330		1.0332	1.0332		0.9505	0.9505		3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**2.2376**	**24.7206**	**13.5399**	**0.0330**	**8.1431**	**1.0332**	**9.1763**	**3.5393**	**0.9505**	**4.4898**		**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1118	7.2000e-004	0.1125	0.0296	6.6000e-004	0.0303		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1374**	**2.5900e-003**	**0.1400**	**0.0370**	**2.4500e-003**	**0.0395**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					3.4812	0.0000	3.4812	1.5130	0.0000	1.5130			0.0000			0.0000
Off-Road	0.5551	9.1476	18.1082	0.0330		0.0539	0.0539		0.0539	0.0539	0.0000	3,192.7120	3,192.7120	1.0326		3,218.5267
Total	**0.5551**	**9.1476**	**18.1082**	**0.0330**	**3.4812**	**0.0539**	**3.5351**	**1.5130**	**0.0539**	**1.5669**	**0.0000**	**3,192.7120**	**3,192.7120**	**1.0326**		**3,218.5267**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0370	0.0279	0.3614	9.7000e-004	0.1030	7.2000e-004	0.1038	0.0275	6.6000e-004	0.0282		97.8803	97.8803	2.8500e-003	2.6700e-003	98.7483
Total	**0.0448**	**0.2319**	**0.4309**	**1.7500e-003**	**0.1270**	**2.5900e-003**	**0.1296**	**0.0345**	**2.4500e-003**	**0.0369**		**182.0966**	**182.0966**	**5.6500e-003**	**0.0148**	**186.6545**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0305	0.0000	0.0305	4.6200e-003	0.0000	4.6200e-003			0.0000			0.0000
Off-Road	0.3581	3.4785	4.1549	5.6500e-003		0.2106	0.2106		0.1938	0.1938		547.4154	547.4154	0.1771		551.8415
Total	**0.3581**	**3.4785**	**4.1549**	**5.6500e-003**	**0.0305**	**0.2106**	**0.2412**	**4.6200e-003**	**0.1938**	**0.1984**		**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1554	5.9734	1.3620	0.0213	0.5983	0.0427	0.6410	0.1640	0.0409	0.2049		2,327.5382	2,327.5382	0.1234	0.3693	2,440.6760
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
Worker	0.0185	0.0140	0.1807	4.8000e-004	0.0559	3.6000e-004	0.0563	0.0148	3.3000e-004	0.0152		48.9402	48.9402	1.4200e-003	1.3400e-003	49.3742
Total	**0.1739**	**5.9873**	**1.5427**	**0.0217**	**0.6542**	**0.0431**	**0.6973**	**0.1789**	**0.0412**	**0.2201**		**2,376.4784**	**2,376.4784**	**0.1248**	**0.3707**	**2,490.0502**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0131	0.0000	0.0131	1.9800e-003	0.0000	1.9800e-003			0.0000			0.0000
Off-Road	0.1319	2.7773	4.2632	5.6500e-003		0.0632	0.0632		0.0632	0.0632	0.0000	547.4154	547.4154	0.1771		551.8415
Total	**0.1319**	**2.7773**	**4.2632**	**5.6500e-003**	**0.0131**	**0.0632**	**0.0763**	**1.9800e-003**	**0.0632**	**0.0652**	**0.0000**	**547.4154**	**547.4154**	**0.1771**		**551.8415**

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	0.1554	5.9734	1.3620	0.0213	0.5576	0.0427	0.6003	0.1540	0.0409	0.1949		2,327.5382	2,327.5382	0.1234	0.3693	2,440.6760
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
Worker	0.0185	0.0140	0.1807	4.8000e-004	0.0515	3.6000e-004	0.0519	0.0138	3.3000e-004	0.0141		48.9402	48.9402	1.4200e-003	1.3400e-003	49.3742
Total	**0.1739**	**5.9873**	**1.5427**	**0.0217**	**0.6091**	**0.0431**	**0.6522**	**0.1678**	**0.0412**	**0.2090**		**2,376.4784**	**2,376.4784**	**0.1248**	**0.3707**	**2,490.0502**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0887	0.0000	0.0887	0.0134	0.0000	0.0134			0.0000			0.0000
Off-Road	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0887**	**0.0000**	**0.0887**	**0.0134**	**0.0000**	**0.0134**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4516	17.3555	3.9573	0.0617	1.7383	0.1242	1.8624	0.4766	0.1188	0.5954		6,762.6072	6,762.6072	0.3585	1.0730	7,091.3265
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
Worker	0.0000	0.0000	0.0000	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	**0.4516**	**17.3555**	**3.9573**	**0.0617**	**1.7383**	**0.1242**	**1.8624**	**0.4766**	**0.1188**	**0.5954**		**6,762.6072**	**6,762.6072**	**0.3585**	**1.0730**	**7,091.3265**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0379	0.0000	0.0379	5.7400e-003	0.0000	5.7400e-003			0.0000			0.0000
Off-Road	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0379**	**0.0000**	**0.0379**	**5.7400e-003**	**0.0000**	**5.7400e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.4516	17.3555	3.9573	0.0617	1.6201	0.1242	1.7443	0.4476	0.1188	0.5664		6,762.6072	6,762.6072	0.3585	1.0730	7,091.3265
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
Worker	0.0000	0.0000	0.0000	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	**0.4516**	**17.3555**	**3.9573**	**0.0617**	**1.6201**	**0.1242**	**1.7443**	**0.4476**	**0.1188**	**0.5664**		**6,762.6072**	**6,762.6072**	**0.3585**	**1.0730**	**7,091.3265**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5605	5.2555	7.4101	0.0108		0.2965	0.2965		0.2728	0.2728		1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.5605**	**5.2555**	**7.4101**	**0.0108**		**0.2965**	**0.2965**		**0.2728**	**0.2728**		**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0256	1.8700e-003	0.0275	7.3800e-003	1.7900e-003	9.1700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.0374**	**0.2263**	**0.3586**	**1.5500e-003**	**0.1150**	**2.4400e-003**	**0.1175**	**0.0311**	**2.3200e-003**	**0.0334**		**162.5205**	**162.5205**	**5.0800e-003**	**0.0143**	**166.9048**

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Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.1955	5.0540	8.1813	0.0108		0.0717	0.0717		0.0717	0.0717	0.0000	1,047.4306	1,047.4306	0.3388		1,055.8996
Total	**0.1955**	**5.0540**	**8.1813**	**0.0108**		**0.0717**	**0.0717**		**0.0717**	**0.0717**	**0.0000**	**1,047.4306**	**1,047.4306**	**0.3388**		**1,055.8996**

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	0.0000
Vendor	7.7800e-003	0.2040	0.0695	7.8000e-004	0.0240	1.8700e-003	0.0259	6.9700e-003	1.7900e-003	8.7700e-003		84.2163	84.2163	2.8000e-003	0.0122	87.9061
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0824	5.7000e-004	0.0830	0.0220	5.3000e-004	0.0225		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.0374**	**0.2263**	**0.3586**	**1.5500e-003**	**0.1064**	**2.4400e-003**	**0.1089**	**0.0290**	**2.3200e-003**	**0.0313**		**162.5205**	**162.5205**	**5.0800e-003**	**0.0143**	**166.9048**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0894	2.3462	0.7993	9.0100e-003	0.2947	0.0215	0.3162	0.0848	0.0206	0.1055		968.4871	968.4871	0.0323	0.1397	1,010.9204
Worker	0.4408	0.3321	4.3003	0.0115	1.3301	8.5100e-003	1.3387	0.3528	7.8300e-003	0.3606		1,164.7758	1,164.7758	0.0339	0.0318	1,175.1053
Total	**0.5302**	**2.6783**	**5.0995**	**0.0205**	**1.6248**	**0.0301**	**1.6548**	**0.4376**	**0.0284**	**0.4660**		**2,133.2628**	**2,133.2628**	**0.0662**	**0.1715**	**2,186.0257**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7664	10.7139	18.0727	0.0269		0.1018	0.1018		0.1018	0.1018	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**0.7664**	**10.7139**	**18.0727**	**0.0269**		**0.1018**	**0.1018**		**0.1018**	**0.1018**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0894	2.3462	0.7993	9.0100e-003	0.2758	0.0215	0.2973	0.0802	0.0206	0.1008		968.4871	968.4871	0.0323	0.1397	1,010.9204
Worker	0.4408	0.3321	4.3003	0.0115	1.2261	8.5100e-003	1.2346	0.3272	7.8300e-003	0.3351		1,164.7758	1,164.7758	0.0339	0.0318	1,175.1053
Total	**0.5302**	**2.6783**	**5.0995**	**0.0205**	**1.5018**	**0.0301**	**1.5319**	**0.4074**	**0.0284**	**0.4359**		**2,133.2628**	**2,133.2628**	**0.0662**	**0.1715**	**2,186.0257**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2947	8.9300e-003	0.3036	0.0848	8.5400e-003	0.0934		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7441	10.6716	18.0549	0.0269		0.0930	0.0930		0.0930	0.0930	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.7441**	**10.6716**	**18.0549**	**0.0269**		**0.0930**	**0.0930**		**0.0930**	**0.0930**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2758	8.9300e-003	0.2847	0.0802	8.5400e-003	0.0888		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.5018**	**0.0169**	**1.5188**	**0.4074**	**0.0159**	**0.4233**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.10 Building Construction and Fine Grading - 2023

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	2.1099	20.6480	19.7889	0.0362		0.9391	0.9391		0.8786	0.8786		3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**2.1099**	**20.6480**	**19.7889**	**0.0362**	**0.5303**	**0.9391**	**1.4693**	**0.0573**	**0.8786**	**0.9359**		**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0556	2.0094	0.7669	9.3200e-003	0.3203	9.7100e-003	0.3300	0.0922	9.2900e-003	0.1015		1,003.1015	1,003.1015	0.0334	0.1444	1,046.9555
Worker	0.4092	0.2933	3.9530	0.0112	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4648**	**2.3026**	**4.7199**	**0.0205**	**1.6504**	**0.0177**	**1.6681**	**0.4450**	**0.0167**	**0.4616**		**2,130.4523**	**2,130.4523**	**0.0638**	**0.1737**	**2,183.8090**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.2267	0.0000	0.2267	0.0245	0.0000	0.0245			0.0000			0.0000
Off-Road	0.9113	13.5634	23.5545	0.0362		0.1081	0.1081		0.1081	0.1081	0.0000	3,450.1728	3,450.1728	0.8973		3,472.6051
Total	**0.9113**	**13.5634**	**23.5545**	**0.0362**	**0.2267**	**0.1081**	**0.3348**	**0.0245**	**0.1081**	**0.1326**	**0.0000**	**3,450.1728**	**3,450.1728**	**0.8973**		**3,472.6051**

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	0.0000
Vendor	0.0556	2.0094	0.7669	9.3200e-003	0.2998	9.7100e-003	0.3095	0.0872	9.2900e-003	0.0965		1,003.1015	1,003.1015	0.0334	0.1444	1,046.9555
Worker	0.4092	0.2933	3.9530	0.0112	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4648**	**2.3026**	**4.7199**	**0.0205**	**1.5258**	**0.0177**	**1.5435**	**0.4144**	**0.0167**	**0.4310**		**2,130.4523**	**2,130.4523**	**0.0638**	**0.1737**	**2,183.8090**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2947	8.9300e-003	0.3036	0.0848	8.5400e-003	0.0934		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.3301	8.0000e-003	1.3381	0.3528	7.3700e-003	0.3601		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.6248**	**0.0169**	**1.6417**	**0.4376**	**0.0159**	**0.4535**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

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Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7441	10.6716	18.0549	0.0269		0.0930	0.0930		0.0930	0.0930	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**0.7441**	**10.6716**	**18.0549**	**0.0269**		**0.0930**	**0.0930**		**0.0930**	**0.0930**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

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	0.0000
Vendor	0.0511	1.8486	0.7055	8.5800e-003	0.2758	8.9300e-003	0.2847	0.0802	8.5400e-003	0.0888		922.8534	922.8534	0.0307	0.1328	963.1991
Worker	0.4092	0.2933	3.9530	0.0112	1.2261	8.0000e-003	1.2341	0.3272	7.3700e-003	0.3346		1,127.3508	1,127.3508	0.0304	0.0293	1,136.8534
Total	**0.4603**	**2.1419**	**4.6585**	**0.0197**	**1.5018**	**0.0169**	**1.5188**	**0.4074**	**0.0159**	**0.4233**		**2,050.2042**	**2,050.2042**	**0.0612**	**0.1622**	**2,100.0525**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0494	1.8524	0.6907	8.4400e-003	0.2947	8.9900e-003	0.3036	0.0848	8.6000e-003	0.0934		909.0259	909.0259	0.0309	0.1310	948.8201
Worker	0.3825	0.2617	3.6765	0.0108	1.3301	7.6600e-003	1.3378	0.3528	7.0500e-003	0.3598		1,095.5016	1,095.5016	0.0276	0.0273	1,104.3175
Total	**0.4319**	**2.1141**	**4.3672**	**0.0193**	**1.6248**	**0.0167**	**1.6414**	**0.4376**	**0.0157**	**0.4533**		**2,004.5276**	**2,004.5276**	**0.0584**	**0.1582**	**2,053.1375**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.7255	10.6318	18.0406	0.0270		0.0853	0.0853		0.0853	0.0853	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**0.7255**	**10.6318**	**18.0406**	**0.0270**		**0.0853**	**0.0853**		**0.0853**	**0.0853**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

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	0.0000
Vendor	0.0494	1.8524	0.6907	8.4400e-003	0.2758	8.9900e-003	0.2848	0.0802	8.6000e-003	0.0888		909.0259	909.0259	0.0309	0.1310	948.8201
Worker	0.3825	0.2617	3.6765	0.0108	1.2261	7.6600e-003	1.2337	0.3272	7.0500e-003	0.3343		1,095.5016	1,095.5016	0.0276	0.0273	1,104.3175
Total	**0.4319**	**2.1141**	**4.3672**	**0.0193**	**1.5018**	**0.0167**	**1.5185**	**0.4074**	**0.0157**	**0.4231**		**2,004.5276**	**2,004.5276**	**0.0584**	**0.1582**	**2,053.1375**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.12 Architectural Coating - 2024

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**7.7664**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0771	0.0528	0.7415	2.1900e-003	0.2683	1.5400e-003	0.2698	0.0711	1.4200e-003	0.0726		220.9415	220.9415	5.5600e-003	5.5000e-003	222.7195
Total	**0.0771**	**0.0528**	**0.7415**	**2.1900e-003**	**0.2683**	**1.5400e-003**	**0.2698**	**0.0711**	**1.4200e-003**	**0.0726**		**220.9415**	**220.9415**	**5.5600e-003**	**5.5000e-003**	**222.7195**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.5856					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0545	1.0598	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**7.6401**	**1.0598**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	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
Worker	0.0771	0.0528	0.7415	2.1900e-003	0.2473	1.5400e-003	0.2488	0.0660	1.4200e-003	0.0674		220.9415	220.9415	5.5600e-003	5.5000e-003	222.7195
Total	**0.0771**	**0.0528**	**0.7415**	**2.1900e-003**	**0.2473**	**1.5400e-003**	**0.2488**	**0.0660**	**1.4200e-003**	**0.0674**		**220.9415**	**220.9415**	**5.5600e-003**	**5.5000e-003**	**222.7195**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.13 Paving - 2024

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	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1039**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0482	0.0330	0.4634	1.3700e-003	0.1677	9.7000e-004	0.1686	0.0445	8.9000e-004	0.0454		138.0884	138.0884	3.4700e-003	3.4400e-003	139.1997
Total	**0.0482**	**0.0330**	**0.4634**	**1.3700e-003**	**0.1677**	**9.7000e-004**	**0.1686**	**0.0445**	**8.9000e-004**	**0.0454**		**138.0884**	**138.0884**	**3.4700e-003**	**3.4400e-003**	**139.1997**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.3341	10.0395	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.1158					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4499**	**10.0395**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

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	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
Worker	0.0482	0.0330	0.4634	1.3700e-003	0.1546	9.7000e-004	0.1555	0.0413	8.9000e-004	0.0421		138.0884	138.0884	3.4700e-003	3.4400e-003	139.1997
Total	**0.0482**	**0.0330**	**0.4634**	**1.3700e-003**	**0.1546**	**9.7000e-004**	**0.1555**	**0.0413**	**8.9000e-004**	**0.0421**		**138.0884**	**138.0884**	**3.4700e-003**	**3.4400e-003**	**139.1997**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.14 Finishing/Landscaping - 2024

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	0.1803	1.4029	3.2650	5.1700e-003		0.0691	0.0691		0.0636	0.0636		500.2654	500.2654	0.1618		504.3103
Total	**0.1803**	**1.4029**	**3.2650**	**5.1700e-003**		**0.0691**	**0.0691**		**0.0636**	**0.0636**		**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	9.6400e-003	6.6000e-003	0.0927	2.7000e-004	0.0335	1.9000e-004	0.0337	8.8900e-003	1.8000e-004	9.0700e-003		27.6177	27.6177	6.9000e-004	6.9000e-004	27.8399
Total	**9.6400e-003**	**6.6000e-003**	**0.0927**	**2.7000e-004**	**0.0335**	**1.9000e-004**	**0.0337**	**8.8900e-003**	**1.8000e-004**	**9.0700e-003**		**27.6177**	**27.6177**	**6.9000e-004**	**6.9000e-004**	**27.8399**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0635	2.2767	3.9180	5.1700e-003		8.4700e-003	8.4700e-003		8.4700e-003	8.4700e-003	0.0000	500.2654	500.2654	0.1618		504.3103
Total	**0.0635**	**2.2767**	**3.9180**	**5.1700e-003**		**8.4700e-003**	**8.4700e-003**		**8.4700e-003**	**8.4700e-003**	**0.0000**	**500.2654**	**500.2654**	**0.1618**		**504.3103**

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	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
Worker	9.6400e-003	6.6000e-003	0.0927	2.7000e-004	0.0309	1.9000e-004	0.0311	8.2500e-003	1.8000e-004	8.4300e-003		27.6177	27.6177	6.9000e-004	6.9000e-004	27.8399
Total	**9.6400e-003**	**6.6000e-003**	**0.0927**	**2.7000e-004**	**0.0309**	**1.9000e-004**	**0.0311**	**8.2500e-003**	**1.8000e-004**	**8.4300e-003**		**27.6177**	**27.6177**	**6.9000e-004**	**6.9000e-004**	**27.8399**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Other Asphalt Surfaces	21.50	1000sqft	0.49	21,502.00	0
Other Non-Asphalt Surfaces	131.89	1000sqft	3.03	131,888.50	0
Parking Lot	61.60	1000sqft	1.41	61,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2019 SCE Sustinability Report

Land Use - 2 story Building C

Construction Phase - based on construction schedule confirmed by construction manager for Phase 1

Off-road Equipment -

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - no additional equipment required for demolition haul

Off-road Equipment -

Off-road Equipment -

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Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Off-road Equipment - overlapping phase: grading equipment from applicant, CalEEMod default builing construction equipment

Off-road Equipment - based on project of similar size

Off-road Equipment -

Off-road Equipment - based on info provided by construction manager

Off-road Equipment - no additional equipment required for rough grading soil haul (overlaps equipment with rough grading phase)

Off-road Equipment - based on information provided by construction manager

Off-road Equipment - based on equipment provided by construction manager

Off-road Equipment -

Trips and VMT - assumes 4 vt/water truck/day for demo, site prep, and grading phases, see assumptions file for hauling calculations

Demolition -

Grading -

Architectural Coating - SCAQMD Rule 1113, coating area based on info from applicant

Vehicle Trips -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Construction Off-road Equipment Mitigation - SCAQMD Rules 403 and 1186

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	34,010.00	13,604.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	102,029.00	51,014.00
tblArchitecturalCoating	ConstArea_Parking	12,899.00	3,696.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	54.00
tblConstructionPhase	NumDays	20.00	48.00
tblConstructionPhase	NumDays	20.00	12.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	20.00	39.00
tblConstructionPhase	NumDays	230.00	236.00
tblConstructionPhase	NumDays	20.00	11.00
tblConstructionPhase	NumDays	230.00	90.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	20.00	43.00
tblGrading	MaterialExported	0.00	30,600.00
tblGrading	MaterialImported	0.00	10,530.00
tblLandUse	LandUseSquareFeet	68,020.00	68,019.00
tblLandUse	LandUseSquareFeet	21,500.00	21,502.00
tblLandUse	LandUseSquareFeet	131,890.00	131,888.50
tblLandUse	LotAcreage	1.56	0.78
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	158.00	303.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	HorsePower	65.00	74.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblTripsAndVMT	HaulingTripNumber	488.00	494.00
tblTripsAndVMT	HaulingTripNumber	1,316.00	1,333.00
tblTripsAndVMT	HaulingTripNumber	3,825.00	3,873.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	28.00	119.00

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					
2022	0.1220	1.5561	1.0796	4.0900e-003	0.2828	0.0499	0.3327	0.0962	0.0465	0.1427	0.0000	380.8488	380.8488	0.0623	0.0298	391.2899

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2023	0.2633	2.1853	2.7488	6.1400e-003	0.2103	0.0945	0.3048	0.0563	0.0889	0.1451	0.0000	549.8774	549.8774	0.0804	0.0192	557.6135
2024	0.1761	0.7572	1.0986	2.2100e-003	0.0590	0.0328	0.0918	0.0159	0.0307	0.0465	0.0000	196.5258	196.5258	0.0371	4.8100e-003	198.8862
Maximum	**0.2633**	**2.1853**	**2.7488**	**6.1400e-003**	**0.2828**	**0.0945**	**0.3327**	**0.0962**	**0.0889**	**0.1451**	**0.0000**	**549.8774**	**549.8774**	**0.0804**	**0.0298**	**557.6135**

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					
2022	0.0579	1.2250	1.4196	4.0900e-003	0.1555	0.0115	0.1670	0.0507	0.0113	0.0620	0.0000	380.8486	380.8486	0.0623	0.0298	391.2897
2023	0.1535	1.6841	2.9950	6.1400e-003	0.1930	0.0144	0.2073	0.0522	0.0142	0.0665	0.0000	549.8771	549.8771	0.0804	0.0192	557.6131
2024	0.1337	0.6948	1.2318	2.2100e-003	0.0545	4.3900e-003	0.0589	0.0148	4.3600e-003	0.0191	0.0000	196.5257	196.5257	0.0371	4.8100e-003	198.8861
Maximum	**0.1535**	**1.6841**	**2.9950**	**6.1400e-003**	**0.1930**	**0.0144**	**0.2073**	**0.0522**	**0.0142**	**0.0665**	**0.0000**	**549.8771**	**549.8771**	**0.0804**	**0.0298**	**557.6131**

	ROG	NOx	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	**38.51**	**19.89**	**-14.60**	**0.00**	**27.00**	**82.92**	**40.59**	**30.06**	**81.98**	**55.84**	**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	6-1-2022	8-31-2022	0.7825	0.7685
2	9-1-2022	11-30-2022	1.6769	1.2955
3	12-1-2022	2-28-2023	0.5461	0.4121
4	3-1-2023	5-31-2023	0.6068	0.4576
5	6-1-2023	8-31-2023	0.6053	0.4561
6	9-1-2023	11-30-2023	0.6390	0.4714
7	12-1-2023	2-29-2024	0.5797	0.4531
8	3-1-2024	5-31-2024	0.4094	0.3654

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9	**6-1-2024**	**8-31-2024**	0.1418	0.1569
		Highest	1.6769	1.2955

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building and Asphalt Demolition	Demolition	6/1/2022	8/15/2022	5	54	
2	Building and Asphalt Demolition Debris Haul	Demolition	6/25/2022	8/31/2022	5	48	
3	Building and Asphalt Demolition and Site Preparation	Demolition	8/16/2022	8/31/2022	5	12	
4	Rough Grading	Grading	9/7/2022	10/31/2022	5	39	
5	Rough Grading Soil Import	Grading	9/7/2022	10/31/2022	5	39	
6	Rough Grading Soil Export	Grading	9/7/2022	10/31/2022	5	39	
7	Utility Trenching	Trenching	11/1/2022	12/14/2022	5	32	
8	Building Construction 1	Building Construction	12/15/2022	11/9/2023	5	236	
9	Building Construction and Fine Grading	Grading	11/10/2023	11/24/2023	5	11	
10	Building Construction 2	Building Construction	11/25/2023	3/31/2024	5	90	
11	Architectural Coating	Architectural Coating	4/1/2024	4/30/2024	5	22	
12	Paving	Paving	5/1/2024	6/28/2024	5	43	
13	Finishing/Landscaping	Trenching	7/1/2024	8/30/2024	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 78

Acres of Paving: 4.93

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 51,014; Non-Residential Outdoor: 13,604; Striped Parking Area: 3,696 (Architectural

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building and Asphalt Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition Debris Haul	Excavators	0	8.00	158	0.38
Building and Asphalt Demolition Debris Haul	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Concrete/Industrial Saws	0	8.00	81	0.73
Building and Asphalt Demolition and Site Preparation	Excavators	2	8.00	303	0.38
Building and Asphalt Demolition and Site Preparation	Generator Sets	1	8.00	84	0.74
Building and Asphalt Demolition and Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Building and Asphalt Demolition and Site Preparation	Skid Steer Loaders	1	8.00	74	0.37
Building and Asphalt Demolition and Site Preparation	Sweepers/Scrubbers	1	8.00	64	0.46
Building and Asphalt Demolition and Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading	Excavators	0	8.00	158	0.38
Rough Grading	Graders	1	8.00	187	0.41
Rough Grading	Rollers	1	8.00	80	0.38
Rough Grading	Rubber Tired Dozers	1	8.00	247	0.40
Rough Grading	Scrapers	1	8.00	367	0.48
Rough Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Rough Grading Soil Import	Excavators	0	8.00	158	0.38
Rough Grading Soil Import	Graders	0	8.00	187	0.41
Rough Grading Soil Import	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Import	Sweepers/Scrubbers	1	8.00	64	0.46
Rough Grading Soil Import	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Rough Grading Soil Export	Excavators	0	8.00	158	0.38

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Rough Grading Soil Export	Graders	0	8.00	187	0.41
Rough Grading Soil Export	Rubber Tired Dozers	0	8.00	247	0.40
Rough Grading Soil Export	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Utility Trenching	Excavators	1	8.00	158	0.38
Utility Trenching	Sweepers/Scrubbers	1	8.00	64	0.46
Utility Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction 1	Cranes	1	7.00	231	0.29
Building Construction 1	Forklifts	3	8.00	89	0.20
Building Construction 1	Generator Sets	1	8.00	84	0.74
Building Construction 1	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 1	Welders	1	8.00	46	0.45
Building Construction and Fine Grading	Cranes	1	7.00	231	0.29
Building Construction and Fine Grading	Excavators	0	8.00	158	0.38
Building Construction and Fine Grading	Forklifts	3	8.00	89	0.20
Building Construction and Fine Grading	Generator Sets	1	8.00	84	0.74
Building Construction and Fine Grading	Graders	1	8.00	187	0.41
Building Construction and Fine Grading	Rollers	1	8.00	80	0.38
Building Construction and Fine Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction and Fine Grading	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction and Fine Grading	Welders	1	8.00	46	0.45
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Finishing/Landscaping	Excavators	1	8.00	158	0.38

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
Building and Asphalt Demolition	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition Debris Haul	0	0.00	0.00	494.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building and Asphalt Demolition and Site	6	15.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading	4	10.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Import	2	5.00	0.00	1,333.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Rough Grading Soil Export	0	0.00	0.00	3,873.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	3	8.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 1	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction and Fine Grading	11	119.00	50.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	119.00	46.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	24.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing/Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0251	0.2216	0.2583	7.7000e-004		8.8600e-003	8.8600e-003		8.4700e-003	8.4700e-003	0.0000	67.5759	67.5759	0.0176	0.0000	68.0170
Total	**0.0251**	**0.2216**	**0.2583**	**7.7000e-004**		**8.8600e-003**	**8.8600e-003**		**8.4700e-003**	**8.4700e-003**	**0.0000**	**67.5759**	**67.5759**	**0.0176**	**0.0000**	**68.0170**

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	2.1000e-004	5.5500e-003	1.8400e-003	2.0000e-005	6.8000e-004	5.0000e-005	7.3000e-004	2.0000e-004	5.0000e-005	2.4000e-004	0.0000	2.0624	2.0624	7.0000e-005	3.0000e-004	2.1527
Worker	9.2000e-004	7.7000e-004	0.0100	3.0000e-005	2.9600e-003	2.0000e-005	2.9800e-003	7.9000e-004	2.0000e-005	8.0000e-004	0.0000	2.4334	2.4334	7.0000e-005	7.0000e-005	2.4549
Total	**1.1300e-003**	**6.3200e-003**	**0.0119**	**5.0000e-005**	**3.6400e-003**	**7.0000e-005**	**3.7100e-003**	**9.9000e-004**	**7.0000e-005**	**1.0400e-003**	**0.0000**	**4.4957**	**4.4957**	**1.4000e-004**	**3.7000e-004**	**4.6076**

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Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0136	0.2405	0.4429	7.7000e-004		2.5700e-003	2.5700e-003		2.5700e-003	2.5700e-003	0.0000	67.5758	67.5758	0.0176	0.0000	68.0169
Total	**0.0136**	**0.2405**	**0.4429**	**7.7000e-004**		**2.5700e-003**	**2.5700e-003**		**2.5700e-003**	**2.5700e-003**	**0.0000**	**67.5758**	**67.5758**	**0.0176**	**0.0000**	**68.0169**

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	2.1000e-004	5.5500e-003	1.8400e-003	2.0000e-005	6.4000e-004	5.0000e-005	6.9000e-004	1.9000e-004	5.0000e-005	2.3000e-004	0.0000	2.0624	2.0624	7.0000e-005	3.0000e-004	2.1527
Worker	9.2000e-004	7.7000e-004	0.0100	3.0000e-005	2.7300e-003	2.0000e-005	2.7500e-003	7.3000e-004	2.0000e-005	7.5000e-004	0.0000	2.4334	2.4334	7.0000e-005	7.0000e-005	2.4549
Total	**1.1300e-003**	**6.3200e-003**	**0.0119**	**5.0000e-005**	**3.3700e-003**	**7.0000e-005**	**3.4400e-003**	**9.2000e-004**	**7.0000e-005**	**9.8000e-004**	**0.0000**	**4.4957**	**4.4957**	**1.4000e-004**	**3.7000e-004**	**4.6076**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0528	0.0000	0.0528	8.0000e-003	0.0000	8.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0528**	**0.0000**	**0.0528**	**8.0000e-003**	**0.0000**	**8.0000e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0437	9.7400e-003	1.5000e-004	4.2500e-003	3.1000e-004	4.5600e-003	1.1700e-003	3.0000e-004	1.4600e-003	0.0000	15.2563	15.2563	8.1000e-004	2.4200e-003	15.9979
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	0.0000	0.0000	0.0000	0.0000	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	**1.1400e-003**	**0.0437**	**9.7400e-003**	**1.5000e-004**	**4.2500e-003**	**3.1000e-004**	**4.5600e-003**	**1.1700e-003**	**3.0000e-004**	**1.4600e-003**	**0.0000**	**15.2563**	**15.2563**	**8.1000e-004**	**2.4200e-003**	**15.9979**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0226	0.0000	0.0226	3.4200e-003	0.0000	3.4200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0226**	**0.0000**	**0.0226**	**3.4200e-003**	**0.0000**	**3.4200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0437	9.7400e-003	1.5000e-004	3.9600e-003	3.1000e-004	4.2700e-003	1.1000e-003	3.0000e-004	1.3900e-003	0.0000	15.2563	15.2563	8.1000e-004	2.4200e-003	15.9979
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	0.0000	0.0000	0.0000	0.0000	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	**1.1400e-003**	**0.0437**	**9.7400e-003**	**1.5000e-004**	**3.9600e-003**	**3.1000e-004**	**4.2700e-003**	**1.1000e-003**	**3.0000e-004**	**1.3900e-003**	**0.0000**	**15.2563**	**15.2563**	**8.1000e-004**	**2.4200e-003**	**15.9979**

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	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	7.7200e-003	0.0701	0.0823	2.1000e-004		3.2300e-003	3.2300e-003		3.0400e-003	3.0400e-003	0.0000	17.9965	17.9965	4.8800e-003	0.0000	18.1186
Total	**7.7200e-003**	**0.0701**	**0.0823**	**2.1000e-004**		**3.2300e-003**	**3.2300e-003**		**3.0400e-003**	**3.0400e-003**	**0.0000**	**17.9965**	**17.9965**	**4.8800e-003**	**0.0000**	**18.1186**

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	5.0000e-005	1.2300e-003	4.1000e-004	0.0000	1.5000e-004	1.0000e-005	1.6000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4583	0.4583	2.0000e-005	7.0000e-005	0.4784
Worker	3.1000e-004	2.6000e-004	3.3400e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8111	0.8111	2.0000e-005	2.0000e-005	0.8183
Total	**3.6000e-004**	**1.4900e-003**	**3.7500e-003**	**1.0000e-005**	**1.1400e-003**	**2.0000e-005**	**1.1500e-003**	**3.0000e-004**	**2.0000e-005**	**3.2000e-004**	**0.0000**	**1.2694**	**1.2694**	**4.0000e-005**	**9.0000e-005**	**1.2967**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	3.8100e-003	0.0701	0.1240	2.1000e-004		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	17.9965	17.9965	4.8800e-003	0.0000	18.1186
Total	**3.8100e-003**	**0.0701**	**0.1240**	**2.1000e-004**		**9.5000e-004**	**9.5000e-004**		**9.5000e-004**	**9.5000e-004**	**0.0000**	**17.9965**	**17.9965**	**4.8800e-003**	**0.0000**	**18.1186**

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	5.0000e-005	1.2300e-003	4.1000e-004	0.0000	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4583	0.4583	2.0000e-005	7.0000e-005	0.4784
Worker	3.1000e-004	2.6000e-004	3.3400e-003	1.0000e-005	9.1000e-004	1.0000e-005	9.2000e-004	2.4000e-004	1.0000e-005	2.5000e-004	0.0000	0.8111	0.8111	2.0000e-005	2.0000e-005	0.8183
Total	**3.6000e-004**	**1.4900e-003**	**3.7500e-003**	**1.0000e-005**	**1.0500e-003**	**2.0000e-005**	**1.0700e-003**	**2.8000e-004**	**2.0000e-005**	**3.0000e-004**	**0.0000**	**1.2694**	**1.2694**	**4.0000e-005**	**9.0000e-005**	**1.2967**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1588	0.0000	0.1588	0.0690	0.0000	0.0690	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0436	0.4821	0.2640	6.4000e-004		0.0202	0.0202		0.0185	0.0185	0.0000	56.4794	56.4794	0.0183	0.0000	56.9361
Total	**0.0436**	**0.4821**	**0.2640**	**6.4000e-004**	**0.1588**	**0.0202**	**0.1789**	**0.0690**	**0.0185**	**0.0876**	**0.0000**	**56.4794**	**56.4794**	**0.0183**	**0.0000**	**56.9361**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	4.0100e-003	1.3300e-003	2.0000e-005	4.9000e-004	4.0000e-005	5.3000e-004	1.4000e-004	3.0000e-005	1.8000e-004	0.0000	1.4895	1.4895	5.0000e-005	2.1000e-004	1.5547
Worker	6.7000e-004	5.6000e-004	7.2300e-003	2.0000e-005	2.1400e-003	1.0000e-005	2.1500e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	1.7574	1.7574	5.0000e-005	5.0000e-005	1.7730
Total	**8.2000e-004**	**4.5700e-003**	**8.5600e-003**	**4.0000e-005**	**2.6300e-003**	**5.0000e-005**	**2.6800e-003**	**7.1000e-004**	**4.0000e-005**	**7.6000e-004**	**0.0000**	**3.2469**	**3.2469**	**1.0000e-004**	**2.6000e-004**	**3.3277**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					0.0679	0.0000	0.0679	0.0295	0.0000	0.0295	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0108	0.1784	0.3531	6.4000e-004		1.0500e-003	1.0500e-003		1.0500e-003	1.0500e-003	0.0000	56.4793	56.4793	0.0183	0.0000	56.9360
Total	**0.0108**	**0.1784**	**0.3531**	**6.4000e-004**	**0.0679**	**1.0500e-003**	**0.0689**	**0.0295**	**1.0500e-003**	**0.0306**	**0.0000**	**56.4793**	**56.4793**	**0.0183**	**0.0000**	**56.9360**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	4.0100e-003	1.3300e-003	2.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	3.0000e-005	1.7000e-004	0.0000	1.4895	1.4895	5.0000e-005	2.1000e-004	1.5547
Worker	6.7000e-004	5.6000e-004	7.2300e-003	2.0000e-005	1.9700e-003	1.0000e-005	1.9800e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.7574	1.7574	5.0000e-005	5.0000e-005	1.7730
Total	**8.2000e-004**	**4.5700e-003**	**8.5600e-003**	**4.0000e-005**	**2.4300e-003**	**5.0000e-005**	**2.4800e-003**	**6.6000e-004**	**4.0000e-005**	**7.1000e-004**	**0.0000**	**3.2469**	**3.2469**	**1.0000e-004**	**2.6000e-004**	**3.3277**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.0000e-004	0.0000	6.0000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9800e-003	0.0678	0.0810	1.1000e-004		4.1100e-003	4.1100e-003		3.7800e-003	3.7800e-003	0.0000	9.6838	9.6838	3.1300e-003	0.0000	9.7621
Total	**6.9800e-003**	**0.0678**	**0.0810**	**1.1000e-004**	**6.0000e-004**	**4.1100e-003**	**4.7100e-003**	**9.0000e-005**	**3.7800e-003**	**3.8700e-003**	**0.0000**	**9.6838**	**9.6838**	**3.1300e-003**	**0.0000**	**9.7621**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0700e-003	0.1179	0.0263	4.1000e-004	0.0115	8.3000e-004	0.0123	3.1500e-003	8.0000e-004	3.9500e-003	0.0000	41.1674	41.1674	2.1800e-003	6.5300e-003	43.1685
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.8000e-004	3.6100e-003	1.0000e-005	1.0700e-003	1.0000e-005	1.0800e-003	2.8000e-004	1.0000e-005	2.9000e-004	0.0000	0.8787	0.8787	3.0000e-005	2.0000e-005	0.8865
Total	**3.4000e-003**	**0.1182**	**0.0299**	**4.2000e-004**	**0.0125**	**8.4000e-004**	**0.0134**	**3.4300e-003**	**8.1000e-004**	**4.2400e-003**	**0.0000**	**42.0461**	**42.0461**	**2.2100e-003**	**6.5500e-003**	**44.0550**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					2.5000e-004	0.0000	2.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5700e-003	0.0542	0.0831	1.1000e-004		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	9.6838	9.6838	3.1300e-003	0.0000	9.7621
Total	**2.5700e-003**	**0.0542**	**0.0831**	**1.1000e-004**	**2.5000e-004**	**1.2300e-003**	**1.4800e-003**	**4.0000e-005**	**1.2300e-003**	**1.2700e-003**	**0.0000**	**9.6838**	**9.6838**	**3.1300e-003**	**0.0000**	**9.7621**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0700e-003	0.1179	0.0263	4.1000e-004	0.0107	8.3000e-004	0.0115	2.9600e-003	8.0000e-004	3.7600e-003	0.0000	41.1674	41.1674	2.1800e-003	6.5300e-003	43.1685
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.8000e-004	3.6100e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.8787	0.8787	3.0000e-005	2.0000e-005	0.8865
Total	**3.4000e-003**	**0.1182**	**0.0299**	**4.2000e-004**	**0.0117**	**8.4000e-004**	**0.0125**	**3.2200e-003**	**8.1000e-004**	**4.0300e-003**	**0.0000**	**42.0461**	**42.0461**	**2.2100e-003**	**6.5500e-003**	**44.0550**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7300e-003	0.0000	1.7300e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7300e-003**	**0.0000**	**1.7300e-003**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	8.9300e-003	0.3426	0.0764	1.2000e-003	0.0333	2.4200e-003	0.0357	9.1500e-003	2.3100e-003	0.0115	0.0000	119.6108	119.6108	6.3500e-003	0.0190	125.4252
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	0.0000	0.0000	0.0000	0.0000	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	**8.9300e-003**	**0.3426**	**0.0764**	**1.2000e-003**	**0.0333**	**2.4200e-003**	**0.0357**	**9.1500e-003**	**2.3100e-003**	**0.0115**	**0.0000**	**119.6108**	**119.6108**	**6.3500e-003**	**0.0190**	**125.4252**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					7.4000e-004	0.0000	7.4000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**7.4000e-004**	**0.0000**	**7.4000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	8.9300e-003	0.3426	0.0764	1.2000e-003	0.0311	2.4200e-003	0.0335	8.6000e-003	2.3100e-003	0.0109	0.0000	119.6108	119.6108	6.3500e-003	0.0190	125.4252
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	0.0000	0.0000	0.0000	0.0000	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	**8.9300e-003**	**0.3426**	**0.0764**	**1.2000e-003**	**0.0311**	**2.4200e-003**	**0.0335**	**8.6000e-003**	**2.3100e-003**	**0.0109**	**0.0000**	**119.6108**	**119.6108**	**6.3500e-003**	**0.0190**	**125.4252**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.9700e-003	0.0841	0.1186	1.7000e-004		4.7400e-003	4.7400e-003		4.3600e-003	4.3600e-003	0.0000	15.2034	15.2034	4.9200e-003	0.0000	15.3263
Total	**8.9700e-003**	**0.0841**	**0.1186**	**1.7000e-004**		**4.7400e-003**	**4.7400e-003**		**4.3600e-003**	**4.3600e-003**	**0.0000**	**15.2034**	**15.2034**	**4.9200e-003**	**0.0000**	**15.3263**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.2900e-003	1.0900e-003	1.0000e-005	4.0000e-004	3.0000e-005	4.3000e-004	1.2000e-004	3.0000e-005	1.5000e-004	0.0000	1.2221	1.2221	4.0000e-005	1.8000e-004	1.2757
Worker	4.4000e-004	3.7000e-004	4.7500e-003	1.0000e-005	1.4000e-003	1.0000e-005	1.4100e-003	3.7000e-004	1.0000e-005	3.8000e-004	0.0000	1.1536	1.1536	3.0000e-005	3.0000e-005	1.1638
Total	**5.6000e-004**	**3.6600e-003**	**5.8400e-003**	**2.0000e-005**	**1.8000e-003**	**4.0000e-005**	**1.8400e-003**	**4.9000e-004**	**4.0000e-005**	**5.3000e-004**	**0.0000**	**2.3757**	**2.3757**	**7.0000e-005**	**2.1000e-004**	**2.4395**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	3.1300e-003	0.0809	0.1309	1.7000e-004		1.1500e-003	1.1500e-003		1.1500e-003	1.1500e-003	0.0000	15.2034	15.2034	4.9200e-003	0.0000	15.3263
Total	**3.1300e-003**	**0.0809**	**0.1309**	**1.7000e-004**		**1.1500e-003**	**1.1500e-003**		**1.1500e-003**	**1.1500e-003**	**0.0000**	**15.2034**	**15.2034**	**4.9200e-003**	**0.0000**	**15.3263**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2000e-004	3.2900e-003	1.0900e-003	1.0000e-005	3.8000e-004	3.0000e-005	4.1000e-004	1.1000e-004	3.0000e-005	1.4000e-004	0.0000	1.2221	1.2221	4.0000e-005	1.8000e-004	1.2757
Worker	4.4000e-004	3.7000e-004	4.7500e-003	1.0000e-005	1.2900e-003	1.0000e-005	1.3000e-003	3.5000e-004	1.0000e-005	3.5000e-004	0.0000	1.1536	1.1536	3.0000e-005	3.0000e-005	1.1638
Total	**5.6000e-004**	**3.6600e-003**	**5.8400e-003**	**2.0000e-005**	**1.6700e-003**	**4.0000e-005**	**1.7100e-003**	**4.6000e-004**	**4.0000e-005**	**4.9000e-004**	**0.0000**	**2.3757**	**2.3757**	**7.0000e-005**	**2.1000e-004**	**2.4395**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

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	5.4000e-004	0.0142	4.7100e-003	5.0000e-005	1.7400e-003	1.3000e-004	1.8700e-003	5.0000e-004	1.2000e-004	6.3000e-004	0.0000	5.2704	5.2704	1.8000e-004	7.6000e-004	5.5014
Worker	2.4500e-003	2.0400e-003	0.0265	7.0000e-005	7.8200e-003	5.0000e-005	7.8800e-003	2.0800e-003	5.0000e-005	2.1300e-003	0.0000	6.4349	6.4349	1.8000e-004	1.8000e-004	6.4919
Total	**2.9900e-003**	**0.0162**	**0.0312**	**1.2000e-004**	**9.5600e-003**	**1.8000e-004**	**9.7500e-003**	**2.5800e-003**	**1.7000e-004**	**2.7600e-003**	**0.0000**	**11.7053**	**11.7053**	**3.6000e-004**	**9.4000e-004**	**11.9933**

Date: 7/28/2021 4:18 PM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	4.6000e-003	0.0643	0.1084	1.6000e-004		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**4.6000e-003**	**0.0643**	**0.1084**	**1.6000e-004**		**6.1000e-004**	**6.1000e-004**		**6.1000e-004**	**6.1000e-004**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

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	5.4000e-004	0.0142	4.7100e-003	5.0000e-005	1.6300e-003	1.3000e-004	1.7600e-003	4.7000e-004	1.2000e-004	6.0000e-004	0.0000	5.2704	5.2704	1.8000e-004	7.6000e-004	5.5014
Worker	2.4500e-003	2.0400e-003	0.0265	7.0000e-005	7.2100e-003	5.0000e-005	7.2600e-003	1.9300e-003	5.0000e-005	1.9800e-003	0.0000	6.4349	6.4349	1.8000e-004	1.8000e-004	6.4919
Total	**2.9900e-003**	**0.0162**	**0.0312**	**1.2000e-004**	**8.8400e-003**	**1.8000e-004**	**9.0200e-003**	**2.4000e-003**	**1.7000e-004**	**2.5800e-003**	**0.0000**	**11.7053**	**11.7053**	**3.6000e-004**	**9.4000e-004**	**11.9933**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.9 Building Construction 1 - 2023

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	0.1762	1.6111	1.8193	3.0200e-003		0.0784	0.0784		0.0737	0.0737	0.0000	259.6213	259.6213	0.0618	0.0000	261.1653
Total	**0.1762**	**1.6111**	**1.8193**	**3.0200e-003**		**0.0784**	**0.0784**		**0.0737**	**0.0737**	**0.0000**	**259.6213**	**259.6213**	**0.0618**	**0.0000**	**261.1653**

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	5.8200e-003	0.2076	0.0777	9.6000e-004	0.0325	1.0000e-003	0.0335	9.3700e-003	9.5000e-004	0.0103	0.0000	93.6748	93.6748	3.1300e-003	0.0135	97.7705
Worker	0.0423	0.0336	0.4541	1.2700e-003	0.1461	9.0000e-004	0.1469	0.0388	8.3000e-004	0.0396	0.0000	116.2527	116.2527	3.0900e-003	3.0300e-003	117.2317
Total	**0.0481**	**0.2412**	**0.5318**	**2.2300e-003**	**0.1785**	**1.9000e-003**	**0.1804**	**0.0482**	**1.7800e-003**	**0.0500**	**0.0000**	**209.9275**	**209.9275**	**6.2200e-003**	**0.0165**	**215.0022**

Date: 7/28/2021 4:18 PM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0833	1.1952	2.0221	3.0200e-003		0.0104	0.0104		0.0104	0.0104	0.0000	259.6210	259.6210	0.0618	0.0000	261.1650
Total	**0.0833**	**1.1952**	**2.0221**	**3.0200e-003**		**0.0104**	**0.0104**		**0.0104**	**0.0104**	**0.0000**	**259.6210**	**259.6210**	**0.0618**	**0.0000**	**261.1650**

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	5.8200e-003	0.2076	0.0777	9.6000e-004	0.0304	1.0000e-003	0.0314	8.8600e-003	9.5000e-004	9.8200e-003	0.0000	93.6748	93.6748	3.1300e-003	0.0135	97.7705
Worker	0.0423	0.0336	0.4541	1.2700e-003	0.1347	9.0000e-004	0.1356	0.0360	8.3000e-004	0.0368	0.0000	116.2527	116.2527	3.0900e-003	3.0300e-003	117.2317
Total	**0.0481**	**0.2412**	**0.5318**	**2.2300e-003**	**0.1651**	**1.9000e-003**	**0.1670**	**0.0449**	**1.7800e-003**	**0.0466**	**0.0000**	**209.9275**	**209.9275**	**6.2200e-003**	**0.0165**	**215.0022**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.10 Building Construction and Fine Grading - 2023

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					2.9200e-003	0.0000	2.9200e-003	3.1000e-004	0.0000	3.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0116	0.1136	0.1088	2.0000e-004		5.1600e-003	5.1600e-003		4.8300e-003	4.8300e-003	0.0000	17.2147	17.2147	4.4800e-003	0.0000	17.3266
Total	**0.0116**	**0.1136**	**0.1088**	**2.0000e-004**	**2.9200e-003**	**5.1600e-003**	**8.0800e-003**	**3.1000e-004**	**4.8300e-003**	**5.1400e-003**	**0.0000**	**17.2147**	**17.2147**	**4.4800e-003**	**0.0000**	**17.3266**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0111	4.1500e-003	5.0000e-005	1.7300e-003	5.0000e-005	1.7900e-003	5.0000e-004	5.0000e-005	5.5000e-004	0.0000	5.0001	5.0001	1.7000e-004	7.2000e-004	5.2187
Worker	2.0800e-003	1.6500e-003	0.0223	6.0000e-005	7.1700e-003	4.0000e-005	7.2200e-003	1.9000e-003	4.0000e-005	1.9500e-003	0.0000	5.7088	5.7088	1.5000e-004	1.5000e-004	5.7569
Total	**2.3900e-003**	**0.0127**	**0.0265**	**1.1000e-004**	**8.9000e-003**	**9.0000e-005**	**9.0100e-003**	**2.4000e-003**	**9.0000e-005**	**2.5000e-003**	**0.0000**	**10.7090**	**10.7090**	**3.2000e-004**	**8.7000e-004**	**10.9757**

Date: 7/28/2021 4:18 PM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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					1.2500e-003	0.0000	1.2500e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0100e-003	0.0746	0.1296	2.0000e-004		5.9000e-004	5.9000e-004		5.9000e-004	5.9000e-004	0.0000	17.2147	17.2147	4.4800e-003	0.0000	17.3266
Total	**5.0100e-003**	**0.0746**	**0.1296**	**2.0000e-004**	**1.2500e-003**	**5.9000e-004**	**1.8400e-003**	**1.3000e-004**	**5.9000e-004**	**7.2000e-004**	**0.0000**	**17.2147**	**17.2147**	**4.4800e-003**	**0.0000**	**17.3266**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0111	4.1500e-003	5.0000e-005	1.6200e-003	5.0000e-005	1.6800e-003	4.7000e-004	5.0000e-005	5.2000e-004	0.0000	5.0001	5.0001	1.7000e-004	7.2000e-004	5.2187
Worker	2.0800e-003	1.6500e-003	0.0223	6.0000e-005	6.6100e-003	4.0000e-005	6.6600e-003	1.7700e-003	4.0000e-005	1.8100e-003	0.0000	5.7088	5.7088	1.5000e-004	1.5000e-004	5.7569
Total	**2.3900e-003**	**0.0127**	**0.0265**	**1.1000e-004**	**8.2300e-003**	**9.0000e-005**	**8.3400e-003**	**2.2400e-003**	**9.0000e-005**	**2.3300e-003**	**0.0000**	**10.7090**	**10.7090**	**3.2000e-004**	**8.7000e-004**	**10.9757**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2023

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	0.0197	0.1798	0.2031	3.4000e-004		8.7500e-003	8.7500e-003		8.2300e-003	8.2300e-003	0.0000	28.9756	28.9756	6.8900e-003	0.0000	29.1479
Total	**0.0197**	**0.1798**	**0.2031**	**3.4000e-004**		**8.7500e-003**	**8.7500e-003**		**8.2300e-003**	**8.2300e-003**	**0.0000**	**28.9756**	**28.9756**	**6.8900e-003**	**0.0000**	**29.1479**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5000e-004	0.0232	8.6700e-003	1.1000e-004	3.6200e-003	1.1000e-004	3.7400e-003	1.0500e-003	1.1000e-004	1.1500e-003	0.0000	10.4548	10.4548	3.5000e-004	1.5000e-003	10.9119
Worker	4.7200e-003	3.7500e-003	0.0507	1.4000e-004	0.0163	1.0000e-004	0.0164	4.3300e-003	9.0000e-005	4.4200e-003	0.0000	12.9746	12.9746	3.5000e-004	3.4000e-004	13.0839
Total	**5.3700e-003**	**0.0269**	**0.0594**	**2.5000e-004**	**0.0199**	**2.1000e-004**	**0.0201**	**5.3800e-003**	**2.0000e-004**	**5.5700e-003**	**0.0000**	**23.4294**	**23.4294**	**7.0000e-004**	**1.8400e-003**	**23.9958**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	9.3000e-003	0.1334	0.2257	3.4000e-004		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003	0.0000	28.9756	28.9756	6.8900e-003	0.0000	29.1479
Total	**9.3000e-003**	**0.1334**	**0.2257**	**3.4000e-004**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**	**0.0000**	**28.9756**	**28.9756**	**6.8900e-003**	**0.0000**	**29.1479**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5000e-004	0.0232	8.6700e-003	1.1000e-004	3.3900e-003	1.1000e-004	3.5000e-003	9.9000e-004	1.1000e-004	1.1000e-003	0.0000	10.4548	10.4548	3.5000e-004	1.5000e-003	10.9119
Worker	4.7200e-003	3.7500e-003	0.0507	1.4000e-004	0.0150	1.0000e-004	0.0151	4.0200e-003	9.0000e-005	4.1100e-003	0.0000	12.9746	12.9746	3.5000e-004	3.4000e-004	13.0839
Total	**5.3700e-003**	**0.0269**	**0.0594**	**2.5000e-004**	**0.0184**	**2.1000e-004**	**0.0186**	**5.0100e-003**	**2.0000e-004**	**5.2100e-003**	**0.0000**	**23.4294**	**23.4294**	**7.0000e-004**	**1.8400e-003**	**23.9958**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.11 Building Construction 2 - 2024

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	0.0478	0.4369	0.5254	8.8000e-004		0.0199	0.0199		0.0188	0.0188	0.0000	75.3510	75.3510	0.0178	0.0000	75.7964
Total	**0.0478**	**0.4369**	**0.5254**	**8.8000e-004**		**0.0199**	**0.0199**		**0.0188**	**0.0188**	**0.0000**	**75.3510**	**75.3510**	**0.0178**	**0.0000**	**75.7964**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6400e-003	0.0604	0.0221	2.7000e-004	9.4200e-003	2.9000e-004	9.7100e-003	2.7200e-003	2.8000e-004	3.0000e-003	0.0000	26.7746	26.7746	9.1000e-004	3.8600e-003	27.9468
Worker	0.0115	8.6900e-003	0.1225	3.6000e-004	0.0424	2.5000e-004	0.0426	0.0113	2.3000e-004	0.0115	0.0000	32.7802	32.7802	8.1000e-004	8.2000e-004	33.0437
Total	**0.0131**	**0.0691**	**0.1446**	**6.3000e-004**	**0.0518**	**5.4000e-004**	**0.0523**	**0.0140**	**5.1000e-004**	**0.0145**	**0.0000**	**59.5548**	**59.5548**	**1.7200e-003**	**4.6800e-003**	**60.9905**

Date: 7/28/2021 4:18 PM

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0236	0.3455	0.5863	8.8000e-004		2.7700e-003	2.7700e-003		2.7700e-003	2.7700e-003	0.0000	75.3509	75.3509	0.0178	0.0000	75.7963
Total	**0.0236**	**0.3455**	**0.5863**	**8.8000e-004**		**2.7700e-003**	**2.7700e-003**		**2.7700e-003**	**2.7700e-003**	**0.0000**	**75.3509**	**75.3509**	**0.0178**	**0.0000**	**75.7963**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6400e-003	0.0604	0.0221	2.7000e-004	8.8200e-003	2.9000e-004	9.1100e-003	2.5700e-003	2.8000e-004	2.8500e-003	0.0000	26.7746	26.7746	9.1000e-004	3.8600e-003	27.9468
Worker	0.0115	8.6900e-003	0.1225	3.6000e-004	0.0391	2.5000e-004	0.0393	0.0104	2.3000e-004	0.0107	0.0000	32.7802	32.7802	8.1000e-004	8.2000e-004	33.0437
Total	**0.0131**	**0.0691**	**0.1446**	**6.3000e-004**	**0.0479**	**5.4000e-004**	**0.0484**	**0.0130**	**5.1000e-004**	**0.0135**	**0.0000**	**59.5548**	**59.5548**	**1.7200e-003**	**4.6800e-003**	**60.9905**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.12 Architectural Coating - 2024

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	0.0834					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9900e-003	0.0134	0.0199	3.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004	0.0000	2.8086	2.8086	1.6000e-004	0.0000	2.8125
Total	**0.0854**	**0.0134**	**0.0199**	**3.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**	**0.0000**	**2.8086**	**2.8086**	**1.6000e-004**	**0.0000**	**2.8125**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	8.3600e-003	2.0000e-005	2.8900e-003	2.0000e-005	2.9100e-003	7.7000e-004	2.0000e-005	7.8000e-004	0.0000	2.2376	2.2376	6.0000e-005	6.0000e-005	2.2556
Total	**7.8000e-004**	**5.9000e-004**	**8.3600e-003**	**2.0000e-005**	**2.8900e-003**	**2.0000e-005**	**2.9100e-003**	**7.7000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.2376**	**2.2376**	**6.0000e-005**	**6.0000e-005**	**2.2556**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	0.0834					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0000e-004	0.0117	0.0202	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.8086	2.8086	1.6000e-004	0.0000	2.8125
Total	**0.0840**	**0.0117**	**0.0202**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.8086**	**2.8086**	**1.6000e-004**	**0.0000**	**2.8125**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	5.9000e-004	8.3600e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.2376	2.2376	6.0000e-005	6.0000e-005	2.2556
Total	**7.8000e-004**	**5.9000e-004**	**8.3600e-003**	**2.0000e-005**	**2.6700e-003**	**2.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.3000e-004**	**0.0000**	**2.2376**	**2.2376**	**6.0000e-005**	**6.0000e-005**	**2.2556**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.13 Paving - 2024

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	0.0213	0.2048	0.3145	4.9000e-004		0.0101	0.0101		9.2700e-003	9.2700e-003	0.0000	43.0570	43.0570	0.0139	0.0000	43.4052
Paving	2.4900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0237**	**0.2048**	**0.3145**	**4.9000e-004**		**0.0101**	**0.0101**		**9.2700e-003**	**9.2700e-003**	**0.0000**	**43.0570**	**43.0570**	**0.0139**	**0.0000**	**43.4052**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	7.2000e-004	0.0102	3.0000e-005	3.5300e-003	2.0000e-005	3.5500e-003	9.4000e-004	2.0000e-005	9.6000e-004	0.0000	2.7335	2.7335	7.0000e-005	7.0000e-005	2.7554
Total	**9.5000e-004**	**7.2000e-004**	**0.0102**	**3.0000e-005**	**3.5300e-003**	**2.0000e-005**	**3.5500e-003**	**9.4000e-004**	**2.0000e-005**	**9.6000e-004**	**0.0000**	**2.7335**	**2.7335**	**7.0000e-005**	**7.0000e-005**	**2.7554**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	7.1800e-003	0.2159	0.3719	4.9000e-004		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	43.0570	43.0570	0.0139	0.0000	43.4051
Paving	2.4900e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.6700e-003**	**0.2159**	**0.3719**	**4.9000e-004**		**8.0000e-004**	**8.0000e-004**		**8.0000e-004**	**8.0000e-004**	**0.0000**	**43.0570**	**43.0570**	**0.0139**	**0.0000**	**43.4051**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	7.2000e-004	0.0102	3.0000e-005	3.2600e-003	2.0000e-005	3.2800e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.7335	2.7335	7.0000e-005	7.0000e-005	2.7554
Total	**9.5000e-004**	**7.2000e-004**	**0.0102**	**3.0000e-005**	**3.2600e-003**	**2.0000e-005**	**3.2800e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.7335**	**2.7335**	**7.0000e-005**	**7.0000e-005**	**2.7554**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.14 Finishing/Landscaping - 2024

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	4.0600e-003	0.0316	0.0735	1.2000e-004		1.5500e-003	1.5500e-003		1.4300e-003	1.4300e-003	0.0000	10.2112	10.2112	3.3000e-003	0.0000	10.2938
Total	**4.0600e-003**	**0.0316**	**0.0735**	**1.2000e-004**		**1.5500e-003**	**1.5500e-003**		**1.4300e-003**	**1.4300e-003**	**0.0000**	**10.2112**	**10.2112**	**3.3000e-003**	**0.0000**	**10.2938**

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	2.0000e-004	1.5000e-004	2.1400e-003	1.0000e-005	7.4000e-004	0.0000	7.4000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5721	0.5721	1.0000e-005	1.0000e-005	0.5767
Total	**2.0000e-004**	**1.5000e-004**	**2.1400e-003**	**1.0000e-005**	**7.4000e-004**	**0.0000**	**7.4000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5721**	**0.5721**	**1.0000e-005**	**1.0000e-005**	**0.5767**

Malibu Middle and High School Campus Specific Plan Project (Phase 1) Mitigated Construction Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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	1.4300e-003	0.0512	0.0882	1.2000e-004		1.9000e-004	1.9000e-004		1.9000e-004	1.9000e-004	0.0000	10.2112	10.2112	3.3000e-003	0.0000	10.2938
Total	**1.4300e-003**	**0.0512**	**0.0882**	**1.2000e-004**		**1.9000e-004**	**1.9000e-004**		**1.9000e-004**	**1.9000e-004**	**0.0000**	**10.2112**	**10.2112**	**3.3000e-003**	**0.0000**	**10.2938**

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	2.0000e-004	1.5000e-004	2.1400e-003	1.0000e-005	6.8000e-004	0.0000	6.9000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	0.5721	0.5721	1.0000e-005	1.0000e-005	0.5767
Total	**2.0000e-004**	**1.5000e-004**	**2.1400e-003**	**1.0000e-005**	**6.8000e-004**	**0.0000**	**6.9000e-004**	**1.8000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5721**	**0.5721**	**1.0000e-005**	**1.0000e-005**	**0.5767**

CalEEMod Existing Conditions Model

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Existing Conditions Building Energy

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	42.31	1000sqft	0.97	42,314.00	0
Junior High School	112.59	1000sqft	2.58	112,590.00	0
Other Asphalt Surfaces	300.99	1000sqft	6.91	300,992.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0
Parking Lot	375.00	Space	3.44	150,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2020 SCE Sustainability Report

Land Use - Based on google earth estimates and information provided by District

Construction Phase -

Vehicle Trips - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

Area Coating - based on parking area only

Energy Use -

Water And Wastewater - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

Solid Waste - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	95250	9000
tblLandUse	LandUseSquareFeet	42,310.00	42,314.00
tblLandUse	LandUseSquareFeet	300,990.00	300,992.00
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LotAcreage	3.37	3.44
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblSolidWaste	SolidWasteGenerationRate	55.00	0.00
tblSolidWaste	SolidWasteGenerationRate	146.37	0.00
tblVehicleTrips	WD_TR	19.52	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	1,226,859.57	0.00
tblWater	IndoorWaterUseRate	2,321,718.89	0.00
tblWater	OutdoorWaterUseRate	3,154,781.74	0.00
tblWater	OutdoorWaterUseRate	5,970,134.29	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Energy	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213
Mobile	0.0000	0.0000	0.0000	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	**4.1144**	**0.5594**	**0.6700**	**3.3700e-003**	**0.0000**	**0.0431**	**0.0431**	**0.0000**	**0.0431**	**0.0431**		**669.4761**	**669.4761**	**0.0140**	**0.0123**	**673.4804**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Energy	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213
Mobile	0.0000	0.0000	0.0000	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	**4.1144**	**0.5594**	**0.6700**	**3.3700e-003**	**0.0000**	**0.0431**	**0.0431**	**0.0000**	**0.0431**	**0.0431**		**669.4761**	**669.4761**	**0.0140**	**0.0123**	**673.4804**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive	Exhaust	PM10 Total	Fugitive	Exhaust	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	16.60	8.40	6.90	65.00	30.00	5.00	63	25	12
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Junior High School	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Other Asphalt Surfaces	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Other Non-Asphalt Surfaces	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Parking Lot	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425

5.0 Energy Detail

Historical Energy Use: Y

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	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213
NaturalGas Unmitigated	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1553.45	0.0168	0.1523	0.1279	9.1000e-004		0.0116	0.0116		0.0116	0.0116		182.7583	182.7583	3.5000e-003	3.3500e-003	183.8443
Junior High School	4133.44	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0613**	**0.5575**	**0.4683**	**3.3400e-003**		**0.0424**	**0.0424**		**0.0424**	**0.0424**		**669.0455**	**669.0455**	**0.0128**	**0.0123**	**673.0213**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1.55345	0.0168	0.1523	0.1279	9.1000e-004		0.0116	0.0116		0.0116	0.0116		182.7583	182.7583	3.5000e-003	3.3500e-003	183.8443
Junior High School	4.13344	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0613**	**0.5575**	**0.4683**	**3.3400e-003**		**0.0424**	**0.0424**		**0.0424**	**0.0424**		**669.0455**	**669.0455**	**0.0128**	**0.0123**	**673.0213**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Unmitigated	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592

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	0.4048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.6294					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0188	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Total	**4.0531**	**1.8500e-003**	**0.2017**	**2.0000e-005**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**		**0.4306**	**0.4306**	**1.1400e-003**		**0.4592**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.4048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.6294					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0188	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Total	**4.0531**	**1.8500e-003**	**0.2017**	**2.0000e-005**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**		**0.4306**	**0.4306**	**1.1400e-003**		**0.4592**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Existing Conditions Building Energy

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	42.31	1000sqft	0.97	42,314.00	0
Junior High School	112.59	1000sqft	2.58	112,590.00	0
Other Asphalt Surfaces	300.99	1000sqft	6.91	300,992.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0
Parking Lot	375.00	Space	3.44	150,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2020 SCE Sustainability Report

Land Use - Based on google earth estimates and information provided by District

Construction Phase -

Vehicle Trips - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

Area Coating - based on parking area only

Energy Use -

Water And Wastewater - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

Solid Waste - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	95250	9000
tblLandUse	LandUseSquareFeet	42,310.00	42,314.00
tblLandUse	LandUseSquareFeet	300,990.00	300,992.00
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LotAcreage	3.37	3.44
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblSolidWaste	SolidWasteGenerationRate	55.00	0.00
tblSolidWaste	SolidWasteGenerationRate	146.37	0.00
tblVehicleTrips	WD_TR	19.52	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	1,226,859.57	0.00
tblWater	IndoorWaterUseRate	2,321,718.89	0.00
tblWater	OutdoorWaterUseRate	3,154,781.74	0.00
tblWater	OutdoorWaterUseRate	5,970,134.29	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Energy	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213
Mobile	0.0000	0.0000	0.0000	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	**4.1144**	**0.5594**	**0.6700**	**3.3700e-003**	**0.0000**	**0.0431**	**0.0431**	**0.0000**	**0.0431**	**0.0431**		**669.4761**	**669.4761**	**0.0140**	**0.0123**	**673.4804**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Energy	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213
Mobile	0.0000	0.0000	0.0000	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	**4.1144**	**0.5594**	**0.6700**	**3.3700e-003**	**0.0000**	**0.0431**	**0.0431**	**0.0000**	**0.0431**	**0.0431**		**669.4761**	**669.4761**	**0.0140**	**0.0123**	**673.4804**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive	Exhaust	PM10 Total	Fugitive	Exhaust	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	16.60	8.40	6.90	65.00	30.00	5.00	63	25	12
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Junior High School	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Other Asphalt Surfaces	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Other Non-Asphalt Surfaces	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Parking Lot	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425

5.0 Energy Detail

Historical Energy Use: Y

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	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213
NaturalGas Unmitigated	0.0613	0.5575	0.4683	3.3500e-003		0.0424	0.0424		0.0424	0.0424		669.0455	669.0455	0.0128	0.0123	673.0213

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1553.45	0.0168	0.1523	0.1279	9.1000e-004		0.0116	0.0116		0.0116	0.0116		182.7583	182.7583	3.5000e-003	3.3500e-003	183.8443
Junior High School	4133.44	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0613**	**0.5575**	**0.4683**	**3.3400e-003**		**0.0424**	**0.0424**		**0.0424**	**0.0424**		**669.0455**	**669.0455**	**0.0128**	**0.0123**	**673.0213**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1.55345	0.0168	0.1523	0.1279	9.1000e-004		0.0116	0.0116		0.0116	0.0116		182.7583	182.7583	3.5000e-003	3.3500e-003	183.8443
Junior High School	4.13344	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0613**	**0.5575**	**0.4683**	**3.3400e-003**		**0.0424**	**0.0424**		**0.0424**	**0.0424**		**669.0455**	**669.0455**	**0.0128**	**0.0123**	**673.0213**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Unmitigated	4.0531	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592

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	0.4048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.6294					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0188	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Total	**4.0531**	**1.8500e-003**	**0.2017**	**2.0000e-005**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**		**0.4306**	**0.4306**	**1.1400e-003**		**0.4592**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.4048					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.6294					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0188	1.8500e-003	0.2017	2.0000e-005		7.2000e-004	7.2000e-004		7.2000e-004	7.2000e-004		0.4306	0.4306	1.1400e-003		0.4592
Total	**4.0531**	**1.8500e-003**	**0.2017**	**2.0000e-005**		**7.2000e-004**	**7.2000e-004**		**7.2000e-004**	**7.2000e-004**		**0.4306**	**0.4306**	**1.1400e-003**		**0.4592**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Existing Conditions Building Energy

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	42.31	1000sqft	0.97	42,314.00	0
Junior High School	112.59	1000sqft	2.58	112,590.00	0
Parking Lot	375.00	Space	3.44	150,000.00	0
Other Asphalt Surfaces	300.99	1000sqft	6.91	300,992.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 2020 SCE Sustainability Report

Land Use - Based on google earth estimates and information provided by District

Construction Phase -

Vehicle Trips - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

Energy Use -

Area Coating - based on parking area only

Water And Wastewater - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

Solid Waste - model accounts for building energy only to provide a comparison to Phase 1 and Full Buildout conditions

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Parking	95250	9000
tblEnergyUse	LightingElect	0.88	0.88
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LotAcreage	3.37	3.44
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblSolidWaste	SolidWasteGenerationRate	55.00	0.00
tblSolidWaste	SolidWasteGenerationRate	146.37	0.00
tblVehicleTrips	WD_TR	19.52	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	1,226,859.57	0.00
tblWater	IndoorWaterUseRate	2,321,718.89	0.00
tblWater	OutdoorWaterUseRate	3,154,781.74	0.00
tblWater	OutdoorWaterUseRate	5,970,134.29	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7386	2.3000e-004	0.0252	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	0.0488	0.0488	1.3000e-004	0.0000	0.0521
Energy	0.0112	0.1018	0.0855	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003	0.0000	401.6688	401.6688	0.0210	4.3100e-003	403.4775
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.7498**	**0.1020**	**0.1107**	**6.1000e-004**	**0.0000**	**7.8200e-003**	**7.8200e-003**	**0.0000**	**7.8200e-003**	**7.8200e-003**	**0.0000**	**401.7176**	**401.7176**	**0.0211**	**4.3100e-003**	**403.5296**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.7386	2.3000e-004	0.0252	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	0.0488	0.0488	1.3000e-004	0.0000	0.0521
Energy	0.0112	0.1018	0.0855	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003	0.0000	401.6688	401.6688	0.0210	4.3100e-003	403.4775
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.7498**	**0.1020**	**0.1107**	**6.1000e-004**	**0.0000**	**7.8200e-003**	**7.8200e-003**	**0.0000**	**7.8200e-003**	**7.8200e-003**	**0.0000**	**401.7176**	**401.7176**	**0.0211**	**4.3100e-003**	**403.5296**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	16.60	8.40	6.90	65.00	30.00	5.00	63	25	12
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Junior High School	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Other Asphalt Surfaces	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Other Non-Asphalt Surfaces	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425
Parking Lot	0.548812	0.060892	0.186048	0.127862	0.022726	0.005730	0.010818	0.008022	0.000956	0.000624	0.023397	0.000686	0.003425

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: Y

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	290.9008	290.9008	0.0188	2.2800e-003	292.0513
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	290.9008	290.9008	0.0188	2.2800e-003	292.0513
NaturalGas Mitigated	0.0112	0.1018	0.0855	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003	0.0000	110.7680	110.7680	2.1200e-003	2.0300e-003	111.4262
NaturalGas Unmitigated	0.0112	0.1018	0.0855	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003	0.0000	110.7680	110.7680	2.1200e-003	2.0300e-003	111.4262

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	567008	3.0600e-003	0.0278	0.0234	1.7000e-004		2.1100e-003	2.1100e-003		2.1100e-003	2.1100e-003	0.0000	30.2577	30.2577	5.8000e-004	5.5000e-004	30.4375
Junior High School	1.50871e+006	8.1400e-003	0.0740	0.0621	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.5103	80.5103	1.5400e-003	1.4800e-003	80.9887
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0112**	**0.1018**	**0.0855**	**6.1000e-004**		**7.7300e-003**	**7.7300e-003**		**7.7300e-003**	**7.7300e-003**	**0.0000**	**110.7680**	**110.7680**	**2.1200e-003**	**2.0300e-003**	**111.4262**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	567008	3.0600e-003	0.0278	0.0234	1.7000e-004		2.1100e-003	2.1100e-003		2.1100e-003	2.1100e-003	0.0000	30.2577	30.2577	5.8000e-004	5.5000e-004	30.4375
Junior High School	1.50871e+006	8.1400e-003	0.0740	0.0621	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.5103	80.5103	1.5400e-003	1.4800e-003	80.9887
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0112**	**0.1018**	**0.0855**	**6.1000e-004**		**7.7300e-003**	**7.7300e-003**		**7.7300e-003**	**7.7300e-003**	**0.0000**	**110.7680**	**110.7680**	**2.1200e-003**	**2.0300e-003**	**111.4262**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	307623	71.1602	4.6000e-003	5.6000e-004	71.4417
Junior High School	818529	189.3447	0.0123	1.4900e-003	190.0936
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	131400	30.3959	1.9700e-003	2.4000e-004	30.5161
Total		**290.9008**	**0.0188**	**2.2900e-003**	**292.0513**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	307623	71.1602	4.6000e-003	5.6000e-004	71.4417
Junior High School	818529	189.3447	0.0123	1.4900e-003	190.0936
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	131400	30.3959	1.9700e-003	2.4000e-004	30.5161
Total		**290.9008**	**0.0188**	**2.2900e-003**	**292.0513**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7386	2.3000e-004	0.0252	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	0.0488	0.0488	1.3000e-004	0.0000	0.0521
Unmitigated	0.7386	2.3000e-004	0.0252	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	0.0488	0.0488	1.3000e-004	0.0000	0.0521

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0739					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6624					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3500e-003	2.3000e-004	0.0252	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	0.0488	0.0488	1.3000e-004	0.0000	0.0521
Total	**0.7386**	**2.3000e-004**	**0.0252**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0488**	**0.0488**	**1.3000e-004**	**0.0000**	**0.0521**

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	0.0739					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6624					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.3500e-003	2.3000e-004	0.0252	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	0.0488	0.0488	1.3000e-004	0.0000	0.0521
Total	**0.7386**	**2.3000e-004**	**0.0252**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0488**	**0.0488**	**1.3000e-004**	**0.0000**	**0.0521**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

MMHS Existing Conditions Building Energy - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

CalEEMod Operations Model

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Phase 1 Operations

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Junior High School	112.59	1000sqft	1.29	112,590.00	0
Parking Lot	196.80	1000sqft	4.52	196,800.00	0
Other Asphalt Surfaces	318.79	1000sqft	7.32	318,792.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2020 Sustainability Report

Land Use - school buildings are assumed to be 2 stories tall

Construction Phase -

Vehicle Trips - student capacity is not anticipated to increase

Area Coating - see assumptions file for architectural coating calculations. Based on data provided by applicant

Energy Use - Middle school land use represents the historical building energy rates for existing school buildings

Water And Wastewater - student capacity will not increase, proposed proejct will not result in additional water and wastewater use

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Solid Waste - student capacity will not increase, proposed proejct will not result in additional solid waste generation

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	90305	69899
tblAreaCoating	Area_Nonresidential_Interior	270914	219899
tblAreaCoating	Area_Parking	99126	11808
tblEnergyUse	LightingElect	2.68	3.30
tblEnergyUse	LightingElect	0.35	0.35
tblEnergyUse	T24E	1.69	1.69
tblEnergyUse	T24E	1.69	2.46
tblEnergyUse	T24NG	10.71	10.71
tblEnergyUse	T24NG	10.71	12.37
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LotAcreage	1.56	0.78
tblLandUse	LotAcreage	2.58	1.29
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblSolidWaste	SolidWasteGenerationRate	88.43	0.00
tblSolidWaste	SolidWasteGenerationRate	146.37	0.00
tblVehicleTrips	ST_TR	3.98	0.00
tblVehicleTrips	SU_TR	1.71	0.00
tblVehicleTrips	WD_TR	14.07	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	2,258,579.61	0.00
tblWater	IndoorWaterUseRate	2,321,718.89	0.00
tblWater	OutdoorWaterUseRate	5,807,776.15	0.00
tblWater	OutdoorWaterUseRate	5,970,134.29	0.00

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Energy	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925
Mobile	0.0000	0.0000	0.0000	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	**4.6296**	**0.6213**	**0.7071**	**3.7300e-003**	**0.0000**	**0.0478**	**0.0478**	**0.0000**	**0.0478**	**0.0478**		**743.9749**	**743.9749**	**0.0153**	**0.0136**	**748.4197**

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	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Energy	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925
Mobile	0.0000	0.0000	0.0000	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	**4.6296**	**0.6213**	**0.7071**	**3.7300e-003**	**0.0000**	**0.0478**	**0.0478**	**0.0000**	**0.0478**	**0.0478**		**743.9749**	**743.9749**	**0.0153**	**0.0136**	**748.4197**

	ROG	NOx	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**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Junior High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Non-Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Parking Lot	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925
NaturalGas Unmitigated	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925

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					
High School	2186.94	0.0236	0.2144	0.1801	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.2867	257.2867	4.9300e-003	4.7200e-003	258.8156
Junior High School	4133.44	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0682**	**0.6197**	**0.5205**	**3.7200e-003**		**0.0471**	**0.0471**		**0.0471**	**0.0471**		**743.5739**	**743.5739**	**0.0143**	**0.0136**	**747.9925**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
High School	2.18694	0.0236	0.2144	0.1801	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.2867	257.2867	4.9300e-003	4.7200e-003	258.8156
Junior High School	4.13344	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0682**	**0.6197**	**0.5205**	**3.7200e-003**		**0.0471**	**0.0471**		**0.0471**	**0.0471**		**743.5739**	**743.5739**	**0.0143**	**0.0136**	**747.9925**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Unmitigated	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.3830					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1612					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0172	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Total	**4.5614**	**1.6900e-003**	**0.1866**	**1.0000e-005**		**6.6000e-004**	**6.6000e-004**		**6.6000e-004**	**6.6000e-004**		**0.4011**	**0.4011**	**1.0400e-003**		**0.4272**

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	0.3830					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1612					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0172	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Total	**4.5614**	**1.6900e-003**	**0.1866**	**1.0000e-005**		**6.6000e-004**	**6.6000e-004**		**6.6000e-004**	**6.6000e-004**		**0.4011**	**0.4011**	**1.0400e-003**		**0.4272**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

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

MMHS Phase 1 Operations - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Phase 1 Operations

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Junior High School	112.59	1000sqft	1.29	112,590.00	0
Parking Lot	196.80	1000sqft	4.52	196,800.00	0
Other Asphalt Surfaces	318.79	1000sqft	7.32	318,792.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2020 Sustainability Report

Land Use - school buildings are assumed to be 2 stories tall

Construction Phase -

Vehicle Trips - student capacity is not anticipated to increase

Area Coating - see assumptions file for architectural coating calculations. Based on data provided by applicant

Energy Use - Middle school land use represents the historical building energy rates for existing school buildings

Water And Wastewater - student capacity will not increase, proposed proejct will not result in additional water and wastewater use

MMHS Phase 1 Operations - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Solid Waste - student capacity will not increase, proposed proejct will not result in additional solid waste generation

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	90305	69899
tblAreaCoating	Area_Nonresidential_Interior	270914	219899
tblAreaCoating	Area_Parking	99126	11808
tblEnergyUse	LightingElect	2.68	3.30
tblEnergyUse	LightingElect	0.35	0.35
tblEnergyUse	T24E	1.69	1.69
tblEnergyUse	T24E	1.69	2.46
tblEnergyUse	T24NG	10.71	10.71
tblEnergyUse	T24NG	10.71	12.37
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LotAcreage	1.56	0.78
tblLandUse	LotAcreage	2.58	1.29
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblSolidWaste	SolidWasteGenerationRate	88.43	0.00
tblSolidWaste	SolidWasteGenerationRate	146.37	0.00
tblVehicleTrips	ST_TR	3.98	0.00
tblVehicleTrips	SU_TR	1.71	0.00
tblVehicleTrips	WD_TR	14.07	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	2,258,579.61	0.00
tblWater	IndoorWaterUseRate	2,321,718.89	0.00
tblWater	OutdoorWaterUseRate	5,807,776.15	0.00
tblWater	OutdoorWaterUseRate	5,970,134.29	0.00

MMHS Phase 1 Operations - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Energy	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925
Mobile	0.0000	0.0000	0.0000	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	**4.6296**	**0.6213**	**0.7071**	**3.7300e-003**	**0.0000**	**0.0478**	**0.0478**	**0.0000**	**0.0478**	**0.0478**		**743.9749**	**743.9749**	**0.0153**	**0.0136**	**748.4197**

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	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Energy	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925
Mobile	0.0000	0.0000	0.0000	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	**4.6296**	**0.6213**	**0.7071**	**3.7300e-003**	**0.0000**	**0.0478**	**0.0478**	**0.0000**	**0.0478**	**0.0478**		**743.9749**	**743.9749**	**0.0153**	**0.0136**	**748.4197**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive	Exhaust	PM10 Total	Fugitive	Exhaust	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

MMHS Phase 1 Operations - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Junior High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Non-Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Parking Lot	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925
NaturalGas Unmitigated	0.0682	0.6196	0.5205	3.7200e-003		0.0471	0.0471		0.0471	0.0471		743.5739	743.5739	0.0143	0.0136	747.9925

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					
High School	2186.94	0.0236	0.2144	0.1801	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.2867	257.2867	4.9300e-003	4.7200e-003	258.8156
Junior High School	4133.44	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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

MMHS Phase 1 Operations - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Other Non-Asphalt Surfaces	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
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		**0.0682**	**0.6197**	**0.5205**	**3.7200e-003**		**0.0471**	**0.0471**		**0.0471**	**0.0471**		**743.5739**	**743.5739**	**0.0143**	**0.0136**	**747.9925**

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					
High School	2.18694	0.0236	0.2144	0.1801	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.2867	257.2867	4.9300e-003	4.7200e-003	258.8156
Junior High School	4.13344	0.0446	0.4052	0.3404	2.4300e-003		0.0308	0.0308		0.0308	0.0308		486.2872	486.2872	9.3200e-003	8.9200e-003	489.1770
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0682**	**0.6197**	**0.5205**	**3.7200e-003**		**0.0471**	**0.0471**		**0.0471**	**0.0471**		**743.5739**	**743.5739**	**0.0143**	**0.0136**	**747.9925**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Unmitigated	4.5614	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272

MMHS Phase 1 Operations - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.3830					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1612					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0172	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Total	**4.5614**	**1.6900e-003**	**0.1866**	**1.0000e-005**		**6.6000e-004**	**6.6000e-004**		**6.6000e-004**	**6.6000e-004**		**0.4011**	**0.4011**	**1.0400e-003**		**0.4272**

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	0.3830					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.1612					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0172	1.6900e-003	0.1866	1.0000e-005		6.6000e-004	6.6000e-004		6.6000e-004	6.6000e-004		0.4011	0.4011	1.0400e-003		0.4272
Total	**4.5614**	**1.6900e-003**	**0.1866**	**1.0000e-005**		**6.6000e-004**	**6.6000e-004**		**6.6000e-004**	**6.6000e-004**		**0.4011**	**0.4011**	**1.0400e-003**		**0.4272**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Phase 1 Operations

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Junior High School	112.59	1000sqft	1.29	112,590.00	0
Parking Lot	196.80	1000sqft	4.52	196,800.00	0
Other Asphalt Surfaces	318.79	1000sqft	7.32	318,792.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2020 Sustainability Report

Land Use - school buildings are assumed to be 2 stories tall

Construction Phase -

Vehicle Trips - student capacity is not anticipated to increase

Area Coating - see assumptions file for architectural coating calculations. Based on data provided by applicant

Energy Use - Middle school land use represents the historical building energy rates for existing school buildings

Water And Wastewater - student capacity will not increase, proposed proejct will not result in additional water and wastewater use

Solid Waste - student capacity will not increase, proposed proejct will not result in additional solid waste generation

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	90305	69899
tblAreaCoating	Area_Nonresidential_Interior	270914	219899
tblAreaCoating	Area_Parking	99126	11808
tblEnergyUse	LightingElect	2.68	3.30
tblEnergyUse	LightingElect	0.35	0.35
tblEnergyUse	T24E	1.69	1.69
tblEnergyUse	T24E	1.69	2.46
tblEnergyUse	T24NG	10.71	10.71
tblEnergyUse	T24NG	10.71	12.37
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LotAcreage	1.56	0.78
tblLandUse	LotAcreage	2.58	1.29
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblSolidWaste	SolidWasteGenerationRate	88.43	0.00
tblSolidWaste	SolidWasteGenerationRate	146.37	0.00
tblVehicleTrips	ST_TR	3.98	0.00
tblVehicleTrips	SU_TR	1.71	0.00
tblVehicleTrips	WD_TR	14.07	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	2,258,579.61	0.00
tblWater	IndoorWaterUseRate	2,321,718.89	0.00
tblWater	OutdoorWaterUseRate	5,807,776.15	0.00
tblWater	OutdoorWaterUseRate	5,970,134.29	0.00

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Energy	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	420.6519	420.6519	0.0216	4.5900e-003	422.5603
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.8439**	**0.1133**	**0.1183**	**6.8000e-004**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**420.6974**	**420.6974**	**0.0217**	**4.5900e-003**	**422.6087**

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	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Energy	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	420.6519	420.6519	0.0216	4.5900e-003	422.5603
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.8439**	**0.1133**	**0.1183**	**6.8000e-004**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**420.6974**	**420.6974**	**0.0217**	**4.5900e-003**	**422.6087**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Junior High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Non-Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Parking Lot	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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	297.5449	297.5449	0.0193	2.3300e-003	298.7217
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	297.5449	297.5449	0.0193	2.3300e-003	298.7217
NaturalGas Mitigated	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	123.1070	123.1070	2.3600e-003	2.2600e-003	123.8386
NaturalGas Unmitigated	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	123.1070	123.1070	2.3600e-003	2.2600e-003	123.8386

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	798232	4.3000e-003	0.0391	0.0329	2.3000e-004		2.9700e-003	2.9700e-003		2.9700e-003	2.9700e-003	0.0000	42.5967	42.5967	8.2000e-004	7.8000e-004	42.8498
Junior High School	1.50871e+006	8.1400e-003	0.0740	0.0621	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.5103	80.5103	1.5400e-003	1.4800e-003	80.9887
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0124**	**0.1131**	**0.0950**	**6.7000e-004**		**8.5900e-003**	**8.5900e-003**		**8.5900e-003**	**8.5900e-003**	**0.0000**	**123.1070**	**123.1070**	**2.3600e-003**	**2.2600e-003**	**123.8386**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	798232	4.3000e-003	0.0391	0.0329	2.3000e-004		2.9700e-003	2.9700e-003		2.9700e-003	2.9700e-003	0.0000	42.5967	42.5967	8.2000e-004	7.8000e-004	42.8498
Junior High School	1.50871e+006	8.1400e-003	0.0740	0.0621	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.5103	80.5103	1.5400e-003	1.4800e-003	80.9887
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0124**	**0.1131**	**0.0950**	**6.7000e-004**		**8.5900e-003**	**8.5900e-003**		**8.5900e-003**	**8.5900e-003**	**0.0000**	**123.1070**	**123.1070**	**2.3600e-003**	**2.2600e-003**	**123.8386**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	399849	92.4943	5.9900e-003	7.3000e-004	92.8602
Junior High School	818529	189.3447	0.0123	1.4900e-003	190.0936
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	67896	15.7059	1.0200e-003	1.2000e-004	15.7680
Total		**297.5449**	**0.0193**	**2.3400e-003**	**298.7217**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	399849	92.4943	5.9900e-003	7.3000e-004	92.8602
Junior High School	818529	189.3447	0.0123	1.4900e-003	190.0936
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	67896	15.7059	1.0200e-003	1.2000e-004	15.7680
Total		**297.5449**	**0.0193**	**2.3400e-003**	**298.7217**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Unmitigated	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484

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	0.0699					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7594					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1500e-003	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Total	**0.8315**	**2.1000e-004**	**0.0233**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0455**	**0.0455**	**1.2000e-004**	**0.0000**	**0.0484**

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	0.0699					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7594					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1500e-003	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Total	**0.8315**	**2.1000e-004**	**0.0233**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0455**	**0.0455**	**1.2000e-004**	**0.0000**	**0.0484**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Phase 1 Operations

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	68.02	1000sqft	0.78	68,019.00	0
Junior High School	112.59	1000sqft	1.29	112,590.00	0
Parking Lot	196.80	1000sqft	4.52	196,800.00	0
Other Asphalt Surfaces	318.79	1000sqft	7.32	318,792.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2020 Sustainability Report

Land Use - school buildings are assumed to be 2 stories tall

Construction Phase -

Vehicle Trips - student capacity is not anticipated to increase

Area Coating - see assumptions file for architectural coating calculations. Based on data provided by applicant

Energy Use - Middle school land use represents the historical building energy rates for existing school buildings

Water And Wastewater - student capacity will not increase, proposed proejct will not result in additional water and wastewater use

Solid Waste - student capacity will not increase, proposed proejct will not result in additional solid waste generation

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	90305	69899
tblAreaCoating	Area_Nonresidential_Interior	270914	219899
tblAreaCoating	Area_Parking	99126	11808
tblEnergyUse	LightingElect	2.68	3.30
tblEnergyUse	LightingElect	0.35	0.35
tblEnergyUse	T24E	1.69	1.69
tblEnergyUse	T24E	1.69	2.46
tblEnergyUse	T24NG	10.71	10.71
tblEnergyUse	T24NG	10.71	12.37
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LotAcreage	1.56	0.78
tblLandUse	LotAcreage	2.58	1.29
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.98
tblSolidWaste	SolidWasteGenerationRate	88.43	0.00
tblSolidWaste	SolidWasteGenerationRate	146.37	0.00
tblVehicleTrips	ST_TR	3.98	0.00
tblVehicleTrips	SU_TR	1.71	0.00
tblVehicleTrips	WD_TR	14.07	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	2,258,579.61	0.00
tblWater	IndoorWaterUseRate	2,321,718.89	0.00
tblWater	OutdoorWaterUseRate	5,807,776.15	0.00
tblWater	OutdoorWaterUseRate	5,970,134.29	0.00

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Energy	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	420.6519	420.6519	0.0216	4.5900e-003	422.5603
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.8439**	**0.1133**	**0.1183**	**6.8000e-004**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**420.6974**	**420.6974**	**0.0217**	**4.5900e-003**	**422.6087**

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	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Energy	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	420.6519	420.6519	0.0216	4.5900e-003	422.5603
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.8439**	**0.1133**	**0.1183**	**6.8000e-004**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**8.6700e-003**	**8.6700e-003**	**0.0000**	**420.6974**	**420.6974**	**0.0217**	**4.5900e-003**	**422.6087**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Junior High School	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Other Non-Asphalt Surfaces	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335
Parking Lot	0.540171	0.064547	0.189075	0.126673	0.023412	0.006384	0.010926	0.008089	0.000929	0.000597	0.025155	0.000706	0.003335

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	297.5449	297.5449	0.0193	2.3300e-003	298.7217
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	297.5449	297.5449	0.0193	2.3300e-003	298.7217
NaturalGas Mitigated	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	123.1070	123.1070	2.3600e-003	2.2600e-003	123.8386
NaturalGas Unmitigated	0.0124	0.1131	0.0950	6.8000e-004		8.5900e-003	8.5900e-003		8.5900e-003	8.5900e-003	0.0000	123.1070	123.1070	2.3600e-003	2.2600e-003	123.8386

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	798232	4.3000e-003	0.0391	0.0329	2.3000e-004		2.9700e-003	2.9700e-003		2.9700e-003	2.9700e-003	0.0000	42.5967	42.5967	8.2000e-004	7.8000e-004	42.8498
Junior High School	1.50871e+006	8.1400e-003	0.0740	0.0621	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.5103	80.5103	1.5400e-003	1.4800e-003	80.9887
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0124**	**0.1131**	**0.0950**	**6.7000e-004**		**8.5900e-003**	**8.5900e-003**		**8.5900e-003**	**8.5900e-003**	**0.0000**	**123.1070**	**123.1070**	**2.3600e-003**	**2.2600e-003**	**123.8386**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	798232	4.3000e-003	0.0391	0.0329	2.3000e-004		2.9700e-003	2.9700e-003		2.9700e-003	2.9700e-003	0.0000	42.5967	42.5967	8.2000e-004	7.8000e-004	42.8498
Junior High School	1.50871e+006	8.1400e-003	0.0740	0.0621	4.4000e-004		5.6200e-003	5.6200e-003		5.6200e-003	5.6200e-003	0.0000	80.5103	80.5103	1.5400e-003	1.4800e-003	80.9887
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0124**	**0.1131**	**0.0950**	**6.7000e-004**		**8.5900e-003**	**8.5900e-003**		**8.5900e-003**	**8.5900e-003**	**0.0000**	**123.1070**	**123.1070**	**2.3600e-003**	**2.2600e-003**	**123.8386**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	399849	92.4943	5.9900e-003	7.3000e-004	92.8602
Junior High School	818529	189.3447	0.0123	1.4900e-003	190.0936
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	67896	15.7059	1.0200e-003	1.2000e-004	15.7680
Total		**297.5449**	**0.0193**	**2.3400e-003**	**298.7217**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	399849	92.4943	5.9900e-003	7.3000e-004	92.8602
Junior High School	818529	189.3447	0.0123	1.4900e-003	190.0936
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	67896	15.7059	1.0200e-003	1.2000e-004	15.7680
Total		**297.5449**	**0.0193**	**2.3400e-003**	**298.7217**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Unmitigated	0.8315	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484

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	0.0699					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7594					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1500e-003	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Total	**0.8315**	**2.1000e-004**	**0.0233**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0455**	**0.0455**	**1.2000e-004**	**0.0000**	**0.0484**

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	0.0699					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7594					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1500e-003	2.1000e-004	0.0233	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0455	0.0455	1.2000e-004	0.0000	0.0484
Total	**0.8315**	**2.1000e-004**	**0.0233**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0455**	**0.0455**	**1.2000e-004**	**0.0000**	**0.0484**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

MMHS Phase 1 Operations - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Phase 2-4B Operational Run

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	162.12	1000sqft	1.99	162,119.00	0
Junior High School	71.21	1000sqft	0.82	71,206.00	0
Other Asphalt Surfaces	216.18	1000sqft	4.96	216,183.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0
Parking Lot	267.60	1000sqft	6.14	267,601.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.44	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2020 Sustainability Report

Land Use - assumes that school buildings are 2 stories tall based on info from District

Construction Phase -

Vehicle Trips - student capacity is not anticipated to increase, the proposed project would not result in additional trips

Area Coating - accounts for parking area only. Assumes that P1 buildings will have 50% of interior painted and 40% of exterior painted based on info from District.

Energy Use - adjusted CalEEMod Energy use reflects blended CalEEMod default energy rates for existing building to remain and new uses

Water And Wastewater - Because student capacity is not anticipated to increase, the proposed project would not result in additional water or wastewater use.

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Solid Waste - student capacity is not anticipated to increase, the proposed project would not result in additional solid waste generation.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	116663	96257
tblAreaCoating	Area_Nonresidential_Interior	349988	298973
tblAreaCoating	Area_Parking	97217	16056
tblEnergyUse	LightingElect	2.68	3.11
tblEnergyUse	T24E	1.69	2.22
tblEnergyUse	T24NG	10.71	11.85
tblLandUse	LandUseSquareFeet	162,120.00	162,119.00
tblLandUse	LandUseSquareFeet	71,210.00	71,206.00
tblLandUse	LandUseSquareFeet	216,180.00	216,183.00
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LandUseSquareFeet	267,600.00	267,601.00
tblLandUse	LotAcreage	3.72	1.99
tblLandUse	LotAcreage	1.63	0.82
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.44
tblSolidWaste	SolidWasteGenerationRate	210.76	0.00
tblSolidWaste	SolidWasteGenerationRate	92.57	0.00
tblVehicleTrips	ST_TR	3.98	0.00
tblVehicleTrips	SU_TR	1.71	0.00
tblVehicleTrips	WD_TR	14.07	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	5,383,136.24	0.00
tblWater	IndoorWaterUseRate	1,468,421.73	0.00
tblWater	OutdoorWaterUseRate	13,842,350.32	0.00
tblWater	OutdoorWaterUseRate	3,775,941.58	0.00

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Energy	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789
Mobile	0.0000	0.0000	0.0000	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	**5.8167**	**0.7593**	**0.8251**	**4.5600e-003**	**0.0000**	**0.0582**	**0.0582**	**0.0000**	**0.0582**	**0.0582**		**909.4823**	**909.4823**	**0.0185**	**0.0167**	**914.9109**

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	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Energy	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789
Mobile	0.0000	0.0000	0.0000	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	**5.8167**	**0.7593**	**0.8251**	**4.5600e-003**	**0.0000**	**0.0582**	**0.0582**	**0.0000**	**0.0582**	**0.0582**		**909.4823**	**909.4823**	**0.0185**	**0.0167**	**914.9109**

	ROG	NOx	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**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Junior High School	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Other Asphalt Surfaces	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Other Non-Asphalt Surfaces	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789
NaturalGas Unmitigated	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789

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					
High School	5214.46	0.0562	0.5112	0.4294	3.0700e-003		0.0389	0.0389		0.0389	0.0389		613.4656	613.4656	0.0118	0.0113	617.1111
Junior High School	2512.69	0.0271	0.2463	0.2069	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.6111	295.6111	5.6700e-003	5.4200e-003	297.3677
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0833**	**0.7576**	**0.6364**	**4.5500e-003**		**0.0576**	**0.0576**		**0.0576**	**0.0576**		**909.0767**	**909.0767**	**0.0174**	**0.0167**	**914.4789**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
High School	5.21446	0.0562	0.5112	0.4294	3.0700e-003		0.0389	0.0389		0.0389	0.0389		613.4656	613.4656	0.0118	0.0113	617.1111
Junior High School	2.51269	0.0271	0.2463	0.2069	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.6111	295.6111	5.6700e-003	5.4200e-003	297.3677
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0833**	**0.7576**	**0.6364**	**4.5500e-003**		**0.0576**	**0.0576**		**0.0576**	**0.0576**		**909.0767**	**909.0767**	**0.0174**	**0.0167**	**914.4789**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Unmitigated	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321

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	0.5223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.1937					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0174	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Total	**5.7334**	**1.7100e-003**	**0.1888**	**1.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**		**0.4057**	**0.4057**	**1.0600e-003**		**0.4321**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.5223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.1937					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0174	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Total	**5.7334**	**1.7100e-003**	**0.1888**	**1.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**		**0.4057**	**0.4057**	**1.0600e-003**		**0.4321**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Phase 2-4B Operational Run

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	162.12	1000sqft	1.99	162,119.00	0
Junior High School	71.21	1000sqft	0.82	71,206.00	0
Other Asphalt Surfaces	216.18	1000sqft	4.96	216,183.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0
Parking Lot	267.60	1000sqft	6.14	267,601.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.44	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2020 Sustainability Report

Land Use - assumes that school buildings are 2 stories tall based on info from District

Construction Phase -

Vehicle Trips - student capacity is not anticipated to increase, the proposed project would not result in additional trips

Area Coating - accounts for parking area only. Assumes that P1 buildings will have 50% of interior painted and 40% of exterior painted based on info from District.

Energy Use - adjusted CalEEMod Energy use reflects blended CalEEMod default energy rates for existing building to remain and new uses

Water And Wastewater - Because student capacity is not anticipated to increase, the proposed project would not result in additional water or wastewater use.

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Solid Waste - student capacity is not anticipated to increase, the proposed project would not result in additional solid waste generation.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	116663	96257
tblAreaCoating	Area_Nonresidential_Interior	349988	298973
tblAreaCoating	Area_Parking	97217	16056
tblEnergyUse	LightingElect	2.68	3.11
tblEnergyUse	T24E	1.69	2.22
tblEnergyUse	T24NG	10.71	11.85
tblLandUse	LandUseSquareFeet	162,120.00	162,119.00
tblLandUse	LandUseSquareFeet	71,210.00	71,206.00
tblLandUse	LandUseSquareFeet	216,180.00	216,183.00
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LandUseSquareFeet	267,600.00	267,601.00
tblLandUse	LotAcreage	3.72	1.99
tblLandUse	LotAcreage	1.63	0.82
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.44
tblSolidWaste	SolidWasteGenerationRate	210.76	0.00
tblSolidWaste	SolidWasteGenerationRate	92.57	0.00
tblVehicleTrips	ST_TR	3.98	0.00
tblVehicleTrips	SU_TR	1.71	0.00
tblVehicleTrips	WD_TR	14.07	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	5,383,136.24	0.00
tblWater	IndoorWaterUseRate	1,468,421.73	0.00
tblWater	OutdoorWaterUseRate	13,842,350.32	0.00
tblWater	OutdoorWaterUseRate	3,775,941.58	0.00

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Energy	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789
Mobile	0.0000	0.0000	0.0000	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	**5.8167**	**0.7593**	**0.8251**	**4.5600e-003**	**0.0000**	**0.0582**	**0.0582**	**0.0000**	**0.0582**	**0.0582**		**909.4823**	**909.4823**	**0.0185**	**0.0167**	**914.9109**

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	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Energy	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789
Mobile	0.0000	0.0000	0.0000	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	**5.8167**	**0.7593**	**0.8251**	**4.5600e-003**	**0.0000**	**0.0582**	**0.0582**	**0.0000**	**0.0582**	**0.0582**		**909.4823**	**909.4823**	**0.0185**	**0.0167**	**914.9109**

	ROG	NOx	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**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Junior High School	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Other Asphalt Surfaces	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Other Non-Asphalt Surfaces	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789
NaturalGas Unmitigated	0.0833	0.7576	0.6364	4.5500e-003		0.0576	0.0576		0.0576	0.0576		909.0767	909.0767	0.0174	0.0167	914.4789

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					
High School	5214.46	0.0562	0.5112	0.4294	3.0700e-003		0.0389	0.0389		0.0389	0.0389		613.4656	613.4656	0.0118	0.0113	617.1111
Junior High School	2512.69	0.0271	0.2463	0.2069	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.6111	295.6111	5.6700e-003	5.4200e-003	297.3677
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0833**	**0.7576**	**0.6364**	**4.5500e-003**		**0.0576**	**0.0576**		**0.0576**	**0.0576**		**909.0767**	**909.0767**	**0.0174**	**0.0167**	**914.4789**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
High School	5.21446	0.0562	0.5112	0.4294	3.0700e-003		0.0389	0.0389		0.0389	0.0389		613.4656	613.4656	0.0118	0.0113	617.1111
Junior High School	2.51269	0.0271	0.2463	0.2069	1.4800e-003		0.0187	0.0187		0.0187	0.0187		295.6111	295.6111	5.6700e-003	5.4200e-003	297.3677
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0833**	**0.7576**	**0.6364**	**4.5500e-003**		**0.0576**	**0.0576**		**0.0576**	**0.0576**		**909.0767**	**909.0767**	**0.0174**	**0.0167**	**914.4789**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Unmitigated	5.7334	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321

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	0.5223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.1937					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0174	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Total	**5.7334**	**1.7100e-003**	**0.1888**	**1.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**		**0.4057**	**0.4057**	**1.0600e-003**		**0.4321**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.5223					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.1937					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0174	1.7100e-003	0.1888	1.0000e-005		6.7000e-004	6.7000e-004		6.7000e-004	6.7000e-004		0.4057	0.4057	1.0600e-003		0.4321
Total	**5.7334**	**1.7100e-003**	**0.1888**	**1.0000e-005**		**6.7000e-004**	**6.7000e-004**		**6.7000e-004**	**6.7000e-004**		**0.4057**	**0.4057**	**1.0600e-003**		**0.4321**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

MMHS Phase 2-4B Operational Run

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	162.12	1000sqft	1.99	162,119.00	0
Junior High School	71.21	1000sqft	0.82	71,206.00	0
Other Asphalt Surfaces	216.18	1000sqft	4.96	216,183.00	0
Other Non-Asphalt Surfaces	1,136.50	1000sqft	26.09	1,136,504.00	0
Parking Lot	267.60	1000sqft	6.14	267,601.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2026
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	509.44	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - SCE 2020 Sustainability Report

Land Use - assumes that school buildings are 2 stories tall based on info from District

Construction Phase -

Vehicle Trips - student capacity is not anticipated to increase, the proposed project would not result in additional trips

Area Coating - accounts for parking area only. Assumes that P1 buildings will have 50% of interior painted and 40% of exterior painted based on info from District.

Energy Use - adjusted CalEEMod Energy use reflects blended CalEEMod default energy rates for existing building to remain and new uses

Water And Wastewater - Because student capacity is not anticipated to increase, the proposed project would not result in additional water or wastewater use.

Solid Waste - student capacity is not anticipated to increase, the proposed project would not result in additional solid waste generation.

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	116663	96257
tblAreaCoating	Area_Nonresidential_Interior	349988	298973
tblAreaCoating	Area_Parking	97217	16056
tblEnergyUse	LightingElect	2.68	3.11
tblEnergyUse	T24E	1.69	2.22
tblEnergyUse	T24NG	10.71	11.85
tblLandUse	LandUseSquareFeet	162,120.00	162,119.00
tblLandUse	LandUseSquareFeet	71,210.00	71,206.00
tblLandUse	LandUseSquareFeet	216,180.00	216,183.00
tblLandUse	LandUseSquareFeet	1,136,500.00	1,136,504.00
tblLandUse	LandUseSquareFeet	267,600.00	267,601.00
tblLandUse	LotAcreage	3.72	1.99
tblLandUse	LotAcreage	1.63	0.82
tblProjectCharacteristics	CO2IntensityFactor	390.98	509.44
tblSolidWaste	SolidWasteGenerationRate	210.76	0.00
tblSolidWaste	SolidWasteGenerationRate	92.57	0.00
tblVehicleTrips	ST_TR	3.98	0.00
tblVehicleTrips	SU_TR	1.71	0.00
tblVehicleTrips	WD_TR	14.07	0.00
tblVehicleTrips	WD_TR	20.17	0.00
tblWater	IndoorWaterUseRate	5,383,136.24	0.00
tblWater	IndoorWaterUseRate	1,468,421.73	0.00
tblWater	OutdoorWaterUseRate	13,842,350.32	0.00
tblWater	OutdoorWaterUseRate	3,775,941.58	0.00

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0454	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0460	0.0460	1.2000e-004	0.0000	0.0490
Energy	0.0152	0.1383	0.1161	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	504.9745	504.9745	0.0259	5.5400e-003	507.2723
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0606**	**0.1385**	**0.1397**	**8.3000e-004**	**0.0000**	**0.0106**	**0.0106**	**0.0000**	**0.0106**	**0.0106**	**0.0000**	**505.0205**	**505.0205**	**0.0260**	**5.5400e-003**	**507.3213**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.0454	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0460	0.0460	1.2000e-004	0.0000	0.0490
Energy	0.0152	0.1383	0.1161	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	504.9745	504.9745	0.0259	5.5400e-003	507.2723
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0606**	**0.1385**	**0.1397**	**8.3000e-004**	**0.0000**	**0.0106**	**0.0106**	**0.0000**	**0.0106**	**0.0106**	**0.0000**	**505.0205**	**505.0205**	**0.0260**	**5.5400e-003**	**507.3213**

	ROG	NOx	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**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High School	0.00	0.00	0.00		
Junior High School	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
High School	16.60	8.40	6.90	77.80	17.20	5.00	75	19	6
Junior High School	16.60	8.40	6.90	72.80	22.20	5.00	63	25	12
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Junior High School	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Other Asphalt Surfaces	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Other Non-Asphalt Surfaces	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318
Parking Lot	0.537891	0.065289	0.189998	0.126515	0.023567	0.006518	0.011114	0.008084	0.000933	0.000591	0.025474	0.000708	0.003318

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	354.4667	354.4667	0.0230	2.7800e-003	355.8701
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	354.4667	354.4667	0.0230	2.7800e-003	355.8701
NaturalGas Mitigated	0.0152	0.1383	0.1161	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	150.5078	150.5078	2.8800e-003	2.7600e-003	151.4022
NaturalGas Unmitigated	0.0152	0.1383	0.1161	8.3000e-004		0.0105	0.0105		0.0105	0.0105	0.0000	150.5078	150.5078	2.8800e-003	2.7600e-003	151.4022

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	1.90328e+006	0.0103	0.0933	0.0784	5.6000e-004		7.0900e-003	7.0900e-003		7.0900e-003	7.0900e-003	0.0000	101.5661	101.5661	1.9500e-003	1.8600e-003	102.1697
Junior High School	917133	4.9500e-003	0.0450	0.0378	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9417	48.9417	9.4000e-004	9.0000e-004	49.2326
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0152**	**0.1383**	**0.1161**	**8.3000e-004**		**0.0105**	**0.0105**		**0.0105**	**0.0105**	**0.0000**	**150.5078**	**150.5078**	**2.8900e-003**	**2.7600e-003**	**151.4022**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High School	1.90328e+006	0.0103	0.0933	0.0784	5.6000e-004		7.0900e-003	7.0900e-003		7.0900e-003	7.0900e-003	0.0000	101.5661	101.5661	1.9500e-003	1.8600e-003	102.1697
Junior High School	917133	4.9500e-003	0.0450	0.0378	2.7000e-004		3.4200e-003	3.4200e-003		3.4200e-003	3.4200e-003	0.0000	48.9417	48.9417	9.4000e-004	9.0000e-004	49.2326
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
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		**0.0152**	**0.1383**	**0.1161**	**8.3000e-004**		**0.0105**	**0.0105**		**0.0105**	**0.0105**	**0.0000**	**150.5078**	**150.5078**	**2.8900e-003**	**2.7600e-003**	**151.4022**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	953260	220.2774	0.0143	1.7300e-003	221.1496
Junior High School	487049	112.5464	7.2900e-003	8.8000e-004	112.9920
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	93660.3	21.6429	1.4000e-003	1.7000e-004	21.7285
Total		**354.4667**	**0.0230**	**2.7800e-003**	**355.8701**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High School	953260	220.2774	0.0143	1.7300e-003	221.1496
Junior High School	487049	112.5464	7.2900e-003	8.8000e-004	112.9920
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	93660.3	21.6429	1.4000e-003	1.7000e-004	21.7285
Total		**354.4667**	**0.0230**	**2.7800e-003**	**355.8701**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0454	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0460	0.0460	1.2000e-004	0.0000	0.0490
Unmitigated	1.0454	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0460	0.0460	1.2000e-004	0.0000	0.0490

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	0.0953					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9479					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1700e-003	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0460	0.0460	1.2000e-004	0.0000	0.0490
Total	**1.0454**	**2.1000e-004**	**0.0236**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0460**	**0.0460**	**1.2000e-004**	**0.0000**	**0.0490**

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	0.0953					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9479					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1700e-003	2.1000e-004	0.0236	0.0000		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	0.0460	0.0460	1.2000e-004	0.0000	0.0490
Total	**1.0454**	**2.1000e-004**	**0.0236**	**0.0000**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0460**	**0.0460**	**1.2000e-004**	**0.0000**	**0.0490**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Junior High School	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

MMHS Phase 2-4B Operational Run - Los Angeles-South Coast County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High School	0	0.0000	0.0000	0.0000	0.0000
Junior High School	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

LST Worksheets

Construction Localized Significance Thresholds: Building and Asphalt Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.50	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**562**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building and Asphalt Demolition and Soil Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.50	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**562**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building and Asphalt Demolition, Debris Haul, and Site Preparation

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.00	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	2	1
NOx	**103**	Graders	0.5	0.0625			0
CO	**562**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading and Soil Haul (Import/Export)

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	2.50	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**159**	Graders	0.5	0.0625	8	1	0.5
CO	**944**	Dozers	0.5	0.0625	8	1	0.5
PM10	**7.16**	Scrapers	1	0.125	8	1	1
PM2.5	**4.33**					**Acres**	2.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	147	143	156	186	262
	3	172	166	179	207	279
		159	155	168	197	270
CO	2	827	1213	1695	2961	8446
	3	1062	1470	2051	3435	9120
		944	1342	1873	3198	8783
PM10	2	6	19	34	64	154
	3	8	26	41	71	161
		7	23	38	67	157
PM2.5	2	4	5	10	21	82
	3	5	6	11	24	86
		4	6	11	22	84

Northwest Coastal LA County

2.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	159	155	168	197	270
CO	944	1342	1873	3198	8783
PM10	7	23	38	67	157
PM2.5	4	6	11	22	84

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	2	2	3
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Utilities Trenching

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.50	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**562**	Dozers	0.5	0.0625			0
PM10	**4.00**	Scrapers	1	0.125			0
PM2.5	**3.00**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Utilities Trenching and Building Constrution

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.81	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**	
Distance (meters)	25	Tractors	0.5	0.0625	8	1	0.5	
NOx	**139**	Tractors	0.5	0.0625	7	3	1.3125	
CO	**777**	Graders	0.5	0.0625			0	
PM10	**5.62**	Dozers	0.5	0.0625			0	
PM2.5	**3.81**	Scrapers	1	0.125			0	
						Acres	1.81	

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	2	147	143	156	186	262
		139	136	149	180	259
CO	1	562	833	1233	2367	7724
	2	827	1213	1695	2961	8446
		777	1142	1608	2850	8311
PM10	1	4	12	27	57	146
	2	6	19	34	64	154
		6	18	33	63	153
PM2.5	1	3	4	8	18	77
	2	4	5	10	21	82
		4	5	10	20	81

Northwest Coastal LA County

1.81 Acres

	25	**50**	**100**	**200**	**500**
NOx	139	136	149	180	259
CO	777	1142	1608	2850	8311
PM10	6	18	33	63	153
PM2.5	4	5	10	20	81

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Constrution

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.31	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**117**	Tractors	0.5	0.0625	7	3	1.3125
CO	**645**	Graders	0.5	0.0625			0
PM10	**4.62**	Dozers	0.5	0.0625			0
PM2.5	**3.31**	Scrapers	1	0.125			0
						Acres	1.31

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	2	147	143	156	186	262
		117	116	132	165	250
CO	1	562	833	1233	2367	7724
	2	827	1213	1695	2961	8446
		645	952	1377	2553	7950
PM10	1	4	12	27	57	146
	2	6	19	34	64	154
		5	14	29	59	149
PM2.5	1	3	4	8	18	77
	2	4	5	10	21	82
		3	4	9	19	79

Northwest Coastal LA County

1.31 Acres

	25	**50**	**100**	**200**	**500**
NOx	117	116	132	165	250
CO	645	952	1377	2553	7950
PM10	5	14	29	59	149
PM2.5	3	4	9	19	79

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Constrution and Fine Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.81	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**	
Distance (meters)	25	Tractors	0.5	0.0625			0	
NOx	**139**	Tractors	0.5	0.0625	7	3	1.3125	
CO	**777**	Graders	0.5	0.0625	8	1	0.5	
PM10	**5.62**	Dozers	0.5	0.0625			0	
PM2.5	**3.81**	Scrapers	1	0.125			0	
						Acres	1.81	

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	2	147	143	156	186	262
		139	136	149	180	259
CO	1	562	833	1233	2367	7724
	2	827	1213	1695	2961	8446
		777	1142	1608	2850	8311
PM10	1	4	12	27	57	146
	2	6	19	34	64	154
		6	18	33	63	153
PM2.5	1	3	4	8	18	77
	2	4	5	10	21	82
		4	5	10	20	81

Northwest Coastal LA County

1.81 Acres

	25	**50**	**100**	**200**	**500**
NOx	139	136	149	180	259
CO	777	1142	1608	2850	8311
PM10	6	18	33	63	153
PM2.5	4	5	10	20	81

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Architectural Coating

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.00	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**562**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625			0
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Paving

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.00	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**562**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625			0
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Finishing/Landscaping

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.00	25	82	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**562**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625			0
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building and Asphalt Demolition

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.50	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**671**	Dozers	0.5	0.0625			0
PM10	**7.22**	Scrapers	1	0.125			0
PM2.5	**3.40**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building and Asphalt Demolition and Soil Haul

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.50	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**671**	Dozers	0.5	0.0625			0
PM10	**7.22**	Scrapers	1	0.125			0
PM2.5	**3.40**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building and Asphalt Demolition, Debris Haul, and Site Preparation

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.00	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625	8	2	1
NOx	**103**	Graders	0.5	0.0625			0
CO	**671**	Dozers	0.5	0.0625			0
PM10	**7.22**	Scrapers	1	0.125			0
PM2.5	**3.40**					**Acres**	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading and Soil Haul (Import/Export)

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	2.50	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625	8	1	0.5
NOx	**157**	Graders	0.5	0.0625	8	1	0.5
CO	**1,104**	Dozers	0.5	0.0625	8	1	0.5
PM10	**13.33**	Scrapers	1	0.125	8	1	1
PM2.5	**4.80**					**Acres**	2.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	147	143	156	186	262
	3	172	166	179	207	279
		159	155	168	197	270
CO	2	827	1213	1695	2961	8446
	3	1062	1470	2051	3435	9120
		944	1342	1873	3198	8783
PM10	2	6	19	34	64	154
	3	8	26	41	71	161
		7	23	38	67	157
PM2.5	2	4	5	10	21	82
	3	5	6	11	24	86
		4	6	11	22	84

Northwest Coastal LA County

2.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	159	155	168	197	270
CO	944	1342	1873	3198	8783
PM10	7	23	38	67	157
PM2.5	4	6	11	22	84

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	2	2	3
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Utilities Trenching

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.50	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625	8	1	0.5
NOx	**103**	Graders	0.5	0.0625			0
CO	**671**	Dozers	0.5	0.0625			0
PM10	**7.22**	Scrapers	1	0.125			0
PM2.5	**3.40**					**Acres**	0.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Utilities Trenching and Building Constrution

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.81	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625	8	1	0.5
NOx	**138**	Tractors	0.5	0.0625	7	3	1.3125
CO	**924**	Graders	0.5	0.0625			0
PM10	**10.48**	Dozers	0.5	0.0625			0
PM2.5	**4.21**	Scrapers	1	0.125			0
						Acres	1.81

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	2	147	143	156	186	262
		139	136	149	180	259
CO	1	562	833	1233	2367	7724
	2	827	1213	1695	2961	8446
		777	1142	1608	2850	8311
PM10	1	4	12	27	57	146
	2	6	19	34	64	154
		6	18	33	63	153
PM2.5	1	3	4	8	18	77
	2	4	5	10	21	82
		4	5	10	20	81

Northwest Coastal LA County

1.81 Acres

	25	**50**	**100**	**200**	**500**
NOx	139	136	149	180	259
CO	777	1142	1608	2850	8311
PM10	6	18	33	63	153
PM2.5	4	5	10	20	81

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	2
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Constrution

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.31	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625			0
NOx	**117**	Tractors	0.5	0.0625	7	3	1.3125
CO	**768**	Graders	0.5	0.0625			0
PM10	**8.47**	Dozers	0.5	0.0625			0
PM2.5	**3.71**	Scrapers	1	0.125			0
						Acres	1.31

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	2	147	143	156	186	262
		117	116	132	165	250
CO	1	562	833	1233	2367	7724
	2	827	1213	1695	2961	8446
		645	952	1377	2553	7950
PM10	1	4	12	27	57	146
	2	6	19	34	64	154
		5	14	29	59	149
PM2.5	1	3	4	8	18	77
	2	4	5	10	21	82
		3	4	9	19	79

Northwest Coastal LA County

1.31 Acres

	25	**50**	**100**	**200**	**500**
NOx	117	116	132	165	250
CO	645	952	1377	2553	7950
PM10	5	14	29	59	149
PM2.5	3	4	9	19	79

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	2
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Constrution and Fine Grading

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	1.81	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**	
Distance (meters)	35	Tractors	0.5	0.0625			0	
NOx	**138**	Tractors	0.5	0.0625	7	3	1.3125	
CO	**924**	Graders	0.5	0.0625	8	1	0.5	
PM10	**10.48**	Dozers	0.5	0.0625			0	
PM2.5	**4.21**	Scrapers	1	0.125			0	
						Acres	1.81	

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	2	147	143	156	186	262
		139	136	149	180	259
CO	1	562	833	1233	2367	7724
	2	827	1213	1695	2961	8446
		777	1142	1608	2850	8311
PM10	1	4	12	27	57	146
	2	6	19	34	64	154
		6	18	33	63	153
PM2.5	1	3	4	8	18	77
	2	4	5	10	21	82
		4	5	10	20	81

Northwest Coastal LA County

1.81 Acres

	25	**50**	**100**	**200**	**500**
NOx	139	136	149	180	259
CO	777	1142	1608	2850	8311
PM10	6	18	33	63	153
PM2.5	4	5	10	20	81

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	2
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Architectural Coating

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.00	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**671**	Graders	0.5	0.0625			0
PM10	**7.22**	Dozers	0.5	0.0625			0
PM2.5	**3.40**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Paving

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.00	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**671**	Graders	0.5	0.0625			0
PM10	**7.22**	Dozers	0.5	0.0625			0
PM2.5	**3.40**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Finishing/Landscaping

SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Project site Acreage Disturbed
2	0.00	35	115	5.72

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	35	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**671**	Graders	0.5	0.0625			0
PM10	**7.22**	Dozers	0.5	0.0625			0
PM2.5	**3.40**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
50			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building and Asphalt Demolition

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
2	1.00	25	82	25	82	7.05

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**562**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625	8	2	1
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	1.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

1.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Rough Grading and Soil Haul

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
2	2.50	25	82	25	82	7.05

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	8	3	1.5
NOx	**159**	Tractors	0.5	0.0625			0
CO	**944**	Graders	0.5	0.0625	8	1	0.5
PM10	**7.16**	Dozers	0.5	0.0625	8	1	0.5
PM2.5	**4.33**	Scrapers	1	0.125			0
						Acres	2.50

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	2	147	143	156	186	262
	3	172	166	179	207	279
		159	155	168	197	270
CO	2	827	1213	1695	2961	8446
	3	1062	1470	2051	3435	9120
		944	1342	1873	3198	8783
PM10	2	6	19	34	64	154
	3	8	26	41	71	161
		7	23	38	67	157
PM2.5	2	4	5	10	21	82
	3	5	6	11	24	86
		4	6	11	22	84

Northwest Coastal LA County

2.50 Acres

	25	**50**	**100**	**200**	**500**
NOx	159	155	168	197	270
CO	944	1342	1873	3198	8783
PM10	7	23	38	67	157
PM2.5	4	6	11	22	84

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	2	2	3
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Building Construction

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
2	1.31	25	82	25	82	7.05

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625	7	3	1.3125
NOx	**117**	Tractors	0.5	0.0625			0
CO	**645**	Graders	0.5	0.0625			0
PM10	**4.62**	Dozers	0.5	0.0625			0
PM2.5	**3.31**	Scrapers	1	0.125			0
						Acres	1.31

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	2	147	143	156	186	262
		117	116	132	165	250
CO	1	562	833	1233	2367	7724
	2	827	1213	1695	2961	8446
		645	952	1377	2553	7950
PM10	1	4	12	27	57	146
	2	6	19	34	64	154
		5	14	29	59	149
PM2.5	1	3	4	8	18	77
	2	4	5	10	21	82
		3	4	9	19	79

Northwest Coastal LA County

1.31 Acres

	25	**50**	**100**	**200**	**500**
NOx	117	116	132	165	250
CO	645	952	1377	2553	7950
PM10	5	14	29	59	149
PM2.5	3	4	9	19	79

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	2
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Architectural Coating

SRA No.	Acres	NOx & CO: Source Receptor Distance (meters)	NOx & CO: Source Receptor Distance (Feet)	PM10 & PM2.5: Source Receptor Distance (meters)	PM10 & PM2.5: Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
2	0.00	25	82	25	82	7.05

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**562**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625			0
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Paving

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
2	0.00	25	82	25	82	7.05

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**562**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625			0
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Construction Localized Significance Thresholds: Finishing and Landscaping

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
2	0.00	25	82	25	82	7.05

Source Receptor	**Northwest Coastal LA Count**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25	Tractors	0.5	0.0625			0
NOx	**103**	Tractors	0.5	0.0625			0
CO	**562**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625			0
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	103	104	121	156	245
	1	103	104	121	156	245
		103	104	121	156	245
CO	1	562	833	1233	2367	7724
	1	562	833	1233	2367	7724
		562	833	1233	2367	7724
PM10	1	4	12	27	57	146
	1	4	12	27	57	146
		4	12	27	57	146
PM2.5	1	3	4	8	18	77
	1	3	4	8	18	77
		3	4	8	18	77

Northwest Coastal LA County

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	103	104	121	156	245
CO	562	833	1233	2367	7724
PM10	4	12	27	57	146
PM2.5	3	4	8	18	77

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
2	1	2	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Energy Calculations

Construction-Related Fuel/Energy Usage (Phase 1)

CONSTRUCTION WORKER COMMUTE

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2022	64,341	2,269	472	11	997	328
2023	443,696	15,681	3,002	69	6,870	2,241
2024	193,063	6,459	1,545	33	4,353	1,408
Total	**701,099**	**24,409**	**5,019**	**113**	**12,220**	**3,977**

CONSTRUCTION VENDOR TRIPS

Year	Gas		Diesel	
	VMT	Gallons	VMT	Gallons
2022	613	122	6,860	860
2023	6,580	1,288	74,920	8,889
2024	1,613	311	18,675	2,184
Total	**8,806**	**1,720**	**100,456**	**11,933**

CONSTRUCTION TRUCK HAUL TRIPS

Year	Gas		Diesel	
	VMT	Gallons	VMT	Gallons
2022	96	23	112,126	17,008
Total	**96**	**23**	**112,126**	**17,008**

CONSTRUCTION OFF-ROAD EQUIPMENT

Year	Gasoline gallons	Diesel gallons
2022	3,246	18,440
2023	10,813	23,810
2024	3,199	12,191
Total	**17,258**	**54,441**

CONSTRUCTION TOTAL

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2022	65,050	5,661	119,457	36,319	997	328
2023	450,276	27,782	77,922	32,768	6,870	2,241
2024	194,675	9,968	20,221	14,408	4,353	1,408
Total	**710,001**	**43,411**	**217,600**	**83,495**	**12,220**	**3,977**

Construction Worker Trips Fuel Usage Worksheet

Note: Per CalEEMod methodology, worker vehicles are "LD_Mix", which is 50% LDA, 25% LDT1, and 25% LDT2

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2022				
Building and Asphalt Demolition	10	14.7	54	7,938
Building and Asphalt Demolition Debris Haul	0	14.7	48	0
Building and Asphalt Demolition and Site Preparat	15	14.7	12	2,646
Rough Grading	10	14.7	39	5,733
Rough Grading Soil Import	5	14.7	39	2,867
Rough Grading Soil Export	0	14.7	39	0
Utility Trenching	8	14.7	32	3,763
Building Construction 1 2022	119	14.7	12	20,992
2023				
Building Construction 1 2023	119	14.7	224	391,843
Building Construction and Fine Grading	119	14.7	11	19,242
Building Construction 2 2023	119	14.7	25	43,733
2024				
Building Construction 2 2024	119	14.7	65	113,705
Architectural Coating	24	14.7	22	7,762
Paving	15	14.7	43	9,482
Finishing/Landscaping	3	14.7	45	1,985

[1] *Based on information provided.*

[2] *Based on CalEEMod defaults.*

Year	LDA VMT	LDT1 VMT	LDT2 VMT	Gasoline[1]						Diesel[1]						Electricity[1]			
				LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA m/kWh	LDA kWh	LDT1 m/kWh	LDT1 kWh
2022	43,938	10,985	10,985	30.28	1,408	26.12	417	24.33	444	47.29	8	21.78	0	34.76	2	3.04	297	3.04	30
2023	227,409	113,705	113,705	31.12	7,060	26.80	4,193	25.20	4,428	48.57	43	22.08	2	35.74	24	3.07	1,826	3.07	415
2024	132,932	33,233	33,233	31.86	4,011	27.38	1,196	25.98	1,252	49.63	26	22.29	0	36.53	7	3.09	1,255	3.09	153

Gasoline		Diesel		Electricity	
VMT	Gallons	VMT	Gallons	VMT	kWh
64,341	2,269	472	11	997	328
443,696	15,681	3,002	69	6,870	2,241
193,063	6,459	1,545	33	4,353	1,408
701,099	**24,409**	**5,019**	**113**	**12,220**	**3,977**

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline			VMT from diesel			VMT from electricity	
	LDA	LDT1	LDT2	LDA	LDT1	LDT2	LDA	LDT1
2022	97.06%	99.12%	98.39%	0.88%	0.04%	0.72%	2.06%	0.84%
2023	96.62%	98.85%	98.14%	0.92%	0.03%	0.76%	2.46%	1.12%
2024	96.13%	98.55%	97.89%	0.96%	0.03%	0.80%	2.92%	1.42%

Appendix C: Evidence Used to Define the Average Number of KWH Required to Displace a Gallong of Gasoline

Table A 3: Evidence from U.S. Department of Energy and U.S. Environmental Protection Agency's fuel economy website[321]

Vehicle	Model year	Electric consumption	Gasoline fuel economy	Number of kWh that are equivalent to 1 gallon
Ford Fusion Energi & Ford C-Max Energi	2013	0.34 kWh per mile	43 mpg	14.6
Chevrolet Volt	2013	0.35 kWh per mile	37 mpg	12.9
Chevrolet Volt	2012	0.36 kWh per mile	37 mpg	13.3
Fisker Karma	2012	0.62 kWh per mile	20 mpg	12.4
Toyota Prius	2013	0.29 kWh per mile & 0.2 gal	50 mpg	13.1
Average for five models	-	-	-	13.3 +/- 0.8

Table A 5: Average power consumption per mile traveled over time for different PEV categories

Year range	2012- 2020	2020-2030	2030-2040	2040-2050	2050
Efficiency improvement per year	0.3%	0.8%	0.9%	0.9%	
Year	2012	2020	2030	2040	2050
Relative energy efficiency	1.000	0.976	0.901	0.823	0.752

https://www.fhwa.dot.gov/environment/climate_change/mitigation/publications_and_tools/ev_deployment/page08.cfm

0.34	14.6
0.35	12.9
0.36	13.3
0.34	13.3

Year	Estimated Electric Consumption
2013	0.34
2014	0.34
2015	0.34
2016	0.34
2017	0.34
2018	0.34
2019	0.34
2020	0.33
2021	0.33
2022	0.33
2023	0.33
2024	0.32
2025	0.32
2026	0.32
2027	0.32
2028	0.31
2029	0.31
2030	0.31
2031	0.31
2032	0.30
2033	0.30
2034	0.30
2035	0.29

Vendor Trips Fuel Usage Worksheet

Note: Based on CalEEMod methodology, vendor vehicles HHDT (T7).

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2022				
Building and Asphalt Demolition	4	6.9	54	1,490
Building and Asphalt Demolition Debris Haul	0	6.9	48	0
Building and Asphalt Demolition and Site Preparat	4	6.9	12	331
Rough Grading	4	6.9	39	1,076
Rough Grading Soil Import	0	6.9	39	0
Rough Grading Soil Export	0	6.9	39	0
Utility Trenching	4	6.9	32	883
Building Construction 1 2022	46	6.9	12	3,809
2023				
Building Construction 1 2023	46	6.9	224	71,098
Building Construction and Fine Grading	50	6.9	11	3,795
Building Construction 2 2023	46	6.9	25	7,935
2024				
Building Construction 2 2024	46	6.9	65	20,631
Architectural Coating	0	6.9	22	0
Paving	0	6.9	43	0
Architectural Coating	0	6.9	45	0

[1] *Based on information provided.*

[2] *Based on CalEEMod defaults.*

Year	HHDT (T7) VMT	MHDT (T6) VMT	Gasoline[1]				Diesel[1]			
			HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons	HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons
2022	3,795	3,795	4.10	1	5.04	121	6.59	557	10.52	303
2023	41,414	41,414	4.20	8	5.12	1,280	7.00	5,719	11.00	3,170
2024	10,316	10,316	4.30	2	5.19	309	7.10	1,403	11.15	781

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline		VMT from diesel	
	HHDT (T7)	MHDT (T6)	HHDT (T7)	MHDT (T6)
2022	0.08%	16.07%	96.85%	83.93%
2023	0.08%	15.81%	96.71%	84.19%
2024	0.08%	15.55%	96.59%	84.45%

VENDOR

Gasoline		Diesel	
VMT	Gallons	VMT	Gallons
613.19	121.71	6,860	860
6,580.44	1,287.90	74,920	8,889
1,612.63	310.77	18,675	2,184
8,806.26	**1,720.38**	**100,456**	**11,933**

Truck Haul Trips Fuel Usage Worksheet

Note: Hauling vehicles are HHDT (T7)

Activity	Total Trips[1]	Mi/Trip[1]	Annual VMT
2022			
Building and Asphalt Demolition Debris Haul	494	20	9,880
Rough Grading Soil Import	1,333	20	26,660
Rough Grading Soil Export	3,873	20	77,460

[1] *Based on information provided by the District.*

Year	VMT	Gasoline[1]		Diesel[1]	
		HHDT (T7) mpg	HHDT (T7) gallons	HHDT (T7) mpg	HHDT (T7) gallons
2022	114,000	4.10	23	6.59	17,008

[1] *EMFAC2017 v1.0.3.*

Gasoline		Diesel	
VMT	Gallons	VMT	Gallons
96	23	112,126	17,008
96	**23**	**112,126**	**17,008**

Year	VMT from gasoline	VMT from diesel
2022	0.08%	98.36%
2023	0.08%	98.29%
2024	0.09%	98.22%

Off-Road Construction Equipment Fuel Usage Worksheet

Year	Total Gasoline	Total Diesel Gallons	Total Natural Gas
2022	3,246	18,440	0
2023	10,813	23,810	0
2024	3,199	12,191	0
Total	**17,258**	**54,441**	**0**

Equipment Type[1]	Number of Equipment[1]	Horsepower	OFFROAD2017 Horsepower Category	Fuel Type	Working days[1]	Hours Per Day	Total Hours of Operation	Gasoline Gal/Hr[2]	Total Gasoline gallons	Diesel Gal/Hr[2]	Total Diesel gallons	Natural Gas Gal/Hr[2]	Total Natural Gas gallons
2022													
Building and Asphalt Demolition													
Generator Sets	1	84	*100*	*Gasoline*	54	8	432	5.20	2,247	0.00	0	0.00	0
Skid Steer Loaders	1	74	*75*	*Diesel*	54	8	432	0.00	0	1.34	581	0.00	0
Excavators	2	303	*600*	*Diesel*	54	8	864	0.00	0	6.68	5,771	0.00	0
Building and Asphalt Demolition and Site Preparation													
Generator Sets	1	84	*100*	*Gasoline*	12	8	96	5.20	499	0.00	0	0.00	0
Skid Steer Loaders	1	74	*75*	*Diesel*	12	8	96	0.00	0	1.34	129	0.00	0
Sweepers/Scrubbers	1	64	*75*	*Diesel*	12	8	96	0.00	0	1.72	165	0.00	0
Tractors/Loaders/Backhoes	1	97	*100*	*Diesel*	12	8	96	0.00	0	1.59	153	0.00	0
Excavators	2	303	*600*	*Diesel*	12	8	192	0.00	0	6.68	1,282	0.00	0
Rough Grading													
Graders	1	187	*300*	*Diesel*	39	8	312	0.00	0	4.58	1,428	0.00	0
Rollers	1	80	*100*	*Diesel*	39	8	312	0.00	0	1.69	528	0.00	0
Rubber Tired Dozers	1	247	*300*	*Diesel*	39	8	312	0.00	0	4.54	1,416	0.00	0
Scrapers	1	367	*600*	*Diesel*	39	8	312	0.00	0	10.55	3,293	0.00	0
Rough Grading Soil Import													
Sweepers/Scrubbers	1	64	*75*	*Diesel*	39	8	312	0.00	0	1.72	537	0.00	0
Tractors/Loaders/Backhoes	1	97	*100*	*Diesel*	39	8	312	0.00	0	1.59	496	0.00	0
Utility Trenching													
Excavators	1	158	*175*	*Diesel*	32	8	256	0.00	0	2.89	739	0.00	0
Sweepers/Scrubbers	1	64	*75*	*Diesel*	32	8	256	0.00	0	1.72	440	0.00	0
Tractors/Loaders/Backhoes	1	97	*100*	*Diesel*	32	8	256	0.00	0	1.59	407	0.00	0
Building Construction 1 2022													
Cranes	1	231	*300*	*Diesel*	12	7	84	0.00	0	3.28	276	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	12	8	96	5.20	499	0.00	0	0.00	0
Welders	1	46	*50*	*Diesel*	12	8	96	0.00	0	1.19	114	0.00	0
Forklifts	3	89	*100*	*Diesel*	12	8	288	0.00	0	0.98	283	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	12	7	252	0.00	0	1.59	401	0.00	0
							TOTAL		**3,246**		**18,440**		**0**
2023													
Building Construction 1 2023													
Cranes	1	231	*300*	*Diesel*	224	7	1,568	0.00	0	3.28	5,140	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	224	8	1,792	5.20	9,316	0.00	0	0.00	0
Welders	1	46	*50*	*Diesel*	224	8	1,792	0.00	0	1.19	2,131	0.00	0
Forklifts	3	89	*100*	*Diesel*	224	8	5,376	0.00	0	0.98	5,278	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	224	7	4,704	0.00	0	1.59	7,491	0.00	0
Building Construction and Fine Grading													
Cranes	1	231	*300*	*Diesel*	11	7	77	0.00	0	3.28	252	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	11	8	88	5.20	457	0.00	0	0.00	0
Graders	1	187	*300*	*Diesel*	11	8	88	0.00	0	4.55	400	0.00	0
Rollers	1	80	*100*	*Diesel*	11	8	88	0.00	0	1.69	149	0.00	0
Welders	1	46	*50*	*Diesel*	11	8	88	0.00	0	1.19	105	0.00	0
Forklifts	3	89	*100*	*Diesel*	11	8	264	0.00	0	0.98	259	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	11	7	231	0.00	0	1.59	368	0.00	0
Building Construction 2 2023													
Cranes	1	231	*300*	*Diesel*	25	7	175	0.00	0	3.28	574	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	25	8	200	5.20	1,040	0.00	0	0.00	0
Welders	1	46	*50*	*Diesel*	25	8	200	0.00	0	1.19	238	0.00	0
Forklifts	3	89	*100*	*Diesel*	25	8	600	0.00	0	0.98	589	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	25	7	525	0.00	0	1.59	836	0.00	0
							TOTAL		**10,813**		**23,810**		**0**
2024													
Building Construction 2 2024													
Cranes	1	231	*300*	*Diesel*	65	7	455	0.00	0	3.27	1,488	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	65	8	520	5.19	2,701	0.00	0	0.00	0
Welders	1	46	*50*	*Diesel*	65	8	520	0.00	0	1.19	618	0.00	0
Forklifts	3	89	*100*	*Diesel*	65	8	1,560	0.00	0	0.98	1,531	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	65	7	1,365	0.00	0	1.59	2,175	0.00	0
Architectural Coating													
Air Compressors	1	78	*100*	*Gasoline*	22	6	132	3.77	497	0.00	0	0.00	0
Paving													
Pavers	2	130	*175*	*Diesel*	43	8	688	0.00	0	3.40	2,337	0.00	0
Paving Equipment	2	132	*175*	*Diesel*	43	8	688	0.00	0	2.67	1,838	0.00	0
Rollers	2	80	*100*	*Diesel*	43	8	688	0.00	0	1.69	1,166	0.00	0
Finishing/Landscaping													
Excavators	1	158	*175*	*Diesel*	45	8	360	0.00	0	2.89	1,039	0.00	0
							TOTAL		**3,199**		**12,191**		**0**

[1] Based on information provided.

[2] OFFROAD2017 v.1.0.1

OFFROAD 2022

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	4255466.2	2891.18	1397595.95	0.3044844	20394	45.5	37040.2	0.5478512	0	0	0	0
Air Compressors50	Air Compressors	50	1297611.55	119.78	57896.3	2.2412684	228612.35	274.81	223693.9	1.0220782	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	7073185.85	388.45	187770.6	1.7662118	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	805631.6	26.12	12629	1.8543526	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	950097	302.95	113705.15	0.8725241	832017.75	453.6	18113.8	0.4593226	185958.65	413.89	155344.85	1.1818566
Aerial Lifts50	Aerial Lifts	50	207874.8	361.73	130706.5	1.5903957	2821883.7883	1140.47	1757.9	945146.8998	0.8175903	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	347693.5943	1000.00	1717.1	301851.1378	1.1527954	0	0	0
Aerial Lifts100	Aerial Lifts	100	3727455.3	361.73	130706.5	2.8517732	1444616.4648	381.59	3786.1	115340.599	1.2520875	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	300922.85612	47.90	1925.2	44479.13824	2.0790637	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1788.27845	1.00	1.6	1.614562104	0.6952759	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1277.032639	0.53	2.4	0.538214053	1.6345263	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7099.23	43.41	5380.1	1.3195387	6832.8	12.68	10360.3	0.6633592	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1361.45	4.95	529.25	2.5724137	7221.272288	17.74	1363.6	5.296132	6315.673619	1.1437057	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	11259.78816	13.69	1458.2	7.720135	6175.499005	1.8231526	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15457.75	22.49	2401.7	6.4361702	33992.15649	40.53	3595.8	9.452196	15471.81088	2.1370388	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5383.75	5.57	594.95	9.0490797	52719.1283	62.77	5496.9	9.592403	13539.40801	3.8937543	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	75052.95312	43.51	8593.3	8.732599	14079.49226	5.2713934	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	127419.845	36.04	7559.9	16.85752	12172.40957	10.467522	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	68967.7292	7.28	4228.4	16.31153	4109.103011	16.784133	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	39472.5925	1.12	1005.5	39.25764	817.3827119	48.291445	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	2341984.85	6545.81	602731.8	0.3885582	1753.66	176.7	530.4	3.305587	0.330586787	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	2097010.75	921.34	261823.8	0.8009674	558.45	1.26	755.55	0.7390104	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30966.6	18.26	5165.35	5.9951691	2.773455	0.63	811.1	3.4195	6449.55	1.3820033	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	3016727.25	10.48	6398.45	4.7147746	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	139.5500519	0.70	7222.76	337.097097	0.413975834	0	0	0
Cranes50	Cranes	50	4485.85	5.57	2303.15	1.9477028	2260.93939	7.50	6370.45	3279.327721	0.689452302	0	0	0
Cranes75	Cranes	75	0	0	0	0	912.0081716	2.34	5740.92	874.6303057	1.0427156	0	0	0
Cranes100	Cranes	100	15353.9	11.14	4628.2	3.3170347	51092.58018	88.19	19598.85	39145.3104	1.3052025	0	0	0
Cranes175	Cranes	175	1060.1	0.45	189.8	5.2692307	156451.227	156.93	30606.76	71688.13711	2.1823561	0	0	0
Cranes300	Cranes	300	0	0	0	0	269770.6591	174.28	85550.94	82158.17287	3.2835232	0	0	0
Cranes600	Cranes	600	0	0	0	0	47559.35888	17.53	5842.83	8083.3176	5.4654058	0	0	0
Cranes750	Cranes	750	0	0	0	0	9439.022408	2.34	5740.92	1001.912598	9.4210038	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	25984.132	3.75	11854.73	1860.465138	13.9664489	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7122.68205	20.81	3980.7	7104.759396	1.0308717	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	788.120849	2.49	2390.38	507.0411405	1.5543528	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	322614.1304	355.17	36018	166072.3834	1.9426115	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	35285.5126	25.04	7487.7	10656.0634	3.3110817	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	370164.2176	182.16	70070	81293.53505	4.5534274	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	1294398.697	318.74	92153	151368.1869	8.5513257	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	13294.01996	2.29	2900995.22	967.4587418	13.7410289	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	74650.66116	6.24	5729297	3457.9025	21.588042	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3135.35	10.02	3149.95	0.9953656	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11906.3	6.44	1954.9	7.657276995	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	2238545	436.36	65046.65	0.3441445	1749.7	7.62	5037	0.3463766	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1281.15	4.02	511	2.5071429	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	12357.30299	12.36	5825.5	16566.57362	0.7459178	0	0	0
Excavators50	Excavators	50	0	0	0	0	292797.4946	509.00	14945	372468.2039	0.7861003	0	0	0
Excavators75	Excavators	75	0	0	0	0	68.99993979	0.21	880.73	66.00992056	1.0453119	0	0	0
Excavators100	Excavators	100	0	0	0	0	380018.9542	366.73	14043	237525.2802	1.5999099	0	0	0
Excavators175	Excavators	175	0	0	0	0	802090.9179	469.39	19533	278005.7124	2.8855159	0	0	0
Excavators300	Excavators	300	0	0	0	0	1024027.892	408.57	15737	239932.3798	4.2220265	0	0	0
Excavators600	Excavators	600	0	0	0	0	1821199.805	424.09	8378	272666.6071	6.6792183	0	0	0
Excavators750	Excavators	750	0	0	0	0	14503.33389	2.29	6778.67	5125.966248	12.880789	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	50563.86261	3.12	9210754	2123.965518	23.806348	0	0	0
Forklifts25	Forklifts	25	43110.65	6.34	6252.45	0.6894337	86.20020709	0.48	1123.75	149.0685375	0.5782594	4869.2	3.36	4967.65
Forklifts50	Forklifts	50	3486976.4	1208.73	2174509.4	1.6035692	198567.5427	556.97	884603	195007.3182	0.5025788	6468471.6	2689.41	4845123.15
Forklifts75	Forklifts	75	0	0	0	0	17534.02907	48.39	4826031	23067.4757	0.7600193	0	0	0
Forklifts100	Forklifts	100	16104323.6	4265.67	7640873.5	2.1076556	2926351.898	4639.23	472291	2980275.518	0.9818774	4048231.6	943.81	1700446.9
Forklifts175	Forklifts	175	1126594.4	155.89	279235.95	4.0345607	8673075244	859.18	4342592	547900.9423	1.5829643	3038296.5	345.41	622284.85
Forklifts300	Forklifts	300	0	0	0	0	168204.4643	105.76	9319	74521.79038	2.2571187	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	43990.34931	16.78	9253.15	11226.07466	3.8829558	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	677.4028934	0.24	1656178	52.17398811	12.981357	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	3149.397788	0.43	6094128	344.4026628	9.1445221	0	0	0
Generator Sets25	Generator Sets	25	6184889.45	75938.47	8725135.2	0.7088601	530755.55	2585.49	872833.55	0.6080749	0	0	0	0
Generator Sets50	Generator Sets	50	1008286.85	3041.99	452784.25	2.2265795	629080.7	1333.85	450289.55	1.3969128	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	454941.3	761.1	87448.7	5.2025210	0	0	0	0	40730.35	56.83	6515.25	6.2515406
Generator Sets175	Generator Sets	175	74288.45	71.99	8267.25	8.9858719	0	0	0	0	58878.15	46.98	5391.05	10.921462
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	56.29102018	0.41	2959.86	95.7872322	0.5876573	0	0	0
Graders50	Graders	50	0	0	0	0	1880.479363	6.07	9268.98	2142.520916	0.8779547	0	0	0
Graders75	Graders	75	0	0	0	0	811.1768955	1.67	7009.95	533.7743515	1.5196999	0	0	0
Graders100	Graders	100	0	0	0	0	43083.52342	61.63	12017.5	23068.91805	1.8670505	0	0	0
Graders175	Graders	175	0	0	0	0	489889.8787	329.53	62824	155476.0881	3.1509017	0	0	0
Graders300	Graders	300	0	0	0	0	1033169.492	297.25	52522	225722.7945	4.5773634	0	0	0
Graders600	Graders	600	0	0	0	0	44605.5389	7.75	30770.5	5944.078694	7.4705528	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	35068.53913	1.25	7779625	916.6838122	38.253657	0	0	0
Pavers25	Pavers	25	19126	42.91	16844.75	1.1354275	3317.85	4.75	1912.8	0.847947	0	0	0	0
Pavers50	Pavers	50	14494.05	15.81	6212.3	2.3334731	8031.548898	24.42	14181	8668.167473	0.9269554	0	0	0
Pavers75	Pavers	75	0	0	0	0	12268.53005	23.61	4837.2	7984.230126	1.5365958	0	0	0
Pavers100	Pavers	100	12997.65	8.68	3416.4	3.8044871	65216.53329	94.45	9348.7	37551.41914	1.7367257	0	0	0
Pavers175	Pavers	175	0	0	0	0	10654.6808	80.81	3774.62	3195.54266	3.3390338	0	0	0
Pavers300	Pavers	300	0	0	0	0	82805.88655	38.88	3050.77	17492.61032	4.7337638	0	0	0
Pavers600	Pavers	600	0	0	0	0	15059.38712	4.27	5098.82	1860.621198	8.0946119	0	0	0
Pavers750	Pavers	750	0	0	0	0	3106.322473	0.40	7152.39	192.7861469	16.112788	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	405606.25	4653.76	880358.1	0.4607287	1927.4	8.24	6840.1	0.5741728	0	0	0	0
Paving Equipment50	Paving Equipment	50	16914.1	43.24	7570.1	2.2343297	9999.692597	30.08	2822.37	14172.41833	0.7055743	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1547.978119	3.04	7139.7	1221.453977	1.2672847	0	0	0
Paving Equipment100	Paving Equipment	100	6978.8	11.15	1945.45	3.5872422	41578.81811	55.08	4247.5	25401.2751	1.6368791	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	45972.21212	38.78	8937.9	16932.09378	2.6659489	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	30249.93797	15.24	3599.9	7133.921782	4.2402957	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	32397.66459	9.55	2659.5	4444.828439	7.2888441	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	6466.590168	1.01	6243.999	549.7990881	11.763733	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	2934.636622	0.46	6049.78	189.4577936	15.489659	0	0	0
Rollers25	Rollers	25	945514.6	503.55	125395.75	0.7540387	72390.45	272.14	18914.55	3.8238585	0	0	0	0
Rollers50	Rollers	50	18790.2	11.14	6927.7	2.7123287	164888.3147	617.32	2091.28	213769.2814	0.7704021	0	0	0
Rollers75	Rollers	75	0	0	0	0	1827.142118	5.88	3229.23	1345.139761	1.3547572	0	0	0
Rollers100	Rollers	100	58973.05	20.97	13030.5	4.5257703	255880.2178	455.24	7629.26	35100.23	1.6938724	0	0	0
Rollers175	Rollers	175	0	0	0	0	291642.9116	266.36	10998.8	29537.27405	2.7878424	0	0	0
Rollers300	Rollers	300	0	0	0	0	44111.53497	34.13	2737.03	10510.37284	4.1969504	0	0	0
Rollers600	Rollers	600	0	0	0	0	25854.2926	12.35	4794.3	3759.335973	6.8139175	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	86.20029709	0.48	1123.75	149.0685375	0.5782594	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3044.1	2.23	927.1	1.2834645	8302.707949	27.54	8804.35	7522.99219	1.1036522	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	228.8865019	0.73	6968.15	165.9077617	1.3795869	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66758.5	31.68	13096.2	5.0975473	655944.8031	1158.98	3032	327439.5321	2.0032547	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3763.15	1.13	459.9	8.1825396	144272.8767	202.02	6545.2	55355.22122	2.6063109	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	10588.81417	9.66	2467.19	2421.813028	4.3722695	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	3936.757727	1.93	2249.28	494.6857021	7.9580629	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	677.4028934	0.24	1656178	52.17398811	12.981357	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7315.859953	8.16	8252.54	7759.963377	0.9427659	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	7354.835538	6.97	2990725	5225.805176	1.4074076	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	23164.42838	15.53	9747.05	13467.9386	1.7403643	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	32858.02555	14.34	4376.15	11272.28161	2.9149408	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	95526.7291	31.15	5579.73	7828.466442	4.5861488	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	369656.1513	66.94	10296	48638.45198	7.5999243	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	10568.68103	0.79	6090979	794.7265772	13.298524	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	58.56335263	0.20	5317872	84.43520914	0.6935849	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	466.1193715	1.21	9072.25	441.1739677	1.0565432	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4113.375203	5.54	5582.55	2429.388601	1.6931738	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	18538.72697	13.55	9979.58	8195.609758	2.2620313	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	250103.4026	133.66	19349	59698.21098	4.1893929	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	294776.7383	130.58	21689	53032.34761	5.5584276	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	3652877.582	720.66	57322	346083.9716	10.554888	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	56325.42179	9.80	5257.87	6769.816247	15.595528	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	8442.75806	1.25	5382.5	1218.854606	39.838598	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	3095676.05	879.3	280738.1	1.1030891	319104.9	609.03	50857.4	6.6277176	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90258.15	152.11	47594.5	1.9126816	124648.2857	427.57	17884	134624.1737	0.9258589	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	652894.6966	1959.24	16	485436.1672	1.3449859	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	120552.2	90.99	28236.4	4.2693898	95147.64218	20.56	24595	6662.959665	1.4276697	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4472.84324	5.72	3568.08	1545.447515	2.8942057	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	4156.636498	3.60	3728.05	1063.556431	3.9082493	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1201.696078	0.42	3968.86	133.1864861	9.0226113	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1626.660897	0.42	3968.86	85.48150834	19.029402	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	1980562.95	1255.97	537371.25	0.3685832	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1155.306027	7.50	2202.09	1829.111309	0.6318218	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	696.6271679	2.69	2369.99	669.6050041	1.0401053	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	7147.395687	18.46	2080.22	5124.631212	1.3947141	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	5807.115716	10.96	1803.1	2723.85716	2.1539439	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	11897.01945	13.05	4268.3	3360.766849	3.5399716	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	41759.66887	22.65	9739.5	6493.498823	6.4248349	0	0	0

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Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	100	Diesel	0.000663496	0.00080283	0.000955434	0.016714737	0.007800939	2.304518905	0.000626196	0.0005761	2.12865E-05	1.88092E-05	7467.5779	55764.24578	57.48505624	4830417	
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	175	Diesel	0.001062628	0.0012857 8	0.001530184	0.024394717	0.010898546	3.900244229	0.000961807	0.000426702	3.60278E-05	3.18333E-05	12651 9.1287	54919.31287	56.61407054	8175159	
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	300	Diesel	0.001355703	0.001640401	0.001952212	0.012272888	0.009809227	5.887330535	0.000388251	0.000357191	5.43906E-05	4.80516E-05	191007.9655	44780.37919	46.16224213	12340217	
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	600	Diesel	0.001581523	0.001913643	0.002277393	0.016186196	0.011357496	8.350983414	0.000533823	0.000481117	7.75615E-05	6.85596E-05	270938.4599	44780.37919	46.16224213	17504189	
Los Angeles (SC)	2022 Portable Equipment - Rental Pump	Aggregate	750	Diesel	0.000282006	0.000341228	0.000406089	0.001756676	0.002664594	0.848296855	0.000120112	0.000110503	7.83446E-06	6.92368E-06	27522.05722	2534.738445	2.612957102	1778084	
Los Angeles (SC)	2022 TRU - Instate Genset TRU	Aggregate	50	Diesel	0.006766677	0.00818768	0.009744016	0.128959742	0.095751108	2.632509878	0.000428697	0.000394402	2.42991E-05	2.16303E-05	1671.021909	1006672.913	1289.414991	11710197	
Los Angeles (SC)	2022 TRU - Instate Trailer TRU	Aggregate	50	Diesel	0.132925967	0.160840421	0.191413393	1.983357934	1.294169214	30.49023007	0.020470879	0.018833208	0.0002798	0.00029526	19354.09355	7749377.7	5849.109547	2.63E+08	
Los Angeles (SC)	2022 TRU - Instate Truck TRU	Aggregate	25	Diesel	0.017629925	0.021332209	0.025387091	0.172620763	0.207026353	4.14226772	0.008399205	0.007727269	3.80253E-05	3.40354E-05	2629.361496	2085325.724	152.20112	29403093	
Los Angeles (SC)	2022 TRU - Instate Van TRU	Aggregate	25	Diesel	0.000408145	0.000493856	0.000587729	0.003996292	0.004792805	0.095896397	0.000194447	0.000178892	8.80312E-07	7.87943E-07	60.87155928	75633.5755	55.57206135	680702.2	
Los Angeles (SC)	2022 TRU - Out-of-State Genset TRU	Aggregate	50	Diesel	0.004243335	0.005134436	0.006110403	0.081089479	0.060294829	1.658816139	0.000269405	0.000247853	1.53121E-05	1.36298E-05	1052.956395	634332.0198	513 0.312871	19981459	
Los Angeles (SC)	2022 TRU - Out-of-State Trailer TRU	Aggregate	50	Diesel	0.070139153	0.085110375	0.10128838	1.138234409	0.758859741	19.04654266	0.007504703	0.005248327	0.00017516 6	0.00015649 8	12080.05533	4840857.303	2307 1.09568	1.65E+08	
Los Angeles (SC)	2022 TRU - Railcar TRU	Aggregate	50	Diesel	0.007281008	0.00881002	0.010484652	0.117821924	0.077723656	1.971562527	0.00059051	0.000543269	1.81319E-05	1.61996E-05	1251.476473	503091.092	1554.108154	17037097	

OFFROAD 2022

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	4247230.85	2885.44	1396854.8	3.04483556	20255.5	45.43	36978.15	0.54782552	0	0	0	0
Air Compressors50	Air Compressors	50	129870.65	119.55	57801.4	2.24682637	2280013.75	274.28	223248.6	1.02143177	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	7057582.25	387.67	187601.95	3.76141441	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	86402.8	26.1	12607.3	6.85350185	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	9901.535	302.34	113482.15	0.87250329	83022.9	452.71	180780.85	0.45924698	185503.95	418.24	156975.55	1.18173785
Aerial Lifts50	Aerial Lifts	50	207509.8	361.03	130447.35	1.59075197	291282.9157	1163.829162	356269.9837	0.81759392	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	218811.3916	645.3512345	196476.3209	1.11418719	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	3720237.2	361.03	130447.35	2.85201406	2893443.0414	764.5352469	234159.6591	1.23565459	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	91062.45523	48.88192239	14940.59778	2.07065749	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1856.224973	1.647705275	506.4394285	3.66524385	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1318.1877	0.549235093	168.8113428	7.80856086	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7084.69	43.34	5376.45	1.31771894	6924.05	52.86	10442.85	0.66305487	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1354.15	4.99	521.95	2.59440559	7452.070736	18.02533053	6490.692518	1.14811643	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	10940.39397	12.33132888	5976.979094	1.82991692	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15435.85	22.53	2412.65	6.39788199	35452.68087	42.69157226	16264.77801	2.17972239	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5387.4	5.56	598.6	9	54430.27551	41.45053355	13913.60681	3.91201765	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	79383.96872	44.7787156	14661.88357	5.41498326	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	125908.9277	35.86092037	12116.47098	10.3915511	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	74320.27282	7.589613847	4419.722033	16.8155988	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	40543.32865	1.138441927	839.9203888	48.27504231	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	2333382.7	6532.31	6015230.95	0.38784681	177794.1	179.05	51782.75	0.33057492	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	2093935.6	919.53	261307.15	0.80099453	573.05	1.27	759.2	0.75480769	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30966.6	18.25	1165.35	2.77345578	9024.45	11.26	6526.2	1.38110862	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	3016727.25	10.48	6398.45	4.71477467	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	143.3978627	0.714884531	346.3918684	0.41397584	0	0	0	0
Cranes50	Cranes	50	4531.4	5.56	2314.1	1.94952841	2323.280228	7.825541439	3369.472207	0.68950844	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	889.9341659	2.382859	884.4283046	1.00622544	0	0	0	0
Cranes100	Cranes	100	15344.6	11.16	4631.85	3.3128447	524602.8265	89.36181374	40123.35755	1.3076849	0	0	0	0
Cranes175	Cranes	175	992.8	0.46	178.85	5.551020408	160841.8759	159.6597739	73781.10262	2.17998479	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	275864.6312	176.5789439	84162.76068	3.27775169	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	485985.9419	177.0554605	84829.41381	5.47100249	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	8427.675149	2.144683553	887.7324198	9.49348583	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	26700.58003	3.812770719	1911.488355	13.96847479	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7524.758943	21.14969858	7300.903105	1.03063382	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	1164.561643	3.595433456	750.2518064	1.55222771	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	331248.8369	359.7548419	170422.7529	1.94369044	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	362749.3289	238.7760806	109504.5094	3.31264265	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	379827.5458	184.847579	83503.02605	4.54866804	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	1330479.624	324.0120034	155572.4101	8.55215877	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	13583.44341	2.326459944	988.0351969	13.7479347	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	77024.08636	6.344882573	3553.55424	21.6752169	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3124.6	10.9	3146.3	0.993039443	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11899	6.46	1562.2	7.61682243	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	223314.9	435.37	64928.2	0.34382729	1770.25	7.73	5102.7	0.34692177	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1266.55	4.03	503.7	2.51449275	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	12528.87513	12.535757	16792.28491	0.7461888	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	308859.1253	517.0823576	182719.6521	0.78610839	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	3920.697593	4.23837998	2761.892861	1.41956172	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	388250.3078	368.5271393	241381.2102	1.6020167252	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	824360.882	477.4535048	285667.4855	2.88573777	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	1049442.861	410.9103959	242955.0782	4.32020587	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	1870509.682	432.3147558	280317.3128	6.67282969	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	19466.53141	2.968685988	1564.215011	12.4447881	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	51958.65286	3.178794985	2182.28472	23.8029142	0	0	0	0
Forklifts25	Forklifts	25	4303.05	6.32	6237.85	0.68987721	88.57709615	0.490983582	153.1788012	0.57825694	4920.25	4.01	5022.4	0.979655183
Forklifts50	Forklifts	50	348218702	1206.37	2170213.35	1.604536992	204913.6862	568.2424014	407774.7014	0.50251369	6536044.65	2717.52	4895796.1	1.335031911
Forklifts75	Forklifts	75	0	0	0	0	17226.67247	49.82772671	22649.68912	0.76055993	0	0	0	0
Forklifts100	Forklifts	100	16076410.6	4257.96	7625824.55	2.10815372	3021335.751	4734.102102	3077141.37	0.98134576	40904659.5	9537.69	17182718.2	2.380569777
Forklifts175	Forklifts	175	11224460.9	155.54	278688.45	4.034759669	891729.8602	870.2019684	564030.8901	1.58099472	3070025.95	349.03	628807.4	4.882299133
Forklifts300	Forklifts	300	0	0	0	0	173444.5127	107.9153903	76910.69108	2.25514178	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	45113.44781	17.12415249	11586.12249	3.89378442	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	695.0808542	0.245402072	53.61258014	12.9815374	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	3250.893756	0.445888558	355.5017623	9.14452219	0	0	0	0
Generator Sets25	Generator Sets	25	6166368.4	75768.93	9707932.75	0.708132295	529055.15	2580.4	871098.05	0.60803161	0	0	0	0
Generator Sets50	Generator Sets	50	10059661.8	3034.16	4518805.95	2.225165763	628146.75	1331.24	449395.4	1.39775945	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	4516580.4	759.81	87207.85	5.198711762	0	0	0	0	40650.05	56.56	6497	6.256741573
Generator Sets175	Generator Sets	175	74146.1	71.8	8245.35	8.992474548	0	0	0	0	58761.35	46.87	5391.05	10.89979689
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	57.84376783	0.425916009	98.42837163	0.58767352	0	0	0	0
Graders50	Graders	50	0	0	0	0	1036.34718	6.175782134	2202.088744	0.87932304	0	0	0	0
Graders75	Graders	75	0	0	0	0	719.5241188	1.277748028	468.5190488	1.53574144	0	0	0	0
Graders100	Graders	100	0	0	0	0	46593.52282	64.31131778	24759.41081	1.88185147	0	0	0	0
Graders175	Graders	175	0	0	0	0	503043.2762	333.4922352	158792.0312	3.15534288	0	0	0	0
Graders300	Graders	300	0	0	0	0	1039118.326	298.1412065	228531.2393	4.54694215	0	0	0	0
Graders600	Graders	600	0	0	0	0	67131.11928	11.71269025	9531.805598	7.04285397	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	36033.41494	1.277748028	942.4541658	38.2337033	0	0	0	0
Pavers25	Pavers	25	19089.5	42.46	16815.55	1.13522899	3372.6	4.84	1960.25	0.85161296	0	0	0	0
Pavers50	Pavers	50	14501.45	15.84	6212.3	2.33412571	8252.425413	24.81697678	8906.457796	0.92656402	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	10819.94701	20.47400585	7086.740684	1.52678489	0	0	0	0
Pavers100	Pavers	100	1300439	8.72	3423.7	3.79850746	68784.35336	99.47471527	39705.19957	1.73237646	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	108948.69	82.10263152	32056.89156	3.39880435	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	84560.29376	39.29354657	17834.32953	4.73082255	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	16039.46519	4.549779077	2013.039638	7.98778418	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	3191.97394	0.413161628	198.1018915	16.1127888	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	404868.05	4644.01	878628	0.46079677	1985.8	8.37	6938.85	0.57443458	0	0	0	0
Paving Equipment50	Paving Equipment	50	169033.15	43.27	7573.75	2.23180729	10284.38009	30.55583829	14562.95539	0.70620144	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1755.568898	3.303698962	1366.350677	1.28217265	0	0	0	0
Paving Equipment100	Paving Equipment	100	6982.45	11.17	1945.45	3.589118199	42760.85773	55.95487679	26093.07505	1.63878184	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	46102.35012	37.16560082	17292.078	2.66609598	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	31082.44259	15.48566703	7330.625266	4.24008063	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	33154.52249	9.706153128	4591.005079	7.30419676	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	6350.316027	1.032378601	542.0549565	11.7152619	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	3015.553298	0.41295112	194.6817098	15.4896559	0	0	0	0
Rollers25	Rollers	25	94307.1	502.52	125158.5	0.75398075	73406.0885	276.1172776	19360.511	0.38239685	0	0	0	0
Rollers50	Rollers	50	18848.6	11.16	6927.7	2.72075669	169863.7309	627.3341738	219701.6373	0.77088004	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	0	0	1775.683835	5.53923843	1288.017606	1.37547009	0	0
Rollers100	Rollers	100	58994.95	20.96	13023.2	4.52998878	262939.6076	462.4701572	155220.8702	1.69397709	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	273879.616	270.5897148	98170.78492	2.79775056	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	46273.08527	35.10008092	10972.49816	4.21719127	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	25583.43731	12.12598825	3726.156287	6.86090598	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	88.57709615	0.490983582	153.1788012	0.57825694	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3055.4	2.24	912.5	3.348	8528.207742	27.98616677	7724.182884	1.10409188	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	235.1979607	0.73647807	170.4822122	1.37958059	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66758.5	31.69	13088.9	5.100390407	676975.0887	1183.029278	337658.2722	2.00491196	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3768.8	1.11	463.55	8.125984252	145393.8947	199.5855578	55611.84745	2.61444101	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	10866.05823	9.81705764	2487.109898	4.37488378	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	4045.250566	1.969341528	508.8940174	7.94910222	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	696.0808542	0.245402693	53.61253824	12.9815374	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7472.610378	8.298005046	7972.52515	0.93729529	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	8028.789613	7.488443578	5642.105982	1.42300501	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	23500.93815	15.38167896	11598.25291	1.74026181	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	32619.73576	14.16732569	11263.17135	2.89614303	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	36733.2697	11.53625959	8217.143222	4.47022154	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	377734.1983	68.00316332	49915.339	7.56749746	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	14008.38828	1.011951815	1026.984501	13.6135203	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	60.17811878	0.208577483	86.76333946	0.69358241	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	4787.978775	1.251456883	453.1384487	1.05654328	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4156.644702	5.42301451	2465.042878	1.68823628	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	20047.9868	15.22615612	8812.504518	2.27447754	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	252287.7118	132.0295456	60126.99424	4.19591434	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	39820.13418	135.1582078	55345.68314	5.54395369	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	3753278.137	732.1069588	355807.5001	10.5545528	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	57740.93966	10.01171909	3702.384502	15.5950086	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	86740.2847	5.423014552	2176.317796	39.8565987	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	3090613.75	877.55	280188.6	1.10305612	323481.25	617.39	5153413	0.62770262	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90275.45	152.11	47190.85	1.91286633	128121.7489	434.350883	133127.4541	0.92622087	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	680753.2663	1401.063652	505485.8651	1.34973098	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	1205522.9	91	28236.4	4.26938984	2903959.045	2.66606843	1491.3005466	1.61451279	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4602.35703	5.814435569	1588.80616	2.89573827	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	4272.847274	3.660940991	1093.128835	3.90882312	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1234.830914	0.430098994	136.8588344	9.02266326	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1671.51897	0.43068894	87.58965403	19.0834637	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	1976883.35	1253.49	536316.4	0.36858048	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1187.166667	7.619229193	1875.31961	0.63380747	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	754.6379059	2.930497282	722.8326936	1.04400928	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	7184.925945	18.16908315	5141.321824	1.39768574	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	6175.98691	11.52862264	2887.041266	2.13889345	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	11998.21553	13.67595398	3395.416973	3.53365102	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	42275.4301	23.24881177	6636.199238	6.37042804	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	18087.59726	5.860

Los Angeles (SC)	2023 Agricultural - Bale Wagons (Self Propelled)	Aggregate	175 Diesel	2.90628E-05	3.5166E-05	4.18505E-05	0.00031455	0.000263814	0.008049966	1.64850E-05	1.51662E-05	7.40532E-08	6.61434E-08	1.88510867E-05	557.2329697	0.895225584	71703.62				
Los Angeles (SC)	2023 Agricultural - Bale Wagons (Self Propelled)	Aggregate	300 Diesel	7.70531E-06	9.32128E-06	1.10950E-05	3.57235E-05	7.44072E-05	0.002445409	1.23466E-06	2.97584E-06	2.25295E-08	2.00959E-08	566.5738506	111.7181782	0.180720382	21613.17				
Los Angeles (SC)	2023 Agricultural - Balers (Self Propelled)	Aggregate	50 Diesel	2.71447E-05	3.28455E-05	3.90883E-05	0.000132837	0.000145272	0.002489296	8.81710E-06	8.11173E-06	2.23548E-08	2.04530E-08	576.7419216	428.0849289	1.32202202	19722.78				
Los Angeles (SC)	2023 Agricultural - Balers (Self Propelled)	Aggregate	75 Diesel	1.27076E-05	1.51755E-05	1.82981E-05	9.69057E-05	0.000127952	0.002284181	7.64649E-06	7.03477E-06	2.08788E-08	1.87682E-08	529.2192606	280.4873532	0.850854198	18205				
Los Angeles (SC)	2023 Agricultural - Balers (Self Propelled)	Aggregate	100 Diesel	2.70433E-06	3.27223E-06	3.89423E-06	2.11522E-05	2.42144E-05	0.000500648	1.81222E-06	1.66723E-06	4.57866E-09	4.11363E-09	115.9945324	50.31147642	0.155103984	3986.723				
Los Angeles (SC)	2023 Agricultural - Balers (Self Propelled)	Aggregate	175 Diesel	1.09854E-06	1.32924E-06	1.5819E-06	1.08639E-05	1.18991E-05	0.000248302	6.24635E-07	5.74605E-07	2.28371E-09	2.04514E-09	57.68800861	21.01912578	0.064931575	2212.533				
Los Angeles (SC)	2023 Agricultural - Combine Harvesters	Aggregate	75 Diesel	2.43986E-06	2.95223E-06	3.51337E-06	1.63369E-05	2.19287E-05	0.000374572	1.56452E-06	1.43936E-06	4.11433E-09	3.69777E-09	86.78401584	30.30939806	0.105642014	3955.51				
Los Angeles (SC)	2023 Agricultural - Combine Harvesters	Aggregate	100 Diesel	1.91395E-05	2.31544E-05	2.75557E-05	0.000129185	0.000165237	0.002958236	1.33442E-05	1.22796E-05	2.68597E-08	2.43067E-08	685.3900326	304.8268597	0.946599425	25886.8				
Los Angeles (SC)	2023 Agricultural - Combine Harvesters	Aggregate	175 Diesel	2.85006E-05	3.44853E-05	4.10409E-05	0.000225553	0.000297441	0.005148224	1.63525E-05	1.50302E-05	5.01616E-08	4.53071E-08	1269.903665	1.12340552	55757.73					
Los Angeles (SC)	2023 Agricultural - Combine Harvesters	Aggregate	300 Diesel	0.000143564	0.000173713	0.000206732	0.000638695	0.001833781	0.031972627	6.79747E-05	6.25367E-05	3.65464E-07	3.26415E-07	9204.112551	1693.352531	4.537339798	397705.8				
Los Angeles (SC)	2023 Agricultural - Combine Harvesters	Aggregate	500 Diesel	3.10112E-05	3.75239E-05	4.46561E-05	0.000137043	0.000395743	0.006903745	1.46915E-05	1.35123E-05	1.14109E-07	1.02458E-07	2873.511852	440.2881	1.417005782	145674.2				
Los Angeles (SC)	2023 Agricultural - Construction Equipment	Aggregate	50 Diesel	0.000280305	0.000339169	0.000403639	0.000103636	0.000954656	0.014415055	7.86655E-05	7.23718E-05	1.25759E-07	1.18443E-07	3339.806432	3229.644609	8.366231412	1430302				
Los Angeles (SC)	2023 Agricultural - Construction Equipment	Aggregate	75 Diesel	0.000193676	0.000234348	0.000278893	0.000268565	0.001628308	0.023116689	0.000114814	0.000105629	2.09549E-07	1.88941E-07	5355.878309	3624.679752	10.00462717	2128323				
Los Angeles (SC)	2023 Agricultural - Construction Equipment	Aggregate	100 Diesel	0.000370978	0.000448861	0.000534181	0.000419635	0.003119268	0.045491384	0.000245385	0.000225754	4.98983E-07	4.49853E-07	12648.21168	5421.277912	17.24128304	541535.9				
Los Angeles (SC)	2023 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000742546	0.000898481	0.001069266	0.000511818	0.006602215	0.123091356	0.000396282	0.00036458	1.12346E-06	1.01139E-06	28518.88632	11134.19114	18.09450503	1361308				
Los Angeles (SC)	2023 Agricultural - Construction Equipment	Aggregate	300 Diesel	0.000449017	0.000543178	0.000646509	0.000407601	0.004008588	0.066348209	0.000238181	0.000219107	6.68834E-07	6.03191E-07	18859.51381	6514.912761	17.11758851	896411.4				
Los Angeles (SC)	2023 Agricultural - Construction Equipment	Aggregate	600 Diesel	5.71384E-05	6.91374E-05	8.22793E-05	0.000250778	0.000545774	0.009831674	2.95584E-05	2.71637E-05	8.97942E-08	8.07830E-08	2277.884424	310.9949404	0.35237034	109848.1				
Los Angeles (SC)	2023 Agricultural - Cotton Pickers	Aggregate	175 Diesel	4.80457E-06	5.81353E-06	6.91858E-06	4.77933E-05	5.03889E-05	0.001076127	3.79779E-06	3.49196E-06	1.54564E-08	1.33723E-08	388.3195261	166.8135466	0.535677511	15515.19				
Los Angeles (SC)	2023 Agricultural - Cotton Pickers	Aggregate	175 Diesel	1.09557E-05	1.32563E-05	1.57761E-05	0.000160723	0.000118633	0.004086888	6.77778E-06	6.23556E-06	3.77101E-08	3.35804E-08	946.8860983	329.1897547	0.721639362	39957.61				
Los Angeles (SC)	2023 Agricultural - Cotton Pickers	Aggregate	300 Diesel	1.00802E-05	1.21997E-05	1.45154E-05	5.81685E-05	0.000122417	0.004297887	4.76613E-06	4.38486E-06	3.97002E-08	3.53141E-08	995.7212705	173.1820169	0.537444015	42796.9				
Los Angeles (SC)	2023 Agricultural - Cotton Pickers	Aggregate	500 Diesel	2.40679E-05	2.91306E-05	3.46647E-05	0.000185144	0.000347322	0.009133703	1.13784E-05	1.04703E-05	1.29153E-06	1.14914E-06	3239.5	1.38E+07	2.597945849	102125.2				
Los Angeles (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	100 Diesel	9.86181E-07	1.19328E-06	1.4201E-06	6.67057E-06	8.53562E-06	0.000152942	6.88972E-07	6.33856E-07	3.39393E-09	1.25667E-09	35.43502918	17.12622521	0.04681137	1370.098				
Los Angeles (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	175 Diesel	1.72553E-06	2.08833E-06	2.48535E-06	1.41025E-05	1.25887E-05	0.000242992	9.13864E-07	8.40842E-07	4.23510E-07	1.56812E-07	44.21450597	1.99581E+09	56.27776396	10.99586006	0.031051756	2419.077		
Los Angeles (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	600 Diesel	1.06801E-05	1.29229E-05	1.53793E-05	5.97042E-05	0.000131429	0.003651426	5.13732E-06	4.72634E-06	3.36653E-08	3.00023E-08	845.9944877	89.77127706	0.222584686	37539.47				
Los Angeles (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	750 Diesel	1.98683E-05	2.40407E-05	2.86106E-05	0.000146729	0.000242988	0.006755602	2.66496E-06	2.45206E-06	8.81832E-08	7.85710E-08	2185.40407	154.4098874	0.583728019	97419.98				
Los Angeles (SC)	2023 Agricultural - Forage & Silage Harvesters	Aggregate	9999 Diesel	1.20948E-05	1.46347E-05	1.74166E-05	8.82586E-05	0.000270768	0.005626805	6.08244E-06	5.59584E-06	5.20087E-08	4.62333E-08	1303.667555	65.1600373	0.141682816	56037.63				
Los Angeles (SC)	2023 Agricultural - Forklifts	Aggregate	50 Diesel	2.35124E-05	2.8456E-05	3.38578E-05	9.90991E-05	9.15642E-05	0.00146915	6.65029E-05	6.15751E-06	2.26408E-08	1.20714E-08	340.3854663	440.7763209	0.731080219	14598.87				
Los Angeles (SC)	2023 Agricultural - Forklifts	Aggregate	75 Diesel	1.3413E-05	2.35105E-05	4.26475E-05	0.000195404	1.12862E-05	1.60661E-05	0.000236964	1.04965E-06	2.82682E-08	2.70899E-08	764.5803987	1.94408E-09	54.89762342	10.94731	0.043524336	935.8368		
Los Angeles (SC)	2023 Agricultural - Forklifts	Aggregate	100 Diesel	7.51212E-07	9.08967E-07	1.08175E-06	4.49029E-06	5.58516E-06	9.41710E-05	4.66632E-07	4.29302E-07	1.91384E-05	1.73767E-10	21.81836604	12.07551343	0.034352436	935.8368				
Los Angeles (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	75 Diesel	1.40979E-05	1.70546E-05	2.03035E-05	6.48461E-05	0.000127888	0.003127041	6.89645E-07	6.34426E-07	1.54288E-07	1.40488E-07	397.1429955	33.19325349	0.093722557	17048.9				
Los Angeles (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	100 Diesel	1.55691E-06	1.88386E-06	2.24195E-06	7.21717E-06	1.10174E-05	0.000141391	9.86302E-07	9.07397E-07	1.26922E-06	1.16170E-06	32.75875605	17.26689686	0.0292835	1338.185				
Los Angeles (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	175 Diesel	1.38246E-05	1.67281E-05	1.99135E-05	0.000185144	0.000224837	0.004297887	1.68388073	1.77456E-07	3.51E-08	1.15819E-08	898.9972726	312.7349699	0.528175398	97877.13				
Los Angeles (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	300 Diesel	7.91594E-05	9.60248E-05	0.000114277	0.000273602	0.00082009	0.011034435	3.52408E-05	3.24215E-05	0.000406E-07	2.71138E-08	765.0860822	307.5083807	0.882476465	116132				
Los Angeles (SC)	2023 Agricultural - Hay Squeeze/Stack retriever	Aggregate	600 Diesel	2.19316E-05	2.65372E-05	3.15815E-05	0.000109616	0.000224492	0.003302215	9.56812E-06	8.80207E-06	2.52526E-06	2.07235E-06	5.11187E-09	6.61249E-09	0.013402198	2.736				
Los Angeles (SC)	2023 Agricultural - Nut Harvester	Aggregate	50 Diesel	5.42076E-05	6.55977E-05	7.81064E-05	0.000643129	0.000773941	0.012705293	4.12452E-05	3.79452E-05	1.44588E-07	1.29077E-07	3816.657006	3521.741886	8.979401514	1430867				
Los Angeles (SC)	2023 Agricultural - Nut Harvester	Aggregate	75 Diesel	3.28073E-05	3.96969E-05	4.72426E-05	0.000552613	0.000553447	0.014221469	1.84843E-05	1.70056E-05	1.31382E-07	1.16852E-07	3294.954798	1966.693535	4.991926006	1283705				
Los Angeles (SC)	2023 Agricultural - Nut Harvester	Aggregate	100 Diesel	6.96037E-05	8.42295E-05	0.000100229	0.000744599	0.001172139	0.018441569	5.95739E-05	5.48127E-05	1.45986E-07	4.07892E-07	11499.62	5418.612476	14.97455163	4474552				
Los Angeles (SC)	2023 Agricultural - Nut Harvester	Aggregate	175 Diesel	7.7E-05	9.3718E-05	0.000111557	0.000518197	0.000839029	0.019369364	4.73407E-05	4.35443E-05	3.64107E-07	3.23483E-07	9121.440651	3108.496853	6.239381869	3823143				
Los Angeles (SC)	2023 Agricultural - Nut Harvester	Aggregate	300 Diesel	5.95837E-05	7.2509E-05	8.58024E-05	4.38957E-05	6.765E-05	0.001609862	2.82682E-05	2.60018E-05	2.95775E-08	2.62682E-08	740.5803987	161.4411378	0.511555514	31485.92				
Los Angeles (SC)	2023 Agricultural - Nut Harvester	Aggregate	600 Diesel	4.14836E-05	5.01953E-05	5.97364E-05	0.000351729	0.000494406	0.027592149	2.08027E-05	1.91384E-05	2.55576E-07	2.26714E-07	6392.791315	845.5125927	1.984455866	274791.6				
Los Angeles (SC)	2023 Agricultural - Other Harvesters	Aggregate	50 Diesel	2.87067E-05	3.47151E-05	4.13175E-05	0.000180946	0.000170231	0.002931174	9.02251E-06	8.30071E-06	2.64207E-08	2.40843E-08	679.1200162	688.8934902	1.554288509	29258.23				
Los Angeles (SC)	2023 Agricultural - Other Harvesters	Aggregate	75 Diesel	1.51588E-05	4.25411E-05	1.06275E-05	0.000319564	0.000132429	0.005495241	1.83416E-05	1.68756E-05	8.97078E-08	8.15285E-08	1736.563344	1005.166085	2.737122398	77539.94				
Los Angeles (SC)	2023 Agricultural - Other Harvesters	Aggregate	100 Diesel	0.000120909	0.0001463	0.000174109	0.000147726	0.000898646	0.02541699	8.02928E-05	7.38693E-05	2.32942E-07	2.08842E-07	5888.833134	2657.800108	2.140923518	227730.8				
Los Angeles (SC)	2023 Agricultural - Other Harvesters	Aggregate	175 Diesel	8.84552E-05	0.000107031	0.000127403	0.000125116	0.002788	0.010827041	0.000242266	0.000222977	6.89645E-07	6.34174E-07	17895.29224	1.38259E+09	4.184249005	1.08E+06				
Los Angeles (SC)	2023 Agricultural - Other Harvesters	Aggregate	300 Diesel	7.53701E-05	9.11978E-05	0.000108513	0.000302443	0.000797497	0.016819679	3.90606E-05	3.04138E-05	1.52588E-07	1.40425E-07	3896.910957	776.0701151	1.170423264	165815.6				
Los Angeles (SC)	2023 Agricultural - Other Harvesters	Aggregate	500 Diesel	2.00172E-05	2.42187E-05	2.88147E-05	0.000104795	0.000211056	0.004459358	8.89205E-06	8.18124E-06	3.84039E-08	2.44458E-08	971.1893971	308.9512262	0.331277596	41185.72				
Los Angeles (SC)	2023 Agricultural - Other Harvesters	Aggregate	500 Diesel	2.00837E-05	2.43013E-05	2.89205E-05	8.74576E-05	8.37668E-05	0.001614862	5.89995E-06	5.42795E-06	1.20691E-08	1.11866E-08	315.4359635	300.6606462	0.572829154	13529.73				
Los Angeles (SC)	2023 Agricultural - Others	Aggregate	75 Diesel	3.76693E-06	4.55798E-06	5.42417E-06	2.51403E-06	3.38691E-05	0.000561362	2.25256E-06	2.07235E-06	5.11187E-09	4.61248E-09	130.0612664	85.82407887	0.173832389	5578.606				
Los Angeles (SC)	2023 Agricultural - Others	Aggregate	100 Diesel	1.51742E-05	1.83608E-05	2.18508E-05	1.01258E-05	0.000122938	0.002038763	9.08591E-06	8.18703E-06	2.06127E-08	1.89702E-08	534.9145245	263.5117814	0.528674807	22941.64				
Los Angeles (SC)	2023 Agricultural - Others	Aggregate	175 Diesel	4.29817E-05	5.20079E-05	6.18937E-05	0.00031993	0.000431555	0.007929059	2.37955E-05	2.18910E-05	7.25103E-08	6.5155E-08	1837.073858	687.0591409	1.391211583	87598.89				
Los Angeles (SC)	2023 Agricultural - Others	Aggregate	300 Diesel	4.83818E-05	5.8542E-05	6.96686E-05	0.000355425	0.000538945	0.010384905	2.68E-05	2.46E-05	9.52656E-08	8.51287E-08	2406.065854	1012.881	1.957449719	111470.1				
Los Angeles (SC)	2023 Agricultural - Others	Aggregate	600 Diesel	0.000224093	0.000272165	0.000323899	0.001354752	0.002509594	0.052542664	0.000105534	9.70988E-05	4.82393E-07	4.31722E-07	12173.54195	1553.674226	3.146875688	580482.2				
Los Angeles (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	50 Diesel	5.04346E-05	6.1036E-05	7.26357E-05	0.000218686	0.000220151	0.003262564	1.45616E-05	1.33966E-05	2.88531E-08	2.60744E-08	755.8942784	818.3164646	2.146207458	31178.7				
Los Angeles (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	75 Diesel	1.07293E-05	1.29825E-05	1.54502E-05	6.79982E-05	9.47744E-05	0.001502353	6.3727E-06	5.86288E-06	1.36613E-08	1.23443E-08	348.0784407	235.5262407	0.422762516	14216.52				
Los Angeles (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	100 Diesel	1.47346E-05	4.20288E-05	5.00175E-05	0.000225139	0.000277072	0.004668776	2.25061E-05	2.07056E-05	4.52498E-08	4.08265E-08	1151.209603	353.3905529	0.954351176	47980.51				
Los Angeles (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	175 Diesel	4.53186E-05	5.49546E-05	6.53962E-05	0.000347975	0.000410764	0.007221164	2.49522E-05	2.29576E-05	7.33015E-08	6.59107E-08	1856.524599	692.2825812	1.288262645	82528.22				
Los Angeles (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	300 Diesel	1.90183E-05	2.30121E-05	2.73863E-05	8.07573E-05	0.000210633	0.003391729	9.05866E-06	8.33392E-06	3.59124E-08	3.22069E-08	908.156919	186.6947958	0.337017674	40893.57				
Los Angeles (SC)	2023 Agricultural - Sprayers/Spray rigs	Aggregate	500 Diesel	1.16265E-05	1.40681E-05	1.67423E-05	7.38822E-05	1.29998E-05	0.000206097	8.74527E-07	8.04945E-07	2.16178E-08	1.93872E-08	546.2256459	81.29166492	0.101520643	2736.249				
Los Angeles (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	50 Diesel	9.04624E-05	0.000109505	0.00013032	0.000655	0.001099504	0.017117796	6.57958E-05	6.05746E-05	1.33868E-06	1.20027E-06	3385.51	1.33E+09	37.17857616	7.29E+06	0.641948544	12386.16		
Los Angeles (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	75 Diesel	2.14837E-05	2.59958E-05	3.09357E-05	0.000271788	0.000261116	0.004068317	1.56220749	1.43806E-05	1.17945E-07	1.05703E-07	2979.554	1.33E+09	37.17857616	7.29E+06	0.641948544	12386.16		
Los Angeles (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	100 Diesel	4.11049E-05	4.9737E-05	5.91911E-05	0.00056877	0.000460399	0.014018177	3.07779E-05	2.83157E-05	1.29241E-07	1.15182E-07	3247.854999	1373.962805	2.98645551	117727.7				
Los Angeles (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	175 Diesel	2.28059E-05	2.75951E-05	3.28405E-05	0.000160873	0.000219305	0.003991782	1.36631E-05	1.25681E-05	8.44877E-08	7.55417E-08	2130.096178	893.3103986	1.947428914	82174.04				
Los Angeles (SC)	2023 Agricultural - Swathers/Windrowers/Hay Conditioners	Aggregate	300 Diesel	1.10192E-05	1.33498E-05	1.58837E-05	6.82111E-05	0.000125218	0.002304769	8.45E-06	7.77E-06	4.56200E-08	4.05650E-08	1141.858615	220.0746259	0.455988925	43240.77				
Los Angeles (SC)	2023 AirGroup - A/C Tug Narrow Body	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Los Angeles (SC)	2023 AirGroup - A/C Tug Narrow Body	Aggregate	50 Diesel	0.000289885	0.000350773	0.000417449	0.00122304	0.001025597	0.01013517	0.000310597	0.000310825	9.28012E-07	8.26922E-07	3287.059111	2474.65871	7.779728558	106754.6				
Los Angeles (SC)	2023 AirGroup - A/C Tug Narrow Body	Aggregate	75 Diesel	1.6772E-05	2.02941E-05	2.41516E-05	0.000106843	0.000212732	0.023542221	1.62218E-05	1.49240E-05	2.16990E-07	1.92002E-07	761.2174938	460.16145	1.355945752	27549.44				
Los Angeles (SC)	2023 AirGroup - A/C Tug Narrow Body	Aggregate	100 Diesel	0.000471712	0.000570795	0.000679294	0.002509116	0.005845151	0.054559979	0.000318215	0.000292826	2.82438E-06	2.50004E-06	7893.436995	1207.39085	3.441949125	111806				
Los Angeles (SC)	2023 AirGroup - A/C Tug Narrow Body	Aggregate	175 Diesel	0.001046982	0.001266848	0.001507654	0.017573172	0.014872623	2.97153893	0.000790514	0.000727273	2.74419E-05	2.42533E-05	96408.30803	26479.36524	80.39053049	3481212				
Los Angeles (SC)	2023 AirGroup - A/C Tug Narrow Body	Aggregate	300 Diesel	0.000400889	0.000485088	0.000577295	0.002971605	0.006853147	1.551387765	0.000197308	0.000181524	1.43313E-05	1.26622E-05	50133.06763	8117.087324	24.37648344	1827537				
Los Angeles (SC)	2023 AirGroup - A/C Tug Narrow Body	Aggregate	750 Diesel	0.000125753	0.000152116	0.000181004	0.000621894	0.001777617	0.310319988	0.000061823	0.000056894	9.50275E-07	8.42223E-07	3347.855832	172.7938656	0.513648584	120892.8				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	50 Diesel	6.83265E-05	8.26751E-05	9.83902E-05	0.000141556	0.000111123	0.022009898	4.66149E-05	4.28857E-05	2.03261E-07	1.79618E-07	713.9924215	477.3509059	1.382176218	23151.52				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	75 Diesel	1.46416E-05	1.77163E-05	2.10839E-05	0.000175366	0.000183476	0.025917851	1.21065E-05	1.11379E-05	2.39184E-07	2.11538E-07	840.7585954	477.3509059	1.382176218	30311.78				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	100 Diesel	9.00708E-05	0.000108986	0.000129702	0.000957614	0.000911178	0.114060927	5.59355E-05	5.14529E-05	1.29738E-06	1.14760E-06	4561.912919	1909.408323	5.529644747	144447.4				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	175 Diesel	1.00104434	0.000126365	0.000150385	0.002127398	0.00133891	0.374481874	6.23631E-05	5.73745E-05	3.45914E-06	3.05647E-06	12149.65197	2864.105435	7.093573093	437969.5				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	300 Diesel	0.000641877	0.000776671	0.000924303	0.006652874	0.007711794	3.57958E-05	0.000241158	0.000221866	1.30735E-05	1.92155E-05	116133.3047	17335.41368	43.14943196	4188371				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	500 Diesel	0.000585243	0.000707724	0.000839387	0.004568664	0.009488217	1.682204945	0.000703317	0.000647	1.23322E-05	1.14068E-05	11044.5	5273.746552	13.95500551	1907438				
Los Angeles (SC)	2023 AirGroup - A/C Tug Wide Body	Aggregate	750 Diesel	0.869988E-05	9.76467E-05	0.000116208	0.000288832	0.001815708	0.140846015	4.72044E-05	4.34281E-05	1.29977E-06	1.14957E-06	4569.593841	261.5621402	1.382176218	164784.1				
Los Angeles (SC)	2023 AirGroup - Baggage Tug	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Los Angeles (SC)	2023 AirGroup - Baggage Tug	Aggregate	50 Diesel	0.000203677	0.000246449	0.000291295	0.001848687	0.00153947	0.222337996	9.185E-05	8.45022E-05	2.04955E-06	1.81469E-06	721.5511368	757.1505258	10.41706994	3401046				
Los Angeles (SC)	2023 AirGroup - Baggage Tug	Aggregate	75 Diesel	0.000262983	0.000318285	0.000376064	0.010975212	0.008281141	1.591760884	0.000599287	0.000551928	1.46977E-05	1.29913E-05	5164.326629	40722.72873	2.709876	5512469.6				
Los Angeles (SC)	2023 AirGroup - Baggage Tug	Aggregate	100 Diesel	0.000600684	0.000726828	0.000864985	0.011084209	0.008222772	1.599719651	0.000263923	0.000242809	1.47722E-05	1.30567E-05	51901.1423	30422.82211	41.66827759	2723540				
Los Angeles (SC)	2023 AirGroup - Baggage Tug	Aggregate	175 Diesel	1.45629E-06	1.76121E-06	2.09706E-06	7.82462E-05	7.24031E-06	0.014503788	2.58809E-07	2.37388E-07	1.34031E-07	1.18598E-07	471.4354624	197.683388	0.267104343	24710.4				
Los Angeles (SC)	2023 AirGroup - Baggage Tug	Aggregate	300 Diesel	5.679E-06	6.87141E-06	8.17907E-06	0.000305355	0.000282504	0.056618993	1.00972E-06	9.26139E-07	7.72122E-07	6.83120E-07	2715.468263	790.7317523	1.088417374	142313.9				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	25 Diesel	8.64568E-07	1.04611E-06	1.24498E-06	2.48854E-05	2.30258E-05	0.004800183	7.94617E-08	7.31040E-08	4.43541E-08	3.91784E-08	155.7316572	123.0332866	0.623876203	8075.082				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	50 Diesel	0.000170352	0.000206128	0.000245267	0.001855667	0.001438109	0.299619965	0.000106861	9.83373E-05	1.27707E-06	1.12858E-06	447.8572529	5006.550942	6.225904153	2120773				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	75 Diesel	0.00006762	0.000735221	0.000874973	0.005843773	0.006552371	0.881455172	0.000468895	0.000431047	7.76144E-06	6.86784E-06	2730.088635	25032.75471	48.35045571	1573672				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	100 Diesel	0.000180058	0.000204987	0.000243783	0.005210444	0.004814327	0.979441722	0.000333434	0.000306757	7.05001E-06	6.19844E-06	2463.501261	16449.70157	32.1262641	1428303				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	175 Diesel	2.24433E-05	2.71563E-05	3.23183E-05	0.000318778	0.000228739	0.051688426	1.55497E-05	1.43005E-05	4.77212E-07	4.21878E-07	1676.974068	715.0245695	1.555695507	96673.23				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	300 Diesel	1.13402E-05	1.37217E-05	1.63299E-05	8.74491E-05	0.000120705	0.045509793	5.81284E-06	5.36621E-06	4.20420E-07	3.71444E-07	1476.513291	321.0932866	0.623876203	85113.29				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	500 Diesel	1.26618E-05	1.5208E-05	1.82413E-05	6.97281E-05	1.32947E-05	0.002932088	6.56278E-07	6.06009E-07	1.26697E-07	1.12478E-07	445.1651	1.33193E-09	0.000369	1.08E+06				
Los Angeles (SC)	2023 AirGroup - Belt Loader	Aggregate	750 Diesel	4.01192E-05	4.85443E-05	5.77717E-05	0.000619008	0.000315578	0.023041598	2.72489E-05	2.51609E-05	2.11846E-07	1.88079E-07	747.6240884	69.01779528	0.131938101	43116.12		

Los Angeles (SC)	2023 OFF - AirGuppi - Sweeper	Aggregate	100 Gasoline	0.000108366	9.9675E-05	0.00011925	0.00566237	0.000525172	0.138115949	9.64372E-06	7.28637E-06	1.14195E-06	1.95382E-06	5577.2	2168.1	5.98	1155559.7
Los Angeles (SC)	2023 OFF - AirGuppi - Water Truck	Aggregate	175 Gasoline	0.000149086	0.000137129	0.000164068	0.011620735	0.001260981	0.319589554	2.40869E-05	1.81908E-05	3.13777E-06	4.70299E-06	13424.7	4927.5	15.85	739125
Los Angeles (SC)	2023 OFF - ConstMin - Asphalt Pavers	Aggregate	25 Gasoline	0.003666072	0.003372053	0.004034289	0.153884505	0.002673827	0.247610799	0.001186151	0.000141492	6.42703E-06	6.68759E-06	19089.5	16815.55	42.42	289277.1
Los Angeles (SC)	2023 OFF - ConstMin - Asphalt Pavers	Aggregate	50 Gasoline	0.000596276	0.000548271	0.000655945	0.04448779	0.000847546	0.110099533	2.11987E-05	1.61809E-05	3.77388E-06	5.08020E-06	14501.45	6212.3	15.84	198793.6
Los Angeles (SC)	2023 OFF - ConstMin - Asphalt Pavers	Aggregate	100 Gasoline	0.00029252	0.00026906	0.0003219	0.013416707	0.000770817	0.521166397	2.2406E-05	1.69239E-05	3.10485E-06	4.55594E-06	13004.95	3423.7	8.72	208845.7
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25 Gasoline	0.001305532	0.001200819	0.001436647	0.057282271	0.00090427	0.091796972	0.000692581	0.000521284	2.35581E-06	2.48139E-06	7084.65	5376.45	43.34	89552.9
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25 Diesel	0.000173425	0.000026939	0.000269732	0.009311995	0.001575564	0.208306188	5.91935E-06	5.45868E-06	2.79418E-06	1.74187E-06	6924.05	1542.66	12.86	161844.7
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	50 Gasoline	4.604566E-05	4.23527E-05	5.06703E-05	0.00265042	8.86195E-05	0.031424345	2.16637E-06	1.63681E-06	3.82063E-07	4.74391E-07	1354.15	521.95	4.92	16702.4
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	100 Gasoline	0.000278149	0.000255841	0.000306086	0.009425365	0.00091681	0.193275252	2.73504E-05	2.06647E-05	3.78999E-06	5.40754E-06	15435.85	2412.65	22.53	212113.2
Los Angeles (SC)	2023 OFF - ConstMin - Bore/Drill Rigs	Aggregate	175 Gasoline	6.3023E-05	5.7969E-05	6.9353E-05	0.004383413	0.000355629	0.135211976	9.69326E-06	7.3237E-06	1.34310E-06	1.88733E-06	5387.4	598.6	5.56	75421.6
Los Angeles (SC)	2023 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Diesel	0.052923744	0.006838659	0.060588476	1.758009377	0.034765455	4.191827226	0.017903973	0.013524746	9.60402E-05	2.13130E-05	2313000.7	65325.61	6871.38	1.4173E+08
Los Angeles (SC)	2023 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Diesel	0.00043601	0.000518889	0.000627855	0.033048477	0.000393422	0.513494305	0.000153994	0.000141674	7.99507E-06	4.47268E-06	17779.15	5378.75	179.09	555059.2
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Gasoline	0.004003044	0.03681991	0.044505952	1.657249369	0.030593771	2.761961226	0.020329776	0.015360275	7.66053E-05	7.33247E-05	209305.6	261307.15	919.53	2736269
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Diesel	1.439886E-05	1.71358E-05	2.07343E-05	0.00070914	0.000113424	0.017187285	4.89577E-06	4.51061E-06	2.38072E-07	1.44161E-07	572.05	179.2	1.27	18665.6
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50 Gasoline	0.000807144	0.000742411	0.000888212	0.059979491	0.001030899	0.72108919	4.97112E-05	3.75596E-05	8.75713E-06	1.08483E-05	30966.6	11165.35	18.29	390787.3
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	100 Gasoline	0.000235436	0.000216597	0.000258732	0.020774155	0.000181851	0.252722898	6.42004E-06	4.84983E-06	2.27077E-06	9026.45	2707.76	6526.2	11.26	215364.6
Los Angeles (SC)	2023 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	100 Gasoline	0.000311705	0.000305103	0.000365022	0.0163479	0.000837208	0.77062344	5.37297E-05	4.05958E-05	7.44510E-06	1.05683E-05	30167.25	6398.45	10.48	422297.7
Los Angeles (SC)	2023 OFF - ConstMin - Cranes	Aggregate	25 Gasoline	0.000211037	0.000206939	0.000247612	0.010458083	0.000209195	0.009527121	6.56840E-06	5.46282E-06	1.15835E-06	1.58040E-06	4511.4	2314.1	5.56	85627.7
Los Angeles (SC)	2023 OFF - ConstMin - Cranes	Aggregate	100 Gasoline	0.000422374	0.0003885	0.000464797	0.0172134	0.001111334	0.376811088	2.62722E-05	1.98501E-05	3.64052E-06	5.37558E-06	15344.6	4631.85	11.16	342756.9
Los Angeles (SC)	2023 OFF - ConstMin - Cranes	Aggregate	175 Gasoline	1.93E-05	1.77521E-05	2.1238E-05	0.00089099	8.19021E-05	0.024561656	1.77515E-06	1.34122E-06	2.45981E-07	3.47801E-07	992.8	178.85	0.46	22356.25
Los Angeles (SC)	2023 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	25 Gasoline	0.000587734	0.000540598	0.000646715	0.024969131	0.000404528	0.038477525	0.000303838	0.000232999	1.03E-06	7.47682E-07	2019.55	1146.13	10.9	37025.25
Los Angeles (SC)	2023 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	100 Gasoline	0.000264318	0.00024312	0.000290866	0.009506337	0.000774967	0.297770205	2.07613E-05	1.56863E-05	2.87688E-06	4.16850E-06	11899	1562.2	6.46	149971.2
Los Angeles (SC)	2023 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Diesel	0.004672814	0.004298577	0.005143274	0.175950659	0.002454468	0.278811747	0.011905818	0.008995507	6.61435E-05	5.48058E-05	15644.61	497710.35	2567.43	3054568
Los Angeles (SC)	2023 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Diesel	0.000267679	0.000246193	0.000294733	0.010241553	0.000267622	0.030770398	0.000304928	0.000240558	5.71252E-06	3.08030E-06	1224.75	521814	103.54	497451.2
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	25 Gasoline	0.018207573	0.016747325	0.020036327	0.751030244	0.013467181	2.238522935	0.00901627	0.006812293	3.31645E-05	3.30595E-05	94367.1	125158.5	502.52	1540388
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	25 Diesel	0.001812017	0.001666545	0.001993904	0.071435445	0.001411295	0.236389997	0.000627864	0.000577581	1.32273E-05	1.84E-05	7337916	4855.75	275.9	2293116
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	50 Gasoline	0.001023801	0.000941693	0.001126631	0.079498428	0.001326442	0.37612982	2.59301E-05	1.95916E-05	4.57305E-06	6.60313E-06	18848.6	6927.7	11.16	256324.9
Los Angeles (SC)	2023 OFF - ConstMin - Rollers	Aggregate	100 Gasoline	0.001809047	0.001664205	0.001990911	0.08538703	0.00475251	0.747256188	9.88145E-05	7.47686E-05	1.38027E-05	2.06670E-05	58094.95	13021.2	20.96	979740
Los Angeles (SC)	2023 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	25 Gasoline	0.000142832	0.000131377	0.000157178	0.003853919	0.000202552	0.064576	4.45181E-06	3.36359E-06	7.85126E-07	1.06898E-06	3051.4	912.5	2.24	42887.5
Los Angeles (SC)	2023 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	100 Gasoline	0.000318503	0.000488542	0.002017761	0.074674124	0.004829538	1.639735882	0.000114126	8.63799E-05	1.58421E-05	2.33871E-05	66758.5	13080.3	31.69	1112557
Los Angeles (SC)	2023 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	175 Gasoline	7.29254E-05	6.70918E-05	8.025E-05	0.003373726	0.000133207	0.039088597	6.72508E-06	5.19189E-06	1.31986E-06	1.79684E-06	5131.85	1183.65	5.11	69824.1
Los Angeles (SC)	2023 OFF - ConstMin - Rubber Tired Loaders	Aggregate	25 Diesel	8.369988E-05	9.960997E-05	0.000120528	0.000411377	0.000076139	0.099908389	2.84589E-05	2.61822E-05	1.26765E-06	8.35585E-07	3321.5	4314.3	4.5	107857.5
Los Angeles (SC)	2023 OFF - ConstMin - Rubber Tired Loaders	Aggregate	50 Gasoline	0.000319997	0.000312702	0.000380785	0.012596387	0.000384421	0.147599782	1.0065E-05	7.55134E-06	1.82515E-06	2.50664E-06	7081	2801.6	5.58	114464
Los Angeles (SC)	2023 OFF - ConstMin - Rubber Tired Loaders	Aggregate	100 Gasoline	0.001996399	0.001836288	0.002196916	0.088749851	0.005019927	1.725362466	0.000112296	9.08900E-05	1.66694E-05	2.48192E-05	70846.5	18969.05	36.97	1365772
Los Angeles (SC)	2023 OFF - ConstMin - Signal Boards	Aggregate	25 Gasoline	0.000090927	0.000083703	0.000100102	0.003412697	0.000072444	0.004003129	0.000404196	0.000304855	1.83979E-06	1.02870E-06	4792.45	8303.75	31.31	649429.85
Los Angeles (SC)	2023 OFF - ConstMin - Signal Boards	Aggregate	25 Diesel	0.004638133	0.005519761	0.006678911	0.035033595	0.004182574	5.7376353	0.001634363	0.001503614	8.92827E-05	4.48279E-05	19113.11	679484	905.19	4076904
Los Angeles (SC)	2023 OFF - ConstMin - Signal Boards	Aggregate	50 Gasoline	0.878076E-05	0.000104498	0.000126441	0.008099946	0.000795147	0.119405547	2.77602E-05	2.55394E-05	1.54355E-06	1.00302E-06	3983.45	2401.7	4.51	88861.9
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Gasoline	0.058583832	0.053975713	0.064703642	2.502162904	0.042489179	3.988877177	0.003094937	0.002310234	0.000103124	0.000108272	309063.75	280188.6	877.55	5023024
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Diesel	0.008201173	0.009760073	0.011809689	0.040131048	0.007467351	9.729447156	0.002905202	0.002672786	0.000123448	8.13777E-05	323481.25	515343.5	617.39	10306870
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	50 Gasoline	0.004247751	0.003727918	0.004509277	0.291961477	0.004958729	0.427280956	0.000142387	0.000118504	4.74708E-06	3.36258E-06	90275.45	47190.85	152.11	1510107
Los Angeles (SC)	2023 OFF - ConstMin - Skid Steer Loaders	Aggregate	100 Gasoline	0.001420903	0.001306947	0.001581617	0.074575586	0.003580998	1.064190787	0.000211643	0.000161419	2.96044E-05	4.22323E-05	120552.2	28236.4	91	2258912
Los Angeles (SC)	2023 OFF - ConstMin - Surfacing Equipment	Aggregate	25 Diesel	0.004056403	0.004749571	0.005749769	1.529737564	0.031523718	2.645285868	0.001458319	0.001402306	7.65688E-05	6.92532E-05	19387.98	4922.2	4.01	115152
Los Angeles (SC)	2023 OFF - ConstMin - Tampers/Rammers	Aggregate	25 Diesel	0.004676397	0.004030135	0.005146088	0.218080133	0.003962478	0.411832676	0.003107011	0.00234752	1.64697E-05	1.02575E-05	29273	13678.4	750.94	577335.1
Los Angeles (SC)	2023 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Gasoline	0.001155038	0.001859634	0.002329255	0.079423878	0.001541709	1.85917436	0.000528165	0.000486096	2.35513E-05	1.55235E-05	61706.9	85501.25	90.69	1966529
Los Angeles (SC)	2023 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	100 Gasoline	0.000999719	0.000893552	0.001100141	0.04099544	0.002585059	0.208814497	0.000212096	0.000164891	1.36788E-05	1.07870E-05	50041.5	17089.3	39.65	1076526
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	25 Gasoline	0.03687595	0.033918499	0.040579734	1.52493467	0.027619446	2.4797961	0.018709344	0.014159548	6.584E-05	6.66564E-05	190270.85	1957203	450.58	2897074
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	25 Diesel	0.000732754	0.000872858	0.001055166	0.035053374	0.000653074	0.098655409	0.000275952	0.000230802	1.16713E-05	7.37243E-06	29305.85	9630.61	49.51	684126.8
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	50 Gasoline	0.004178338	0.003842316	0.004598006	0.28710177	0.005955978	0.912429361	0.000113841	9.96133E-05	2.32517E-05	3.15463E-05	90049.15	40836.2	101.51	1225086
Los Angeles (SC)	2023 OFF - ConstMin - Trenchers	Aggregate	100 Gasoline	0.001523353	0.001401215	0.001676399	0.061798272	0.004003944	0.38036869	9.62585E-05	8.72726E-05	1.31385E-05	1.96166E-05	56129.7	14552.45	31.65	894461.7
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	25 Gasoline	0.019368033	0.017814717	0.021313339	0.801627722	0.013816554	2.377016731	0.00963472	0.007279566	3.24294E-05	3.46868E-05	99013.55	113482.15	302.34	2140568
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	25 Diesel	0.002078762	0.002473899	0.002959418	0.01191013	0.018855419	2.495006213	0.000703484	0.000677566	3.39938E-07	2.08868E-05	8302.19	1850.95	455.71	3160166
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	25 Net Gas	0	0	0.001758333	0.471404447	0.012977748	2.72414169	0	0	0	0	185503.95	15975.55	418.24	2361095
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	50 Gasoline	0.005995517	0.005514676	0.0065977	0.494518177	0.009052582	0.684270183	0.000323929	0.000243991	5.68522E-05	7.26958E-05	207509.8	130447.35	361.03	4304763
Los Angeles (SC)	2023 OFF - Industrial - Aerial Lifts	Aggregate	100 Gasoline	0.004727761	0.004349749	0.005203812	0.391196589	0.00714031	1.005409777	0.000254614	0.000205176	9.08523E-05	1.03033E-04	272037.2	104940.35	361.03	8739972
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	25 Gasoline	0.000571283	0.000525466	0.000628662	0.035323381	0.000481417	0.055839831	2.80864E-05	2.12288E-05	1.41524E-06	1.50757E-06	4303.35	6237.85	6.92	143470.6
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	25 Net Gas	0	0	0.000174953	0.013535506	0.000377938	0.076922969	0	0	0	0	4932.2	5022.4	4.01	115152
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	50 Gasoline	0.151950564	0.139764129	0.167212327	17.96583836	0.354490695	63.1196142	0.00435141	0.003287732	0.000767419	0.002118824	3479136.2	2169300.85	1204.13	88941335
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	50 Net Gas	0	0	0.011880056	1.969177796	0.515046837	122.6843584	0	0	0	0	653604.05	485796.1	2717.52	2.01E+08
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	100 Gasoline	0.320734545	0.295011631	0.352968794	35.55456529	1.598756519	373.9124176	0.026071441	0.019698449	0.003612709	0.005608558	6536041.9	4635651.9	6225.65	5.13E+08
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	100 Net Gas	0	0	0.070350775	33.19393293	3.32992666	735.203045	0	0	0	0	4090469.4	1718272.81	9537.69	1.2E+09
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	175 Gasoline	0.016473838	0.015404229	0.018042497	1.009809222	0.018855922	27.21210907	0.001987787	0.001501575	0.00027539	0.000392599	1120674.1	278224.9	154.43	40628835
Los Angeles (SC)	2023 OFF - Industrial - Forklifts	Aggregate	175 Net Gas	0	0	0.002327034	1.944855728	0.165634855	56.11560501	0	0	0	0	307002.95	62880.74	349.03	91805880
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	25 Gasoline	0.015990227	0.014709785	0.017346348	0.678821349	0.012971949	1.620212157	0.000780849	0.000589974	4.49058E-06	4.27535E-06	12245.05	5564.16	13.11	2331158
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	25 Diesel	0.002553495	0.003003887	0.003677033	0.014469258	0.023786521	3.1529374	0.000898113	0.000826264	4.2153E-05	2.63387E-05	104890.05	19992.45	140.18	3602068
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	50 Gasoline	0.004512772	0.004334808	0.005186118	0.455907715	0.008145007	0.153698802	0.000207413	0.000164268	8.83412E-05	5.15014E-05	147011.05	82292.9	115.31	2468787
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	100 Gasoline	0.001457894	0.001400425	0.001676399	0.061852793	0.003883995	0.269459364	0.000188345	0.000147284	2.60709E-05	3.80623E-05	56129.7	14552.45	37.9	2136385
Los Angeles (SC)	2023 OFF - Industrial - Other General Industrial Equipment	Aggregate	175 Gasoline	0.000204615	0.000188205	0.000225166	0.01975866	0.001749068	0.559390801	4.01024E-05	3.02996E-05	5.55698E-06	7.81576E-06	22367.2	2617.05	3.68	455166.7
Los Angeles (SC)	2023 OFF - Industrial - Other Material Handling Equipment	Aggregate	25 Gasoline	0.000207852	0.000191008	0.000228504	0.00499755	0.000171004	0.040691517	0.000124538	0.000101466	5.34956E-07	5.94488E-07	1525.7	638.75	1.61	261388.75
Los Angeles (SC)	2023 OFF - Industrial - Other Material Handling Equipment	Aggregate	50 Gasoline	0.000717887	0.000659107	0.000789512	0.083447506	0.007682386	1.865317296	0.000110054	9.82633E-05	7.12188E-06	1.00415E-05	18550.95	5695.55	72.11	1504464
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25 Diesel	0.012204682	0.011218867	0.013435058	0.787506205	0.009984246	1.277807328	0.005972128	0.004503128	1.38529E-05	1.04602E-05	4410.88	2660.8	396.01	1387594
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	25 Gasoline	0.000508528	0.00060519	0.00073228	0.003121845	0.004806023	0.641048333	0.000182802	0.000167994	8.83051E-06	5.36519E-06	21326.95	29692.75	45.65	549132.3
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	50 Gasoline	0.001456339	0.012008221	0.014367705	1.132695473	0.028536696	10.19171881	0.000702746	0.000503963	0.000137009	0.000193975	454938	173400.55	316.76	6069019
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	100 Gasoline	0.007619796	0.007010859	0.008388398	0.594583203	0.048582033	5.350381802	0.001139988	0.000817244	0.000175968	0.000272546	648388.65	147441.75	1654.85	9845846
Los Angeles (SC)	2023 OFF - Industrial - Sweepers/Scrubbers	Aggregate	175 Gasoline	5.900496E-05	5.427275E-05	6.49313E-05	0.004308869	0.000575858	0.190342726	1.36455E-05	1.031E-05	1.80806E-06	2.65966E-06	7592	8393.5	1.62	117530
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	25 Gasoline	0.012322683	0.011344672	0.013580614	2.843851619	0.078192499	6.247377099	0.005455621	0.004122483	0.002276182	0.002160124	6166368.4	870791.25	7578.93	93403861
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	25 Diesel	0.000541495	0.000644424	0.000779753	0.028824891	0.004757555	0.608361455	0.000203172	0.00018747	8.07126E-06	5.09615E-06	20257.5	36978.15	45.43	738643.2
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	50 Gasoline	0.000636439	0.000583874	0.000703513	0.462780621	0.008490088	2.679624645	0.000184731	0.000139574	1.42455E-05	1.54458E-05	12870.65	5780.14	119.55	2023499
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	50 Diesel	0.006553225	0.007778888	0.009416644	0.359649851	0.048012543	6.805159642	0.00197376	0.001815859	8.79737E-05	5.73661E-05	228033.75	223248.6	274.28	8260198
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	100 Gasoline	0.020527329	0.018881037	0.022589071	0.885714661	0.051603035	17.18291839	0.001198034	0.000905182	0.000166011	0.000247252	705782.25	187401.95	387.67	13118137
Los Angeles (SC)	2023 OFF - Light Commercial - Air Compressors	Aggregate	175 Gasoline	0.001841148	0.001693948	0.002026071	0.079384443	0.007196863	2.253260888	0.000154279	0.000116566	2.13783E-05	3.02858E-05	86402.8	12607.1	26.1	1689351
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	50 Net Gas	0	0	0.000398503	0.07058645	0.014470345	4.806896	0	0	0	0	255405.1	74708.2	8.79	2390682
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	100 Net Gas	0	0	0.002173807	1.127888	0.185624242	27.01227	0	0	0	0	1494685.95	454391.35	18.17	13586439
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	175 Net Gas	0	0	0.000606056	0.22962932	0.022912632	7.0300331	0	0	0	0	3838559	24903.95	2.93	3635977
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	300 Net Gas	0	0	0.000466253	0.26421322	0.022166828	7.2453534	0	0	0	0	3975557.7	19921.7	2.15	4183557
Los Angeles (SC)	2023 OFF - Light Commercial - Gas Compressors	Aggregate	600 Net Gas	0	0	0.000656664	0.37212541	0.031218244	10.203874	0	0	0	0	5598808.8	17432.4	2.06	5892151
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	25 Gasoline	0.006273197	0.833590249	0.09728565	48.91308252	0.646364557	82.17563981	0.054556521	0.041220483	0.002256182	0.002160124	6166368.4	8707912.75	7578.93	93403861
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	25 Diesel	0.012984204	0.015452276	0.018697254	0.081248894	0.123699711	15.90864467	0.005211579	0.004794652	0.000220043	0.000133245	529655.15	871098.05	2580.4	12529964
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	50 Gasoline	0.032104247	0.029529487	0.035328766	2.037860545	0.067176913	23.28032046	0.001603546	0.001211568	0.000282803	0.000352412	1005961.9	455180.95	3934.19	14460190
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	50 Diesel	0.012475524	0.014846906	0.017945757	0.128123218	0.123384771	15.85395251	0.005007259	0.004329828	0.000194796	0.000158022	628146.75	449395.1	1311.24	14830045
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	100 Gasoline	0.007211958	0.006635398	0.00793852	0.282560276	0.040913244	11.52107538	0.000803277	0.000606092	0.000011131	0.000158935	453680.4	87267.85	759.83	7243232
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	100 Net Gas	0	0	0.00422175	0.223470888	0.002530302	0.74608402	0	0	0	0	406040.05	6497	56.56	538251
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	175 Gasoline	0.000713274	0.000656069	0.000784914	0.06047408	0.007143907	1.862297478	0.000133507	0.000100872	1.85E-05	2.59751E-05	74146.1	8245.35	71.8	1203821
Los Angeles (SC)	2023 OFF - Light Commercial - Generator Sets	Aggregate	175 Net Gas	0	0	0.000637015	0.128141221	0.003486141	1.089301355	0	0	0	0	581286.75	5391.05	46.87	7870591
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	25 Gasoline	0.097017007	0.089230448	0.109754855	3.559891552	0.026933864	0.693822228	0.009618564	0.007267359	0.000207826	0.000171444	489377.4	909036.15	7911.82	82938837
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	25 Diesel	7.06237E-05	8.40469E-05	0.000101697	0.003517734	0.000694423	0.089868994	2.96423E-05	2.72709E-05	1.33285E-06	7.53863E-07	2996.65	1234.65	85.26	174422.6
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	50 Gasoline	0.000282857	0.000260317	0.000311285	0.010923827	0.002693554	0.225500457	1.62358E-05	1.42358E-05	2.86337E-06	3.533E-06	10084.95	4940.55	35.17	317176
Los Angeles (SC)	2023 OFF - Light Commercial - Pressure Washers	Aggregate	50 Diesel	4.222455E-05	5.02506E-05	6.08033E-05	0.002523371	0.000569106	0.090502641	1.6922E-05	1.55682E-05	1.16997E-06	7.53863E-07	2996.65	4635.5	31.93	176149
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	25 Gasoline	0.305413219	0.280988894	0.345077628	10.31724947	2.110004325	18.16506426	0.119113909	0.090407244	0.000585871	0.000483742	1538687.8	1798588.85	17488.15	21416266
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	25 Diesel	0.007156651	0.008517006	0.010305578	0.043581861	0.063483782	8.166998064	0.002784139	0.002561408	0.000116775	6.8456E-05	272092.9	58514245	1453.71	6430763
Los Angeles (SC)	2023 OFF - Light Commercial - Pumps	Aggregate	50 Gasoline	0.004866527	0.004479232	0.005355316	0.361261507	0.007464582	0.511681616	0.000429202	0.000182914	4.28958E-05	5.42208E-05	155829.3	69404.75	314.4	2151547
Los Angeles (SC)	2023 OFF -

Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	75	Diesel	0.000454622	0.000550093	0.000654656	0.000952768	0.008001857	1.531570525	0.000265752	0.000244492	1.41465E-05	1.25005E-05	49690.11897	43090.55356	43.9412286	3175648	
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	100	Diesel	0.000666987	0.000807054	0.000960461	0.017049032	0.007723298	2.350692283	0.000925095	0.000575087	2.17125E-05	1.91854E-05	76282.92946	56879.5307	58.00224175	4873891	
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	175	Diesel	0.001056289	0.001278109	0.001521056	0.024882611	0.009629674	3.978249114	0.000447029	0.000411267	3.67492E-05	3.24699E-05	129069.9112	56017.71963	57.12359718	8248735	
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	300	Diesel	0.001353408	0.001637204	0.001948028	0.012518345	0.009342811	6.005077145	0.000368159	0.000338706	5.54794E-05	4.90126E-05	194828.1146	45675.98077	46.57770231	12451279	
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	600	Diesel	0.001551845	0.001877733	0.002234657	0.01650992	0.00938094	8.518003082	0.000456842	0.000420294	7.87066E-05	6.95228E-05	276357.2291	45675.98077	46.57770231	17661727	
Los Angeles (SC)	2023 Portable Equipment - Rental Pump	Aggregate	750	Diesel	0.000287646	0.000348052	0.000414211	0.001791809	0.002717886	0.865262792	0.000122515	0.000112714	7.99115E-06	7.06216E-06	28072.49836	2585.433214	2.636473716	1794087	
Los Angeles (SC)	2023 TRU - Instate Genset TRU	Aggregate	50	Diesel	0.007187884	0.00869734	0.010350553	0.135431266	0.039653824	2.730787719	0.003450585	0.00041463	2.52012E-05	2.24378E-05	1731.405123	1044254.423	1337.551913	32894014	
Los Angeles (SC)	2023 TRU - Instate Trailer TRU	Aggregate	50	Diesel	0.142935952	0.172952501	0.20582777	2.100742115	1.324167872	31.13044337	0.018827627	0.017321417	0.000285459	0.000255787	19760.47776	7912093.908	5971.919079	2.69E+08	
Los Angeles (SC)	2023 TRU - Instate Truck TRU	Aggregate	25	Diesel	0.017970039	0.021743747	0.025879856	0.17621071	0.211018349	4.229244264	0.003480378	0.007801948	3.88246E-05	3.47501E-05	2684.573056	212911.988	1564.373246	30020479	
Los Angeles (SC)	2023 TRU - Instate Van TRU	Aggregate	25	Diesel	0.000416019	0.000503383	0.000599067	0.004079401	0.004885222	0.097909965	0.000196327	0.000180621	8.98817E-07	8.04488E-07	62.14969925	77221.67832	56.73892603	694995.1	
Los Angeles (SC)	2023 TRU - Out-of-State Genset TRU	Aggregate	50	Diesel	0.004522233	0.005471901	0.006512015	0.085271377	0.062783722	1.720749382	0.000283739	0.00026104	1.58802E-05	1.41387E-05	1092.265756	65803.6.1395	5321.839626	20727414	
Los Angeles (SC)	2023 TRU - Out-of-State Trailer TRU	Aggregate	50	Diesel	0.07511359	0.090887444	0.10816357	1.195981617	0.769750743	19.53864482	0.005247183	0.004827408	0.000179603	0.000160541	12402.42395	4965929.679	23667.14873	1.69E+08	
Los Angeles (SC)	2023 TRU - Railcar TRU	Aggregate	50	Diesel	0.007775224	0.009408021	0.011196323	0.123799504	0.079679118	2.02250144	0.000541151	0.000499699	1.85912E-05	1.66181E-05	1283.81065	514037.694	1594.261372	17477282	

OFFROAD 2024

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	4238552.6	2879.62	1392022.4	0.3044869	20213.7	45.3	36894.2	0.5478628	0	0	0	0
Air Compressors50	Air Compressors	50	1299991.1	119.34	57670	2.2540506	227471.65	273.7	222817.9	1.0208859	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	7044209.8	386.9	187029.65	3.76635897	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	86213.25	26.02	12588.85	6.84981154	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	98801.89	301.74	113255.85	0.87237455	82869.6	451.79	38423.15	0.4559368	3	422.85	1586	1.18159644
Aerial Lifts50	Aerial Lifts	50	207137.5	360.32	130177.25	1.59119585	300177.2428	1186.848334	167393.0682	0.8175039	2	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	229820.9313	670.4379858	206440.2958	1.1137176	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	371318.15	360.32	130177.25	2.8542043	294201.4795	767.3346945	237640.541	1.2380104	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	92032.25416	93.84875023	15407.05731	2.0790617	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1914.178043	3.080249953	522.2509448	3.6652428	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1359.342762	0.560098317	174.0816482	7.8085038	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7081	43.23	5361.85	1.32062627	7011.69	13.08	10577.7	0.6628709	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1350.5	4.93	525.6	2.56944444	7619.44726	18.29859457	6663.697539	1.1434263	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	9369.973219	10.20868898	5052.13855	1.8542876	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15421.25	22.54	2416.3	6.38217522	38254.76093	45.65017803	17781.41338	2.1513903	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5383.75	5.6	602.25	8.93933939	55793.78805	44.10924375	14280.76656	3.9069183	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	81280.75889	45.45756124	13065.52151	5.4319694	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	125225.4519	36.01933878	12171.24085	10.288634	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	81035.17479	8.089934967	4849.900048	16.708607	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	41617.87743	1.155570071	862.2205239	48.268251	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	2325418.6	6519.67	600337.4	0.3873935	180.61	181.55	54512.75	0.0069819	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	2038663.95	917.87	260781.55	0.8009353	57105	1.29	770.15	0.7440758	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30566.6	18.65	11165.35	2.7736553	91424.2	11.42	6613.8	1.3824533	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	3016727.25	10.48	6398.45	4.7147746	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	147.2051185	0.725732312	355.5886754	0.4139758	0	0	0	0
Cranes50	Cranes	50	4522.197	5.6	2310.45	1.9573459	2384.364008	7.741148668	3458.933721	0.6895084	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	915.2208194	2.419107708	909.6060074	1.0063729	0	0	0	0
Cranes100	Cranes	100	15353.9	11.17	4639.15	3.3092025	57416.64519	95.31284315	41579.99439	1.3175094	0	0	0	0
Cranes175	Cranes	175	989.15	0.45	178.85	5.5300122	161563.1409	157.4839118	73348.50282	2.2028783	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	280496.3588	177.8044166	85768.94955	3.2703718	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	501416.8059	181.1913571	91821.87336	5.4607536	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	8629.960112	2.177196937	908.7580217	9.4964134	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	27380.48913	3.870572319	1961.679215	13.962818	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7714.176805	21.47023875	7494.595181	1.0292434	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	1891.567809	5.367559174	1198.65716	1.5797407	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	339403.4879	363.4911073	174522.8042	1.9447515	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	37245.786	242.3989723	112411.6386	3.1129057	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	387952.0238	185.7175474	85383.38851	4.5436475	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	1986919.817	330.8563475	160072.4356	8.5393823	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	13527.23862	2.361726037	983.4108017	13.755403	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	79175.35712	6.641071009	3647.80216	21.704666	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3120.75	10.88	3142.65	0.9930315	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	79175.35712	6.641071009	3647.80216	21.704666	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11895.35	6.47	1554.9	7.650234742	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	2220.145	434.47	64798.45	0.0435475	1799.5	7.82	518.5	0.3471839	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1270.2	4.03	507.35	2.5035972	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	12682.41898	12.49026338	16955.73574	0.7482926	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	309207.5136	525.1164593	392957.3894	0.7868728	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	5801.19127	6.884241413	4021.19385	1.4420578	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	394918.5058	371.5324314	246607.5003	1.6014059	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	849523.5012	484.6917013	293254.8071	2.8866483	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	1078564.148	417.5758134	249486.7124	4.3231328	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	1914806.136	438.0081243	287282.9685	6.6652267	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	23924.46519	3.442107693	1962.207673	12.192257	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	53338.84047	3.226975374	2240.727771	23.804284	0	0	0	0
Forklifts25	Forklifts	25	4202.4	6.31	6223.25	0.6897366	90.92884419	0.498429722	157.2457408	0.5782549	4971.3	4.35	5068.85	0.9805615
Forklifts50	Forklifts	50	3477180	1203.01	2165837	1.6054467	210889.0076	577.8425585	420135.9491	0.5019542	6604766.25	2746.14	4947345.05	1.3350125
Forklifts75	Forklifts	75	0	0	0	0	13826.97076	41.39084955	18004.08125	0.7679909	0	0	0	0
Forklifts100	Forklifts	100	16047557.1	4248.75	7610425.2	2.1088281	3120544.315	4840.909179	877692.875	0.9815234	41333917.69	9638.1	17363626.7	2.3804887
Forklifts175	Forklifts	175	11222214.4	155.25	278126.35	4.0349085	9151804.8208	878.766024	579599.7689	1.5788673	3102277.35	352.71	635413.9	4.8822938
Forklifts300	Forklifts	300	0	0	0	0	179164.6314	110.2534847	79768.10883	2.2574655	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	46148.88925	17.20456282	11880.2678	3.8844988	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	714.5620078	0.249214383	55.03601038	12.981357	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	3352.389719	0.454707709	366.6008626	9.1445221	0	0	0	0
Generator Sets25	Generator Sets	25	6148801.45	75635.57	9690317.85	0.7075335	528500.95	2575.39	869342.4	0.6079661	0	0	0	0
Generator Sets50	Generator Sets	50	1003897	3926.25	450964.2	2.2256216	62860	1128.53	46849.1	1.3972884	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	4524443.69	758.29	87092.65	5.1949824	0	0	0	0	40562.45	56.45	6489.7	6.2520812
Generator Sets175	Generator Sets	175	739855.7	71.69	8227.1	6.9529015	0	0	0	0	58655.1	46.8	5380.1	10.902306
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	59.37951657	0.432372897	101.0416741	0.5878573	0	0	0	0
Graders50	Graders	50	0	0	0	0	1986.800384	6.269407607	2268.30225	0.8750016	0	0	0	0
Graders75	Graders	75	0	0	0	0	738.6270978	1.297118691	480.9583698	1.5357414	0	0	0	0
Graders100	Graders	100	0	0	0	0	49919.7525	66.15305124	26300.66256	1.8980409	0	0	0	0
Graders175	Graders	175	0	0	0	0	512355.3489	337.6832326	162120.8606	3.1603295	0	0	0	0
Graders300	Graders	300	0	0	0	0	1057416.838	301.5809057	233213.5302	4.5341145	0	0	0	0
Graders600	Graders	600	0	0	0	0	77324.88004	12.97138691	11186.87522	6.9235525	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	36980.11281	1.297118691	967.2214255	38.243668	0	0	0	0
Pavers25	Pavers	25	19053	42.94	16782.7	1.1352762	3413.75	4.89	4025.95	0.8476881	0	0	0	0
Pavers50	Pavers	50	14527	15.84	6219.8	2.3350875	8471.481448	25.19102212	9142.419201	0.9268109	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	9809.74609	18.05512825	6434.465723	1.5245623	0	0	0	0
Pavers100	Pavers	100	13003.1	8.71	3405.45	3.8177926	71827.49088	103.5020724	41550.01662	1.7286994	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	11393.12897	83.55745401	32958.29997	3.3952078	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	87362.69889	40.09938019	18431.81288	4.7397778	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	16078.97019	4.408310387	1983.081241	8.1087437	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	3276.720872	0.459886704	203.3614978	16.127888	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	4040118.5	4635.21	876850.45	0.4607601	4044.2	8.47	7033.55	0.5749876	0	0	0	0
Paving Equipment50	Paving Equipment	50	168995	43.28	7581.05	2.2291766	10556.29369	31.92154806	14949.11631	0.7061483	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1299.841843	2.934802224	1068.873925	1.2169943	0	0	0	0
Paving Equipment100	Paving Equipment	100	6975.15	11.14	1963.7	3.5520446	44458.26893	57.22236413	27183.10592	1.6355112	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	6725.21064	37.72903143	17689.95907	2.6730753	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	32056.92686	15.72042976	7551.951266	4.2448535	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	35536.38869	10.06107505	4806.455116	7.393471	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	5241.805905	0.838422921	435.4587106	12.037434	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	3095.637113	0.41921148	195.8505871	15.488659	0	0	0	0
Rollers25	Rollers	25	94570	501.5	124884.75	0.7540552	74417.85212	279.845852	194560.9162	0.3824737	0	0	0	0
Rollers50	Rollers	50	18925.25	11.17	6938.65	2.7275118	173891.7659	636.8445613	225529.482	0.7710378	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	1818.687677	5.014770819	1322.214858	1.3754708	0	0	0	0
Rollers100	Rollers	100	59038.75	20.97	13034.15	4.5295435	269961.4167	469.4812059	159346.32	1.6941804	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	280991.6419	274.6918553	100771.2111	2.7883545	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	47494.55419	35.63219824	11264.05941	4.2164887	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	26245.75401	12.30930485	3825.843835	6.8600215	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	90.92884419	0.498428722	157.2457408	0.5782549	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3062.35	2.23	923.45	3.3162655	8382.806444	26.91515097	7609.238025	1.1016617	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	615.3098854	2.242502947	498.5272473	1.2342524	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66762.15	31.66	13085.25	5.1020925	698491.8769	1208.68965	348405.7716	2.0048171	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3770.45	1.11	456.25	8.264	145543.5414	194.8856302	55307.40486	2.6315344	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	11530.94462	10.21778879	2619.015224	4.4027787	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	3798.421199	1.744500526	457.1774405	8.3084178	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	714.5620078	0.249214383	55.03601038	12.981357	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	6738.722265	1.789954177	691.2838613	9.7455452	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7427.068458	8.012885612	7970.29881	0.9318433	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	9856.065851	8.629261439	6701.771257	1.4706658	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	22752.48773	14.99967852	13187.07437	1.7275833	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	34641.15797	14.79301959	11892.78716	2.912787	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	40631.45354	12.51929974	8774.768635	4.6304734	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	383605.1516	67.80131398	50571.29319	7.5854329	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	14380.07712	1.027293872	1056.304396	13.615263	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	81.7758857	0.211739516	89.06693186	0.6935819	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	491.6885116	1.270457096	465.3747191	1.0565432	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4094.770652	5.505227423	2458.742136	1.6655924	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	20735.34023	15.45088469	9118.474659	2.2739522	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	259552.534	132.1254582	61017.52836	4.1947378	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	317935.1302	139.1128622	57527.58905	5.5285548	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	1859094.125	743.8405203	365546.7698	10.557046	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	51572.23353	9.528278233	3312.308233	15.569145	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	89043.26894	5.505227423	2235.085174	39.838598	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	3084443.25	875.79	279619.2	1.1030832	3278643	625.79	522358.8	0.6276625	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90279.1	152.11	47190.85	1.9130569	131617.5374	440.9447779	141998.0455	0.9268968	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	69617.1	141.3	19664.2	3.5408553	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	1205856.7	903.8	282836.4	4.2692606	3185.166667	8.903180908	2202.6666	1.4461197	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4724.765209	5.902582546	1630.734493	2.8973223	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	4388.120074	3.716440864	1121.129987	3.9140155	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1267.618481	0.437228319	140.4924772	9.0226613	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1725.893118	0.437228319	89.95518532	19.084048	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	1972697	1250.97	535221.4	0.3685725	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1219.122077	7.734801433	1929.447844	0.6318547	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	583.3028177	2.379938902	580.7346021	1.0044223	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	7695.235688	19.23783946	5500.293608	1.3990597	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	6229.850425	11.50330809	2901.587772	2.1470596	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	12320.25522	11.88297693	3486.493252	3.5337097	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	43412.2787	23.79938903	6811.555986	6.3714019	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	18579.09553	5.755159014	1853.669618

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Los Angeles (SC)	2024 OFF - AirGroup - Sweeper	Aggregate	100 Gasoline	0.000103552	9.52475-05	0.000113952	0.005700319	0.000516029	0.119864697	9.75176-06	7.367956-06	1.15474E-06	1.97556E-06	5639.25	2197.3	6.07	117116.1
Los Angeles (SC)	2024 OFF - AirGroup - Water Truck	Aggregate	175 Gasoline	0.00014506	0.000133426	0.000155963	0.011759465	0.001239121	0.193751784	2.43566E-05	1.840275-05	3.37508E-06	4.75542E-06	13574.35	4974.05	16.02	7462412.5
Los Angeles (SC)	2024 OFF - ConstMin - Asphalt Pavers	Aggregate	25 Gasoline	0.003660238	0.003366686	0.004027868	0.153573098	0.002674002	0.247109751	0.001186431	0.001408836	6.41403E-06	6.67472E-06	19053	16782.7	42.34	288696.8
Los Angeles (SC)	2024 OFF - ConstMin - Asphalt Pavers	Aggregate	50 Gasoline	0.000574035	0.000527997	0.000631681	0.049424698	0.000813449	0.131899525	2.13987E-05	1.616784-05	3.77388E-06	5.08910E-06	14527	6219.6	15.84	199027.2
Los Angeles (SC)	2024 OFF - ConstMin - Asphalt Pavers	Aggregate	100 Gasoline	0.000271205	0.000251349	0.000300711	0.013441323	0.00071457	0.521166415	2.24064E-05	1.692938-05	3.10485E-06	4.55468E-06	13001.3	3405.45	8.71	207732.4
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25 Gasoline	0.001304082	0.001200182	0.001435885	0.057166536	0.000941967	0.059161222	0.00069318	0.000522225	2.35104E-06	2.48096E-06	7081	5361.85	43.23	89359.3
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	50 Gasoline	0.000175758	0.000209393	0.000253124	0.009943841	0.001597063	0.211135924	0.014176-05	5.533040-05	2.78652E-06	1.76391E-06	7011.65	10577.7	13.06	163943.4
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	50 Gasoline	4.455556-05	4.09821E-05	4.90308E-05	0.002651469	7.73232E-05	0.031424346	2.16637E-06	1.636816-06	3.82063E-07	4.73112E-07	1350.5	525.6	4.92	16819.2
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	100 Gasoline	0.000362906	0.000241821	0.000289153	0.009289573	0.000845147	0.39227528	2.73504E-05	2.066475-05	3.78999E-06	5.40243E-06	15421.25	2416.1	22.54	212614.9
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	175 Gasoline	6.053555-05	5.56808E-05	6.66156E-05	0.004386545	0.000327321	0.135211974	9.69326E-06	7.32379E-06	1.34310E-06	1.88605E-06	5383.75	602.25	5.6	75883.5
Los Angeles (SC)	2024 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Gasoline	0.052035623	0.046312503	0.055409741	1.751279055	0.037409581	3.185301812	0.017867744	0.013500374	9.54859E-05	8.14473E-05	232548.8	6003074	6519.67	4168011
Los Angeles (SC)	2024 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Diesel	0.000441291	0.000525173	0.000635459	0.033088447	0.000984865	0.546739424	0.000155626	0.000143176	8.31064E-06	4.53236E-06	18016.4	54512.75	181.55	562622
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Gasoline	0.019905228	0.01670682B	0.049313269	1.653852491	0.030499387	2.756474136	0.022088639	0.015329194	7.58535E-05	7.3137E-05	208661.95	260781.55	917.67	2724787
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Diesel	1.459446-05	1.36826E-05	2.10159E-05	7.173023E-05	0.000132804	0.017426916	4.96226E-06	3.58420E-06	1.92705E-07	1.44161E-07	573.05	1.29	1.29	1862.7
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50 Gasoline	0.000807144	0.000742411	0.000888212	0.059979482	0.001030899	0.72108927	4.97112E-05	3.755960-05	8.76713E-06	1.08483E-05	30966.6	11165.35	18.29	390787.3
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50 Diesel	0.000187404	0.000222007	0.000269913	0.010285737	0.001783925	0.273791981	0.000175764	0.000135705	1.12603E-06	1.26116E-06	9143.25	66118	10.48	218255.4
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	100 Gasoline	0.000311705	0.000305103	0.000365022	0.016347899	0.000813708	0.77962345	5.37297E-05	4.059580-05	7.44530E-06	1.05683E-05	30167.25	6398.45	10.48	422297.7
Los Angeles (SC)	2024 OFF - ConstMin - Cranes	Aggregate	50 Gasoline	0.000205568	0.000183908	0.000228213	0.014917252	0.000228146	0.059273119	6.56840E-06	4.962526-06	1.15835E-06	1.58420E-06	4522.35	2310.46	5.35	85486.05
Los Angeles (SC)	2024 OFF - ConstMin - Cranes	Aggregate	100 Gasoline	0.000402575	0.000370288	0.000443009	0.017316854	0.000349279	0.37681107	2.62722E-05	1.985010-05	3.64052E-06	5.37813E-06	15351.9	4639.15	11.17	343297.1
Los Angeles (SC)	2024 OFF - ConstMin - Cranes	Aggregate	175 Gasoline	1.90625E-05	1.75337E-05	2.09773E-05	0.000892971	7.70053E-05	0.024761657	1.77515E-06	1.341226-06	2.45981E-07	3.46523E-07	980.15	178.85	0.45	22356.25
Los Angeles (SC)	2024 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	25 Gasoline	0.000587079	0.000538791	0.000644629	0.024918552	0.000443793	0.039409483	0.000307707	0.000232527	1.09353E-06	1.09137E-06	3120.75	3142.65	10.88	36970.85
Los Angeles (SC)	2024 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	100 Gasoline	0.000250983	0.000230854	0.000276191	0.009927917	0.000172917	0.029770181	2.07613E-05	1.568616-05	2.87688E-06	4.16722E-06	11895.35	1554.9	6.47	149270.4
Los Angeles (SC)	2024 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Gasoline	0.000440272	0.000428887	0.000513791	0.029855654	0.000418348	0.042421595	0.000159065	0.000145435	7.79868E-06	4.72961E-06	22261.35	64798.45	414.47	563987.1
Los Angeles (SC)	2024 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Diesel	4.53087E-05	5.39211E-05	6.52445E-05	0.002222688	0.000412293	0.054082814	1.54045E-05	1.417218-05	6.86208E-07	4.52685E-07	1795.45	5183	7.82	8292.8
Los Angeles (SC)	2024 OFF - ConstMin - Excavators	Aggregate	25 Gasoline	0.000587079	0.000538791	0.000644629	0.024918552	0.000443793	0.039409483	0.000307707	0.000232527	1.09353E-06	1.09137E-06	12410	3142.65	4.03	14985.1
Los Angeles (SC)	2024 OFF - ConstMin - Excavators	Aggregate	25 Diesel	0.000317613	0.000377986	0.000457863	0.001561042	0.002890169	0.379119628	0.000107892	9.935275-05	4.81031E-06	3.17053E-06	12603.45	16848.4	12.06	387513.2
Los Angeles (SC)	2024 OFF - ConstMin - Other Construction Equipment	Aggregate	25 Gasoline	0.001024145	0.000938818	0.001147477	0.039731758	0.000551599	1.253853351	0.000358522	0.000312984	1.89304E-05	1.05459E-05	41934.85	87114.55	126.15	1182918
Los Angeles (SC)	2024 OFF - ConstMin - Other Construction Equipment	Aggregate	175 Gasoline	0.000309129	0.00028452	0.000347997	0.01947863	0.000170248	0.182320484	0.000758587	5.717848-05	1.12388E-06	1.97514E-06	12618.95	317180.55	7.56	73078.1
Los Angeles (SC)	2024 OFF - ConstMin - Pavers	Aggregate	25 Diesel	8.595501-05	0.000102288	0.000123768	0.000424237	0.000782115	0.102594432	2.93511E-05	2.700310-05	1.30173E-06	8.58541E-07	3412.75	4025.95	4.89	96622.8
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	25 Gasoline	0.004394244	0.004027825	0.004827072	0.172360553	0.002655403	0.542990178	0.001538387	0.002507778	8.05016E-05	4.68431E-05	179842.45	40418.5	4635.21	7188069
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	25 Diesel	0.000101804	0.000121156	0.000146598	0.005003359	0.000926383	0.12151884	3.46146E-05	3.184584-05	1.54184E-06	1.01739E-06	4044.2	7033.55	8.47	133637.5
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	100 Gasoline	0.000413139	0.000415123	0.000496649	0.034200993	0.000729132	0.191357968	2.69E-05	2.019849-05	4.75822E-06	5.92025E-06	16899.5	7581.05	43.28	280498.9
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	100 Diesel	7.95915-05	7.32078E-05	8.75851E-05	0.004006738	0.000203895	0.177901663	1.24037E-05	9.371716-06	1.71878E-06	2.44356E-06	6975.15	1963.7	11.14	129604.2
Los Angeles (SC)	2024 OFF - ConstMin - Plate Compactors	Aggregate	25 Gasoline	0.001590078	0.002735699	0.039164644	1.147425753	0.02455059	2.17404228	0.011881725	0.008977304	6.62112E-05	5.46878E-05	156106.85	4967084.6	2562.23	1048422
Los Angeles (SC)	2024 OFF - ConstMin - Plate Compactors	Aggregate	25 Diesel	0.000360798	0.000331906	0.000396833	0.015317644	0.002727877	0.020712465	0.017209145	0.003203058	5.79301E-06	3.12197E-06	12410	63024.55	104.95	504186.4
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	25 Gasoline	0.018148549	0.016693036	0.019971371	0.74956275	0.013423728	1.236016748	0.008998024	0.006798507	3.329E-05	3.299E-05	94170	124884.75	501.5	1537055
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	25 Diesel	0.001816625	0.001785778	0.002136474	0.011185766	0.016836348	0.184221595	0.000652403	0.000585435	3.17527E-05	1.87144E-05	74390.65	27963.6	279.63	2242030
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	50 Gasoline	0.000998611	0.000918523	0.001098911	0.076499991	0.001287341	0.376129809	2.593E-05	1.959160-05	4.57305E-06	6.62990E-06	18925.25	6938.65	11.17	256730.1
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	100 Gasoline	0.001859343	0.001745178	0.002088605	0.088166777	0.004546149	0.872563863	9.88145E-05	7.47985E-05	1.38925E-05	2.06823E-05	59088.75	13034.15	20.97	477561.3
Los Angeles (SC)	2024 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	50 Gasoline	0.00013902	0.000128523	0.000152983	0.010013087	0.00019574	0.064576	4.45181E-06	3.365396-06	7.85126E-07	1.07281E-06	3062.35	923.45	2.23	43402.15
Los Angeles (SC)	2024 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	100 Gasoline	0.000174758	0.00160743	0.001913112	0.075117583	0.00455931	1.619975804	0.000114426	8.637969-05	1.58412E-05	2.13884E-05	66762.15	13085.25	31.66	512246
Los Angeles (SC)	2024 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	175 Gasoline	7.20205E-05	6.62444E-05	7.88543E-05	0.003180772	0.000203131	0.067045847	5.71784E-06	4.319859-06	1.12388E-06	9.97514E-06	25.35	5799.85	1.11	64797.5
Los Angeles (SC)	2024 OFF - ConstMin - Rubber Tired Loaders	Aggregate	25 Diesel	8.483856-05	0.000100962	0.000122165	0.000416964	0.000771982	0.101265212	2.88453E-05	2.653776-05	1.28486E-06	8.47522E-07	3368.95	4369.05	4.56	109226.3
Los Angeles (SC)	2024 OFF - ConstMin - Rubber Tired Loaders	Aggregate	50 Gasoline	0.000310068	0.000304148	0.000368388	0.025722307	0.000385144	0.150350178	0.000150017	0.000115837	2.72579E-06	3.64941E-06	7121.35	2857.35	5.55	114318
Los Angeles (SC)	2024 OFF - ConstMin - Rubber Tired Loaders	Aggregate	100 Gasoline	0.001897258	0.001745098	0.002087816	0.089571949	0.004754356	0.725362206	0.000120296	9.089068-05	1.66694E-05	2.48307E-05	70875.35	18972.7	37.02	1366034
Los Angeles (SC)	2024 OFF - ConstMin - Signal Boards	Aggregate	25 Gasoline	0.000906798	0.000833999	0.000997775	0.037195451	0.000572101	0.106378327	0.000464013	0.000350586	1.80607E-06	1.68373E-06	4777.85	8289.35	11.24	54815.06
Los Angeles (SC)	2024 OFF - ConstMin - Signal Boards	Aggregate	25 Diesel	0.00470112	0.005594722	0.006769612	0.03550938	0.042393891	5.81555559	0.001656559	0.001524034	9.04952E-05	4.87816E-05	193909.9	688714.85	917.49	4132289
Los Angeles (SC)	2024 OFF - ConstMin - Signal Boards	Aggregate	50 Gasoline	8.25640E-05	9.82584E-05	0.000118893	0.000904118	0.000779978	0.12101203	2.41104E-05	2.236502-05	1.56451E-06	1.02107E-06	4058.8	2440.15	4.58	80616.55
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Gasoline	0.059733077	0.050402484	0.060719892	2.497099624	0.044509837	3.938082525	0.003004017	0.002492369	0.000108055	0.000144125	308443.25	376912.2	875.79	5292142
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Diesel	0.008285371	0.009860276	0.011930934	0.040622976	0.075523537	9.865177959	0.002909723	0.002076945	0.000125125	8.24805E-05	327864.9	522358.8	625.79	10447176
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	50 Gasoline	0.002472839	0.002273614	0.002720319	0.191965624	0.002710828	0.272810861	0.000142864	0.000107329	2.51927E-05	3.16209E-05	90279.1	47190.85	152.11	1510107
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	100 Gasoline	0.001421028	0.001307061	0.001563754	0.076582186	0.003581324	1.056491308	0.000221364	0.000161419	2.96044E-05	4.22331E-05	120548.55	28236.4	90.98	2258912
Los Angeles (SC)	2024 OFF - ConstMin - Surfacing Equipment	Aggregate	25 Diesel	0.040625268	0.037367118	0.044705623	1.526145978	0.031461741	2.664892168	0.018530962	0.014008372	7.64139E-05	6.19269E-05	197307.9	535221.4	1250.97	4164730
Los Angeles (SC)	2024 OFF - ConstMin - Tampers/Rammers	Aggregate	25 Diesel	0.004666702	0.004292432	0.005135421	0.217638864	0.003954262	0.410979984	0.003100724	0.00234277	1.64363E-05	1.02371E-05	29221.9	13657.3	749.42	576200
Los Angeles (SC)	2024 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Diesel	0.001576157	0.001837575	0.002206868	0.007746672	0.014434669	1.881381944	0.000535758	0.000492897	2.38712E-05	1.57356E-05	62550.05	86654.65	91.9	1993057
Los Angeles (SC)	2024 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	50 Gasoline	0.001001718	0.000930138	0.001103239	0.075296983	0.001295162	0.220854588	8.42815E-06	5.705948-06	1.16788E-05	1.50052E-05	17899.5	7777.85	19.63	107626
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	25 Gasoline	0.036811292	0.033859027	0.040508582	1.52184895	0.027571009	2.47477868	0.018671486	0.014107345	6.57068E-05	6.65221E-05	189887.6	195322.45	449.67	2891169
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	25 Diesel	0.000742706	0.000883361	0.001060496	0.040966772	0.078377953	0.892677951	0.000325429	0.000219396	1.18296E-05	7.47908E-06	29696.4	31035.95	50.2	691812.5
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	50 Gasoline	0.004066261	0.003740147	0.004476672	0.291647787	0.005757189	0.914229343	0.000113841	9.961186-05	2.32517E-05	3.16397E-05	90315.6	40828.9	101.47	1224867
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	100 Gasoline	0.014516547	0.013135231	0.015803765	0.662149896	0.010807532	1.938096953	0.042585E-05	0.00727E-05	1.31389E-05	1.96166E-05	56129.7	13559.1	31.67	894702.6
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	25 Gasoline	0.019328076	0.017777965	0.021269369	0.800005596	0.013788869	1.274432799	0.009615225	0.007264836	3.23638E-05	3.46126E-05	98801.85	113255.85	301.74	2136290
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	25 Diesel	0.002067573	0.002460516	0.002972224	0.011871379	0.018782232	2.490011444	0.000727871	0.000669641	3.1925E-05	2.08474E-05	82869.6	18043.15	45.79	1153881
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	25 Net Gas	0	0	0.007838806	0.479455229	0.011313971	0.284643413	0	0	0	0	18743.15	53825.35	422.63	2992201
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	50 Gasoline	0.005989641	0.005509271	0.006591234	0.494386338	0.009039282	0.674791605	0.000322276	0.000243497	5.68369E-05	7.25652E-05	207137.5	130177.25	360.32	4295849
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	50 Diesel	0.004723839	0.004344749	0.005198297	0.252853997	0.011935654	1.581661311	0.000414284	0.000344173	9.06685E-05	0.000130082	371138.15	130177.25	360.32	8721876
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	100 Gasoline	0.001421028	0.001307061	0.001563754	0.076582186	0.003581324	1.056491308	0.000221364	0.000161419	2.96044E-05	4.22331E-05	120548.55	28236.4	90.98	2258912
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	175 Gasoline	0.000402628	0.000370718	0.000443503	0.020154775	0.000474384	0.153461147	0.000492368	0.000328702	7.64139E-06	9.9269E-06	28219.97	4371.3	5069.86	416685.5
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	25 Gasoline	0.000666702	0.000429242	0.000513521	0.217638864	0.003954262	0.410979984	0.003100724	0.00234277	1.64363E-05	1.02371E-05	29221.9	13657.3	749.42	576200
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	25 Diesel	0.001576157	0.001837575	0.002206868	0.007746672	0.014434669	1.881381944	0.000535758	0.000492897	2.38712E-05	1.57356E-05	62550.05	86654.65	91.9	1993057
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	25 Net Gas	0	0.633312-05	0.001367478	0.086599888	0.002050562	0.208814588	8.42815E-06	1.167888-05	1.55042E-05	1.59807E-05	1598.795	7597339.95	0.63	1768.5
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	100 Net Gas	0	0	0.071018143	33.5332068	3.36258959	742.943973	0	0	0	0	4113391.67	17363626.7	9638.12	1.22E+09
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	175 Gasoline	0.016373769	0.015195318	0.018413786	1.167536007	0.098466666	27.60010032	0.001983104	0.001498537	0.000274833	0.000393817	1134443.95	276791	154.14	40538835
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	175 Net Gas	0	0	0.003258091	1.964560383	0.167332831	36.70844442	0	0	0	0	3102277.35	6154119	352.71	92770429
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	25 Diesel	0.015959928	0.014679943	0.017629628	0.977838843	0.012709124	1.610743319	0.000779937	0.000588832	4.48144E-06	4.26697E-06	12179.2	3185547	563.23	2308494
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	25 Gasoline	0.002548328	0.003032721	0.003669593	0.014439979	0.022738186	3.14655731	0.000896296	0.000824592	4.20677E-05	2.63338E-05	104678.35	19951.6	139.89	1594746
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	50 Diesel	0.004707342	0.004328813	0.005180143	0.455622102	0.010532093	1.147317399	0.000216973	0.000163935	3.82656E-05	5.34068E-05	146794.95	82128.65	115.06	2463860
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	50 Gasoline	0.001456114	0.001393164	0.001665923	0.106475232	0.001678847	0.038078397	2.69209883	0.242708167	0.000241865	0.000297916	104612.3	26991.75	37.81	2132148
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	175 Gasoline	0.000204391	0.000187999	0.00022492	0.010723685	0.001745867	0.558258891	4.00212E-05	3.023826-05	5.54572E-06	7.81786E-06	22316.1	2613.4	3.68	454731.6
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	175 Diesel	0.000247596	0.000275	0.000329116	0.875316105	0.005350777	0.000127274	0.000104032	0.000082306	4.68268E-06	5.94488E-07	1525.7	631.45	1.6	25889.45
Los Angeles (SC)	2024 OFF - ConstMin - Other Material Handling Equipment	Aggregate	100 Gasoline	0.001612792	0.001483446	0.001774779	0.083415796	0.007420356	1.861542661	0.000129791	9.806458-05	1.79851E-05	2.64904E-05	75617.05	27805.7	72	1501508
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	25 Gasoline	0.012171822	0.011196162	0.013394338	0.789312846	0.009054552	1.242720995	0.002595974	0.001936417	1.39377E-05	9.6874E-05	36127.95	107039.9	396.08	1384912
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	25 Diesel	0.000507499	0.000603965	0.000730798	0.003115528	0.004796298	0.639751384	0.000182233	0.000167654	8.81264E-06	5.35601E-06	21290.45	29630.7	45.52	548168
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	50 Gasoline	0.013042787	0.011996755	0.014352791	1.132385504	0.028561789	10.17308812	0.000701024	0.000529888	0.000120866	0.000159096	454140.3	173081.1	335.09	6057139
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	50 Diesel	0.007911574	0.007501207	0.008976007	0.44842504	0.004508917	0.317229859	0.001317681	0.000955048	0.000178596	0.000226706	647134.05	444402.55	279.78	9825493
Los Angeles (SC)	2024 OFF - Industrial - Sweepers/Scrubbers	Aggregate	175 Gasoline	5.89483E-05	5.42207E-05	6.48691E-05	0.004195088	0.000574804	0.189955723	1.36179E-05	1.028916-05	1.88703E-06	2.65454E-06	7577.4	8393.5	1.6	117530
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	25 Gasoline	0.012297678	0.011312623	0.013538425	2.838659993	0.009246612	0.235020908	0.001731814	0.001498537	1.22422E-05	1.00010E-05	41488.1	23852.6	2879.62	8579446
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	25 Diesel	0.000532365	0.000633559	0.000766608	0.028000915	0.004717809	0.607130434	0.000197369	0.000181579	8.05487E-06	5.08513E-06	20213.7	36894.2	45.3	736891.2
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	50 Gasoline	0.000147139	0.000564515	0.000683547	0.468854757	0.008178682	2.674021817	0.000184187	0.000139292	3.25134E-06	4.75585E-06	18913.1	5767.9	119.34	2018450
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	50 Diesel	0.0006085	0.007241653	0.0087624	0.059090837	0.046665043	6.791389161	0.001706433	0.001569918	8.77957E-05	5.72247E-05	227471.65	222817.9	273.7	8244262
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	100 Gasoline	0.019357388	0.017804926	0.021301625	0.888013963	0.048506962	17.14814925	0.00119561	0.000903335	0.000165675	0.000248775	704420.8	187029.65	386.9	3092076
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	100 Diesel	0.00181188	0.001668351	0.002099998	0.079401227	0.009573268	2.243913902	0.000153987	0.000116368	2.11351E-05	3.02048E-05	86231.25	12588.85	28.02	1689098
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	50 Net Gas	0	0	0.000397707	0.07044448	0.0144414	4.7971691	0	0	0	0	25489.45	7455.49	8.78	2385757
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	100 Net Gas	0	0	0.002168722	1.126516849	0.085405006	26.9576111	0	0	0	0	149166.5	54081.1	38.13	13559137
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	175 Net Gas	0	0	0.000604846	0.2291671	0.022866836	7.0158073	0	0	0	0	38307.45	24849.2	292	3627845
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	300 Net Gas	0	0	0.001496532	0.261698855	0.022122209	7.230693	0	0	0	0	89744.05	41775.25	2.34	4175125
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	600 Net Gas	0	0	0.000655326	0.3717362	0.031155301	10.183225	0	0	0	0	558749.3	17395.9	2.05	5879814
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	25 Gasoline	0.895369223	0.823566011	0.985299232	48.75123752	0.643761607	82.20965989	0.054472454	0.041159466	0.002252316	0.002156142	6148691.45	8690317.85	75635.57	93214897
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	25 Diesel	0.012849305	0.015291807	0.018303086	0.088664049	0.122545636	15.87645362	0.005071303	0.004665598	0.000221593	0.000132962	52853.95	89349.24	257.75	1329207
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	50 Gasoline	0.030991782	0.028506242	0.034104566	2.032440224	0.065051303	23.21225503	0.001600301	0.001209116	0.000282231	0.000335312	1003677	450964.8	3926.25	14430874
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	50 Diesel	0.011472577	0.013653312	0.016520507	0.126779777	0

Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	75	Diesel	0.000463715	0.000561095	0.00066775	0.010151823	0.008057268	1.562201916	0.00022432	0.000206374	1.44294E-05	1.27505E-05	50683.92135	43952.36463	44.33669965	3204229	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	100	Diesel	0.000641188	0.000778258	0.000926191	0.017390013	0.00709031	2.397621469	0.000583127	0.000536477	2.21479E-05	1.95691E-05	77788.18805	58017.12131	58.52444354	4917756	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	175	Diesel	0.001077415	0.001308672	0.001551477	0.025380263	0.009739637	4.057814096	0.000455846	0.000419378	3.74842E-05	3.31193E-05	131651.3095	57138.07402	57.61770955	8322974	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	300	Diesel	0.001113363	0.00158917	0.001891243	0.012768712	0.00752002	6.125178688	0.000313859	0.00028875	5.69309E-05	4.99929E-05	198724.6769	46585.50051	46.99690163	12503341	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	600	Diesel	0.00152561	0.001845988	0.002196879	0.016840119	0.007442438	8.688363144	0.000378805	0.000348501	8.02825E-05	7.09133E-05	281884.3737	46585.50051	46.99690163	17820683	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	750	Diesel	0.000293399	0.000355013	0.000422495	0.001827645	0.002772243	0.882568048	0.000124965	0.000114968	8.15098E-06	7.2034E-06	28633.94833	2637.141878	2.660201979	1810233	
Los Angeles (SC)	2024 TRU - Instate Genset TRU	Aggregate	50	Diesel	0.007509589	0.009086603	0.010813809	0.143057952	0.103560712	2.835168081	0.003469578	0.003432011	2.61631E-05	2.32955E-05	1799.661995	1084169.519	1388.677876	9415140	
Los Angeles (SC)	2024 TRU - Instate Trailer TRU	Aggregate	50	Diesel	0.152181848	0.184140036	0.219141862	2.21268479	1.353643032	31.79714089	0.017230389	0.015851958	0.000291387	0.000261265	20183.6732	8081541.331	6099.815223	2.75E+08	
Los Angeles (SC)	2024 TRU - Instate Truck TRU	Aggregate	25	Diesel	0.018334448	0.022184682	0.026401605	0.179952233	0.215296159	4.319818839	0.00858436	0.007857611	3.90567E-05	3.54943E-05	2742.064516	2174709.594	1597.876263	10663405	
Los Angeles (SC)	2024 TRU - Instate Van TRU	Aggregate	25	Diesel	0.000424455	0.000513591	0.000611216	0.004166252	0.004984257	0.10000683	0.000198734	0.000182835	9.18081E-07	8.21717E-07	63.48071307	78875.4775	57.05406135	709879.3	
Los Angeles (SC)	2024 TRU - Out-of-State Genset TRU	Aggregate	50	Diesel	0.004710828	0.005700102	0.006783593	0.088681593	0.065214617	1.78651659	0.000295142	0.000271531	1.64867E-05	1.46791E-05	1134.010015	683164.7283	552529152	2159689	
Los Angeles (SC)	2024 TRU - Out-of-State Trailer TRU	Aggregate	50	Diesel	0.078722275	0.095253952	0.113360076	1.242012061	0.787439948	20.00838406	0.004927993	0.004533754	0.000183867	0.000164401	12700.59741	5085318.31	24236.1436	1.73E+08	
Los Angeles (SC)	2024 TRU - Railcar TRU	Aggregate	50	Diesel	0.00814877	0.009860011	0.011734228	0.128564248	0.081510179	2.071125503	0.000510111	0.000469302	1.90326E-05	1.7017BE-05	1314.675444	526395.9554	1632.589881	17897462	

EMFAC Fuel Usage: Year 2022

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	144,213	14,122	10.21	0	0	0.00	0
LDA	149,966,457	4,951,891	30.28	1,365,564	28,876	47.29	0	0	0.00	3,181,478
LDT1	17,043,180	652,540	26.12	6,627	304	21.78	0	0	0.00	144,752
LDT2	51,802,173	2,129,498	24.33	378,461	10,888	34.76	0	0	0.00	469,870
LHD1	3,836,225	367,280	10.44	2,744,971	126,149	21.76	0	0	0.00	0
LHD2	625,803	68,770	9.10	1,067,421	54,454	19.60	0	0	0.00	0
MCY	1,237,635	34,667	35.70	0	0	0.00	0	0	0.00	0
MDV	32,233,548	1,629,223	19.78	771,652	28,703	26.88	0	0	0.00	250,682
MH	190,935	37,177	5.14	61,785	5,859	10.54	0	0	0.00	0
Motor coach	0	0	0.00	91,142	13,998	6.51	0	0	0.00	0
OBUS	163,041	32,643	4.99	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	76,505	15,508	4.93	0	0	0.00	0
SBUS	55,608	6,053	9.19	109,536	14,360	7.63	0	0	0.00	0
T6	793,122	157,239	5.04	4,140,797	393,561	10.52	0	0	0.00	0
T7	5,769	1,407	4.10	6,735,541	1,021,710	6.59	106,828	47,783	2.24	0
UBUS	32,989	7,783	4.24	1,181	209	5.66	437,121	111,088	3.93	1,070
Total	**257,986,485**	**10,076,171**	**25.60**	**17,695,397**	**1,728,701**	**10.24**	**543,949**	**158,871**	**3.42**	**4,047,852**

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2022	All Other Buses	Aggregate	Aggregate	DSL	2387.615771	144212.5891	20055.97247	14.12157342
Los Angeles (SC)	2022	LDA	Aggregate	Aggregate	GAS	3949334.32	149966456.8	18636854.28	4951.890616
Los Angeles (SC)	2022	LDA	Aggregate	Aggregate	DSL	34750.74201	1365564.321	164528.3052	28.87579459
Los Angeles (SC)	2022	LDA	Aggregate	Aggregate	ELEC	78084.60157	3181477.948	389918.6908	0
Los Angeles (SC)	2022	LDT1	Aggregate	Aggregate	GAS	458115.2498	17043179.81	2118381.376	652.5401757
Los Angeles (SC)	2022	LDT1	Aggregate	Aggregate	DSL	270.6503295	6627.200698	961.4710483	0.304298206
Los Angeles (SC)	2022	LDT1	Aggregate	Aggregate	ELEC	3508.68045	144752.0157	17546.16027	0
Los Angeles (SC)	2022	LDT2	Aggregate	Aggregate	GAS	1372144.276	51802172.9	6443902.5	2129.497975
Los Angeles (SC)	2022	LDT2	Aggregate	Aggregate	DSL	8920.377392	378460.5711	44003.20424	10.88805719
Los Angeles (SC)	2022	LDT2	Aggregate	Aggregate	ELEC	14383.25646	469869.8144	72773.64326	0
Los Angeles (SC)	2022	LHD1	Aggregate	Aggregate	GAS	105423.6869	3836224.58	1570655.854	367.2799521
Los Angeles (SC)	2022	LHD1	Aggregate	Aggregate	DSL	64097.22758	2744971.33	806262.4886	126.1492688
Los Angeles (SC)	2022	LHD2	Aggregate	Aggregate	GAS	17796.61867	625803.0177	265143.1013	68.76969502
Los Angeles (SC)	2022	LHD2	Aggregate	Aggregate	DSL	25927.3097	1067421.343	326132.9395	54.45422002
Los Angeles (SC)	2022	MCY	Aggregate	Aggregate	GAS	177319.3254	1237635.154	354638.6508	34.66720507
Los Angeles (SC)	2022	MDV	Aggregate	Aggregate	GAS	921693.6708	32233548.24	4274374.135	1629.222502
Los Angeles (SC)	2022	MDV	Aggregate	Aggregate	DSL	19516.67089	771652.3864	96044.41776	28.70279505
Los Angeles (SC)	2022	MDV	Aggregate	Aggregate	ELEC	7423.218148	250681.8433	37959.59904	0
Los Angeles (SC)	2022	MH	Aggregate	Aggregate	GAS	18777.11371	190934.9774	1878.462455	37.17660803
Los Angeles (SC)	2022	MH	Aggregate	Aggregate	DSL	5865.304828	61785.30748	586.5304828	5.859423982
Los Angeles (SC)	2022	Motor Coach	Aggregate	Aggregate	DSL	676.2916755	91141.88557	9873.858462	13.99760817
Los Angeles (SC)	2022	OBUS	Aggregate	Aggregate	GAS	3972.712037	163041.1007	79486.02243	32.64328018
Los Angeles (SC)	2022	PTO	Aggregate	Aggregate	DSL	0	76505.4461	0	15.50775389
Los Angeles (SC)	2022	SBUS	Aggregate	Aggregate	GAS	1378.869452	55608.41612	5515.47781	6.053496228
Los Angeles (SC)	2022	SBUS	Aggregate	Aggregate	DSL	3460.157096	109535.682	39929.73315	14.35975618
Los Angeles (SC)	2022	T6 Ag	Aggregate	Aggregate	DSL	12.10479957	101.9666453	53.26111809	0.012181572
Los Angeles (SC)	2022	T6 CAIRP heavy	Aggregate	Aggregate	DSL	272.1638062	53846.97659	3973.591571	4.680155196
Los Angeles (SC)	2022	T6 CAIRP small	Aggregate	Aggregate	DSL	144.6349106	7530.75419	2111.669694	0.699944378
Los Angeles (SC)	2022	T6 instate construction heavy	Aggregate	Aggregate	DSL	2518.967495	168570.4564	11388.15411	16.56194729
Los Angeles (SC)	2022	T6 instate construction small	Aggregate	Aggregate	DSL	8157.753968	433957.0754	36880.88852	42.40587222
Los Angeles (SC)	2022	T6 instate heavy	Aggregate	Aggregate	DSL	10296.35106	1423092.141	118818.4637	128.9338909
Los Angeles (SC)	2022	T6 instate small	Aggregate	Aggregate	DSL	37908.6179	1932060.83	437460.1947	186.9232192
Los Angeles (SC)	2022	T6 OOS heavy	Aggregate	Aggregate	DSL	156.4590604	31080.56962	2284.302283	2.699014263
Los Angeles (SC)	2022	T6 OOS small	Aggregate	Aggregate	DSL	83.58460294	4317.240411	1220.335203	0.401773955
Los Angeles (SC)	2022	T6 Public	Aggregate	Aggregate	DSL	4445.935083	69430.49194	13486.00307	8.507368053
Los Angeles (SC)	2022	T6 utility	Aggregate	Aggregate	DSL	996.7203316	16808.24099	11462.28381	1.735997959
Los Angeles (SC)	2022	T6TS	Aggregate	Aggregate	GAS	14505.49561	793122.3284	290225.9562	157.2392835
Los Angeles (SC)	2022	T7 Ag	Aggregate	Aggregate	DSL	5.193051548	102.8930892	22.84942681	0.01852168
Los Angeles (SC)	2022	T7 CAIRP	Aggregate	Aggregate	DSL	6003.500987	1067306.387	87651.11441	155.0696328
Los Angeles (SC)	2022	T7 CAIRP construction	Aggregate	Aggregate	DSL	671.4917023	121085.6232	3035.787878	16.55458348
Los Angeles (SC)	2022	T7 NNOOS	Aggregate	Aggregate	DSL	6498.761345	1301079.701	94881.91563	179.099333
Los Angeles (SC)	2022	T7 NOOS	Aggregate	Aggregate	DSL	2371.048773	419354.6563	34617.31208	62.47642547
Los Angeles (SC)	2022	T7 POLA	Aggregate	Aggregate	DSL	8258.014728	1072153.038	62760.91194	188.7409496
Los Angeles (SC)	2022	T7 Public	Aggregate	Aggregate	DSL	5475.906144	110937.1004	16610.24862	19.0808356
Los Angeles (SC)	2022	T7 Single	Aggregate	Aggregate	DSL	5794.937297	385296.7187	66872.77297	58.88961274
Los Angeles (SC)	2022	T7 single construction	Aggregate	Aggregate	DSL	4300.116371	300391.1598	19440.65893	44.46501106
Los Angeles (SC)	2022	T7 SWCV	Aggregate	Aggregate	DSL	1379.990695	56384.18389	5381.963711	27.81339016
Los Angeles (SC)	2022	T7 SWCV	Aggregate	Aggregate	NG	2623.533087	106827.7218	10231.77904	47.782843
Los Angeles (SC)	2022	T7 tractor	Aggregate	Aggregate	DSL	12166.67647	1645420.533	154516.7912	230.7310322
Los Angeles (SC)	2022	T7 tractor construction	Aggregate	Aggregate	DSL	3592.159925	247796.2601	16240.01536	37.46414496
Los Angeles (SC)	2022	T7 utility	Aggregate	Aggregate	DSL	405.4684121	8232.431424	4662.886739	1.306947156
Los Angeles (SC)	2022	T7IS	Aggregate	Aggregate	GAS	55.2683338	5768.621752	1105.808823	1.407168754
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	GAS	460.6006493	32989.32038	1842.402597	7.783285084
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	DSL	10.1389	1181.230112	40.5556	0.208547568
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	ELEC	12	1070.403311	48	0
Los Angeles (SC)	2022	UBUS	Aggregate	Aggregate	NG	4129.345993	437121.0718	16517.38397	111.0876976

EMFAC Fuel Usage: Year 2023

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	148,348	14,082	10.53	0	0	0.00	0
LDA	149,418,106	4,801,115	31.12	1,426,245	29,363	48.57	0	0	0.00	3,806,342
LDT1	17,372,475	648,191	26.80	6,133	278	22.08	0	0	0.00	196,782
LDT2	52,162,943	2,069,800	25.20	404,272	11,313	35.74	0	0	0.00	584,569
LHD1	3,800,052	359,383	10.57	2,893,383	130,924	22.10	0	0	0.00	0
LHD2	625,879	67,954	9.21	1,126,544	56,597	19.90	0	0	0.00	0
MCY	1,265,085	35,455	35.68	0	0	0.00	0	0	0.00	0
MDV	32,264,362	1,576,940	20.46	823,486	29,770	27.66	0	0	0.00	342,100
MH	191,392	36,760	5.21	64,319	6,026	10.67	0	0	0.00	0
Motor coach	0	0	0.00	92,744	13,826	6.71	0	0	0.00	0
OBUS	159,343	31,499	5.06	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	77,199	14,935	5.17	0	0	0.00	0
SBUS	58,916	6,358	9.27	110,638	14,360	7.70	0	0	0.00	0
T6	797,300	155,868	5.12	4,246,866	386,115	11.00	0	0	0.00	0
T7	5,905	1,406	4.20	6,872,058	981,183	7.00	113,852	50,168	2.27	0
UBUS	33,184	7,630	4.35	1,181	209	5.66	439,713	111,745	3.93	1,070
Total	**258,154,940**	**9,798,359**	**26.35**	**18,293,417**	**1,688,982**	**10.83**	**553,565**	**161,913**	**3.42**	**4,930,863**

3,400,030,661

0.34%

81875000 11690001.06

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2023	All Other Buses	Aggregate	Aggregate	DSL	2413.362241	148347.7525	20272.24282	14.0818541
Los Angeles (SC)	2023	LDA	Aggregate	Aggregate	GAS	3986929.129	149418105.6	18815397.63	4801.114553
Los Angeles (SC)	2023	LDA	Aggregate	Aggregate	DSL	36740.62878	1426244.815	174171.2985	29.36298643
Los Angeles (SC)	2023	LDA	Aggregate	Aggregate	ELEC	91678.53845	3806341.937	457107.9273	0
Los Angeles (SC)	2023	LDT1	Aggregate	Aggregate	GAS	472375.6724	17372474.6	2187811.198	648.1906909
Los Angeles (SC)	2023	LDT1	Aggregate	Aggregate	DSL	252.4118747	6132.921962	894.9059766	0.277775308
Los Angeles (SC)	2023	LDT1	Aggregate	Aggregate	ELEC	4635.248736	196781.6242	23233.68477	0
Los Angeles (SC)	2023	LDT2	Aggregate	Aggregate	GAS	1397479.324	52162943.36	6567821.268	2069.799895
Los Angeles (SC)	2023	LDT2	Aggregate	Aggregate	DSL	9765.230182	404272.1374	48008.05802	11.31280557
Los Angeles (SC)	2023	LDT2	Aggregate	Aggregate	ELEC	18283.62829	584568.8418	92279.45183	0
Los Angeles (SC)	2023	LHD1	Aggregate	Aggregate	GAS	105195.9307	3800052.408	1567262.626	359.3833271
Los Angeles (SC)	2023	LHD1	Aggregate	Aggregate	DSL	68776.35703	2893383.107	865120.0508	130.9243641
Los Angeles (SC)	2023	LHD2	Aggregate	Aggregate	GAS	17937.98852	625878.5235	267249.3013	67.95438628
Los Angeles (SC)	2023	LHD2	Aggregate	Aggregate	DSL	27873.77545	1126544.027	350617.0299	56.59739854
Los Angeles (SC)	2023	MCY	Aggregate	Aggregate	GAS	183955.3723	1265084.637	367910.7446	35.45479504
Los Angeles (SC)	2023	MDV	Aggregate	Aggregate	GAS	931795.9713	32264362.15	4326648.043	1576.940395
Los Angeles (SC)	2023	MDV	Aggregate	Aggregate	DSL	21297.50738	823486.0536	104465.3428	29.77006577
Los Angeles (SC)	2023	MDV	Aggregate	Aggregate	ELEC	10378.92649	342100.1259	52903.33041	0
Los Angeles (SC)	2023	MH	Aggregate	Aggregate	GAS	18786.35518	191391.548	1879.386973	36.76042896
Los Angeles (SC)	2023	MH	Aggregate	Aggregate	DSL	6166.797629	64319.47927	616.6797629	6.026053915
Los Angeles (SC)	2023	Motor Coach	Aggregate	Aggregate	DSL	658.0910352	92743.98303	9608.129114	13.82589661
Los Angeles (SC)	2023	OBUS	Aggregate	Aggregate	GAS	3965.955178	159342.8081	79350.83121	31.49929974
Los Angeles (SC)	2023	PTO	Aggregate	Aggregate	DSL	0	77198.6472	0	14.93547066
Los Angeles (SC)	2023	SBUS	Aggregate	Aggregate	GAS	1481.565044	58916.21473	5926.260176	6.358131428
Los Angeles (SC)	2023	SBUS	Aggregate	Aggregate	DSL	3497.078427	110638.3688	40355.80019	14.36000383
Los Angeles (SC)	2023	T6 Ag	Aggregate	Aggregate	DSL	11.67476155	97.073849	51.36895084	0.011080203
Los Angeles (SC)	2023	T6 CAIRP heavy	Aggregate	Aggregate	DSL	280.5602581	54871.42749	4096.179768	4.630891473
Los Angeles (SC)	2023	T6 CAIRP small	Aggregate	Aggregate	DSL	147.0353228	7680.714425	2146.715713	0.690922567
Los Angeles (SC)	2023	T6 instate construction heavy	Aggregate	Aggregate	DSL	2593.685207	170789.0459	11725.94998	16.01357351
Los Angeles (SC)	2023	T6 instate construction small	Aggregate	Aggregate	DSL	7838.439815	439668.4712	35437.28165	40.85987457
Los Angeles (SC)	2023	T6 instate heavy	Aggregate	Aggregate	DSL	10535.34865	1466280.47	121576.4628	127.6396288
Los Angeles (SC)	2023	T6 instate small	Aggregate	Aggregate	DSL	37375.9816	1984183.072	431313.6457	183.0271301
Los Angeles (SC)	2023	T6 OOS heavy	Aggregate	Aggregate	DSL	161.7713139	31697.11686	2361.861183	2.673821474
Los Angeles (SC)	2023	T6 OOS small	Aggregate	Aggregate	DSL	84.77351604	4403.138169	1237.693334	0.39634697
Los Angeles (SC)	2023	T6 Public	Aggregate	Aggregate	DSL	4479.460204	70241.70163	13587.69594	8.450363812
Los Angeles (SC)	2023	T6 utility	Aggregate	Aggregate	DSL	1011.45952	16954.26417	11631.78448	1.721713991
Los Angeles (SC)	2023	T6TS	Aggregate	Aggregate	GAS	14623.10816	797300.0842	292579.148	155.8676623
Los Angeles (SC)	2023	T7 Ag	Aggregate	Aggregate	DSL	5.450542727	89.56607012	23.982388	0.015745035
Los Angeles (SC)	2023	T7 CAIRP	Aggregate	Aggregate	DSL	5967.126018	1085857.383	87120.03986	152.0768811
Los Angeles (SC)	2023	T7 CAIRP construction	Aggregate	Aggregate	DSL	672.7726984	122679.2552	3041.579212	16.23989484
Los Angeles (SC)	2023	T7 NNOOS	Aggregate	Aggregate	DSL	6698.602472	1323677.931	97799.59609	176.2912352
Los Angeles (SC)	2023	T7 NOOS	Aggregate	Aggregate	DSL	2364.918201	426649.092	34527.80573	61.26348855
Los Angeles (SC)	2023	T7 POLA	Aggregate	Aggregate	DSL	8486.558826	1131828.731	64497.84707	175.4952223
Los Angeles (SC)	2023	T7 Public	Aggregate	Aggregate	DSL	5541.588258	112265.4557	16809.48436	19.02171313
Los Angeles (SC)	2023	T7 Single	Aggregate	Aggregate	DSL	5934.360332	388787.818	68481.69547	56.1742218
Los Angeles (SC)	2023	T7 single construction	Aggregate	Aggregate	DSL	4385.71399	304344.6678	19827.64243	42.88123171
Los Angeles (SC)	2023	T7 SWCV	Aggregate	Aggregate	DSL	1255.519365	51298.487	4896.525523	25.30419893
Los Angeles (SC)	2023	T7 SWCV	Aggregate	Aggregate	NG	2795.817267	113851.643	10903.68734	50.16782394
Los Angeles (SC)	2023	T7 tractor	Aggregate	Aggregate	DSL	12205.73158	1665217.666	155012.7911	219.5996373
Los Angeles (SC)	2023	T7 tractor construction	Aggregate	Aggregate	DSL	3685.502446	251057.5562	16662.01327	35.5101791
Los Angeles (SC)	2023	T7 utility	Aggregate	Aggregate	DSL	409.1727144	8303.947199	4705.486215	1.309375599
Los Angeles (SC)	2023	T7IS	Aggregate	Aggregate	GAS	52.86814563	5904.510911	1057.785858	1.405502268
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	GAS	463.3229945	33183.96593	1853.291978	7.630187276
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	DSL	10.1389	1181.230112	40.5556	0.208547568
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	ELEC	12	1070.403311	48	0
Los Angeles (SC)	2023	UBUS	Aggregate	Aggregate	NG	4153.840831	439713.4848	16615.36332	111.7447779

EMFAC Fuel Usage: Year 2024

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	152,659	14,345	10.64	0	0	0.00	0
LDA	148,818,024	4,671,011	31.86	1,479,530	29,812	49.63	0	0	0.00	4,518,576
LDT1	17,673,621	645,437	27.38	5,684	255	22.29	0	0	0.00	255,128
LDT2	52,511,433	2,021,022	25.98	427,073	11,690	36.53	0	0	0.00	705,899
LHD1	3,766,960	352,708	10.68	3,028,302	135,096	22.42	0	0	0.00	0
LHD2	625,803	67,294	9.30	1,179,926	58,473	20.18	0	0	0.00	0
MCY	1,288,390	36,306	35.49	0	0	0.00	0	0	0.00	0
MDV	32,284,082	1,532,106	21.07	870,334	30,765	28.29	0	0	0.00	437,605
MH	191,783	36,247	5.29	66,619	6,157	10.82	0	0	0.00	0
Motor coach	0	0	0.00	94,455	13,987	6.75	0	0	0.00	0
OBUS	155,998	30,411	5.13	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	78,022	14,938	5.22	0	0	0.00	0
SBUS	62,194	6,630	9.38	111,550	14,309	7.80	0	0	0.00	0
T6	801,588	154,302	5.19	4,353,533	390,361	11.15	0	0	0.00	0
T7	6,082	1,413	4.30	7,013,825	987,351	7.10	120,686	52,270	2.31	0
UBUS	33,379	7,243	4.61	1,181	209	5.66	442,306	112,443	3.93	1,070
Total	**258,219,336**	**9,562,129**	**27.00**	**18,862,693**	**1,707,747**	**11.05**	**562,992**	**164,713**	**3.42**	**5,918,277**

3,318,058,703

0.35%

81875000 11525716.03

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2024	All Other Buses	Aggregate	Aggregate	DSL	2507.924484	152659.3111	21066.56566	14.34483756
Los Angeles (SC)	2024	LDA	Aggregate	Aggregate	GAS	4021900.074	148818024	18978442.95	4671.010856
Los Angeles (SC)	2024	LDA	Aggregate	Aggregate	DSL	38501.07281	1479530.051	182905.2219	29.81248246
Los Angeles (SC)	2024	LDA	Aggregate	Aggregate	ELEC	106845.8544	4518575.527	531934.2031	0
Los Angeles (SC)	2024	LDT1	Aggregate	Aggregate	GAS	486400.7655	17673621.24	2255127.586	645.4368189
Los Angeles (SC)	2024	LDT1	Aggregate	Aggregate	DSL	234.7727133	5684.021112	832.856787	0.254959916
Los Angeles (SC)	2024	LDT1	Aggregate	Aggregate	ELEC	5879.20802	255127.5247	29473.49424	0
Los Angeles (SC)	2024	LDT2	Aggregate	Aggregate	GAS	1423190.933	52511432.89	6691338.255	2021.021699
Los Angeles (SC)	2024	LDT2	Aggregate	Aggregate	DSL	10554.80961	427072.609	51733.15953	11.68952346
Los Angeles (SC)	2024	LDT2	Aggregate	Aggregate	ELEC	22560.95292	705898.5423	113549.0395	0
Los Angeles (SC)	2024	LHD1	Aggregate	Aggregate	GAS	105026.6205	3766959.671	1564740.156	352.7082005
Los Angeles (SC)	2024	LHD1	Aggregate	Aggregate	DSL	73357.19754	3028301.786	922741.2616	135.0962581
Los Angeles (SC)	2024	LHD2	Aggregate	Aggregate	GAS	18080.14015	625803.0034	269367.1488	67.29375602
Los Angeles (SC)	2024	LHD2	Aggregate	Aggregate	DSL	29768.23755	1179926.342	374446.98	58.47275234
Los Angeles (SC)	2024	MCY	Aggregate	Aggregate	GAS	190348.3854	1288390.153	380696.7708	36.30573273
Los Angeles (SC)	2024	MDV	Aggregate	Aggregate	GAS	941489.7366	32284082.37	4376581.951	1532.105557
Los Angeles (SC)	2024	MDV	Aggregate	Aggregate	DSL	23002.44645	870333.9934	112429.6903	30.76509027
Los Angeles (SC)	2024	MDV	Aggregate	Aggregate	ELEC	13602.33231	437604.9715	69087.01662	0
Los Angeles (SC)	2024	MH	Aggregate	Aggregate	GAS	18822.07195	191782.5832	1882.960078	36.24675511
Los Angeles (SC)	2024	MH	Aggregate	Aggregate	DSL	6460.410652	66619.07665	646.0410652	6.15692445
Los Angeles (SC)	2024	Motor Coach	Aggregate	Aggregate	DSL	678.2424309	94455.31673	9902.339491	13.98682771
Los Angeles (SC)	2024	OBUS	Aggregate	Aggregate	GAS	3958.891451	155997.8277	79209.50015	30.41137693
Los Angeles (SC)	2024	PTO	Aggregate	Aggregate	DSL	0	78021.88069	0	14.93785593
Los Angeles (SC)	2024	SBUS	Aggregate	Aggregate	GAS	1584.677682	62194.10493	6338.710727	6.630326024
Los Angeles (SC)	2024	SBUS	Aggregate	Aggregate	DSL	3527.518186	111549.9025	40707.0708	14.30938908
Los Angeles (SC)	2024	T6 Ag	Aggregate	Aggregate	DSL	12.05761943	92.02238142	53.05352549	0.010587275
Los Angeles (SC)	2024	T6 CAIRP heavy	Aggregate	Aggregate	DSL	292.9737915	55948.91958	4277.417356	4.606415135
Los Angeles (SC)	2024	T6 CAIRP small	Aggregate	Aggregate	DSL	154.1455999	7835.504274	2250.525759	0.693198823
Los Angeles (SC)	2024	T6 instate construction heavy	Aggregate	Aggregate	DSL	2650.219386	172806.9504	11981.5388	16.02873739
Los Angeles (SC)	2024	T6 instate construction small	Aggregate	Aggregate	DSL	8095.748927	444863.2364	36600.56614	40.87032028
Los Angeles (SC)	2024	T6 instate heavy	Aggregate	Aggregate	DSL	11161.35175	1509601.756	128800.4517	129.3548221
Los Angeles (SC)	2024	T6 instate small	Aggregate	Aggregate	DSL	39428.08263	2037409.216	454994.6071	185.6465197
Los Angeles (SC)	2024	T6 OOS heavy	Aggregate	Aggregate	DSL	169.1090119	32340.43231	2468.991574	2.661667322
Los Angeles (SC)	2024	T6 OOS small	Aggregate	Aggregate	DSL	88.81818726	4491.79632	1296.745534	0.397667786
Los Angeles (SC)	2024	T6 Public	Aggregate	Aggregate	DSL	4516.492267	71042.57543	13700.02653	8.390086221
Los Angeles (SC)	2024	T6 utility	Aggregate	Aggregate	DSL	1024.210832	17100.83697	11778.42456	1.700801636
Los Angeles (SC)	2024	T6TS	Aggregate	Aggregate	GAS	14759.51384	801587.7755	295308.3529	154.3015303
Los Angeles (SC)	2024	T7 Ag	Aggregate	Aggregate	DSL	6.009096854	73.97272745	26.44002616	0.013325928
Los Angeles (SC)	2024	T7 CAIRP	Aggregate	Aggregate	DSL	6074.83944	1105706.171	88692.65583	152.2409443
Los Angeles (SC)	2024	T7 CAIRP construction	Aggregate	Aggregate	DSL	679.2465248	124128.7336	3070.847129	16.15710136
Los Angeles (SC)	2024	T7 NNOOS	Aggregate	Aggregate	DSL	6955.11324	1347857.593	101544.6533	175.0088623
Los Angeles (SC)	2024	T7 NOOS	Aggregate	Aggregate	DSL	2414.358836	434453.6439	35249.639	61.38317256
Los Angeles (SC)	2024	T7 POLA	Aggregate	Aggregate	DSL	8709.300953	1191474.419	66190.68724	184.6865334
Los Angeles (SC)	2024	T7 Public	Aggregate	Aggregate	DSL	5602.402193	113498.9197	16993.9533	18.93664376
Los Angeles (SC)	2024	T7 Single	Aggregate	Aggregate	DSL	5977.693003	392933.7865	68981.74848	56.25200991
Los Angeles (SC)	2024	T7 single construction	Aggregate	Aggregate	DSL	4405.551189	307940.557	19917.32564	42.86075886
Los Angeles (SC)	2024	T7 SWCV	Aggregate	Aggregate	DSL	1141.578768	46643.05884	4452.157197	23.00637543
Los Angeles (SC)	2024	T7 SWCV	Aggregate	Aggregate	NG	2963.309642	120685.728	11556.9076	52.27010461
Los Angeles (SC)	2024	T7 tractor	Aggregate	Aggregate	DSL	12883.30858	1686713.793	163618.019	219.9306868
Los Angeles (SC)	2024	T7 tractor construction	Aggregate	Aggregate	DSL	3730.610403	254023.8482	16865.94458	35.56472406
Los Angeles (SC)	2024	T7 utility	Aggregate	Aggregate	DSL	412.8480139	8376.025785	4747.752159	1.30969788
Los Angeles (SC)	2024	T7IS	Aggregate	Aggregate	GAS	52.04562781	6082.283607	1041.328921	1.413481111
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	GAS	466.0453396	33378.61148	1864.181359	7.242737574
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	DSL	10.1389	1181.230112	40.5556	0.208621865
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	ELEC	12	1070.403311	48	0
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	NG	4178.335668	442305.8977	16713.34267	112.4427001

Construction-Related Fuel/Energy Usage (Phases 2-4)

CONSTRUCTION WORKER COMMUTE

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2024	101,452	3,394	812	18	2,287	740
2025	523,436	17,509	3,820	84	11,637	3,735
2026	147,686	4,806	1,110	24	3,666	1,167
Total	**772,574**	**25,709**	**5,742**	**125**	**17,591**	**5,643**

CONSTRUCTION VENDOR TRIPS

Year	Gas		Diesel	
	VMT	Gallons	VMT	Gallons
2024	2,165	417	25,078	2,932
2025	7,657	1,449	90,525	10,414
2026	1,858	346	22,210	2,507
Total	**11,681**	**2,213**	**137,812**	**15,853**

CONSTRUCTION TRUCK HAUL TRIPS

Year	Gas		Diesel	
	VMT	Gallons	VMT	Gallons
2024	85	20	98,126	13,813
Total	**85**	**20**	**98,126**	**13,813**

CONSTRUCTION OFF-ROAD EQUIPMENT

Year	Gasoline gallons	Diesel gallons
2024	2,612	17,171
2025	10,839	23,321
2026	3,154	12,063
Total	**16,605**	**52,555**

CONSTRUCTION TOTAL

Year	Gas		Diesel		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	kWh
2024	103,703	6,443	124,016	33,934	2,287	740
2025	531,092	29,797	94,345	33,818	11,637	3,735
2026	149,544	8,306	23,320	14,594	3,666	1,167
Total	**784,340**	**44,546**	**241,681**	**82,347**	**17,591**	**5,643**

Construction Worker Trips Fuel Usage Worksheet

Note: Per CalEEMod methodology, worker vehicles are "LD_Mix", which is 50% LDA, 25% LDT1, and 25% LDT2

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2024				
Building and Asphalt Demolition	15	14.7	45	9,923
Building and Asphalt Demolition Debris Haul	0	14.7	45	0
Rough Grading	15	14.7	65	14,333
Rough Grading Soil Haul	0	14.7	65	0
Building Construction 2024	141	14.7	22	45,599
				0
				0
2025				
Building Construction 2025	141	14.7	261	540,975
2026				
Building Construction 2026	141	14.7	64	132,653
Architectural Coating	28	14.7	22	9,055
Paving	15	14.7	43	9,482
Finishing/Landscaping	3	14.7	44	1,940

[1] *Based on information provided.*

[2] *Based on CalEEMod defaults.*

Year	LDA VMT	LDT1 VMT	LDT2 VMT	Gasoline[1]						Diesel[1]						Electricity[1]			
				LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA m/kWh	LDA kWh	LDT1 m/kWh	LDT1 kWh
2024	69,854	17,464	17,464	31.86	2,108	27.38	628	25.98	658	49.63	13	22.29	0	36.53	4	3.09	660	3.09	80
2025	270,487	135,244	135,244	32.81	7,881	28.13	4,723	26.92	4,905	51.05	52	22.70	2	37.60	30	3.12	2,975	3.12	760
2026	76,565	38,282	38,282	33.69	2,164	28.82	1,301	27.80	1,341	52.34	15	23.21	0	38.54	8	3.14	923	3.14	244
	0																		

Gasoline		Diesel		Electricity	
VMT	Gallons	VMT	Gallons	VMT	kWh
101,452	3,394	812	18	2,287	740
523,436	17,509	3,820	84	11,637	3,735
147,686	4,806	1,110	24	3,666	1,167
101,452	**3,394**	**812**	**18**	**2,287**	**740**

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline			VMT from diesel			VMT from electricity	
	LDA	LDT1	LDT2	LDA	LDT1	LDT2	LDA	LDT1
2024	96.13%	98.55%	97.89%	0.96%	0.03%	0.80%	2.92%	1.42%
2025	95.59%	98.22%	97.63%	0.98%	0.03%	0.83%	3.43%	1.75%
2026	95.20%	97.97%	97.40%	1.01%	0.03%	0.85%	3.79%	2.00%

Appendix C: Evidence Used to Define the Average Number of KWH Required to Displace a Gallong of Gasoline

Table A 3: Evidence from U.S. Department of Energy and U.S. Environmental Protection Agency's fuel economy website[32]

Vehicle	Model year	Electric consumption	Gasoline fuel economy	Number of kWh that are equivalent to 1 gallon
Ford Fusion Energi & Ford C-Max Energi	2013	0.34 kWh per mile	43 mpg	14.6
Chevrolet Volt	2013	0.35 kWh per mile	37 mpg	12.9
Chevrolet Volt	2012	0.36 kWh per mile	37 mpg	13.3
Fisker Karma	2012	0.62 kWh per mile	20 mpg	12.4
Toyota Prius	2013	0.29 kWh per mile & 0.2 gal	50 mpg	13.1
Average for five models	-	-	-	13.3 +/- 0.8

Table A 5: Average power consumption per mile traveled over time for different PEV categories

Year range	2012- 2020	2020-2030	2030-2040	2040-2050	2050
Efficiency improvement per year	0.3%	0.8%	0.9%	0.9%	
Year	2012	2020	2030	2040	2050
Relative energy efficiency	1.000	0.976	0.901	0.823	0.752

https://www.fhwa.dot.gov/environment/climate_change/mitigation/publications_and_tools/ev_deployment/page08.cfm

0.34	14.6
0.35	12.9
0.36	13.3
0.34	13.3

Year	Estimated Electric Consumption
2013	0.34
2014	0.34
2015	0.34
2016	0.34
2017	0.34
2018	0.34
2019	0.34
2020	0.33
2021	0.33
2022	0.33
2023	0.33
2024	0.32
2025	0.32
2026	0.32
2027	0.32
2028	0.31
2029	0.31
2030	0.31
2031	0.31
2032	0.30
2033	0.30
2034	0.30
2035	0.29

Vendor Trips Fuel Usage Worksheet

Note: Based on CalEEMod methodology, vendor vehicles HHDT (T7). d

Activity[1]	Daily trips[1,2]	Trip miles[2]	Trip days[1]	Annual VMT
2024				
Building and Asphalt Demolition	4	6.9	45	1,242
Building and Asphalt Demolition Debris Haul	0	6.9	45	0
Rough Grading	4	6.9	65	1,794
Architectural Coating	55	6.9	65	24,668
2025				
Building Construction 2025	55	6.9	261	99,050
2026				
Building Construction 2026	55	6.9	64	24,288
Architectural Coating	0	6.9	22	0
Paving	0	6.9	43	0
Finishing/Landscaping			44	0

[1] *Based on information provided.*

[2] *Based on CalEEMod defaults.*

Year	HHDT (T7) VMT	MHDT (T6) VMT	Gasoline[1]				Diesel[1]			
			HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons	HHDT (T7) mpg	HHDT (T7) gallons	MHDT (T6) mpg	MHDT (T6) gallons
2024	13,852	13,852	4.30	3	5.19	415	7.10	1,883	11.15	1,049
2025	49,525	49,525	4.41	10	5.29	1,440	7.24	6,719	11.34	3,695
2026	12,144	12,144	4.51	2	5.38	344	7.38	1,614	11.53	893

[1] *EMFAC2017 v1.0.3.*

Year	VMT from gasoline		VMT from diesel	
	HHDT (T7)	MHDT (T6)	HHDT (T7)	MHDT (T6)
2024	0.08%	15.55%	96.59%	84.45%
2025	0.09%	15.37%	98.16%	84.63%
2026	0.09%	15.21%	98.10%	84.79%

VENDOR

Gasoline		Diesel	
VMT	Gallons	VMT	Gallons
2,165.46	417.30	25,078	2,932
7,657	1,449	90,525	10,414
1,858.24	345.91	22,210	2,507
11,680.59	**2,212.51**	**137,812.33**	**15,853.37**

Truck Haul Trips Fuel Usage Worksheet

Note: Hauling vehicles are HHDT (T7)

Activity	Total Trips[1]	Mi/Trip[1]	Annual VMT
2024			
Building and Asphalt Demolition Debris Haul	674	20	13,480
Rough Grading Soil Haul	4,321	20	86,420

[1] *Based on information provided by the District.*

[2] *Based on CalEEMod defaults.*

Year	VMT	Gasoline[1]		Diesel[1]	
		HHDT (T7) mpg	HHDT (T7) gallons	HHDT (T7) mpg	HHDT (T7) gallons
2024	99,900	4.30	20	7.10	13,813

[1] *EMFAC2017 v1.0.3.*

Gasoline		Diesel	
VMT	Gallons	VMT	Gallons
85	20	98,126	13,813
85	**20**	**98,126**	**13,813**

Year	VMT from gasoline	VMT from diesel
2024	0.09%	98.22%

Off-Road Construction Equipment Fuel Usage Worksheet

Year	Total Gasoline	Total Diesel Gallons	Total Natural Gas
2024	2,612	17,171	0
2025	10,839	23,321	0
2026	3,154	12,063	0
Total	**16,605**	**52,555**	**0**

Equipment Type[1]	Number of Equipment[1]	Horsepower	OFFROAD2017 Horsepower Category	Fuel Type	Working days[1]	Hours Per Day	Total Hours of Operation	Gasoline Gal/Hr[2]	Total Gasoline gallons	Diesel Gal/Hr[2]	Total Diesel gallons	Natural Gas Gal/Hr[2]	Total Natural Gas gallons
2024													
Building and Asphalt Demolition													
Concrete/Industrial Saws	1	81	*100*	*Gasoline*	45	8	360	4.71	1,697	0.00	0	0.00	0
Rubber Tired Dozers	2	247	*300*	*Diesel*	45	8	720	0.00	0	4.63	3,334	0.00	0
Excavators	3	158	*175*	*Diesel*	45	8	1,080	0.00	0	2.89	3,118	0.00	0
Rough Grading													
Excavators	1	158	*175*	*Diesel*	65	8	520	0.00	0	2.89	1,501	0.00	0
Graders	1	187	*300*	*Diesel*	65	8	520	0.00	0	4.53	2,358	0.00	0
Rubber Tired Dozers	1	247	*300*	*Diesel*	65	8	520	0.00	0	4.63	2,408	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	65	8	1,560	0.00	0	1.59	2,486	0.00	0
Building Construction 2024													
Cranes	1	231	*300*	*Diesel*	22	7	154	0.00	0	3.27	504	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	22	8	176	5.19	914	0.00	0	0.00	0
Welders	1	46	*50*	*Diesel*	22	8	176	0.00	0	1.19	209	0.00	0
Forklifts	3	89	*100*	*Diesel*	22	8	528	0.00	0	0.98	518	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	22	7	462	0.00	0	1.59	736	0.00	0
							TOTAL		**2,612**		**17,171**		**0**
2025													
Building Construction 2025													
Cranes	1	231	*300*	*Diesel*	261	7	1,827	0.00	0	3.26	5,956	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	261	8	2,088	5.19	10,839	0.00	0	0.00	0
Welders	1	46	*50*	*Diesel*	261	8	2,088	0.00	0	1.19	2,480	0.00	0
Forklifts	3	89	*100*	*Diesel*	261	8	6,264	0.00	0	0.98	6,142	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	261	7	5,481	0.00	0	1.59	8,742	0.00	0
							TOTAL		**10,839**		**23,321**		**0**
2026													
Building Construction 2026													
Cranes	1	231	*300*	*Diesel*	64	7	448	0.00	0	3.26	1,462	0.00	0
Generator Sets	1	84	*100*	*Gasoline*	64	8	512	5.19	2,656	0.00	0	0.00	0
Welders	1	46	*50*	*Diesel*	64	8	512	0.00	0	1.19	608	0.00	0
Forklifts	3	89	*100*	*Diesel*	64	8	1,536	0.00	0	0.98	1,505	0.00	0
Tractors/Loaders/Backhoes	3	97	*100*	*Diesel*	64	7	1,344	0.00	0	1.60	2,146	0.00	0
Architectural Coating													
Air Compressors	1	78	*100*	*Gasoline*	22	6	132	3.77	497	0.00	0	0.00	0
Paving													
Pavers	2	130	*175*	*Diesel*	43	8	688	0.00	0	3.40	2,336	0.00	0
Paving Equipment	2	132	*175*	*Diesel*	43	8	688	0.00	0	2.65	1,824	0.00	0
Rollers	2	80	*100*	*Diesel*	43	8	688	0.00	0	1.69	1,166	0.00	0
Finishing/Landscaping													
Excavators	1	158	*175*	*Diesel*	44	8	352	0.00	0	2.89	1,016	0.00	0
							TOTAL		**3,154**		**12,063**		**0**

[1] Based on information provided.

[2] OFFROAD2017 v.1.0.1

OFFROAD 2024

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	4238552.6	2879.62	1392022.4	0.3044869	20213.7	45.3	36894.2	0.5478628	0	0	0	0
Air Compressors50	Air Compressors	50	1299991.1	119.34	57670	2.2540506	227471.65	273.7	222817.9	1.0208859	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	7044209.8	386.9	187029.65	3.76635897	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	86213.25	26.02	12588.85	6.84981154	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	98801.89	301.74	113255.85	0.87237455	82869.6	451.79	38423.15	0.4559368	3	422.85	1586	1.18159644
Aerial Lifts50	Aerial Lifts	50	207137.5	360.32	130177.25	1.59119585	300177.2428	1186.848334	167393.0682	0.8175039	2	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	229820.9313	670.4379858	206440.2958	1.1137176	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	371318.15	360.32	130177.25	2.8542043	294201.4795	767.3346945	237640.541	1.2380104	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	92032.25416	93.84875023	15407.05731	2.0790617	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1914.178043	3.080249953	522.2509448	3.6652428	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1359.342762	0.560098317	174.0816482	7.8085038	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7081	43.23	5361.85	1.32062627	7011.69	13.08	10577.7	0.6628709	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1350.5	4.93	525.6	2.56944444	7619.44726	18.29859457	6663.697539	1.1434263	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	9369.973219	10.20868898	5052.13855	1.8542876	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15421.25	22.54	2416.3	6.38217522	38254.76093	45.65017803	17781.41338	2.1513903	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5383.75	5.6	602.25	8.93933939	55793.78805	44.10924375	14280.76656	3.9069183	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	81280.75889	45.45756124	13065.52151	5.4319694	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	125225.4519	36.01933878	12171.24085	10.288634	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	81035.17479	8.089934967	4849.900048	16.708607	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	41617.87743	1.155570071	862.2205239	48.268251	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	2325418.6	6519.67	600337.4	0.3873935	180.61	181.55	54512.75	0.0069819	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	2038663.95	917.87	260781.55	0.8009353	57105	1.29	770.15	0.7440758	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30566.6	18.65	11165.35	2.7736553	91424.2	11.42	6613.8	1.3824533	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	3016727.25	10.48	6398.45	4.7147746	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	147.2051185	0.725732312	355.5886754	0.4139758	0	0	0	0
Cranes50	Cranes	50	4522.197	5.6	2310.45	1.9573459	2384.364008	7.741148668	3458.933721	0.6895084	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	915.2208194	2.419107708	909.6060074	1.0063729	0	0	0	0
Cranes100	Cranes	100	15353.9	11.17	4639.15	3.3092025	57416.64519	95.31284315	41579.99439	1.3175094	0	0	0	0
Cranes175	Cranes	175	989.15	0.45	178.85	5.5300122	161563.1409	157.4839118	73348.50282	2.2028783	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	280496.3588	177.8044166	85768.94955	3.2703718	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	501416.8059	181.1913571	91821.87336	5.4607536	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	8629.960112	2.177196937	908.7580217	9.4964134	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	27380.48913	3.870572319	1961.679215	13.962818	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7714.176805	21.47023875	7494.595181	1.0292434	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	1891.567809	5.367559174	1198.65716	1.5797407	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	339403.4879	363.4911073	174522.8042	1.9447515	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	37245.786	242.3989723	112411.6386	3.1129057	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	387952.0238	185.7175474	85383.38851	4.5436475	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	1986919.817	330.8563475	160072.4356	8.5393823	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	13527.23862	2.361726037	983.4108017	13.755403	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	79175.35712	6.641071009	3647.80216	21.704666	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3120.75	10.88	3142.65	0.9930315	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	79175.35712	6.641071009	3647.80216	21.704666	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11895.35	6.47	1554.9	7.650234742	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	2220.145	434.47	64798.45	0.0435475	1799.5	7.82	518.5	0.3471839	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1270.2	4.03	507.35	2.5035972	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	12682.41898	12.49026338	16955.73574	0.7482926	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	309207.5136	525.1164593	392957.3894	0.7868728	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	5801.19127	6.884241413	4021.19385	1.4420578	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	394918.5058	371.5324314	246607.5003	1.6014059	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	849523.5012	484.6917013	293254.8071	2.8866483	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	1078564.148	417.5758134	249486.7124	4.3231328	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	1914806.136	438.0081243	287282.9685	6.6652267	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	23924.46519	3.442107693	1962.207673	12.192257	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	53338.84047	3.226975374	2240.727771	23.804284	0	0	0	0
Forklifts25	Forklifts	25	4202.4	6.31	6223.25	0.6897366	90.92884419	0.498429722	157.2457408	0.5782549	4971.3	4.35	5068.85	0.9805615
Forklifts50	Forklifts	50	3477180	1203.01	2165837	1.6054467	210889.0076	577.8425585	420135.9491	0.5019542	6604766.25	2746.14	4947345.05	1.3350125
Forklifts75	Forklifts	75	0	0	0	0	13826.97076	41.39084955	18004.08125	0.7679909	0	0	0	0
Forklifts100	Forklifts	100	16047557.1	4248.75	7610425.2	2.1088281	3120544.315	4840.909179	877692.875	0.9815234	41333917.69	9638.1	17363626.7	2.3804887
Forklifts175	Forklifts	175	11222214.4	155.25	278126.35	4.0349085	9151804.8208	878.766024	579599.7689	1.5788673	3102277.35	352.71	635413.9	4.8822938
Forklifts300	Forklifts	300	0	0	0	0	179164.6314	110.2534847	79768.10883	2.2574655	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	46148.88925	17.20456282	11880.2678	3.8844988	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	714.5620078	0.249214383	55.03601038	12.981357	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	3352.389719	0.454707709	366.6008626	9.1445221	0	0	0	0
Generator Sets25	Generator Sets	25	6148801.45	75635.57	9690317.85	0.7075335	528500.95	2575.39	869342.4	0.6079661	0	0	0	0
Generator Sets50	Generator Sets	50	1003897	3926.25	450964.2	2.2256216	62860	1128.53	46849.1	1.3972884	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	4524443.69	758.29	87092.65	5.1949824	0	0	0	0	40562.45	56.45	6489.7	6.2520812
Generator Sets175	Generator Sets	175	739855.7	71.69	8227.1	6.9529015	0	0	0	0	58655.1	46.8	5380.1	10.902306
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	59.37951657	0.432372897	101.0416741	0.5878573	0	0	0	0
Graders50	Graders	50	0	0	0	0	1986.800384	6.269407607	2268.30225	0.8750016	0	0	0	0
Graders75	Graders	75	0	0	0	0	738.6270978	1.297118691	480.9583698	1.5357414	0	0	0	0
Graders100	Graders	100	0	0	0	0	49919.7525	66.15305124	26300.66256	1.8980409	0	0	0	0
Graders175	Graders	175	0	0	0	0	512355.3489	337.6832326	162120.8606	3.1603295	0	0	0	0
Graders300	Graders	300	0	0	0	0	1057416.838	301.5809057	233213.5302	4.5341145	0	0	0	0
Graders600	Graders	600	0	0	0	0	77324.88004	12.97138691	11186.87522	6.9235525	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	36980.11281	1.297118691	967.2214255	38.243668	0	0	0	0
Pavers25	Pavers	25	19053	42.94	16782.7	1.1352762	3413.75	4.89	4025.95	0.8476881	0	0	0	0
Pavers50	Pavers	50	14527	15.84	6219.8	2.3350875	8471.481448	25.19102212	9142.419201	0.9268109	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	9809.74609	18.05512825	6434.465723	1.5245623	0	0	0	0
Pavers100	Pavers	100	13003.1	8.71	3405.45	3.8177926	71827.49088	103.5020724	41550.01662	1.7286994	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	11393.12897	83.55745401	32958.29997	3.3952078	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	87362.69889	40.09938019	18431.81288	4.7397778	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	16078.97019	4.408310387	1983.081241	8.1087437	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	3276.720872	0.459886704	203.3614978	16.127888	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	4040118.5	4635.21	876850.45	0.4607601	4044.2	8.47	7033.55	0.5749876	0	0	0	0
Paving Equipment50	Paving Equipment	50	168995	43.28	7581.05	2.2291766	10556.29369	31.92154806	14949.11631	0.7061483	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1299.841843	2.934802224	1068.873925	1.2169943	0	0	0	0
Paving Equipment100	Paving Equipment	100	6975.15	11.14	1963.7	3.5520446	44458.26893	57.22236413	27183.10592	1.6355112	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	6725.21064	37.72903143	17689.95907	2.6730753	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	32056.92686	15.72042976	7551.951266	4.2448535	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	35536.38869	10.06107505	4806.455116	7.393471	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	5241.805905	0.838422921	435.4587106	12.037434	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	3095.637113	0.41921148	195.8505871	15.488659	0	0	0	0
Rollers25	Rollers	25	94570	501.5	124884.75	0.7540552	74417.85212	279.845852	194560.9162	0.3824737	0	0	0	0
Rollers50	Rollers	50	18925.25	11.17	6938.65	2.7275118	173891.7659	636.8445613	225529.482	0.7710378	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	1818.687677	5.014770819	1322.214858	1.3754708	0	0	0	0
Rollers100	Rollers	100	59038.75	20.97	13034.15	4.5295435	269961.4167	469.4812059	159346.32	1.6941804	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	280991.6419	274.6918553	100771.2111	2.7883545	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	47494.55419	35.63219824	11264.05941	4.2164887	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	26245.75401	12.30930485	3825.843835	6.8600215	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	90.92884419	0.498428722	157.2457408	0.5782549	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3062.35	2.23	923.45	3.3162655	8382.806444	26.91515097	7609.238025	1.1016617	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	615.3098854	2.242502947	498.5272473	1.2342524	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66762.15	31.66	13085.25	5.1020925	698491.8769	1208.68965	348405.7716	2.0048171	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3770.45	1.11	456.25	8.264	145543.5414	194.8856302	55307.40486	2.6315344	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	11530.94462	10.21778879	2619.015224	4.4027787	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	3798.421199	1.744500526	457.1774405	8.3084178	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	714.5620078	0.249214383	55.03601038	12.981357	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	6738.722265	1.789954177	691.2838613	9.7455452	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7427.068458	8.012885612	7970.29881	0.9318433	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	9856.065851	8.629261439	6701.771257	1.4706658	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	22752.48773	14.99967852	13187.07437	1.7275833	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	34641.15797	14.79301959	11892.78716	2.912787	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	40631.45354	12.51929974	8774.768635	4.6304734	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	383605.1516	67.80131398	50571.29319	7.5854329	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	14380.07712	1.027293872	1056.304396	13.615263	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	81.7758857	0.211739516	89.06693186	0.6935819	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	491.6885116	1.270457096	465.3747191	1.0565432	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4094.770652	5.505227423	2458.742136	1.6655924	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	20735.34023	15.45088469	9118.474659	2.2739522	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	259552.534	132.1254582	61017.52836	4.1947378	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	317935.1302	139.1128622	57527.58905	5.5285548	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	1859094.125	743.8405203	365546.7698	10.557046	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	51572.23353	9.528278233	3312.308233	15.569145	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	89043.26894	5.505227423	2235.085174	39.838598	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	3084443.25	875.79	279619.2	1.1030832	3278643	625.79	522358.8	0.6276625	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90279.1	152.11	47190.85	1.9130569	131617.5374	440.9447779	141998.0455	0.9268968	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	69617.1	141.3	19664.2	3.5408553	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	1205856.7	903.8	282836.4	4.2692606	3185.166667	8.903180908	2202.6666	1.4461197	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4724.765209	5.902582546	1630.734493	2.8973223	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	4388.120074	3.716440864	1121.129987	3.9140155	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1267.618481	0.437228319	140.4924772	9.0226613	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0	0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1725.893118	0.437228319	89.95518532	19.084048	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	1972697	1250.97	535221.4	0.3685725	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1219.122077	7.734801433	1929.447844	0.6318547	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	583.3028177	2.379938902	580.7346021	1.0044223	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	7695.235688	19.23783946	5500.293608	1.3990597	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	6229.850425	11.50330809	2901.587772	2.1470596	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	12320.25522	11.88297693	3486.493252	3.5337097	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	43412.2787	23.79938903	6811.555986	6.3714019	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	18579.09553	5.755159014	1853.669618

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Los Angeles (SC)	2024 OFF - AirGroup - Sweeper	Aggregate	100 Gasoline	0.000103552	9.52475-05	0.000113952	0.005700319	0.000516029	0.119864697	9.75176-06	7.367956-06	1.15474E-06	1.97556E-06	5639.25	2197.3	6.07	117116.1
Los Angeles (SC)	2024 OFF - AirGroup - Water Truck	Aggregate	175 Gasoline	0.00014506	0.000133426	0.000155963	0.011759465	0.001239121	0.193751784	2.43566E-05	1.840275-05	3.37508E-06	4.75542E-06	13574.35	4974.05	16.02	7462412.5
Los Angeles (SC)	2024 OFF - ConstMin - Asphalt Pavers	Aggregate	25 Gasoline	0.003660238	0.003366686	0.004027868	0.153573098	0.002674002	0.247109751	0.001186431	0.001408836	6.41403E-06	6.67472E-06	19053	16782.7	42.34	288696.8
Los Angeles (SC)	2024 OFF - ConstMin - Asphalt Pavers	Aggregate	50 Gasoline	0.000574035	0.000527997	0.000631681	0.049424698	0.000813449	0.131899525	2.13987E-05	1.616784-05	3.77388E-06	5.08910E-06	14527	6219.6	15.84	199027.2
Los Angeles (SC)	2024 OFF - ConstMin - Asphalt Pavers	Aggregate	100 Gasoline	0.000271205	0.000251349	0.000300711	0.013441323	0.00071457	0.521166415	2.24064E-05	1.692938-05	3.10485E-06	4.55468E-06	13001.3	3405.45	8.71	207732.4
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	25 Gasoline	0.001304082	0.001200182	0.001435885	0.057166536	0.000941967	0.059161222	0.00069318	0.000522225	2.35104E-06	2.48096E-06	7081	5361.85	43.23	89359.3
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	50 Gasoline	0.000175758	0.000209393	0.000253124	0.009943841	0.001597063	0.211135924	0.014176-05	5.533040-05	2.78652E-06	1.76391E-06	7011.65	10577.7	13.06	163943.4
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	50 Gasoline	4.455556-05	4.09821E-05	4.90308E-05	0.002651469	7.73232E-05	0.031424346	2.16637E-06	1.636816-06	3.82063E-07	4.73112E-07	1350.5	525.6	4.92	16819.2
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	100 Gasoline	0.000362906	0.000241821	0.000289153	0.009289573	0.000845147	0.39227528	2.73504E-05	2.066475-05	3.78999E-06	5.40243E-06	15421.25	2416.1	22.54	212614.9
Los Angeles (SC)	2024 OFF - ConstMin - Bore/Drill Rigs	Aggregate	175 Gasoline	6.053555-05	5.56808E-05	6.66156E-05	0.004386545	0.000327321	0.135211974	9.69326E-06	7.32379E-06	1.34310E-06	1.88605E-06	5383.75	602.25	5.6	75883.5
Los Angeles (SC)	2024 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Gasoline	0.052035623	0.046312503	0.055409741	1.751279055	0.037409581	3.185301812	0.017867744	0.013500374	9.54859E-05	8.14473E-05	232548.8	6003074	6519.67	4168011
Los Angeles (SC)	2024 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Diesel	0.000441291	0.000525173	0.000635459	0.033088447	0.000984865	0.546739424	0.000155626	0.000143176	8.31064E-06	4.53236E-06	18016.4	54512.75	181.55	562622
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Gasoline	0.019905228	0.01670682B	0.049313269	1.653852491	0.030499387	2.756474136	0.022088639	0.015329194	7.58535E-05	7.3137E-05	208661.95	260781.55	917.67	2724787
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Diesel	1.459446-05	1.36826E-05	2.10159E-05	7.173023E-05	0.000132804	0.017426916	4.96226E-06	3.58420E-06	1.92705E-07	1.44161E-07	573.05	1.29	1.29	1862.7
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50 Gasoline	0.000807144	0.000742411	0.000888212	0.059979482	0.001030899	0.72108927	4.97112E-05	3.755960-05	8.76713E-06	1.08483E-05	30966.6	11165.35	18.29	390787.3
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50 Diesel	0.000187404	0.000222007	0.000269913	0.010285737	0.001783925	0.273791981	0.000175764	0.000135705	1.12603E-06	1.26116E-06	9143.25	66118	10.48	218255.4
Los Angeles (SC)	2024 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	100 Gasoline	0.000311705	0.000305103	0.000365022	0.016347899	0.000813708	0.77962345	5.37297E-05	4.059580-05	7.44530E-06	1.05683E-05	30167.25	6398.45	10.48	422297.7
Los Angeles (SC)	2024 OFF - ConstMin - Cranes	Aggregate	50 Gasoline	0.000205568	0.000183908	0.000228213	0.014917252	0.000228146	0.059273119	6.56840E-06	4.962526-06	1.15835E-06	1.58420E-06	4522.35	2310.46	5.35	85486.05
Los Angeles (SC)	2024 OFF - ConstMin - Cranes	Aggregate	100 Gasoline	0.000402575	0.000370288	0.000443009	0.017316854	0.000349279	0.37681107	2.62722E-05	1.985010-05	3.64052E-06	5.37813E-06	15351.9	4639.15	11.17	343297.1
Los Angeles (SC)	2024 OFF - ConstMin - Cranes	Aggregate	175 Gasoline	1.90625E-05	1.75337E-05	2.09773E-05	0.000892971	7.70053E-05	0.024761657	1.77515E-06	1.341226-06	2.45981E-07	3.46523E-07	980.15	178.85	0.45	22356.25
Los Angeles (SC)	2024 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	25 Gasoline	0.000587079	0.000538791	0.000644629	0.024918552	0.000443793	0.039409483	0.000307707	0.000232527	1.09353E-06	1.09137E-06	3120.75	3142.65	10.88	36970.85
Los Angeles (SC)	2024 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	100 Gasoline	0.000250983	0.000230854	0.000276191	0.009927917	0.000172917	0.029770181	2.07613E-05	1.568616-05	2.87688E-06	4.16722E-06	11895.35	1554.9	6.47	149270.4
Los Angeles (SC)	2024 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Gasoline	0.000440272	0.000428887	0.000513791	0.029855654	0.000418348	0.042421595	0.000159065	0.000145435	7.79868E-06	4.72961E-06	22261.35	64798.45	414.47	563987.1
Los Angeles (SC)	2024 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Diesel	4.53087E-05	5.39211E-05	6.52445E-05	0.002222688	0.000412293	0.054082814	1.54045E-05	1.417218-05	6.86208E-07	4.52685E-07	1795.45	5183	7.82	8292.8
Los Angeles (SC)	2024 OFF - ConstMin - Excavators	Aggregate	25 Gasoline	0.000587079	0.000538791	0.000644629	0.024918552	0.000443793	0.039409483	0.000307707	0.000232527	1.09353E-06	1.09137E-06	12410	3142.65	4.03	14985.1
Los Angeles (SC)	2024 OFF - ConstMin - Excavators	Aggregate	25 Diesel	0.000317613	0.000377986	0.000457863	0.001561042	0.002890169	0.379119628	0.000107892	9.935275-05	4.81031E-06	3.17053E-06	12603.45	16848.4	12.06	387513.2
Los Angeles (SC)	2024 OFF - ConstMin - Other Construction Equipment	Aggregate	25 Gasoline	0.001024145	0.000938818	0.001147477	0.039731758	0.000551599	1.253853351	0.000358522	0.000312984	1.89304E-05	1.05459E-05	41934.85	87114.55	126.15	1182918
Los Angeles (SC)	2024 OFF - ConstMin - Other Construction Equipment	Aggregate	175 Gasoline	0.000309129	0.00028452	0.000347997	0.01947863	0.000170248	0.182320484	0.000758587	5.717848-05	1.12388E-06	1.97514E-06	12618.95	317180.55	7.56	73078.1
Los Angeles (SC)	2024 OFF - ConstMin - Pavers	Aggregate	25 Diesel	8.595501-05	0.000102288	0.000123768	0.000424237	0.000782115	0.102594432	2.93511E-05	2.700310-05	1.30173E-06	8.58541E-07	3412.75	4025.95	4.89	96622.8
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	25 Gasoline	0.004394244	0.004027825	0.004827072	0.172360553	0.002655403	0.542990178	0.001538387	0.002507778	8.05016E-05	4.68431E-05	179842.45	40418.5	4635.21	7188069
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	25 Diesel	0.000101804	0.000121156	0.000146598	0.005003359	0.000926383	0.12151884	3.46146E-05	3.184584-05	1.54184E-06	1.01739E-06	4044.2	7033.55	8.47	133637.5
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	100 Gasoline	0.000413139	0.000415123	0.000496649	0.034200993	0.000729132	0.191357968	2.69E-05	2.019849-05	4.75822E-06	5.92025E-06	16899.5	7581.05	43.28	280498.9
Los Angeles (SC)	2024 OFF - ConstMin - Paving Equipment	Aggregate	100 Diesel	7.95915-05	7.32078E-05	8.75851E-05	0.004006738	0.000203895	0.177901663	1.24037E-05	9.371716-06	1.71878E-06	2.44356E-06	6975.15	1963.7	11.14	129604.2
Los Angeles (SC)	2024 OFF - ConstMin - Plate Compactors	Aggregate	25 Gasoline	0.001590078	0.002735699	0.039164644	1.147425753	0.02455059	2.17404228	0.011881725	0.008977304	6.62112E-05	5.46878E-05	156106.85	4967084.6	2562.23	1048422
Los Angeles (SC)	2024 OFF - ConstMin - Plate Compactors	Aggregate	25 Diesel	0.000360798	0.000331906	0.000396833	0.015317644	0.002727877	0.020712465	0.017209145	0.003203058	5.79301E-06	3.12197E-06	12410	63024.55	104.95	504186.4
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	25 Gasoline	0.018148549	0.016693036	0.019971371	0.74956275	0.013423728	1.236016748	0.008998024	0.006798507	3.329E-05	3.299E-05	94170	124884.75	501.5	1537055
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	25 Diesel	0.001816625	0.001785778	0.002136474	0.011185766	0.016836348	0.184221595	0.000652403	0.000585435	3.17527E-05	1.87144E-05	74390.65	27963.6	279.63	2242030
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	50 Gasoline	0.000998611	0.000918523	0.001098911	0.076499991	0.001287341	0.376129809	2.593E-05	1.959160-05	4.57305E-06	6.62990E-06	18925.25	6938.65	11.17	256730.1
Los Angeles (SC)	2024 OFF - ConstMin - Rollers	Aggregate	100 Gasoline	0.001859343	0.001745178	0.002088605	0.088166777	0.004546149	0.872563863	9.88145E-05	7.47985E-05	1.38925E-05	2.06823E-05	59088.75	13034.15	20.97	477561.3
Los Angeles (SC)	2024 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	50 Gasoline	0.00013902	0.000128523	0.000152983	0.010013087	0.00019574	0.064576	4.45181E-06	3.365396-06	7.85126E-07	1.07281E-06	3062.35	923.45	2.23	43402.15
Los Angeles (SC)	2024 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	100 Gasoline	0.000174758	0.00160743	0.001913112	0.075117583	0.00455931	1.619975804	0.000114426	8.637969-05	1.58412E-05	2.13884E-05	66762.15	13085.25	31.66	512246
Los Angeles (SC)	2024 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	175 Gasoline	7.20205E-05	6.62444E-05	7.88543E-05	0.003180772	0.000203131	0.067045847	5.71784E-06	4.319859-06	1.12388E-06	9.97514E-06	25.35	5799.85	1.11	64797.5
Los Angeles (SC)	2024 OFF - ConstMin - Rubber Tired Loaders	Aggregate	25 Diesel	8.483856-05	0.000100962	0.000122165	0.000416964	0.000771982	0.101265212	2.88453E-05	2.653776-05	1.28486E-06	8.47522E-07	3368.95	4369.05	4.56	109226.3
Los Angeles (SC)	2024 OFF - ConstMin - Rubber Tired Loaders	Aggregate	50 Gasoline	0.000310068	0.000304148	0.000368388	0.025722307	0.000385144	0.150350178	0.000150017	0.000115837	2.72579E-06	3.64941E-06	7121.35	2857.35	5.55	114318
Los Angeles (SC)	2024 OFF - ConstMin - Rubber Tired Loaders	Aggregate	100 Gasoline	0.001897258	0.001745098	0.002087816	0.089571949	0.004754356	0.725362206	0.000120296	9.089068-05	1.66694E-05	2.48307E-05	70875.35	18972.7	37.02	1366034
Los Angeles (SC)	2024 OFF - ConstMin - Signal Boards	Aggregate	25 Gasoline	0.000906798	0.000833999	0.000997775	0.037195451	0.000572101	0.106378327	0.000464013	0.000350586	1.80607E-06	1.68373E-06	4777.85	8289.35	11.24	54815.06
Los Angeles (SC)	2024 OFF - ConstMin - Signal Boards	Aggregate	25 Diesel	0.00470112	0.005594722	0.006769612	0.03550938	0.042393891	5.81555559	0.001656559	0.001524034	9.04952E-05	4.87816E-05	193909.9	688714.85	917.49	4132289
Los Angeles (SC)	2024 OFF - ConstMin - Signal Boards	Aggregate	50 Gasoline	8.25640E-05	9.82584E-05	0.000118893	0.000904118	0.000779978	0.12101203	2.41104E-05	2.236502-05	1.56451E-06	1.02107E-06	4058.8	2440.15	4.58	80616.55
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Gasoline	0.059733077	0.050402484	0.060719892	2.497099624	0.044509837	3.938082525	0.003004017	0.002492369	0.000108055	0.000144125	308443.25	376912.2	875.79	5292142
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Diesel	0.008285371	0.009860276	0.011930934	0.040622976	0.075523537	9.865177959	0.002909723	0.002076945	0.000125125	8.24805E-05	327864.9	522358.8	625.79	10447176
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	50 Gasoline	0.002472839	0.002273614	0.002720319	0.191965624	0.002710828	0.272810861	0.000142864	0.000107329	2.51927E-05	3.16209E-05	90279.1	47190.85	152.11	1510107
Los Angeles (SC)	2024 OFF - ConstMin - Skid Steer Loaders	Aggregate	100 Gasoline	0.001421028	0.001307061	0.001563754	0.076582186	0.003581324	1.056491308	0.000221364	0.000161419	2.96044E-05	4.22331E-05	120548.55	28236.4	90.98	2258912
Los Angeles (SC)	2024 OFF - ConstMin - Surfacing Equipment	Aggregate	25 Diesel	0.040625268	0.037367118	0.044705623	1.526145978	0.031461741	2.664892168	0.018530962	0.014008372	7.64139E-05	6.19269E-05	197307.9	535221.4	1250.97	4164730
Los Angeles (SC)	2024 OFF - ConstMin - Tampers/Rammers	Aggregate	25 Diesel	0.004666702	0.004292432	0.005135421	0.217638864	0.003954262	0.410979984	0.003100724	0.00234277	1.64363E-05	1.02371E-05	29221.9	13657.3	749.42	576200
Los Angeles (SC)	2024 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Diesel	0.001576157	0.001837575	0.002206868	0.007746672	0.014434669	1.881381944	0.000535758	0.000492897	2.38712E-05	1.57356E-05	62550.05	86654.65	91.9	1993057
Los Angeles (SC)	2024 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	50 Gasoline	0.001001718	0.000930138	0.001103239	0.075296983	0.001295162	0.220854588	8.42815E-06	5.705948-06	1.16788E-05	1.50052E-05	17899.5	7777.85	19.63	107626
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	25 Gasoline	0.036811292	0.033859027	0.040508582	1.52184895	0.027571009	2.47477868	0.018671486	0.014107345	6.57068E-05	6.65221E-05	189887.6	195322.45	449.67	2891169
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	25 Diesel	0.000742706	0.000883361	0.001060496	0.040966772	0.078377953	0.892677951	0.000325429	0.000219396	1.18296E-05	7.47908E-06	29696.4	31035.95	50.2	691812.5
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	50 Gasoline	0.004066261	0.003740147	0.004476672	0.291647787	0.005757189	0.914229343	0.000113841	9.961186-05	2.32517E-05	3.16397E-05	90315.6	40828.9	101.47	1224867
Los Angeles (SC)	2024 OFF - ConstMin - Trenchers	Aggregate	100 Gasoline	0.014516547	0.013135231	0.015803765	0.662149896	0.010807532	1.938096953	0.042585E-05	0.00727E-05	1.31389E-05	1.96166E-05	56129.7	13559.1	31.67	894702.6
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	25 Gasoline	0.019328076	0.017777965	0.021269369	0.800005596	0.013788869	1.274432799	0.009615225	0.007264836	3.23638E-05	3.46126E-05	98801.85	113255.85	301.74	2136290
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	25 Diesel	0.002067573	0.002460516	0.002972224	0.011871379	0.018782232	2.490011444	0.000727871	0.000669641	3.1925E-05	2.08474E-05	82869.6	18043.15	45.79	1153881
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	25 Net Gas	0	0	0.007838806	0.479455229	0.011313971	0.284643413	0	0	0	0	18743.15	53825.35	422.63	2992201
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	50 Gasoline	0.005989641	0.005509271	0.006591234	0.494386338	0.009039282	0.674791605	0.000322276	0.000243497	5.68369E-05	7.25652E-05	207137.5	130177.25	360.32	4295849
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	50 Diesel	0.004723839	0.004344749	0.005198297	0.252853997	0.011935654	1.581661311	0.000414284	0.000344173	9.06685E-05	0.000130082	371138.15	130177.25	360.32	8721876
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	100 Gasoline	0.001421028	0.001307061	0.001563754	0.076582186	0.003581324	1.056491308	0.000221364	0.000161419	2.96044E-05	4.22331E-05	120548.55	28236.4	90.98	2258912
Los Angeles (SC)	2024 OFF - ConstMin - Aerial Lifts	Aggregate	175 Gasoline	0.000402628	0.000370718	0.000443503	0.020154775	0.000474384	0.153461147	0.000492368	0.000328702	7.64139E-06	9.9269E-06	28219.97	4371.3	5069.86	416685.5
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	25 Gasoline	0.000666702	0.000429242	0.000513521	0.217638864	0.003954262	0.410979984	0.003100724	0.00234277	1.64363E-05	1.02371E-05	29221.9	13657.3	749.42	576200
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	25 Diesel	0.001576157	0.001837575	0.002206868	0.007746672	0.014434669	1.881381944	0.000535758	0.000492897	2.38712E-05	1.57356E-05	62550.05	86654.65	91.9	1993057
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	25 Net Gas	0	0.633312-05	0.001367478	0.086599888	0.002050562	0.208814588	8.42815E-06	1.167888-05	1.55042E-05	1.59807E-05	1598.795	7597339.95	0.63	1768.5
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	100 Net Gas	0	0	0.071018143	33.5332068	3.36258959	742.943973	0	0	0	0	4113391.67	17363626.7	9638.12	1.22E+09
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	175 Gasoline	0.016373769	0.015195318	0.018413786	1.167536007	0.098466666	27.60010032	0.001983104	0.001498537	0.000274833	0.000393817	1134443.95	276791	154.14	40538835
Los Angeles (SC)	2024 OFF - ConstMin - Forklifts	Aggregate	175 Net Gas	0	0	0.003258091	1.964560383	0.167332831	36.70844442	0	0	0	0	3102277.35	6154119	352.71	92770429
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	25 Diesel	0.015959928	0.014679943	0.017629628	0.977838843	0.012709124	1.610743319	0.000779937	0.000588832	4.48144E-06	4.26697E-06	12179.2	3185547	563.23	2308494
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	25 Gasoline	0.002548328	0.003032721	0.003669593	0.014439979	0.022738186	3.14655731	0.000896296	0.000824592	4.20677E-05	2.63338E-05	104678.35	19951.6	139.89	1594746
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	50 Diesel	0.004707342	0.004328813	0.005180143	0.455622102	0.010532093	1.147317399	0.000216973	0.000163935	3.82656E-05	5.34068E-05	146794.95	82128.65	115.06	2463860
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	50 Gasoline	0.001456114	0.001393164	0.001665923	0.106475232	0.001678847	0.038078397	2.69209883	0.242708167	0.000241865	0.000297916	104612.3	26991.75	37.81	2132148
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	175 Gasoline	0.000204391	0.000187999	0.00022492	0.010723685	0.001745867	0.558258891	4.00212E-05	3.023826-05	5.54572E-06	7.81786E-06	22316.1	2613.4	3.68	454731.6
Los Angeles (SC)	2024 OFF - ConstMin - Other General Industrial Equipment	Aggregate	175 Diesel	0.000247596	0.000275	0.000329116	0.875316105	0.005350777	0.000127274	0.000104032	0.000082306	4.68268E-06	5.94488E-07	1525.7	631.45	1.6	25889.45
Los Angeles (SC)	2024 OFF - ConstMin - Other Material Handling Equipment	Aggregate	100 Gasoline	0.001612792	0.001483446	0.001774779	0.083415796	0.007420356	1.861542661	0.000129791	9.806458-05	1.79851E-05	2.64904E-05	75617.05	27805.7	72	1501508
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	25 Gasoline	0.012171822	0.011196162	0.013394338	0.789312846	0.009054552	1.242720995	0.002595974	0.001936417	1.39377E-05	9.6874E-05	36127.95	107039.9	396.08	1384912
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	25 Diesel	0.000507499	0.000603965	0.000730798	0.003115528	0.004796298	0.639751384	0.000182233	0.000167654	8.81264E-06	5.35601E-06	21290.45	29630.7	45.52	548168
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	50 Gasoline	0.013042787	0.011996755	0.014352791	1.132385504	0.028561789	10.17308812	0.000701024	0.000529888	0.000120866	0.000159096	454140.3	173081.1	335.09	6057139
Los Angeles (SC)	2024 OFF - ConstMin - Sweepers/Scrubbers	Aggregate	50 Diesel	0.007911574	0.007501207	0.008976007	0.44842504	0.004508917	0.317229859	0.001317681	0.000955048	0.000178596	0.000226706	647134.05	444402.55	279.78	9825493
Los Angeles (SC)	2024 OFF - Industrial - Sweepers/Scrubbers	Aggregate	175 Gasoline	5.89483E-05	5.42207E-05	6.48691E-05	0.004195088	0.000574804	0.189955723	1.36179E-05	1.028916-05	1.88703E-06	2.65454E-06	7577.4	8393.5	1.6	117530
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	25 Gasoline	0.012297678	0.011312623	0.013538425	2.838659993	0.009246612	0.235020908	0.001731814	0.001498537	1.22422E-05	1.00010E-05	41488.1	23852.6	2879.62	8579446
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	25 Diesel	0.000532365	0.000633559	0.000766608	0.028000915	0.004717809	0.607130434	0.000197369	0.000181579	8.05487E-06	5.08513E-06	20213.7	36894.2	45.3	736891.2
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	50 Gasoline	0.000147139	0.000564515	0.000683547	0.468854757	0.008178682	2.674021817	0.000184187	0.000139292	3.25134E-06	4.75585E-06	18913.1	5767.9	119.34	2018450
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	50 Diesel	0.0006085	0.007241653	0.0087624	0.059090837	0.046665043	6.791389161	0.001706433	0.001569918	8.77957E-05	5.72247E-05	227471.65	222817.9	273.7	8244262
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	100 Gasoline	0.019357388	0.017804926	0.021301625	0.888013963	0.048506962	17.14814925	0.00119561	0.000903335	0.000165675	0.000248775	704420.8	187029.65	386.9	3092076
Los Angeles (SC)	2024 OFF - ConstMin - Air Compressors	Aggregate	100 Diesel	0.00181188	0.001668351	0.002099998	0.079401227	0.009573268	2.243913902	0.000153987	0.000116368	2.11351E-05	3.02048E-05	86231.25	12588.85	28.02	1689098
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	50 Net Gas	0	0	0.000397707	0.07044448	0.0144414	4.7971691	0	0	0	0	25489.45	7455.49	8.78	2385757
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	100 Net Gas	0	0	0.002168722	1.126516849	0.085405006	26.9576111	0	0	0	0	149166.5	54081.1	38.13	13559137
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	175 Net Gas	0	0	0.000604846	0.2291671	0.022866836	7.0158073	0	0	0	0	38307.45	24849.2	292	3627845
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	300 Net Gas	0	0	0.001496532	0.261698855	0.022122209	7.230693	0	0	0	0	89744.05	41775.25	2.34	4175125
Los Angeles (SC)	2024 OFF - Light Commercial - Gas Compressors	Aggregate	600 Net Gas	0	0	0.000655326	0.3717362	0.031155301	10.183225	0	0	0	0	558749.3	17395.9	2.05	5879814
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	25 Gasoline	0.895369223	0.823566011	0.985299232	48.75123752	0.643761607	82.20965989	0.054472454	0.041159466	0.002252316	0.002156142	6148691.45	8690317.85	75635.57	93214897
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	25 Diesel	0.012849305	0.015291807	0.018303086	0.088664049	0.122545636	15.87645362	0.005071303	0.004665598	0.000221593	0.000132962	52853.95	89349.24	257.75	1329207
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	50 Gasoline	0.030991782	0.028506242	0.034104566	2.032440224	0.065051303	23.21225503	0.001600301	0.001209116	0.000282231	0.000335312	1003677	450964.8	3926.25	14430874
Los Angeles (SC)	2024 OFF - Light Commercial - Generator Sets	Aggregate	50 Diesel	0.011472577	0.013653312	0.016520507	0.126779777	0

Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	75	Diesel	0.000463715	0.000561095	0.00066775	0.010151823	0.008057268	1.562201916	0.00022432	0.000206374	1.44294E-05	1.27505E-05	50683.92135	43952.36463	44.33669965	3204229	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	100	Diesel	0.000641188	0.000778258	0.000926191	0.017390013	0.00709031	2.397621469	0.000583127	0.000536477	2.21479E-05	1.95691E-05	77788.18805	58017.12131	58.52444354	4917756	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	175	Diesel	0.001077415	0.001308672	0.001551477	0.025380263	0.009739637	4.057814096	0.000455846	0.000419378	3.74842E-05	3.31193E-05	131651.3095	57138.07402	57.61770955	8322974	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	300	Diesel	0.001113363	0.00158917	0.001891243	0.012768712	0.00752002	6.125178688	0.000313859	0.00028875	5.69309E-05	4.99929E-05	198724.6769	46585.50051	46.99690163	12503341	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	600	Diesel	0.00152561	0.001845988	0.002196879	0.016840119	0.007442438	8.688363144	0.000378805	0.000348501	8.02825E-05	7.09133E-05	281884.3737	46585.50051	46.99690163	17820683	
Los Angeles (SC)	2024 Portable Equipment - Rental Pump	Aggregate	750	Diesel	0.000293399	0.000355013	0.000422495	0.001827645	0.002772243	0.882568048	0.000124965	0.000114968	8.15098E-06	7.2034E-06	28633.94833	2637.141878	2.660201979	1810233	
Los Angeles (SC)	2024 TRU - Instate Genset TRU	Aggregate	50	Diesel	0.007509589	0.009086603	0.010813809	0.143057952	0.103560712	2.835168081	0.003469578	0.003432011	2.61631E-05	2.32955E-05	1799.661995	1084169.519	1388.677876	9415140	
Los Angeles (SC)	2024 TRU - Instate Trailer TRU	Aggregate	50	Diesel	0.152181848	0.184140036	0.219141862	2.21268479	1.353643032	31.79714089	0.017230389	0.015851958	0.000291387	0.000261265	20183.6732	8081541.331	6099.815223	2.75E+08	
Los Angeles (SC)	2024 TRU - Instate Truck TRU	Aggregate	25	Diesel	0.018334448	0.022184682	0.026401605	0.179952233	0.215296159	4.319818839	0.00858436	0.007857611	3.90567E-05	3.54943E-05	2742.064516	2174709.594	1597.876263	10663405	
Los Angeles (SC)	2024 TRU - Instate Van TRU	Aggregate	25	Diesel	0.000424455	0.000513591	0.000611216	0.004166252	0.004984257	0.10000683	0.000198734	0.000182835	9.18081E-07	8.21717E-07	63.48071307	78875.4775	57.05406135	709879.3	
Los Angeles (SC)	2024 TRU - Out-of-State Genset TRU	Aggregate	50	Diesel	0.004710828	0.005700102	0.006783593	0.088681593	0.065214617	1.78651659	0.000295142	0.000271531	1.64867E-05	1.46791E-05	1134.010015	683164.7283	552529152	2159689	
Los Angeles (SC)	2024 TRU - Out-of-State Trailer TRU	Aggregate	50	Diesel	0.078722275	0.095253952	0.113360076	1.242012061	0.787439948	20.00838406	0.004927993	0.004533754	0.000183867	0.000164401	12700.59741	5085318.31	24236.1436	1.73E+08	
Los Angeles (SC)	2024 TRU - Railcar TRU	Aggregate	50	Diesel	0.00814877	0.009860011	0.011734228	0.128564248	0.081510179	2.071125503	0.000510111	0.000469302	1.90326E-05	1.7017BE-05	1314.675444	526395.9554	1632.589881	17897462	

OFFROAD 2025

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	4230113.1	2873.94	1389270.3	0.304485815	201659		45.25	3684.1	0.54745393	0	0	0
Air Compressors50	Air Compressors	50	130071.4	119.09	57560.5	2.259733672	226938.75		273.21	222376.25	1.020517024	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0		0	0	0	0	0	0
Air Compressors100	Air Compressors	100	7030888.55	386.11	1866560.05	3.766881123	0		0	0	0	0	0	0
Air Compressors175	Air Compressors	175	86074.1	25.96	12559.65	1.853240107	0		0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0		0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0		0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0		0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0		0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	98618.89	301.15	113025.9	0.872537622	82687.4		450.89	180066.1	0.459196497	189442.2	427.1	169306
Aerial Lifts50	Aerial Lifts	50	2067871	359.98	129925.4	1.591583324	303911.2975		1195.707083	171715.8377	0.817590392	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	338928.8612		958.7099255	297158.3984	1.140561424	0	0	0
Aerial Lifts100	Aerial Lifts	100	370610.05	359.98	129925.4	2.852484425	191360.4059		489.7941233	152348.1882	1.257723852	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	92409.16762		50.22082655	15588.3377	2.070603749	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1936.698863		1.602836833	528.3957816	3.605243855	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1375.336873		0.564278944	176.1319273	7.808503865	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7059.1	43.13	5354.55	1.318338742	7113.85		13.23	10701	0.662925717	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1357.8	4.95	529.25	2.565517241	7716.821993		18.35129982	6710.294169	1.149997532	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	3494.536758		6.181490464	2064.845501	1.708949891	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15421.25	22.53	2409	6.401515152	44327.56477		49.83826683	20954.85013	2.115384481	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5388.1	5.59	602.25	8.933333333	56114.00179		44.23629114	14385.77527	3.900859865	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	80771.22147		44.81580587	14907.43627	5.396467682	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	11630.1505		35.92991332	11681.75549	9.955828207	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	93323.7588		9.079864123	5605.701222	16.64800797	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	41915.78496		1.159029662	868.3963355	48.26801527	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	2318145.69	6506.76	599143.85	0.386971578	18206.8		183.99	55213.8	0.330523864	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0		0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0		0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0		0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0		0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0		0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0		0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0		0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0		0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	208466.1	915.84	260263.25	0.800981698	587.95		1.32	781.1	0.752316449	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30966.6	14.26	11165.35	2.773455378	9283.7		11.54	6701.4	1.382352941	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0		0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	30167.25	10.49	6398.45	4.714774672	0		0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0		0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0		0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0		0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0		0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0		0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	148.259502		0.727822032	358.1356441	0.413973694	0	0	0
Cranes50	Cranes	50	4529.85	5.59	2321.4	1.951257862	2402.046746		7.763441404	3483.708864	0.689508443	0	0	0
Cranes75	Cranes	75	0	0	0	0	1316.912226		3.639113156	1281.943407	1.022597585	0	0	0
Cranes100	Cranes	100	15344.6	11.14	4628.2	3.315457413	56698.66889		92.67608175	43096.41503	1.315623791	0	0	0
Cranes175	Cranes	175	932.8	0.45	182.5	5.44	16365.4153		159.6357638	74306.32087	2.199743079	0	0	0
Cranes300	Cranes	300	0	0	0	0	27874.5912		176.1330768	85491.07054	3.260083998	0	0	0
Cranes600	Cranes	600	0	0	0	0	5075.51619		183.6539107	91233.12769	5.643676969	0	0	0
Cranes750	Cranes	750	0	0	0	0	9868.724705		2.426075839	1046.79216	9.427585902	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	27587.88602		3.881720702	1975.439778	13.9653402	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0		0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7779.407819		21.53207159	7548.679451	1.030561899	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	1348.803324		3.879773899	858.8155511	1.579518309	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	342122.5866		366.0453123	176121.5361	1.943672562	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	374892.7492		241.0971519	113210.4819	3.311466716	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	392839.4808		187.1137508	86325.99618	4.550653159	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	137425.51		330.9480265	160855.6483	8.543390051	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	13849.22928		2.698528491	1015.216027	15.64170846	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	79835.90349		6.459623158	3673.525591	21.73277454	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3137.1	10.83	3133.7	0.995337995	0		0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0		0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0		0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11895.35	6.44	1565.85	7.596736597	0		0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0		0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0		0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0		0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0		0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0		0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	22202.05	433.63	64670.7	0.343123174	1824.05		7.92	5252.25	0.348158443	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1273.85	4.09	511	2.492857143	0		0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	12828.56431		12.66150263	17185.58944	0.746672174	0	0	0
Excavators50	Excavators	50	0	0	0	0	31301.3149		526.6490645	39774.295	0.786562736	0	0	0
Excavators75	Excavators	75	0	0	0	0	23827.98015		21.79088464	16199.2261	1.470933612	0	0	0
Excavators100	Excavators	100	0	0	0	0	979398.9247		358.167213	236100.7206	1.605508771	0	0	0
Excavators175	Excavators	175	0	0	0	0	852511.69		485.6562508	295270.2323	2.88732692	0	0	0
Excavators300	Excavators	300	0	0	0	0	1085867.14		418.5577852	251301.0945	4.321202103	0	0	0
Excavators600	Excavators	600	0	0	0	0	1927373.005		439.0539629	289106.754	6.666848149	0	0	0
Excavators750	Excavators	750	0	0	0	0	28146.60917		3.868523998	2315.760525	12.15433804	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	53721.63459		3.236209972	2276.273948	21.80992456	0	0	0
Forklifts25	Forklifts	25	4288.75	6.5	6215.95	0.689958896	91.58013878		0.499845431	158.3720452	0.578259494	5022.4	4.1	5124.9	0.980056988
Forklifts50	Forklifts	50	3473037.07	1201.55	2161555.55	1.606738417	21706.04998		583.5263923	425064.916	0.502403385	68745557.3	27755.4	4599718.9	1.334986611
Forklifts75	Forklifts	75	0	0	0	0	11777.85487		37.69092123	15714.66623	0.749481769	0	0	0	0
Forklifts100	Forklifts	100	16020890.21	4240.41	7595383.55	2.10292911	31525185.27		4869.50158	3216022.609	0.980504997	41769651	9740.17	17547455.3	2.380382247
Forklifts175	Forklifts	175	1120042.65	154.02	277578.85	4.035043198	9273603422		888.0306785	587169.7651	1.579293789	31350362	356.44	642148.15	4.88210771
Forklifts300	Forklifts	300	0	0	0	0	1812211.3107		1113.029589	802886.9992	2.257558831	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	46074.24693		12.32498266	12017.43368	3.838134416	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	719.6801883		0.24992217	55.43021582	12.98353574	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	1391.834142		0.458301698	370.3143109	9.144522376	0	0	0	0
Generator Sets25	Generator Sets	25	6133905.1	75485.94	8673115.4	0.707004443	527454.2		2570.13	867619.4	0.607932553	0	0	0	0
Generator Sets50	Generator Sets	50	1001468.75	3918.68	450063.25	2.225717351	625164		1325.35	447614.1	1.39655999	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0		0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	4512493.7	756.75	869024.75	5.191266098	0		0	0	0	40933.1	56.39	6471.45	6.257191203
Generator Sets175	Generator Sets	175	73835.85	71.44	8232.5	8.96867299	0		0	0	0	58531.4	46.7	5208.2	10.92370579
Generator Sets300	Generator Sets	300	0	0	0	0	0		0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0		0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0		0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0		0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	59.80483318		0.433618256	101.7654016	0.587673524	0	0	0	0
Graders50	Graders	50	0	0	0	0	1999.955227		6.287464713	2276.490377	0.878526768	0	0	0	0
Graders75	Graders	75	0	0	0	0	688.83467		1.309854768	453.1105796	1.520234598	0	0	0	0
Graders100	Graders	100	0	0	0	0	46588.15356		58.32165544	24840.17178	1.875516563	0	0	0	0
Graders175	Graders	175	0	0	0	0	519804.5868		346.6779957	164955.6132	1.149965861	0	0	0	0
Graders300	Graders	300	0	0	0	0	10751513.16		303.7495884	236499.7449	4.546510822	0	0	0	0
Graders600	Graders	600	0	0	0	0	67597.66953		11.70769293	9640.745506	7.013664169	0	0	0	0
Graders750	Graders	750	0	0	0	0	0		0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	37255.06123		1.308854768	973.6404983	38.26301256	0	0	0	0
Pavers25	Pavers	25	1901.85	42.25	16746.2	1.135353085	3452.9		4.94	4089.75	0.844430491	0	0	0	0
Pavers50	Pavers	50	145615.5	15.82	6212.3	2.344300823	8532.1089		25.26576593	9208.908899	0.926505952	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	14066.3954		23.37083448	9147.63641	1.537708187	0	0	0	0
Pavers100	Pavers	100	12990.35	8.74	3405.45	3.814576635	68204.20248		98.74703516	39228.22737	1.738651145	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	112587.1149		81.58757552	33142.97998	3.397012412	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	85584.80819		39.37248524	18175.49516	4.708814869	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	18558.52363		5.260702235	2385.929394	7.778347514	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	3305.190988		0.421096096	204.8181136	16.11239886	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0		0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	403252	4624.04	875120.35	0.460796049	4095.7		8.8	7124.8	0.574795082	0	0	0	0
Paving Equipment50	Paving Equipment	50	16908.8	43.28	7577.4	2.231231873	10830.68958		31.11099938	15055.94541	0.706078583	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1227.012227		3.153141838	995.8033918	1.232182429	0	0	0	0
Paving Equipment100	Paving Equipment	100	6978.8	11.17	1956.4	3.567164179	45397.15885		57.80760221	27716.48616	1.637736849	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	47059.63767		37.20707359	17558.65089	2.68013975	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	31102.78892		15.55549993	7247.79751	4.210335845	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	35657.12668		10.09005585	4914.616511	7.225910465	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	6598.717159		1.051047277	563.1456888	11.73737796	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	3117.790955		0.420418913	201.2820333	15.488659	0	0	0	0
Rollers25	Rollers	25	93993.15	500.53	124651.15	0.754030357	75403.84699		281.6310797	197180.0277	0.38246668	0	0	0	0
Rollers50	Rollers	50	19023.8	11.14	6931.35	2.744024422	175198.5989		638.6798579	227170.0378	0.771222398	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	1748.726199		5.414368073	1270.692237	1.376139864	0	0	0	0
Rollers100	Rollers	100	590849.65	20.97	13034.15	4.533466016	271887.7995		471.0502224	160549.3886	1.693488388	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	282978.9234		275.4830478	101501.6252	2.787925049	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	47843.78877		35.73482928	11142.98132	4.217527524	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	26421.39372		12.34475923	3856.296801	6.851493824	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0		0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0		0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	91.58013878		0.499845431	158.3720452	0.578259494	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3065.65	2.23	919.8	3.33730158	8821.13109		28.49226741	7989.576396	1.104082715	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	296.1712619		0.999728683	229.0529024	1.293025516	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66793.75	31.69	13081.6	5.104631086	701302.6512		1207.422315	349805.1345	2.00438807	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3755.85	1.1	459.9	8.166666667	148668.0853		199.9457382	56738.54488	2.620230491	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	11615.23167		10.28721898	2616.894521	4.604891309	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	3825.564626		1.749525192	660.1587716	8.313575387	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	719.6801883		0.24992217	55.43021582	12.98353574	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0		0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0		0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7725.228342		8.448065818	8241.852209	0.937317859	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	9565.631576		8.035965042	6426.764186	1.488410397	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	23020.17641		15.24772854	13168.08046	1.722554596	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	34930.82070		14.83562773	11978.18016	2.951960894	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	35756.5432		11.12672083	8003.448431	4.467642105	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	39185.57798		6.957995796	5796.23905	7.558702805	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	14483.02728		1.030251928	1063.870369	13.61352633	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0		0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	62.2183466		0.212349387	89.70489092	0.693589241	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	695.2035202		1.276599124	468.7087004	1.059541216	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4512.332405		5.734343459	2688.405716	1.678441753	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	20477.85932		15.28915589	8971.984084	2.282422669	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	23497.49		12.34788552	5620.0972	4.180503755	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	343162.7911		145.6716797	63181.39011	5.431218406	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	384575.7517		74.64479546	36539.1041	10.52402545	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	93346.65241		11.89155589	6090.463672	15.32669862	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	89981.05243		5.521084729	2251.094379	39.83859189	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	307819.1	874.01	279068.05	1.10302521	332248.55		634.19	529155.81	0.627646884	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90282.75	152.11	47190.85	1.913141001	132575.4299		442.2148264	143019.7633	0.926972766	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	70797.13647		142.6	42526.2	1.665537805	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	1205522	90.98	28232.75	4.269941823	249.1658906		0.657731523	154.3623055	1.614162796	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4758.857994		5.919583695	1642.414631	2.897479197	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	4421.613295		3.727145239	1129.674896	3.914058516	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1276.659007		0.438467683	141.4987801	9.022361106	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	0		0	0	0	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1728.185516		0.438467683	90.81648975	19.02940227	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	196888.9	1248.47	534159.25	0.368594759	0		0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1238.105747		7.7570799	1942.801073	0.612311499	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	748.3598227		2.981492268	744.0713377	1.005836494	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	7644.77681		18.69955159	5398.251559	1.416557941	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	6257.459491		11.53617013	2905.3122	2.153782709	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	1205.2.91952		13.72406444	3429.309964	3.514677776	0	0	0	0
Surfacing Equipment600	Surfacing Equipment	600	0	0	0	0	43329.01168		23.47031938	6862.354288	6.284871055	0	0	0	0
Surfacing Equipment750	Surfacing Equipment	750	0	0	0	0	18939.67516		6.105869022	1897.288576	9.382499387	0	0	0	0
Surfacing Equipment9999	Surfacing Equipment	9999	0	0	0	0	7354.241111		1.988999848	543.1160613	13.54082776	0	0	0	0
Tractors/Loaders/Backhoes25	Tractors/Loaders/Backho

Los Angeles (SC)	2025 Agricultural - Combine Harvesters	Aggregate	300 Diesel	0.000128659	0.000155677	0.000185269	0.000604835	0.001565429	0.039425537	5.867331e-05	5.397964e-05	3.630941e-07	3.239442e-07	9134.45458	1680.55805
Los Angeles (SC)	2025 Agricultural - Combine Harvesters	Aggregate	600 Diesel	2.802E-05	3.390546e-05	4.035035e-05	0.000229313	0.000283017	0.015041261	1.201455e-05	1.105381e-05	1.391749e-07	1.236104e-07	3485.94841	416.8679062
Los Angeles (SC)	2025 Agricultural - Construction Equipment	Aggregate	50 Diesel	0.000255554	0.00030922	0.000367998	0.000995601	0.000915458	0.014187404	7.144581e-05	6.574868e-05	1.262446e-07	1.182168e-07	3333.490078	3223.771954
Los Angeles (SC)	2025 Agricultural - Construction Equipment	Aggregate	75 Diesel	0.000176537	0.000213699	0.000254213	0.000525453	0.000518379	0.023808215	0.000103323	9.505756e-05	2.095798e-07	1.890869e-07	5348.819915	3619.877974
Los Angeles (SC)	2025 Agricultural - Construction Equipment	Aggregate	100 Diesel	0.000330374	0.000399752	0.000475738	0.002435729	0.002578671	0.054412348	0.000221623	0.000198916	4.965132e-07	4.470858e-07	12606.73049	6399.853691
Los Angeles (SC)	2025 Agricultural - Construction Equipment	Aggregate	175 Diesel	0.000676098	0.000818035	0.000973529	0.005451124	0.005743802	0.122499193	0.000505036	0.000322097	1.119888e-06	1.008536e-06	28381.68845	11082.96094
Los Angeles (SC)	2025 Agricultural - Construction Equipment	Aggregate	300 Diesel	0.001369193	0.00004673	0.000531646	0.001522795	0.003764895	0.081270323	0.00016078	0.000147918	7.453488e-07	6.677670e-07	18829.42187	4547.781526
Los Angeles (SC)	2025 Agricultural - Construction Equipment	Aggregate	600 Diesel	5.263356-05	6.368660-05	7.57923E-05	0.000220799	0.00047886	0.0098202	2.072775-05	1.906964-05	8.982260-08	8.068880-08	2275.230072	310.5974475
Los Angeles (SC)	2025 Agricultural - Cotton Pickers	Aggregate	100 Diesel	1.999766-04	4.839732-06	5.759069-06	6.68013E-05	3.928786-05	0.001605947	2.990666-06	2.751416-06	1.513268-08	1.392508-08	384.498389	165.1850966
Los Angeles (SC)	2025 Agricultural - Cotton Pickers	Aggregate	175 Diesel	9.539826-06	1.154326-05	1.37373E-05	0.000159692	9.44787e-05	0.004606062	5.483809e-06	5.045170e-06	3.750858-08	3.33649E-08	940.8099278	327.1183113
Los Angeles (SC)	2025 Agricultural - Cotton Pickers	Aggregate	300 Diesel	9.153816-06	1.108108-05	1.31889E-05	5.76664E-05	9.822632e-05	0.004588952	1.035188e-05	9.519386-06	3.599749-08	3.193E-08	951.524268	172.6062889
Los Angeles (SC)	2025 Agricultural - Cotton Pickers	Aggregate	600 Diesel	2.683916-05	3.247536-05	3.86438E-05	0.000168303	0.000270907	0.012772318	1.165776-05	1.072516-05	1.180716-07	1.049456-07	2959.202761	390.0751189
Los Angeles (SC)	2025 Agricultural - Forage & Silage Harvesters	Aggregate	100 Diesel	8.500586-07	1.028576-06	1.22408E-06	6.59069E-06	7.411356-06	0.000152883	6.022831e-07	5.540969-07	1.397486-09	1.2562E-09	35.42178641	17.11978615
Los Angeles (SC)	2025 Agricultural - Forage & Silage Harvesters	Aggregate	175 Diesel	1.700996-06	2.058127e-06	2.44931E-06	1.31918E-05	1.778e-05	1.09361E-05	0.000470777	4.02712E-07	2.424169-09	1.977886-09	55.77145376	10.85868282
Los Angeles (SC)	2025 Agricultural - Forage & Silage Harvesters	Aggregate	600 Diesel	9.651387-06	1.167888-05	1.38986E-05	5.616688-05	0.000110259	0.000362457	4.368676-06	4.019186-06	3.34460-08	2.978160-08	839.7692753	89.12951717
Los Angeles (SC)	2025 Agricultural - Forage & Silage Harvesters	Aggregate	300 Diesel	1.362716-05	1.281238-05	2.59901E-05	0.000190811	0.000196196	0.000490481	7.763116-06	5.142246-06	8.702978-08	7.730558-08	2178.946306	154.0138602
Los Angeles (SC)	2025 Agricultural - Harvesters	Aggregate	9999 Diesel	1.085636-05	1.313616-05	5.56131E-05	8.62862E-05	0.000247143	0.005619856	5.011331e-06	4.61124e-06	5.198128-08	4.61762E-08	1302.05756	65.07956591
Los Angeles (SC)	2025 Agricultural - Forklifts	Aggregate	50 Diesel	2.145856-05	2.595586-05	0.000109E-05	9.66853E-05	4.727088-05	0.001469915	5.982410e-06	5.503826e-06	1.303046-08	1.207146-08	340.3850306	44.07628221
Los Angeles (SC)	2025 Agricultural - Forklifts	Aggregate	75 Diesel	1.814866-06	2.195986-06	2.61346E-06	1.1369E-05	1.5221E-05	0.000236946	9.942098-07	9.146726-07	2.150916-09	1.94969E-09	54.89782227	36.2259393
Los Angeles (SC)	2025 Agricultural - Forklifts	Aggregate	100 Diesel	6.893226-07	8.339586-07	9.92478E-07	4.4392E-06	4.937356-06	9.41271E-05	4.196641e-07	3.860861e-07	8.558231e-10	7.73768E-10	21.81830522	12.07531331
Los Angeles (SC)	2025 Agricultural - Hay Squeeze/Stack retriever	Aggregate	50 Diesel	1.277026E-06	1.545096E-06	1.83954E-06	6.83974E-06	9.394024E-06	0.000225971	7.59136-07	6.976166-06	1.134296-09	1.05508E-09	29.18614418	18.97979564
Los Angeles (SC)	2025 Agricultural - Hay Squeeze/Stack retriever	Aggregate	100 Diesel	1.395186-06	1.688176-06	2.00906E-06	7.03682E-06	9.785141e-06	0.000314225	8.884890-07	8.17416-07	1.263298-09	1.15217E-09	32.48853375	17.12466462
Los Angeles (SC)	2025 Agricultural - Hay Squeeze/Stack retriever	Aggregate	175 Diesel	1.662796-06	2.011796-06	2.39427E-06	8.41922E-06	1.170188e-05	0.000419705	1.060313e-06	1.474854e-05	1.504826-09	1.372606-09	38.69118473	22.76417615
Los Angeles (SC)	2025 Agricultural - Hay Squeeze/Stack retriever	Aggregate	300 Diesel	7.227636-06	8.745436-06	0.000104076	0.000250318	0.000728562	0.010970546	3.105188-06	2.856786-06	9.594028-08	9.014078-08	2541.751146	485.8200998
Los Angeles (SC)	2025 Agricultural - Hay Squeeze/Stack retriever	Aggregate	600 Diesel	2.008436-05	2.430896-05	2.89229E-05	9.3924E-05	0.000198902	0.002725315	8.48312e-06	7.804546-06	2.688546-08	2.526498-08	712.1835473	106.1839473
Los Angeles (SC)	2025 Agricultural - Nut Harvester	Aggregate	50 Diesel	4.951526-05	5.991346-05	0.000713E-05	0.000635335	0.000702847	0.015702858	1.79056-05	1.647266-05	1.446696-07	1.29024E-07	3638.17609	3520.307935
Los Angeles (SC)	2025 Agricultural - Nut Harvester	Aggregate	75 Diesel	3.103414-05	3.755136-05	4.46845E-05	0.000551203	0.000521217	0.01422227	1.423777e-05	1.309867e-05	1.31195E-07	1.16777E-07	3292.823157	1965.380917
Los Angeles (SC)	2025 Agricultural - Nut Harvester	Aggregate	100 Diesel	2.170416E-05	7.34973E-05	8.75146E-05	0.000519467	0.000615229	0.014988504	1.734E-05	1.597196-05	4.97419E-07	4.07448E-07	11488.9592	5433.881372
Los Angeles (SC)	2025 Agricultural - Nut Harvester	Aggregate	175 Diesel	6.882111-06	8.327356-06	9.91023E-06	0.000156514	0.000638223	0.039343165	3.590045-06	3.308355-06	3.641226-07	3.23267E-07	9115.169784	3104.416479
Los Angeles (SC)	2025 Agricultural - Nut Harvester	Aggregate	300 Diesel	1.547476-06	1.479276-06	7.72586E-06	4.29163E-05	5.092E-05	0.001594224	1.372626-06	1.19904e-06	2.956966-08	2.62457E-08	740.565893	161.2972126
Los Angeles (SC)	2025 Agricultural - Nut Harvester	Aggregate	600 Diesel	3.702122-05	4.479568-05	5.33105E-05	0.000351468	0.000362818	0.027581415	1.527498-05	1.405209-05	2.566046-07	2.26626E-07	6390.304226	845.1836706
Los Angeles (SC)	2025 Agricultural - Nut Harvester	Aggregate	50 Diesel	2.579466-05	3.121386-05	3.71445E-05	0.000183617	0.000337553	0.007231451	7.474088-07	6.876166-06	2.62E-08	2.40548E-08	679.4164101	689.2187025
Los Angeles (SC)	2025 Agricultural - Other Harvesters	Aggregate	75 Diesel	3.2806E-05	3.9695E-05	4.72406E-05	0.000333575	0.000317403	0.007482651	1.47312E-05	1.355276-05	6.866076-08	6.14482E-08	1733.646231	1003.425571
Los Angeles (SC)	2025 Agricultural - Other Harvesters	Aggregate	100 Diesel	0.000100842	0.000128772	0.000153249	0.001142871	0.000726497	0.025435291	6.617166-05	6.087766-05	2.335476-07	2.08992E-07	5893.073703	2659.729933
Los Angeles (SC)	2025 Agricultural - Other Harvesters	Aggregate	175 Diesel	0.000176525	0.000225431	0.000268347	0.001914947	0.001268008	0.044538619	0.000115843	4.231922e-05	1.538736-07	1.37952E-07	3889.918649	1262.099936
Los Angeles (SC)	2025 Agricultural - Other Harvesters	Aggregate	300 Diesel	6.886576-05	8.332756-05	9.91666E-05	0.000238	0.000683399	0.016735445	2.862495-05	2.633496-05	1.536996-07	1.37509E-07	3877.414913	772.2188535
Los Angeles (SC)	2025 Agricultural - Other Harvesters	Aggregate	600 Diesel	2.784916E-05	3.369256-05	2.62E-05	0.449127E-05	0.000603773	0.032955417	1.124E-05	1.075796-05	3.818016-08	3.41911E-08	964.1067323	108.1053884
Los Angeles (SC)	2025 Agricultural - Others	Aggregate	50 Diesel	1.812796-05	2.194876-05	2.61207E-05	8.50977E-05	7.9784E-05	0.001361482	5.225531e-06	4.816486-06	2.121726-07	1.18860E-08	315.4159662	300.6606488
Los Angeles (SC)	2025 Agricultural - Others	Aggregate	75 Diesel	1.444946-06	1.630286-06	1.96072E-06	2.48916E-06	1.185345-06	0.000051362	1.986686-07	1.828826-07	5.121536-09	4.61246E-09	130.0613075	85.82470427
Los Angeles (SC)	2025 Agricultural - Others	Aggregate	100 Diesel	1.363E-05	1.649236-05	1.96271E-05	0.000102534	0.000107244	0.002038763	8.444846-06	8.113256-06	2.107996-08	1.89702E-08	534.9149431	263.5117644
Los Angeles (SC)	2025 Agricultural - Others	Aggregate	175 Diesel	3.915176-05	4.737356-05	5.63784E-05	0.000337843	0.000306453	0.007929055	2.114566-05	1.945396-05	6.25278E-08	6.1535E-08	1837.078979	687.0591477
Los Angeles (SC)	2025 Agricultural - Others	Aggregate	300 Diesel	3.424266-05	5.37496E-05	0.000119467	0.000619421	0.000666317	0.020462277	5.108496-06	4.699476-06	9.532496-08	8.51287E-08	2406.693877	527.0253194
Los Angeles (SC)	2025 Agricultural - Others	Aggregate	600 Diesel	0.000207735	0.000251359	0.000299138	0.001256006	0.002101384	0.052952648	9.342481-05	8.595086-05	4.828036-07	4.31722E-07	12173.54181	1553.674225
Los Angeles (SC)	2025 Agricultural - Sprayers/Spray rigs	Aggregate	50 Diesel	4.57946-05	5.541076-05	6.59433E-05	0.000331666	0.000328582	0.014594224	1.737266-06	1.599046-06	2.895068-08	2.62752E-08	754.8644414	817.1626927
Los Angeles (SC)	2025 Agricultural - Sprayers/Spray rigs	Aggregate	75 Diesel	9.835976-06	1.190156-05	1.41638E-05	6.7075E-05	8.90063E-05	0.001698401	5.668436-06	5.214986-06	1.365146-08	1.23118E-08	347.1646057	234.9229241
Los Angeles (SC)	2025 Agricultural - Sprayers/Spray rigs	Aggregate	100 Diesel	1.2716E-05	1.539086-05	1.83225E-05	0.000122033	0.000124449	0.004955448	2.005754-06	1.845266-05	4.517401-08	4.07922E-08	1147.849449	538.9398823
Los Angeles (SC)	2025 Agricultural - Sprayers/Spray rigs	Aggregate	175 Diesel	4.134436-05	5.002668-05	5.95358E-05	0.000343649	0.000388729	0.008807291	2.220925-05	2.043256-05	7.328766-08	6.57928E-08	1855.199437	690.7986271
Los Angeles (SC)	2025 Agricultural - Sprayers/Spray rigs	Aggregate	300 Diesel	1.713536-04	2.097586-04	2.49626E-04	0.000144699	0.000180845	0.003802471	7.947066-07	7.311266-06	3.582026-08	3.20651E-08	904.1587976	185.9258891
Los Angeles (SC)	2025 Agricultural - Sprayers/Spray rigs	Aggregate	600 Diesel	2.182276-05	1.285196-05	3.17966E-05	0.000216967	0.000229886	0.013467599	4.818376-06	4.43e-07	1.362666-07	1.21910E-07	3438.670492	661.2217944
Los Angeles (SC)	2025 AirGroup - Swathers/Windrowers/Hay Conditioners	Aggregate	50 Diesel	7.81273E-06	9.453416-06	0.125038-05	6.91149E-05	7.24488E-05	0.00145557	2.716396-06	2.499086-06	1.331346-08	1.19599E-08	337.2393306	277.4395521
Los Angeles (SC)	2025 AirGroup - Swathers/Windrowers/Hay Conditioners	Aggregate	75 Diesel	1.958826-05	2.369886-05	2.96495E-05	0.000216967	0.000166668	0.004651285	1.008661e-05	7.595686-06	5.47438E-08	5.1453E-08	1449.468644	818.2077338
Los Angeles (SC)	2025 AirGroup - Swathers/Windrowers/Hay Conditioners	Aggregate	100 Diesel	3.515116-05	4.251286-05	5.06175E-05	0.000563289	0.000310852	0.013938567	2.441826-05	2.246476-05	1.286786-07	1.14528E-07	3229.409613	1366.087737
Los Angeles (SC)	2025 AirGroup - Swathers/Windrowers/Hay Conditioners	Aggregate	175 Diesel	2.60823E-05	2.427366-05	2.91561E-05	0.000183804	0.000187747	0.004599542	1.347001e-05	1.007938-06	8.442486-08	7.52613E-08	2116.604993	688.9029566
Los Angeles (SC)	2025 AirGroup - Swathers/Windrowers/Hay Conditioners	Aggregate	300 Diesel	9.92728E-06	1.20122E-05	1.42953E-05	6.73333E-05	9.82672E-05	0.004908493	4.084646-06	3.757876-06	4.538756-08	4.03307E-08	1137.228926	218.7861244
Los Angeles (SC)	2025 AirGroup - Tug/Pushback	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2025 AirGroup - Tug/Pushback	Aggregate	50 Diesel	0.000232675	0.000281537	0.000335052	0.001105807	0.000955157	0.104007019	9.238876-05	8.499676-05	9.546166-07	8.48891E-07	3374.391774	2540.408123
Los Angeles (SC)	2025 AirGroup - Tug/Pushback	Aggregate	75 Diesel	1.612526-05	1.951156-05	2.32203E-05	0.000161569	0.000193351	0.024149237	1.372946-05	1.263116-05	2.227881-07	1.97103E-07	783.4954081	472.3875062
Los Angeles (SC)	2025 AirGroup - Tug/Pushback	Aggregate	100 Diesel	0.000459247	0.000555895	0.000661669	0.004602034	0.003850282	0.480502822	0.000152579	0.000209533	9.975016-06	8.81832E-06	35055.72411	14181.40542
Los Angeles (SC)	2025 AirGroup - Tug/Pushback	Aggregate	175 Diesel	0.00089157	0.0010788	0.001283861	0.017469933	0.013057054	2.949705521	0.00064001	0.000588809	2.724476-05	2.40751E-05	95699.88227	29441.84905
Los Angeles (SC)	2025 AirGroup - Tug/Pushback	Aggregate	300 Diesel	0.000409647	0.000495673	0.000589892	0.008747476	0.006565094	1.505606683	0.000319634	0.000275316	1.472128-05	1.29988E-05	51603.98882	8152.750687
Los Angeles (SC)	2025 AirGroup - Tug/Pushback	Aggregate	750 Diesel	9.254316-06	1.11977E-05	1.33262E-05	0.000188	5.220811e-05	0.105931649	1.786355-06	1.643446-06	9.791138-07	8.6466-07	3436.835697	172.2925678
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	50 Diesel	7.823616-06	9.466576-06	1.12686-05	0.000153103	0.000115784	0.022591691	5.072688-07	4.666876-07	2.086376-07	1.84398E-07	732.9625275	490.0336697
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	75 Diesel	1.576396-05	1.900176-05	2.26136E-05	0.000183089	0.000190487	0.026606431	1.286716-05	1.183776-05	2.455196-07	2.17158E-07	863.2163545	490.0336697
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	100 Diesel	2.284646-05	2.754076-05	3.27795E-05	0.000494502	0.000276668	0.064651228	1.248456-05	1.148456-05	1.332666-06	1.17813E-06	4369.418648	1260.134679
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	175 Diesel	3.015611e-05	4.25128E-05	5.06175E-05	0.000563289	0.000310852	0.013938567	2.441826-05	2.246476-05	1.286786-07	1.14528E-07	3229.409613	1366.087737
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	300 Diesel	0.000539002	0.000650192	0.000788762	0.006743825	0.004499842	1.043007112	0.000155552	0.000143098	3.342486-05	2.95213E-05	11749.5852	17530.45108
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	600 Diesel	0.000428969	0.000519053	0.000617715	0.004771609	0.005128793	1.784510402	0.000202524	0.000188834	1.648585-05	1.45649E-05	57896.47472	5658.881967
Los Angeles (SC)	2025 AirGroup - Tug/Wide Body	Aggregate	750 Diesel	8.445646-05	0.000102192	0.000121617	0.000300145	0.001883865	0.144588161	4.97522-05	4.575346-05	1.334266-06	1.18031E-06	4691.003645	268.5115998
Los Angeles (SC)	2025 AirGroup - Baggage Tug	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2025 AirGroup - Baggage Tug	Aggregate	50 Diesel	0.000220902	0.000267291	0.000318099	0.002005962	0.001604626	0.228345305	9.590635-05	8.823385-05	2.103616-06	1.86291E-06	7405.16757	7772.215717
Los Angeles (SC)	2025 AirGroup - Baggage Tug	Aggregate	75 Diesel	0.000518892	0.000627863	0.000747209	0.004709331	0.00667113	1.614805156	0.000224259	0.000207195	4.940726-06	4.37926E-06	17398.96	2791985.84
Los Angeles (SC)	2025 AirGroup - Baggage Tug	Aggregate	100 Diesel	0.000660683	0.000799426	0.000951981	0.011610788	0.008343155	1.630543892	0.00026302	0.000241978	1.505546-05	1.33083E-05	52901.21706	30967.52409
Los Angeles (SC)	2025 AirGroup - Baggage Tug	Aggregate	175 Diesel	1.104646-05	1.215616-05	1.44767E-05	0.000171754	0.474545-05	0.018838896	7.191856-06	6.615e-06	1.788696-07	1.57153E-07	611.340318	263.6037383
Los Angeles (SC)	2025 AirGroup - Baggage Tug	Aggregate	300 Diesel	4.679646-05	5.662146-05	6.73842E-05	0.000189924	0.000935497	0.085921107	2.417846-05	2.242826-05	7.929796-07	7.02277E-07	2787.615697	831.7417664
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	25 Diesel	0	0	0	0	0	0	0	0	0	0	0	0
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	50 Diesel	0.000170525	0.000206336	0.000245557	0.001239162	0.000894118	0.14162266	6.298401e-05	5.794546-05	1.304266-06	1.15591E-06	4594.79129	5305.362874
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	75 Diesel	0.000631753	0.000764421	0.000909724	0.006083145	0.000674214	0.86421838	0.000477485	0.000439286	7.971176-06	7.05363E-06	28038.61357	25697.85142
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	100 Diesel	0.000277419	0.000335677	0.000399848	0.005142178	0.003701474	0.775275492	0.000207727	0.000191046	7.015946-06	6.32769E-06	25132.99553	16886.75464
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	175 Diesel	5.172669E-05	6.198466E-05	7.37668E-05	0.000194956	0.000495579	0.061926803	3.52210-05	3.249535-05	5.710076-07	5.05438E-07	2009.14693	899.8144832
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	300 Diesel	1.276269E-05	1.544156-05	1.83767E-05	9.15182E-05	0.000131568	0.004718886	8.197577e-06	7.560116-06	4.315506-07	3.83131E-07	1521.578258	1315.885796
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	600 Diesel	3.955862-06	4.786598-06	5.69643E-06	7.28845E-05	2.006188-05	0.040136042	6.965810-07	6.408553-07	3.728380-07	3.29217E-07	1308.658445	165.7925898
Los Angeles (SC)	2025 AirGroup - Belt Loader	Aggregate	750 Diesel	4.118582-05	4.983418-05	5.93066E-05	0.000635456	0.000540808	0.023655843	2.797299-05	2.573516-05	2.174746-07	1.93070E-07	767.4877664	70.85154411
Los Angeles (SC)	2025 AirGroup - Bobtail	Aggregate	25 Diesel	2.267816-06	2.744106-06	3.26545E-06	1.7724E-05	4.368275-05	0.005018488	1.685988-06	1.54656-06	4.659346-08	4.06239E-08	162.8193364	307.0580456
Los Angeles (SC)	2025 AirGroup - Bobtail	Aggregate	50 Diesel	2.713776-05	3.283676-05	3.90783E-05	0.000237796	0.000186018	0.031663785	7.385916-06	6.795036-06	2.919318-07	2.58436E-07	1027.296645	1067.044942
Los Angeles (SC)	2025 AirGroup - Bobtail	Aggregate	75 Diesel	1.256152E-05	1.519836-05	1.77796E-05	0.000109E-05	0.000159967	0.018821946	3.807766-06	3.503146-06	1.350956-07	1.19604E-07	475.2205528	921.1741368
Los Angeles (SC)	2025 AirGroup - Bobtail	Aggregate	100 Diesel	1.523211-06	1.843096-06	2.15634E-06	8.43739E-06	3.651422e-05	0.011445375	2.412698-07	2.218556-07	1.135096-07	1.00413E-07	399.1819884	1681.163284
Los Angeles (SC)	2025 AirGroup - Bobtail	Aggregate	175 Diesel	6.449566-05	7.79122E-05	9.17444E-05	0.000177139	0.000178501	0.011988781	4.242666-07	3.897186-05	1.107426-06	9.79312E-07	3884.969841	1681.163284
Los Angeles (SC)	2025 AirGroup - Bobtail	Aggregate	300 Diesel	0.000010261	0.000124158	0.000147759	0.001107732	0.000114944	0.537645678	4.003595-05	3.683E-05	4.967726-06	4.38819E-06	17443.32191	4446.683444
Los Angeles (SC)	2025 AirGroup - Cargo Loader	Aggregate	25 Diesel	4.127416-06	4.994176-06	5.94347E-06	9.76757E-05	8.279226-05	0.010860863	3.17288-07	2.918876-07	1.552646-07	1.37173E-07	545.280152	113.2378459
Los Angeles (SC)	2025 AirGroup - Cargo Loader	Aggregate	75 Diesel	3.697226-05	4.473626-05	5.32567E-05	0.000734653	0.000344653	0.051084411	1.202986-05	1.106546-05	4.761926-06	4.20744E-06	16717.37487	2395.254596
Los Angeles (SC)	2025 AirGroup - Cargo Loader	Aggregate	100 Diesel	0.00061857	0.00074847	0.000890741	0.011222671	0.009143981	2.02141674	0.000342618	0.000315208	1.868889-05	1.65149E-05	65647.52773	44057.60945
Los Angeles (SC)	2025 AirGroup - Cargo Loader	Aggregate	175 Diesel	0.000227052	0.000274719	0.000326574	0.004116007	0.003603773	3.259997447	0.000125693	0.000115645	6.860216-05	6.06052E-05	10577.284	97.13407241
Los Angeles (SC)	2025 AirGroup - Cargo Loader	Aggregate	300 Diesel	5.418676-05	6.58086-05	7.83181E-05	0.000593326	0.000407316	0.30509911	1.655776-05	1.523315-05	2.819166-06	2.49014E-06	9898.606573	2678.424161
Los Angeles (SC)	2025 AirGroup - Cargo Loader	Aggregate	600 Diesel	1.360526-05	1.646236-05	1.95952E-05	0.000148882	0.000186103	0.528661026	5.158426-06	4.747576-06	2.649038-06	2.34009E-06	9299.92616	1699.019788
Los Angeles (SC)	2025 AirGroup - Cargo Loader	Aggregate	750 Diesel	3.969358-05	4.803138-05	5.71612E-05	0.000588294	0.000160412	0.315057824	5.774516-06	5.312556-06	2.951676-06	2.57146E-06	10221.70412	849.508894
Los Angeles (SC)	2025 AirGroup - Cargo Tractor	Aggregate	25 Diesel	9.296646-06	1.124876-05	1.33884E-05	0.000161207	0.000110731	0.020798784	5.413398-07	4.980316-07	1.920166-07	1.69757E-07	674.7936358	1298.007859
Los Angeles (SC)	2025 AirGroup - Cargo Tractor	Aggregate	50 Diesel	0.000151908	0.000183881	0.000218814	0.003576004	0.000798369	0.197651031	5.528606-05	5.065476-05	2.886396-07	2.55107E-07	1013.668731	1677.572141
Los Angeles (SC)	2025 AirGroup - Cargo Tractor	Aggregate	75 Diesel	0.000113732	0.000136396	0.000162969	0.012455275	0.010716579	1.7372922	0.000802995	0.000738756	1.602826-05	1.41795E-05	56364.53603	49499.42668
Los Angeles (SC)	2025 AirGroup - Cargo Tractor	Aggregate	100 Diesel	0.000220532	0.000268207	0.000317598	0.006966207	0.003090306	0.959074271	0.000397855	3.262381e-05	8.860656-06	7.82764E-06	31135.57484	20649.65677
Los Angeles (SC)	2025 AirGroup - Cargo Tractor	Aggregate	175 Diesel	0.000236917	0.000286669	0.000340116	0.009355413	0.003260408	0.571862693	0.000158021	0.000127577	5.296698-06	4.68210E-06	18611.86209	6917.557755
Los Angeles (SC)	2025 AirGroup - Cargo Tractor	Aggregate	300 Diesel	0.000247116	0.000299021	0.000358647	0.010322564	0.003274515	0.818010002	0.000128538	0.000105467	7.74096-06	6.83972E-06	27188.3116	6696.072287
Los Angeles (SC)	2025 AirGroup - Cargo Tractor	Aggregate	600 Diesel	0.000334755	0.000405054	0.000482047	0.001759215	0.003577921	0.869019578	0.000122121	0.000112151	8.024476-06	7.09282E-06	28194.38316	3894.023576
Los Angeles (SC)	2025 AirGroup - Forklift	Aggregate	25 Diesel	5.471246-07	6.62072E-07	7.87859E-07	1.12402E-05	8.78202E-06	0.001734121	3.760414E-08	3.407818-08	1.601646-08	1.41536E-08	56.26150759	164.4772803
Los Angeles (SC)	2025 AirGroup - Forklift	Aggregate	50 Diesel	0.000135847	0.000164337	0.000195614	0.000756475	0.000653449	0.077751015	5.621348-05	5.115346-05	1.747716-07	1.54535E-07	2522.546059	5663.263495
Los Angeles (SC)	2025 AirGroup - Forklift	Aggregate	75 Diesel	5.81456-05	7.035556-05	8.37288E-05	0.000432178	0.000614788	0.054903014	4.395366-05	4.043746-05	5.058616-07	4.48131E-07	1781.26781	2466.101755
Los Angeles (SC)	2025 AirGroup - Forklift	Aggregate	100 Diesel	0.000408082	0.000493822	0.000587824	0.00558224	0.00531142	0.823389573	0.000364686	0.000299533	7.616726-06	6.73672E-06	26778.85634	29444.50319
Los Angeles (SC)	2025 AirGroup - Forklift	Aggregate	175

Los Angeles (SC)	2025 ConstMin - Off-Highway Tractors	Aggregate	Aggregate	175 Diesel	0.001182493	0.001430816	0.001702789	0.025659381	0.011011676	4.322911151	0.000527994	0.000485755		3.99322-05	3.52383-05	140252.0915	39305.9281	55.77447804	6231477.854
Los Angeles (SC)	2025 ConstMin - Off-Highway Tractors	Aggregate	Aggregate	300 Diesel	0.00089603	0.001084922	0.001291147	0.007956284	0.007968891	3.643609707	0.000286892	0.000263941		3.36601E-05	2.97387E-05	118212.3042	24586.06437	36.82818588	5249021.19
Los Angeles (SC)	2025 ConstMin - Off-Highway Tractors	Aggregate	Aggregate	600 Diesel	0.002416738	0.002924253	0.003480102	0.024396046	0.017406095	12.22879668	0.000597389	0.000549414		0.000112989	9.98098E-05	396749.8406	49281.79204	69.61165771	17654871.63
Los Angeles (SC)	2025 ConstMin - Off-Highway Tractors	Aggregate	Aggregate	750 Diesel	0.002204197	0.002437078	0.002849041	0.003666719	0.003675501	0.515155868	8.66258E-05	7.96957E-05		4.72392-06	4.17528E-06	16596.99062	1166.328001	1.703007498	742072.9641
Los Angeles (SC)	2025 ConstMin - Off-Highway Tractors	Aggregate	Aggregate	9999 Diesel	0.000201601	0.000241937	0.000290305	0.001295218	0.003498871	0.644664468	7.61312E-05	7.00407E-05		5.95419E-06	5.26166E-06	20915.4287	592.2817928	1.064398436	928946.9042
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	25 Diesel																	
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	50 Diesel	0.000370203	0.000447946	0.000553093	0.003653844	0.002648177	0.384414493	0.000122174	0.00011224		3.543E-06	3.13754E-06	12471.90486	19867.88155	12.02263685	572663.1563
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	75 Diesel	3.934022-05	4.760160-05	5.66498-05	0.000794319	0.000332235	0.106292518	5.41415E-06	4.98102E-06		9.81547E-07	8.67545E-07	3448.543674	2481.752644	1.687387628	176386.7218
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	100 Diesel	0.000113909	0.000162029	0.000230828	0.002005904	0.001411382	0.279289598	8.17232E-05	7.51854E-05		2.56899E-06	2.27144E-06	9026191448	5160.768364	1.585698709	455719.6975
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	175 Diesel	0.001106613	0.001759002	0.004473523	0.05768374	0.023686884	9.093514177	0.001166116	0.001072826		8.39808E-05	7.422E-05	295029.0528	94888.73694	66.01904093	14971136.74
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	300 Diesel	0.005431068	0.008577592	0.021820718	0.283544377	0.104439901	44.97483345	0.004393024	0.003924006		0.000171025	0.000151145	608811.51	344201.4747	311.115666	80512964.76
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	600 Diesel	0.022027389	0.02665314	0.03171944	0.176132412	0.163068675	79.38270743	0.005781347	0.005118839		0.000733272	0.000647911	2575484.518	346678.9335	247.8350578	130211159.6
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	750 Diesel	0.009826075	0.011889551	0.014149548	0.088680198	0.08570751	27.16634354	0.003285749	0.00302289		0.000292872	0.000221728	881382.8979	66977.12554	53.15275207	44552169.78
Los Angeles (SC)	2025 ConstMin - Off-Highway Trucks	Aggregate	Aggregate	9999 Diesel	0.012724644	0.015398619	0.018323487	0.105384819	0.236793862	40.7797	0.004461369	0.004104343		0.000403501	0.000309091	1550635.723	61612.41142	42.39561414	39234894.41
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	25 Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	50 Diesel	0.002272454	0.002746669	0.003272334	0.017700202	0.015636948	2.148729578	0.000972864	0.000894851		1.97979E-05	1.75370E-05	69713.16477	76195.77201	155.965319	2895752.347
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	75 Diesel	0.000620586	0.000758169	0.000902284	0.003494806	0.00661247	0.405110505	0.000506651	0.000466119		3.72665E-06	3.30644E-06	13143.36418	8462.118908	26.65894314	618209.7126
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	100 Diesel	0.002950597	0.003570222	0.004248859	0.042110216	0.030870824	10.63078282	0.002066776	0.001901494		5.44442E-05	5.15706E-05	205392.8575	41626.411	248.1170929	9562079.908
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	175 Diesel	0.001370258	0.001658012	0.001973177	0.021919407	0.015276888	3.667364123	0.000795144	0.000731533		3.38655E-05	2.99320E-05	118983.5901	36511.70057	86.06430463	555250.5553
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	300 Diesel	0.001615134	0.001954555	0.002326082	0.021852145	0.02030821	4.954023623	0.000795598	0.000731905		4.58547E-05	4.05238E-05	161081.4791	33823.84051	80.60659824	748704.184
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	600 Diesel	0.001945619	0.002355086	0.002802775	0.024942472	0.025039124	29.08613247	0.001935566	0.001780721		0.000176344	0.000155799	619309.6581	74526.04883	162.0527882	2879075.19
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	750 Diesel	0.000712445	0.000862058	0.00102592	0.00621877	0.008488417	2.965281456	0.000285442	0.000262607		2.73941E-05	2.42022E-05	96205.29117	7247.755334	14.27407979	447004.538
Los Angeles (SC)	2025 ConstMin - Other Construction Equipment	Aggregate	Aggregate	9999 Diesel	0.000270265	0.000327149	0.000389307	0.002178307	0.003211832	0.551403146	0.000104146	9.57164E-05		1.09632E-05	9.68417E-06	38495.92555	1951.356839	3.988345624	179282.1.598
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	25 Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	50 Diesel	0.000338601	0.000409816	0.000487715	0.002209682	0.001834491	0.262980383	0.000118073	0.000108528		2.42122E-05	2.14641E-05	8532.1089	9208.908896	25.26576593	356856.0742
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	75 Diesel	0.000413056	0.000499798	0.000594801	0.003063046	0.004054796	0.431560576	0.000346882	0.000319131		3.9969E-06	3.53866E-06	14066.3954	9147.63641	23.37383348	658913.0262
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	100 Diesel	0.000817863	0.000989614	0.001177224	0.011755224	0.010561393	2.102219884	0.000555288	0.000511785		1.94115E-05	1.7158E-05	68204.20246	39228.22737	98.74703516	3182519.612
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	175 Diesel	0.001002006	0.001212494	0.001442968	0.009755998	0.012588218	3.429029159	0.000523578	0.000482346		1.85737E-05	1.62834E-05	112587.1144	33142.97998	83.58757501	523405.328
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	300 Diesel	0.000452427	0.000547437	0.000651495	0.004991584	0.005337447	2.637923802	0.000179905	0.000165512		2.43754E-05	2.15304E-05	85584.80839	18175.44558	39.37248524	397992.412
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	600 Diesel	0.000766226	0.000918931	0.001093127	0.010166381	0.011228538	5.572018881	0.000377225	0.000347253		5.2857E-06	4.66874E-06	18558.52263	2185.920994	5.263701125	864102.0769
Los Angeles (SC)	2025 ConstPav - Pavers	Aggregate	Aggregate	750 Diesel	0.99454E-06	1.20934E-05	1.43932E-05	0.000183841	5.06E-05	0.103719926	1.75735E-06	1.61676E-06		9.40151E-07	8.30224E-07	3300.199083	204.8181116	0.422106099	153613.5837
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	25 Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	50 Diesel	0.000221268	0.000267734	0.000318626	0.002163413	0.002039135	0.327663476	7.95432E-05	7.31797E-05		3.02777E-06	2.67435E-06	10630.68563	15005.94541	31.11099938	521578.927
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	75 Diesel	5.30010E-05	6.41422E-05	7.6314E-05	0.000301088	0.000480591	0.037819525	4.77615E-06	4.39406E-06		3.4807E-07	3.08678E-07	1227.018236	995.8039918	3.153141835	67307.29764
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	100 Diesel	0.000443498	0.000536633	0.000638618	0.005076648	0.005215036	0.855033705	0.000237102	0.000218217		1.29235E-05	1.14205E-05	45397.15885	27719.44666	57.80760201	2473522.598
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	175 Diesel	0.000449184	0.000545313	0.000646825	0.003850547	0.004669285	1.450492883	0.000244567	0.000225002		1.1397E-05	1.18387E-05	47059.63767	17558.65069	37.20707359	2566828.017
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	300 Diesel	0.000230505	0.000279811	0.000331927	0.002531393	0.002453193	0.693139668	0.000117265	0.000107949		8.85641E-06	7.69224E-06	30572.18792	7387.247951	15.55349969	1609134.913
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	600 Diesel	0.000172038	0.000208166	0.000247734	0.002028889	0.001458231	0.199039515	4.62386E-05	4.25395E-05		1.0156E-05	8.97022E-06	35657.12668	4934.616511	10.09005385	1944615.133
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	750 Diesel	3.10862E-05	3.76960E-05	4.47582E-05	0.001972427	0.001602074	0.227488412	5.44468E-06	5.01284E-06		1.87978E-06	1.66020E-06	65917.71516	563.1458883	1.051047727	93224.2052
Los Angeles (SC)	2025 ConstPav - Paving Equipment	Aggregate	Aggregate	9999 Diesel	1.761.4E-05	2.13129E-05	2.53641E-05	0.000183724	0.000432628	0.096097885	7.34579E-06	6.75813E-06		8.87944E-07	7.84338E-07	3117.790055	201.2820331	0.420418911	169683.714
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	25 Diesel	4.82658E-06	5.84618E-06	6.95029E-06	1.60484E-05	1.10506E-05	0.000844443	1.51504E-06	1.39076E-06		7.66248E-09	6.80221E-09	27.38695577	5.927878994	0.021657473	1270.692237
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	50 Diesel	0.000431012	0.000521257	0.000630588	0.001478424	0.001842465	5.40404764	0.001153084	0.001058949		4.97968E-05	4.42470E-05	175198.5986	227170.0378	638.6787879	812830.1358
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	75 Diesel	0.00015889	0.000192257	0.000228802	0.000630493	0.001543852	0.053900002	0.000110411	0.000101578		4.93566E-07	4.39925E-07	1748.726199	1270.692237	5.414368073	90168.32114
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	100 Diesel	0.000200278	0.000387216	0.00060947	0.004472557	0.004126543	0.844324374	0.000204709	0.000188103		7.73835E-05	6.83984E-05	271887.7995	160549.1688	471.0500224	1400624.93
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	175 Diesel	0.001730049	0.002093359	0.002492127	0.048053967	0.018188047	8.722095833	0.000816363	0.000751054		8.05588E-05	7.11886E-05	282978.9234	101501.6252	275.4830476	14593662.47
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	300 Diesel	0.000648109	0.000582119	0.000699277	0.004113172	0.006078814	1.474662313	0.000242284	0.000222291		1.38199E-05	1.22138E-05	48551.2881	17342.96132	37.54822447	2194417.503
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	600 Diesel	0.000181669	0.000219819	0.000261603	0.002186822	0.002193752	0.814171724	7.66924E-05	7.00055E-05		7.52382E-06	6.64679E-06	26421.39371	3856.296801	12.34475921	1356751.216
Los Angeles (SC)	2025 ConstRollers - Rollers	Aggregate	Aggregate	750 Diesel	1.65204E-06	1.99807E-06	2.37894E-06	2.00129E-05	2.42241E-05	0.002822723	1.38568E-06	1.27466E-06		2.60479E-08	2.30387E-08	91.58018878	158.1720452	0.499884241	3950.30113
Los Angeles (SC)	2025 ConstRough Terrain Forklifts	Aggregate	Aggregate	25 Diesel	0.000174527	0.000211178	0.000251373	0.001172456	0.001672074	0.003602074	0.227488412	0.344482		5.37721E-05	4.75852E-05	2.21912E-06	8821.15193	7989.576599	1814155.6055
Los Angeles (SC)	2025 ConstRough Terrain Forklifts	Aggregate	Aggregate	75 Diesel	2.090466-05	2.529452-05	3.01026E-05	8.72021E-05	0.000207958	0.00012872	1.52219E-05	1.40066-05		8.37724E-08	7.45074E-08	296.1712619	229.0529024	0.099728881	14187.34907
Los Angeles (SC)	2025 ConstRough Terrain Forklifts	Aggregate	Aggregate	100 Diesel	0.000402108	0.000482624	0.000576312	0.011586019	0.002513193	0.000855827	0.000330004	0.000304181		0.000199729	0.000176426	701302.6512	1207.422115	1307.44285	1340677.86
Los Angeles (SC)	2025 ConstRough Terrain Forklifts	Aggregate	Aggregate	175 Diesel	0.001385306	0.00155522	0.00185084	0.025547703	0.012767761	4.582311982	0.000874114	0.000804185		4.23272E-05	3.74002E-05	148668.0653	56738.54488	199.9457362	7157391.689
Los Angeles (SC)	2025 ConstRough Terrain Forklifts	Aggregate	Aggregate	300 Diesel	6.57555-05	7.95606-05	9.60071E-05	0.000674705	0.000853813	0.258009798	2.72924E-05	2.50984E-05		1.38081E-06	1.21923E-06	4847.05	2636.894553	10.24721598	358184.1377
Los Angeles (SC)	2025 ConstRough Terrain Forklifts	Aggregate	Aggregate	600 Diesel	1.36194E-05	1.64964E-05	1.96312E-05	0.000213839	0.000117722	0.117913222	2.04994E-06	1.88595E-06		1.08976E-06	9.62392E-07	3825.564626	460.1587758	1.749525192	184013.6524
Los Angeles (SC)	2025 ConstRough Terrain Forklifts	Aggregate	Aggregate	750 Diesel	4.13488E-06	5.00318E-06	5.9542E-06	4.14361E-05	5.67031E-05	0.022182295	4.06849E-07	3.74301E-07		2.04962E-07	1.81049E-07	719.6801883	55.49221582	0.24993217	34643.88489
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	25 Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	50 Diesel	0.000176908	0.000214059	0.000254748	0.002101766	0.001492298	0.238110356	5.15913E-05	4.74645-05		2.19614E-06	1.94342E-06	7725.228342	8241.852109	8.848065813	339791.008
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	75 Diesel	0.000312353	0.000377949	0.000449793	0.002727855	0.002630341	0.29408307	0.000127145	0.000117945		2.71545E-06	2.40641E-06	9565.631579	6426.744186	8.035965042	467817.3755
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	100 Diesel	0.000652342	0.000789333	0.000939372	0.005549553	0.006563234	0.709815324	0.000474226	0.000436288		6.54302E-06	5.79342E-06	23009.17646	13366.08046	15.24772854	1118397.511
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	175 Diesel	0.000880168	0.001065004	0.001267442	0.007518867	0.009111976	1.037652997	0.000350702	0.000324492		9.62779E-06	8.53787E-06	34930.82676	11979.18036	14.83562777	1709557.709
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	300 Diesel	0.000740403	0.000895887	0.00106518	0.005180903	0.005588442	1.102103774	0.000414273	0.000384812		1.01673E-05	8.95202E-06	35756.5432	8003.448431	11.12672083	1746585.351
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	600 Diesel	0.000645988	0.000840646	0.001002223	0.00578869	0.007461622	1.092513193	0.000413231	0.000382092		0.000111296	9.84352E-05	39185.5793	51769.23965	69.43897998	16981264.48
Los Angeles (SC)	2025 ConstRubber Tired Dozers	Aggregate	Aggregate	750 Diesel	0.000161977	0.000195992	0.000233247	0.001372647	0.001729454	0.244674185	8.84427E-05	8.15135E-05		4.12235E-06	3.64347E-06	14481.02728	1063.870369	1.030251928	783651.5781
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	25 Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	50 Diesel	0.000104447	0.001227341	0.001463804	0.007595021	0.005558827	0.749104468	0.000333004	0.000304181		6.89574E-06	6.11438E-06	24305.04447	28060.08864	31.78550511	1164535.264
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	75 Diesel	5.593796-06	6.76848E-06	8.05505E-06	2.1941E-05	5.36025E-05	0.001832034	1.93004E-06	3.61564E-06		1.67702E-08	1.49528E-08	59.43831746	50.40342125	0.214766933	3175.415539
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	100 Diesel	0.010056032	0.012187799	0.014496808	0.132214957	0.102785193	18.2425885	0.008175172	0.007558118		0.000168848	0.000148883	59167.5543	371190.7761	2636.894553	161939.9193
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	175 Diesel	0.0153157	0.018531997	0.022054608	0.27015281	0.131865751	43.29939297	0.006986121	0.006462732		0.000399865	0.000353404	140480.1119	502232.7942	520.1655122	75315384.79
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	300 Diesel	0.017665375	0.021375103	0.025438139	0.138486031	0.178254209	62.9031722	0.005592845	0.005452698		0.000584041	0.000514907	204082.618	521926.9308	488.4338296	109307586.6
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	600 Diesel	0.021635754	0.026180552	0.031164503	0.169455562	0.218407888	81.68287954	0.006851808	0.006402224		0.000754444	0.000666885	265010.9199	429620.1096	425.8828285	143172751.8
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	750 Diesel	0.002272201	0.002749363	0.00327197	0.021426739	0.017063272	7.16122994	0.000627032	0.000576869		6.61594E-05	5.84653E-05	23240.3065	19204.71156	19.32062399	12459133.28
Los Angeles (SC)	2025 ConstRubber Tired Loaders	Aggregate	Aggregate	9999 Diesel	0.001662402	0.002013758	0.002393938	0.015625889	0.012738891	5.617381393	0.000492344	0.000452966		5.38194E-05	4.75807E-05	18907.5313	10146.2087	9.709791166	9707831.036
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	25 Diesel	5.28108E-07	6.39011E-07	7.6047E-07	1.1692E-06	9.55987E-06	0.000197721	3.82317E-08	3.51732E-08		1.77144E-09	1.56522E-08	62.2183466	89.70489002	0.212349387	2242.622251
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	50 Diesel	7.50703E-05	9.08420E-05	0.00010813	0.000255594	0.000178816	0.031263588	2.52103E-06	2.31939E-06		1.38809E-07	1.24579E-07	491.2233203	468.7080924	1.274096194	43515.0304
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	75 Diesel	0.000127516	0.000154295	0.000183623	0.000181914	0.002127256	0.139081078	9.74928E-05	8.96934E-05		1.28205E-06	1.13516E-06	4513.132605	2688.405718	5.733435459	179696.1089
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	100 Diesel	0.000530754	0.000642213	0.000764298	0.004804211	0.008555979	0.631177514	0.000475485	0.000437446		5.81536E-06	5.15159E-06	20477.85932	8971.384084	15.28915589	817324.2343
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	175 Diesel	0.001404648	0.001700625	0.002060964	0.007518867	0.013727833	1.724200421	0.000715907	0.000634492		6.68584E-05	5.91123E-05	234974.95	56205.09572	126.3478855	9347706.05
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	300 Diesel	0.004687352	0.005671696	0.006749787	0.043804123	0.054448842	10.57711326	0.00245147	0.002264552		9.765E-05	8.63295-05	343162.7911	63183.39011	145.6716797	13772580.89
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	600 Diesel	0.007664837	0.009274477	0.011035394	0.055178834	0.047834297	13.52384751	0.003106455	0.002871484		0.000159776	0.000141275	561550.7702	365390.1941	741.6475546	15387965
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	750 Diesel	0.001424747	0.001509047	0.001795891	0.01631263	0.018903385	8.777312445	0.000778387	0.000716116		2.65635E-05	2.34831E-05	93146.65241	60901.46302	11.89156569	3741094.067
Los Angeles (SC)	2025 ConstScrapers - Scrapers	Aggregate	Aggregate	9999 Diesel	0.001818747	0.002198264	0.002616115	0.021419179	0.027483796	6.794387806	0.001075252	0.000989039		2.55038E-05	2.25439E-05	89481.02161	2251.094179	2.550380525	1595171.992
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	25 Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	50 Diesel	0.001952512	0.00236108	0.002810107	0.025339064	0.022902927	4.08629778	0.000580759	0.000534298		3.77218E-05	3.33518E-05	132575.4299	141919.7653	442.2148264	6231831.478
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	75 Diesel	0.004721177	0.005712624	0.006798495	0.113382693	0.076443339	21.62626613	0.002311813	0.002126868		0.000200417	0.000177052	703793.3647	522668.9653	1426.404027	36891113.39
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	100 Diesel	2.08457E-05	2.52231E-05	3.00179E-05	8.508E-05	0.000209504	0.00709799	1.40863E-05	1.29594E-05		7.03791E-08	6.26823E-08	249.1658906	154.3623555	0.057791522	13069.34187
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	175 Diesel	2.50368E-05	3.02945E-05	3.60526E-05	0.000102208	0.000278571	0.104677951	1.69247E-05	1.55718E-05		8.45577E-08	7.52917E-08	2994.169	1977.186494	0.693988355	156981.3607
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	300 Diesel	2.31289E-05	2.79859E-05	3.33056E-05	0.000256738	0.000308473	0.116264894	9.52810-06	8.76586E-06		1.25933E-06	1.12134E-06	4421.613295	1129.674806	3.72714529	231928.5922
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	600 Diesel	1.03818E-05	1.25649E-05	1.49547E-05	7.47187E-05	0.000155531	0.059310868	6.81944E-06	6.27469E-06		3.63507E-07	3.22614E-07	1284.655722	1414.498782	0.684847601	66980.62321
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	9999 Diesel	6.33561E-06	7.66609E-06	9.12128E-06	9.65088E-05	0.000231477	0.052166826	3.07305E-06	2.82726-06		4.92288E-07	4.34757E-07	1728.183516	90.81648975	0.148478681	90816.48975
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	25 Diesel	0	0	0	0	0	0	0	0		0	0	0	0	0	0		
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	50 Diesel	0.000104447	0.001227341	0.001463804	0.007595021	0.005558827	0.749104468	0.000333004	0.000304181		6.89574E-06	6.11438E-06	24305.04447	28060.08864	31.78550511	1164535.264
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	75 Diesel	5.593796-06	6.76848E-06	8.05505E-06	2.1941E-05	5.36025E-05	0.001832034	1.93004E-06	3.61564E-06		1.67702E-08	1.49528E-08	59.43831746	50.40342125	0.214766933	3175.415539
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	100 Diesel	0.010056032	0.012187799	0.014496808	0.132214957	0.102785193	18.2425885	0.008175172	0.007558118		0.000168848	0.000148883	59167.5543	371190.7761	2636.894553	161939.9193
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	175 Diesel	0.0153157	0.018531997	0.022054608	0.27015281	0.131865751	43.29939297	0.006986121	0.006462732		0.000399865	0.000353404	140480.1119	502232.7942	520.1655122	75315384.79
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	300 Diesel	0.017665375	0.021375103	0.025438139	0.138486031	0.178254209	62.9031722	0.005592845	0.005452698		0.000584041	0.000514907	204082.618	521926.9308	488.4338296	109307586.6
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	600 Diesel	0.021635754	0.026180552	0.031164503	0.169455562	0.218407888	81.68287954	0.006851808	0.006402224		0.000754444	0.000666885	265010.9199	429620.1096	425.8828285	143172751.8
Los Angeles (SC)	2025 ConstSkid Steer Loaders	Aggregate	Aggregate	750 Diesel	0.002272201	0.002749363	0.00327197	0.021426739	0.017063272	7.16122994

Los Angeles (SC)	2025 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Gasoline	0.049947841	0.045942024	0.054966552	1.74445734	0.104650466	3.179089911	0.017832282	0.013473355	9.565625-05	8.122310-05	231851.65	599143.85	6506.76	4154736.6
Los Angeles (SC)	2025 OFF - ConstMin - Cement and Mortar Mixers	Aggregate	25 Diesel	0.004004725	0.005516193	0.003642383	0.00312879	0.004036091	0.547845992	0.000157296	0.000144712	8.212122-06	4.593888-06	18260.95	55231.8	183.99	569969.4
Los Angeles (SC)	2025 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Gasoline	0.039859372	0.03666265	0.043842807	1.659068353	0.103461886	2.750918903	0.022248485	0.015288856	7.57014E-05	7.30308E-05	208466.1	260263.25	915.84	27193705.45
Los Angeles (SC)	2025 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	25 Diesel	1.479866-05	1.760182-05	1.229758-05	7.36912E-05	0.000134583	0.01705403	5.02874E-06	4.626446-06	2.239998-07	1.478364-07	587.65	781.1	1.32	14059.8
Los Angeles (SC)	2025 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50 Gasoline	0.000807144	0.00074241	0.000888212	0.059979484	0.001030899	0.72108929	4.97112E-05	3.75596E-05	8.76713E-06	1.08483E-05	30966.6	11365.35	18.29	390787.25
Los Angeles (SC)	2025 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	50 Diesel	0.000177597	0.000211355	0.000205574	0.020097946	0.001753961	0.277459512	4.84538E-05	4.45775E-05	9.586868-06	2.330848-06	9263.7	6703.4	11.56	221146.2
Los Angeles (SC)	2025 OFF - ConstMin - Concrete/Industrial Saws	Aggregate	100 Gasoline	0.000331705	0.000305103	0.000365022	0.01663479	0.000832768	0.75762317	5.37297E-05	4.05958E-05	7.44543E-06	1.05638E-05	30167.25	10.48	0.048	422297.7
Los Angeles (SC)	2025 OFF - ConstMin - Cranes	Aggregate	50 Gasoline	0.00020044	0.000184365	0.000220572	0.01506671	0.000280884	0.095273123	6.56804E-06	4.96252E-06	1.158350-06	1.586846-06	4529.65	2321.4	5.59	85891.8
Los Angeles (SC)	2025 OFF - ConstMin - Cranes	Aggregate	50 Diesel	0.000384279	0.00035346	0.000422876	0.017448681	0.000994298	0.179811096	2.627226-05	1.985015-05	3.649525-06	5.375586-06	15344.6	4628.2	11.14	342488.8
Los Angeles (SC)	2025 OFF - ConstMin - Cranes	Aggregate	175 Gasoline	1.88833E-05	1.736880-05	2.07799E-05	0.000895014	7.2539E-05	0.024761656	1.77515E-06	1.341226-06	2.459881-07	3.478010-07	992.8	182.5	0.45	22812.5
Los Angeles (SC)	2025 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	25 Gasoline	0.000585819	0.000538258	0.000643456	0.024869273	0.000443153	0.040271012	0.000307748	0.000232067	1.09139E-06	1.06199E-06	1117.1	3131.7	10.83	38846.75
Los Angeles (SC)	2025 OFF - ConstMin - Crushing/Proc. Equipment	Aggregate	100 Gasoline	0.000218747	0.0002196	0.000262722	0.009924724	0.000676391	0.297770179	2.07612E-05	1.568634-05	2.876886-06	4.167226-06	11895.35	1565.85	6.44	150321.6
Los Angeles (SC)	2025 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Gasoline	0.004422777	0.004251975	0.005087017	0.178095928	0.003936456	0.293622284	0.001975702	0.001492304	8.51558E-06	7.77822E-06	22202.95	6467.02	433.63	562819.05
Los Angeles (SC)	2025 OFF - ConstMin - Dumpers/Tenders	Aggregate	25 Diesel	0.001586105	0.001524655	0.001824106	0.063868477	0.001411797	0.054807465	1.58404E-05	1.19404E-05	6.954038-07	5.460310-07	1628.65	5252.35	7.92	84037.6
Los Angeles (SC)	2025 OFF - ConstMin - Dumpers/Tenders	Aggregate	100 Gasoline	2.13085E-05	1.959950-05	2.34487E-05	0.000801484	6.5636E-05	0.032298329	2.25192E-06	1.701456-06	3.120470-07	4.46260-07	1273.85	511	4.02	33726
Los Angeles (SC)	2025 OFF - ConstMin - Excavators	Aggregate	25 Diesel	0.000321808	0.000318357	0.000453491	0.015387357	0.002928893	0.041939911	0.000102949	7.61555E-05	4.874766-06	1.211959-06	12767.7	12.23	0.0027	3927.18
Los Angeles (SC)	2025 OFF - ConstMin - Other Construction Equipment	Aggregate	25 Diesel	0.001037868	0.001235148	0.001149453	0.007328652	0.003975151	0.275499376	0.000363325	0.000334259	1.918410-05	1.069270-05	42504.25	88275.25	127.84	1198663.65
Los Angeles (SC)	2025 OFF - ConstMin - Other Construction Equipment	Aggregate	50 Diesel	0.000309358	0.000284546	0.000340428	0.026346117	0.001002853	0.078658885	5.71784E-05	4.32010E-05	7.923718-06	1.113393-06	1780.55	15.6	5.799.85	
Los Angeles (SC)	2025 OFF - ConstMin - Pavers	Aggregate	25 Gasoline	8.71017E-05	0.000103658	0.000125426	0.000428097	0.000792594	0.103969056	2.9659E-05	2.723863E-05	0.000161148	0.000141269	40.252	875120.35	4626.04	717383.6
Los Angeles (SC)	2025 OFF - ConstMin - Paving Equipment	Aggregate	25 Gasoline	0.084121204	0.077458293	0.092670283	3.066874648	0.061913317	5.483904712	0.035014185	0.026457316	0.000161148	0.000141269	40.252	875120.35	4626.04	717383.6
Los Angeles (SC)	2025 OFF - ConstMin - Paving Equipment	Aggregate	25 Diesel	0.001003104	0.001227779	0.001112243	0.005707504	0.003893796	0.112474984	3.507849E-05	2.237216-05	1.562568-06	1.030276-06	4095.3	7124.8	8.6	135373.4
Los Angeles (SC)	2025 OFF - ConstMin - Paving Equipment	Aggregate	50 Gasoline	0.000450264	0.000414153	0.000495488	0.034271099	0.000719927	0.391159781	2.698E-05	2.038490-05	4.758226-06	5.922856-06	16906.8	7577.4	43.28	280363.8
Los Angeles (SC)	2025 OFF - ConstMin - Paving Equipment	Aggregate	100 Gasoline	0.000294645	0.0002709	0.000324178	0.0224301	0.000470988	0.256082828	0.017705497	0.013364	3.117567-06	4.444846-06	6978.8	1956.4	11.17	120122.9
Los Angeles (SC)	2025 OFF - ConstMin - Plate Compactors	Aggregate	25 Gasoline	0.055104403	0.032662469	0.039077013	1.149519592	0.024450458	2.170099598	0.011858212	0.008959538	6.608026-05	5.458690-05	15588.5	4957.10	2557.2	3042318.8
Los Angeles (SC)	2025 OFF - ConstMin - Plate Compactors	Aggregate	25 Diesel	0.000304819	0.000180276	0.000430894	0.022302441	0.002748808	0.377978982	0.000107411	9.81795E-05	5.867586-06	3.163206-06	12574.25	6384.05	108.36	510912.6
Los Angeles (SC)	2025 OFF - ConstMin - Rollers	Aggregate	25 Gasoline	0.018128389	0.016674492	0.019945186	0.748065213	0.01340887	1.233570829	0.003980216	0.003678052	3.323118-05	3.292738-05	9399.15	12465.15	500.53	1534200.85
Los Angeles (SC)	2025 OFF - ConstMin - Rollers	Aggregate	25 Diesel	0.001861218	0.002215021	0.002080176	0.011712284	0.010857263	0.263852783	0.000859269	0.000745164	3.217810-05	1.896410-05	25381.45	1971.29	283.4	2355461.8
Los Angeles (SC)	2025 OFF - ConstMin - Rollers	Aggregate	50 Gasoline	0.000975627	0.000897381	0.001070163	0.071114897	0.001252266	0.176179955	2.593810-05	1.959516-05	4.572050-06	6.604948-06	19524.8	6931.35	11.14	259459.95
Los Angeles (SC)	2025 OFF - ConstMin - Rollers	Aggregate	100 Gasoline	0.001812066	0.001666739	0.001994068	0.087466987	0.004155701	0.417256302	9.881455-05	7.465996-05	1.369275-05	2.070068-05	59089.85	13034.15	20.97	977561.25
Los Angeles (SC)	2025 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	50 Gasoline	0.000145633	0.000134079	0.000160495	0.010181212	0.000189596	0.064577998	4.453816-06	3.363596-06	7.85126E-07	1.075378-06	3069.65	919.8	2.23	41238.6
Los Angeles (SC)	2025 OFF - ConstMin - Rough Terrain Forklifts	Aggregate	100 Gasoline	0.001066812	0.00153433	0.001835656	0.075683056	0.004319862	0.639753906	0.000114326	8.637990-05	1.554252-05	2.339358-05	66776.75	13081.6	31.69	1111936
Los Angeles (SC)	2025 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Gasoline	7.13350E-07	6.561475-05	7.8500E-05	0.003188432	0.000274384	0.009808984	6.72508E-06	5.181578-06	9.31886-07	1.315769-06	3761.85	459.9	1.1	45309.8
Los Angeles (SC)	2025 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Diesel	8.59731E-05	0.000102315	0.000123801	0.000422551	0.000782325	0.102622005	2.92318E-05	2.689338-05	0.000160148	0.000140144	40252	875120.35	4626.04	717383.6
Los Angeles (SC)	2025 OFF - ConstMin - Trenchers	Aggregate	25 Gasoline	0.000320882	0.000295098	0.000353052	0.026237033	0.000428375	0.147959781	1.08085E-05	7.60664E-06	1.775070-06	2.407268-06	7126.45	285.7.06	5.55	114318
Los Angeles (SC)	2025 OFF - ConstMin - Trenchers	Aggregate	25 Diesel	0.000179862	0.001649994	0.000760748	0.039325346	0.004949237	1.725236237	0.000126296	0.000105744	1.666946-05	2.484225-05	7012.2	18972.7	37.02	1380314.4
Los Angeles (SC)	2025 OFF - ConstMin - Signal Boards	Aggregate	25 Gasoline	0.000905747	0.000833106	0.00099672	0.037262592	0.000720321	0.063747209	0.000463092	0.000349892	1.832418-06	1.672516-06	4774.2	8267.25	31.18	64648.8
Los Angeles (SC)	2025 OFF - ConstMin - Signal Boards	Aggregate	25 Diesel	0.001764109	0.001623035	0.001940818	0.072554999	0.001402607	0.124135782	0.000901269	0.000681154	9.170775-06	4.943455-06	10650.05	6979.84	920.78	4187536.4
Los Angeles (SC)	2025 OFF - ConstMin - Signal Boards	Aggregate	50 Diesel	7.80337E-05	9.286666-05	0.000112365	0.000909819	0.000760617	0.122641558	2.12158E-05	1.951868-05	1.585486-06	1.030256-06	4095.3	2478.35	4.62	91698.95
Los Angeles (SC)	2025 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Gasoline	0.059593917	0.054777933	0.065545453	2.492175078	0.042471522	4.205206935	0.029397477	0.022047458	0.000160148	0.000139519	39.252	875120.35	4626.04	717383.6
Los Angeles (SC)	2025 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Diesel	0.008383936	0.009977576	0.012072862	0.041149536	0.076412469	0.993709425	0.002922869	0.002685904	0.000126801	8.35833E-05	33224.85	532355.85	634.19	10587117
Los Angeles (SC)	2025 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Gasoline	0.002472116	0.002273853	0.002720413	0.103808346	0.003855844	0.272080982	0.000142367	0.000107929	2.519278-05	3.162828-05	9028.25	4739.85	152.11	153010.72
Los Angeles (SC)	2025 OFF - ConstMin - Skid Steer Loaders	Aggregate	25 Diesel	0.001421042	0.001307074	0.001563577	0.074583496	0.00358136	0.064191122	0.000213643	0.000161584	2.366946-05	1.231524-05	2626.1	12052.2	29232.75	90.98
Los Angeles (SC)	2025 OFF - ConstMin - Surfacing Equipment	Aggregate	25 Gasoline	0.040542517	0.037291007	0.044614567	1.523583365	0.031398299	2.641454191	0.018493892	0.013973163	7.623268-05	6.897466-05	196888.3	534155.25	1248.47	4156484.95
Los Angeles (SC)	2025 OFF - ConstMin - Tampers/Rammers	Aggregate	25 Gasoline	0.004654133	0.004281793	0.005121818	0.217158613	0.003497381	0.410336599	0.002695888	0.002038133	1.040148-05	1.021452-05	29156.2	1283.85	747.93	575079.4
Los Angeles (SC)	2025 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Gasoline	0.001597725	0.001900889	0.002300076	0.097650467	0.014534637	0.906590021	0.000543056	0.000409612	2.41910-05	1.594686-05	63389.55	8782.65	99.14	2019020.95
Los Angeles (SC)	2025 OFF - ConstMin - Tractors/Loaders/Backhoes	Aggregate	25 Diesel	0.000327159	0.000922294	0.000310421	0.076463983	0.002562596	0.028814598	8.42815E-06	7.53884E-06	1.367886-05	5.30063-06	17092.95	39.61	0.0585	1369855.85
Los Angeles (SC)	2025 OFF - ConstMin - Trenchers	Aggregate	25 Gasoline	0.016731942	0.01378604	0.040421262	1.51883706	0.027511584	2.46988072	0.018634531	0.014079424	6.557676-05	6.630546-05	189511.65	19493.55	448.78	2885492.9
Los Angeles (SC)	2025 OFF - ConstMin - Trenchers	Aggregate	25 Diesel	0.000752657	0.000895733	0.001083825	0.040677844	0.005837169	0.904638125	0.000257586	0.000237071	1.198810-05	7.569858-06	30090.6	3145.35	50.86	702687.05
Los Angeles (SC)	2025 OFF - ConstMin - Trenchers	Aggregate	50 Gasoline	0.003906425	0.003218317	0.009436345	0.296453146	0.005755112	0.519429254	0.003513184	0.961388-05	3.171434-05	9.05857-06	36025.9	10.54	105.44	1225086
Los Angeles (SC)	2025 OFF - ConstMin - Trenchers	Aggregate	100 Gasoline	0.001385394	0.001274285	0.001524542	0.062585647	0.003605027	0.180596979	9.625855-05	7.272876-05	1.333850-05	1.967510-05	56162.55	13548.8	33.67	894220.8
Los Angeles (SC)	2025 OFF - ConstMin - Aerial Lifts	Aggregate	25 Gasoline	0.032765078	0.03773629	0.021212723	0.841135174	0.127331253	0.995609576	0.009662196	0.009082298	3.229978-05	3.454387-05	98619.35	301.15	305.15	2113905
Los Angeles (SC)	2025 OFF - ConstMin - Aerial Lifts	Aggregate	25 Diesel	0.002060384	0.002452027	0.002969651	0.011842989	0.018719514	0.485883691	0.000721503	0.000663783	3.985798-05	2.080150-05	82687.1	1800691	450.89	31477235
Los Angeles (SC)	2025 OFF - ConstMin - Aerial Lifts	Aggregate	25 Net Gas	0	0	0.000830953	0.481656599	0.012545112	2.834322283	0	0	0	0	18944.23	160388	427.1	3023955
Los Angeles (SC)	2025 OFF - ConstMin - Aerial Lifts	Aggregate	50 Gasoline	0.005984019	0.00550441	0.006585047	0.4942734	0.009026391	0.665539385	0.000321638	0.000243015	5.672455-05	7.344245-05	206787.1	129925.4	359.58	4287538.2
Los Angeles (SC)	2025 OFF - ConstMin - Aerial Lifts	Aggregate	100 Gasoline	0.004720114	0.004343415	0.005194929	0.389755495	0.011925712	0.96604883	0.000853039	0.000491395	9.04898-05	0.000239833	370610.05	129925.4	359.58	87050018
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	25 Gasoline	0.000568099	0.000523165	0.000626146	0.021818211	0.000479464	0.168576444	0.000113566	0.000081708	1.469586-06	1.502456-06	4288.75	6215.56	6.9	142966.85
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	25 Net Gas	0	0	8.7307E-05	0.013821847	0.00038593	0.072602826	0	0	0	0	5022.4	5124.6	4.1	117805.8
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	25 Diesel	0.151849228	0.139670007	0.167109477	6.167109477	0.154199463	42.82722127	0.004334477	0.003274586	0.000764351	0.000121561	34699.67	2160635.75	1199.12	88368065.75
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	50 Gasoline	0	0	0.012082078	2.009026775	0.525480691	125.2882521	0	0	0	0	6674557.9	4999718.9	2775.24	2069884749
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	100 Gasoline	0.320493819	0.294729213	0.353683943	16.57124145	1.559827039	372.4719101	0.025967274	0.019619673	0.003598815	0.005588102	1954313.5	1742401.95	4208.54	705701186.5
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	100 Net Gas	0	0	0.071674321	33.86768587	3.39536955	750.809289	0	0	0	0	41769651	17547453.3	9740.15	1228321871
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	175 Gasoline	0.016738539	0.015396109	0.018419742	1.166437207	0.098514316	27.61124766	0.001979412	0.001495573	0.000274289	0.000393082	111628.86	27718.95	154.63	40459996.7
Los Angeles (SC)	2025 OFF - ConstMin - Forklifts	Aggregate	175 Net Gas	0	0	0.028378773	1.196447207	0.169064687	42.20926935	0.002909477	0.002198477	0.000403501	0.000578032	164151.6	40758.57	227.36	59483191.5
Los Angeles (SC)	2025 OFF - Installation - Other General Industrial Equipment	Aggregate	25 Gasoline	0.015927358	0.014649984	0.017527086	0.979003501	0.01291999	1.611354512	0.000777766	0.000587645	4.472575-05	4.258398-05	121555.95	2183131.3	562.11	23040114
Los Angeles (SC)	2025 OFF - Installation - Other General Industrial Equipment	Aggregate	25 Diesel	0.002541328	0.002778629	0.003166233	0.014543443	0.02351465	0.41303306	0.000889426	0.000692296	4.338495-06	2.627870-05	10449.35	1991221	109.6	3587836.1
Los Angeles (SC)	2025 OFF - Installation - Other Material Handling Equipment	Aggregate	25 Gasoline	0.004703792	0.004326548	0.005176236	0.45361304	0.010525876	0.141088306	0.000216544	0.000163611	3.818998-05	5.132506-05	146507.35	81960.75	114.86	2458822.5
Los Angeles (SC)	2025 OFF - Installation - Other Material Handling Equipment	Aggregate	25 Diesel	0.001454994	0.001338326	0.001601098	0.106491937	0.008464643	0.287669837	0.000187354	0.000141584	2.596668-05	1.791136-05	6282.85	37.75	217734.05	
Los Angeles (SC)	2025 OFF - Installation - Other General Industrial Equipment	Aggregate	175 Gasoline	0.000204254	0.000187873	0.000224769	0.01969168	0.001742887	0.557154098	3.99422E-05	3.017846-05	5.534746-06	7.801236-06	22268.65	2606.1	3.69	453461.4
Los Angeles (SC)	2025 OFF - Installation - Other Material Handling Equipment	Aggregate	50 Gasoline	0.040611E-05	5.562128-05	6.65339E-05	0.00507733	0.000125815	0.032440882	2.22266E-06	1.67816E-06	3.919816-07	5.344838-07	1525.7	631.45	1.61	25889.45
Los Angeles (SC)	2025 OFF - Installation - Other Material Handling Equipment	Aggregate	50 Diesel	0.001513081	0.001391711	0.001665238	0.083172529	0.007182498	0.187578872	0.000194884	0.000147211	2.704956-05	2.644307-05	7540.15	2764.65	73.84	149815.71
Los Angeles (SC)	2025 OFF - Installation - Sweepers/Scrubbers	Aggregate	25 Gasoline	0.012154317	0.011179541	0.013379585	0.794357337	0.009942227	1.272697341	0.000594731	0.000449353	8.795E-06	5.344098-06	21246.65	2965	45.47	548915.65
Los Angeles (SC)	2025 OFF - Installation - Sweepers/Scrubbers	Aggregate	25 Diesel	0.000506648	0.00060227	0.000516955	0.021691691	0.004766806	0.061846531	0.000181872	0.000167122	8.795E-06	5.344098-06	21246.65	2965	45.47	548915.65
Los Angeles (SC)	2025 OFF - Installation - Sweepers/Scrubbers	Aggregate	50 Gasoline	0.01302914	0.011984203	0.014337774	1.132018378	0.028530154	10.15295465	0.000699936	0.000528884	0.000123441	0.000015882	453351.9	172714.35	334.42	6045002.25
Los Angeles (SC)	2025 OFF - Installation - Sweepers/Scrubbers	Aggregate	50 Diesel	0.007650158	0.006999451	0.008699641	0.484201284	0.044934693	1.285303819	0.001119634	0.000857788	0.000157308	0.000022092	6459419.95	1157676.65	1944207.85	
Los Angeles (SC)	2025 OFF - Installation - Sweepers/Scrubbers	Aggregate	175 Gasoline	5.88911E-05	5.416E-05	6.4806E-05	0.004084863	0.000573772	0.189581629	1.35910-05	1.026787-05	1.88318-06	2.649438-06	7562.8	835.85	1.6	117019
Los Angeles (SC)	2025 OFF - Light Commercial - Air Compressors	Aggregate	25 Gasoline	0.122725829	0.112883227	0.135052288	2.821466404	0.078636262	6.218805746	0.022368466	0.017895227	0.000194246	0.000148391	42303.1	1389270.3	2873.94	85625914
Los Angeles (SC)	2025 OFF - Light Commercial - Air Compressors	Aggregate	25 Diesel	0.000524393	0.000624071	0.000755125	0.022779836	0.004684444	0.065928882	0.000192985	0.000177004	8.038838-06	5.074116-06	20169.9	3684.1	45.25	735883.4
Los Angeles (SC)	2025 OFF - Light Commercial - Air Compressors	Aggregate	50 Gasoline	0.005946837	0.00546699	0.006544133	0.474236454	0.007809846	2.668809695	0.000183992	0.000139016	3.244932-05	4.556732-05	130271.4	575605	139.09	2014617.5
Los Angeles (SC)	2025 OFF - Light Commercial - Air Compressors	Aggregate	50 Diesel	0.000679871	0.000797202	0.000817992	0.028187902	0.005424847	0.077945562	0.000224387	0.000204528	8.76222E-06	5.769070-06	22693.8	7725.25	271.21	827792.25
Los Angeles (SC)	2025 OFF - Light Commercial - Air Compressors	Aggregate	100 Gasoline	0.018284421	0.01681801	0.02010288	0.889924757	0.045773406	17.11421075	0.001193244	0.000901562	0.000165347	0.000240309	793088.55	186650.05	386.11	19055503.5
Los Angeles (SC)	2025 OFF - Light Commercial - Air Compressors	Aggregate	100 Diesel	0.001780943	0.001649526	0.001969169	0.079387464	0.006295165	0.134940883	0.000353384	0.000281361	2.129288-06	3.015398-06	8474.3	12559.65	25.96	1682993.1
Los Angeles (SC)	2025 OFF - Light Commercial - Gas Compressors	Aggregate	50 Net Gas	0	0	0.000369917	0.07030483	0.014412731	4.7876746	0	0	0	0	2543831	74405.25	8.75	2380968
Los Angeles (SC)	2025 OFF - Light Commercial - Gas Compressors	Aggregate	100 Net Gas	0	0	0.002164415	1.1242855	0.085228337	26.904204	0	0	0	0	14887210.9	153734.5	18.09	13532156
Los Angeles (SC)	2025 OFF - Light Commercial - Gas Compressors	Aggregate	175 Net Gas	0	0	0.006039644	2.228719	0.022821431	7.20192214	0	0	0	0	1822229	24801.75	2.92	3621055.5
Los Angeles (SC)	2025 OFF - Light Commercial - Gas Compressors	Aggregate	300 Net Gas	0	0	0.004643397	2.8531765	0.022078285	7.2163823	0	0	0	0	1955953	19841.4	2.34	4166894
Los Angeles (SC)	2025 OFF - Light Commercial - Gas Compressors	Aggregate	600 Net Gas	0	0	0.000654525	0.3139577	0.003109	1.016855	0	0	0	0	275446.9	55764.35	1.75	587477.2
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	25 Gasoline	0.885251883	0.814256682	0.974165697	48.59949985	0.640750092	92.04426604	0.054343282	0.041053169	0.00224736	0.002148151	613195.1	8673115.4	25483.75	593035868
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	25 Diesel	0.027331005	0.031554102	0.023516643	0.080198812	0.121491271	1.854032404	0.004508587	0.004023155	0.000221155	0.000132491	52454.2	2570.11	1483.64	867619.6
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	50 Gasoline	0.029965969	0.027562698	0.032975721	2.027215583	0.063139889	33.16731375	0.001597134	0.001206723	0.000281672	0.000350838	10014685.75	450063.25	3918.48	14402024
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	50 Diesel	0.010577382	0.012587598	0.01152141	0.125400888	0.115999765	18.79547893	0.001249767	0.002980786	0.000242517	0.000157272	625164.7	447614.1	1325.91	14771265.3
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	100 Gasoline	0.060156575	0.055346278	0.065946728	4.027099524	0.127331362	0.377029954	0.147450728	0.108360065	0.000459004	0.000658083	451249.5	86924.75	796.75	72147545.8
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	100 Net Gas	0	0	0.005325E-05	0.023415212	0.002329982	0.743997138	0	0	0	0	40493.1	6471.45	56.35	537130.35
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	175 Gasoline	0.000840021	0.000588007	0.000755654	0.060109966	0.001643184	1.854450773	0.000312977	0.000180449	1.84260-05	2.588640-05	67835.85	8216.15	7.48	1199557.9
Los Angeles (SC)	2025 OFF - Light Commercial - Generator Sets	Aggregate	175 Net Gas	0	0	0.388758-05	0.028051262	0.00317955	0.089497464	0	0	0	0	58531.4	5358.2	46.7	782297.2
Los Angeles (SC)	2025 OFF - Light Commercial - Pressure Washers	Aggregate	25 Gasoline	0.095252503	0.087611255	0.104819573	5.583074967	0.049604065	10.40057647	0.009572117	0.007222287	0.000200905	0.000131487	48562.75	905404.4	7880.16	6026787.25
Los Angeles (SC)	2025 OFF - Light Commercial - Pressure Washers	Aggregate	25 Diesel	6.907046-05	8.21994E-05	9.94613E-05	0.003505962	0.000608007	0.089506839	2.81932E-05	2.593776-05	1.327526-06	7.49272E-07	2978.4	1289.55	84.97	173670.65
Los Angeles (SC)	2025 OFF - Light Commercial - Pressure Washers	Aggregate	50 Diesel	0.000206976	0.000245564	0.00029276	0.018813852	0.000443401	0.234567766	1.61709E-05	1.22168-05	2.851828-06	3.515508-06	10031.85	4029.6	35.03	156858.4
Los Angeles (SC)	2025 OFF - Light Commercial - Pressure Washers	Aggregate	50 Gasoline	3.83912E-05	4.55196E-05	5.42E-05	0.005126205	0.000538483	0.090240756	1.29165E-06	1.13615E-06	2.128698-07	3.0833-07	4669.95	1.81	0.0	1275.78
Los Angeles (SC)	2025 OFF - Light Commercial - Pumps	Aggregate	25 Gasoline	0.30382973	0.279462586	0.334360884	10.27137178	0.209110343	19.08843031	0.113585426	0.089597197	0.000582034	0.000483651	1380583.3	1844271.25	17418.38	21330855.5
Los Angeles (SC)	2025 OFF - Light Commercial - Pumps	Aggregate	25 Diesel	0.000942008	0.000821558	0.000995685	0.042292791	0.013441744	0.092613849	0.002615869	0.002404595	0.000116308	6.81617E-05	27094.8	1447.55	564784.55	
Los Angeles (SC)	2025 OFF - Light Commercial - Pumps	Aggregate	50 Gasoline	0.004588974	0.004220939	0.005049886	0.359927132	0.007138845	1.497639728	0.000241124	0.000182183	4.252498-05	5.409265-05	154405.95	6912.17	313.15

Los Angeles (SC)	2025 TRU - Out-of-State Genset TRU	Aggregate	50	Diesel	0.004870093	0.005892813	0.007012934	0.091818399	0.067597446	1.852604583	0.000305527	0.000281085	1.7097E-05	1.52221E-05	1175.96628	708436.8061	5729.653164	2231759.39	
Los Angeles (SC)	2025 TRU - Out-of-State Trailer TRU	Aggregate	50	Diesel	0.081179576	0.098227287	0.116898589	1.276004487	0.802690686	20.43676287	0.00468292	0.004308287	0.00018778	0.000167921	12972.51675	5194194.798	24755.03859	17960262	3.1
Los Angeles (SC)	2025 TRU - Railcar TRU	Aggregate	50	Diesel	0.008403132	0.01016779	0.01210051	0.132082488	0.083088826	2.115468228	0.000484743	0.000445963	1.94376E-05	1.73826E-05	1342.822599	537666.0745	1667.543574	1828064	6.53

OFFROAD 2026

	Equipment Type	Horsepower HP	Gas				Diesel				Natural Gas			
			Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr	Fuel (Gal/Yr)	Population	Hrs/Yr	Gal/Hr
Air Compressors25	Air Compressors	25	422228.05	2868.61	1380700.7	0.3044841284	20118.8	45.16	38773.75	0.5470963774	0	0	0	0
Air Compressors50	Air Compressors	50	130104.25	118.82	57454.65	2.2644685854	226416.8	272.65	221952.85	1.0200112354	0	0	0	0
Air Compressors75	Air Compressors	75	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors100	Air Compressors	100	707417.7	385.41	186306.95	3.7655895954	0	0	0	0	0	0	0	0
Air Compressors175	Air Compressors	175	85906.6	25.91	12537.75	3.8518195092	0	0	0	0	0	0	0	0
Air Compressors300	Air Compressors	300	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors600	Air Compressors	600	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors750	Air Compressors	750	0	0	0	0	0	0	0	0	0	0	0	0
Air Compressors9999	Air Compressors	9999	0	0	0	0	0	0	0	0	0	0	0	0
Aerial Lifts25	Aerial Lifts	25	98433.2	300.59	112821.5	0.8724684577	82555.7	459.08	179744.25	0.4592993614	191449.8	431.85	162012.55	1.181697344
Aerial Lifts50	Aerial Lifts	50	2064333.05	358.99	129684.5	1.5918097181	307445.5924	1204.518224	376038.6071	0.8175903892	0	0	0	0
Aerial Lifts75	Aerial Lifts	75	0	0	0	0	328676.9657	924.2787319	287400.1269	1.1435021459	0	0	0	0
Aerial Lifts100	Aerial Lifts	100	369953.05	358.99	129684.5	2.8527160151	207779.1589	534.8993153	167301.9502	1.2434180405	0	0	0	0
Aerial Lifts175	Aerial Lifts	175	0	0	0	0	92786.04129	50.59390023	15769.61808	2.0790631749	0	0	0	0
Aerial Lifts300	Aerial Lifts	300	0	0	0	0	1959.221383	1.705131313	534.5406178	3.6652428858	0	0	0	0
Aerial Lifts600	Aerial Lifts	600	0	0	0	0	1391.330983	0.568437104	178.180208	7.8085608805	0	0	0	0
Bore/Drill rigs25	Bore/Drill rigs	25	7048.15	43.69	5350.9	1.3173896132	7208.75	13.4	10862.4	0.6636424474	0	0	0	0
Bore/Drill rigs50	Bore/Drill rigs	50	1361.45	4.95	529.25	2.5724137931	7815.614446	18.40203688	6756.161331	1.1568128828	0	0	0	0
Bore/Drill rigs75	Bore/Drill rigs	75	0	0	0	0	3293.907787	5.617453279	1945.832086	1.6891282492	0	0	0	0
Bore/Drill rigs100	Bore/Drill rigs	100	15401	22.5	2405.35	6.4036418882	44764.86353	50.36346388	21166.64891	2.1150775869	0	0	0	0
Bore/Drill rigs175	Bore/Drill rigs	175	5388.1	5.55	602.25	8.9333333333	56727.76009	44.55229497	14532.89153	3.9034049806	0	0	0	0
Bore/Drill rigs300	Bore/Drill rigs	300	0	0	0	0	81418.02001	49.39770522	15076.61665	5.4003248857	0	0	0	0
Bore/Drill rigs600	Bore/Drill rigs	600	0	0	0	0	112696.4306	35.25424672	11446.07588	9.8458573379	0	0	0	0
Bore/Drill rigs750	Bore/Drill rigs	750	0	0	0	0	98469.91012	29.98787548	9357.008655	16.5300934545	0	0	0	0
Bore/Drill rigs9999	Bore/Drill rigs	9999	0	0	0	0	42209.19237	1.162233782	874.4798317	48.26777113	0	0	0	0
Cement and Mortar Mixers25	Cement and Mortar Mixers	25	2312134.8	6494.8	598041.55	0.3866534662	1850.81	186.43	5599.14	0.3306157699	0	0	0	0
Cement and Mortar Mixers50	Cement and Mortar Mixers	50	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers75	Cement and Mortar Mixers	75	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers100	Cement and Mortar Mixers	100	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers175	Cement and Mortar Mixers	175	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers300	Cement and Mortar Mixers	300	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers600	Cement and Mortar Mixers	600	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers750	Cement and Mortar Mixers	750	0	0	0	0	0	0	0	0	0	0	0	0
Cement and Mortar Mixers9999	Cement and Mortar Mixers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws25	Concrete/Industrial Saws	25	2080682.85	914.18	259781.45	1.8009919498	591.3	1.33	792.05	0.7465437776	0	0	0	0
Concrete/Industrial Saws50	Concrete/Industrial Saws	50	30966.6	18.04	5165.35	2.7736515789	9387.6	11.7	6792.81	1.3820526862	0	0	0	0
Concrete/Industrial Saws75	Concrete/Industrial Saws	75	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws100	Concrete/Industrial Saws	100	3016727.25	1048	6398.45	4.7147746772	0	0	0	0	0	0	0	0
Concrete/Industrial Saws175	Concrete/Industrial Saws	175	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws300	Concrete/Industrial Saws	300	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws600	Concrete/Industrial Saws	600	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws750	Concrete/Industrial Saws	750	0	0	0	0	0	0	0	0	0	0	0	0
Concrete/Industrial Saws9999	Concrete/Industrial Saws	9999	0	0	0	0	0	0	0	0	0	0	0	0
Cranes25	Cranes	25	0	0	0	0	149.2981246	0.720834812	160.6445409	0.4139775834	0	0	0	0
Cranes50	Cranes	50	4544.25	5.55	2306.8	1.969936709	2417.197409	7.784984662	3507.827188	0.6890867799	0	0	0	0
Cranes75	Cranes	75	0	0	0	0	1322.63922	3.649317406	1293.217628	1.0227503867	0	0	0	0
Cranes100	Cranes	100	15368.5	11.16	4631.85	3.3175728814	57114.77119	93.91122994	41458.52722	1.3142162416	0	0	0	0
Cranes175	Cranes	175	989.15	0.49	186.15	5.3133725849	164569.3274	160.0771021	74758.63184	2.2013422893	0	0	0	0
Cranes300	Cranes	300	0	0	0	0	282264.9467	177.3498593	86477.85933	3.2640146936	0	0	0	0
Cranes600	Cranes	600	0	0	0	0	509641.4073	183.4318163	93565.54794	5.4485783876	0	0	0	0
Cranes750	Cranes	750	0	0	0	0	9993.795865	2.432782707	1056.419025	9.427883853	0	0	0	0
Cranes9999	Cranes	9999	0	0	0	0	27782.38803	3.892453313	1990.138635	13.96002698	0	0	0	0
Crawler Tractors25	Crawler Tractors	25	0	0	0	0	0	0	0	0	0	0	0	0
Crawler Tractors50	Crawler Tractors	50	0	0	0	0	7840.778271	21.59169602	7601.052377	1.0315374926	0	0	0	0
Crawler Tractors75	Crawler Tractors	75	0	0	0	0	5380.728746	10.36397089	3194.457114	1.6843953448	0	0	0	0
Crawler Tractors100	Crawler Tractors	100	0	0	0	0	348834.5197	360.5798205	175021.6478	1.9473649312	0	0	0	0
Crawler Tractors175	Crawler Tractors	175	0	0	0	0	377562.6212	243.7692315	114588.1521	3.3117139806	0	0	0	0
Crawler Tractors300	Crawler Tractors	300	0	0	0	0	394547.2423	186.9833083	86761.25236	4.5475051554	0	0	0	0
Crawler Tractors600	Crawler Tractors	600	0	0	0	0	1381659.814	332.0788005	161899.5659	8.5346553084	0	0	0	0
Crawler Tractors750	Crawler Tractors	750	0	0	0	0	17349.51989	2.809038782	1277.528419	13.5805353581	0	0	0	0
Crawler Tractors9999	Crawler Tractors	9999	0	0	0	0	80463.51168	6.477481805	3699.51468	21.7315295	0	0	0	0
Crushing/Proc. Equipment25	Crushing/Proc. Equipment	25	3102.5	10.82	3128.05	0.991831972	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment50	Crushing/Proc. Equipment	50	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment75	Crushing/Proc. Equipment	75	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment100	Crushing/Proc. Equipment	100	11899	6.45	1562.2	7.61682243	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment175	Crushing/Proc. Equipment	175	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment300	Crushing/Proc. Equipment	300	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment600	Crushing/Proc. Equipment	600	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment750	Crushing/Proc. Equipment	750	0	0	0	0	0	0	0	0	0	0	0	0
Crushing/Proc. Equipment9999	Crushing/Proc. Equipment	9999	0	0	0	0	0	0	0	0	0	0	0	0
Dumpers/Tenders25	Dumpers/Tenders	25	22170.1	432.81	6455.65	0.3435326091	1866.9	8.04	5318.85	0.3472889574	0	0	0	0
Dumpers/Tenders100	Dumpers/Tenders	100	1273.85	4	511	2.4928571429	0	0	0	0	0	0	0	0
Excavators25	Excavators	25	0	0	0	0	13005.81868	12.83269562	17412.07562	0.7468424879	0	0	0	0
Excavators50	Excavators	50	0	0	0	0	313485.4023	528.1050084	198541.0052	0.7865823562	0	0	0	0
Excavators75	Excavators	75	0	0	0	0	4450.319083	5.625041026	3075.411213	1.4470545494	0	0	0	0
Excavators100	Excavators	100	0	0	0	0	401899.5921	375.3634533	251212.6555	1.5398381338	0	0	0	0
Excavators175	Excavators	175	0	0	0	0	858525.6918	486.9989242	297335.1601	2.8874032	0	0	0	0
Excavators300	Excavators	300	0	0	0	0	1059308.143	419.7147547	252930.4805	4.1249180652	0	0	0	0
Excavators600	Excavators	600	0	0	0	0	1923804.38	437.8879709	289677.6072	6.6411905215	0	0	0	0
Excavators750	Excavators	750	0	0	0	0	45898.16674	8.27488567	3785.380698	12.1257315	0	0	0	0
Excavators9999	Excavators	9999	0	0	0	0	54098.81062	3.245217178	2272.072715	23.81028764	0	0	0	0
Forklifts25	Forklifts	25	4274.15	6.88	6201.35	0.6892289958	124.4491113	0.751869442	215.3000359	0.5780264422	5080.8	4.34	5175.5	0.981664319
Forklifts50	Forklifts	50	3409197.25	1199.1	2157562.45	1.607924373	216120.2221	587.4391889	430216.0591	0.5023527549	6745440.8	2804.79	5052906.1	1.334962488
Forklifts75	Forklifts	75	0	0	0	0	9380.285516	12.42860153	12459.36139	0.7528704958	0	0	0	0
Forklifts100	Forklifts	100	15996078.9	4232.66	7581407.7	2.109958153	31555545.12	4909.874011	3256248.286	0.9881268574	42212333.9	9843.75	17734105.35	2.380291149
Forklifts175	Forklifts	175	11180042.45	154.82	277071.5	4.035212752	935389.6398	890.0493595	592755.7548	1.5780155527	3168305.85	360.23	648977.3	4.881999795
Forklifts300	Forklifts	300	0	0	0	0	183289.6347	111.8005842	81218.55018	2.2569663826	0	0	0	0
Forklifts600	Forklifts	600	0	0	0	0	47199.27644	17.44459473	12154.96651	3.8831126821	0	0	0	0
Forklifts750	Forklifts	750	0	0	0	0	724.7218646	0.250123147	53.81852872	12.981357474	0	0	0	0
Forklifts9999	Forklifts	9999	0	0	0	0	3431.278569	0.461477832	175.2277932	9.1445221799	0	0	0	0
Generator Sets25	Generator Sets	25	6116868.85	75348.7	8657135.7	0.7065672839	526446.8	2565.38	866009.95	0.6078599251	0	0	0	0
Generator Sets50	Generator Sets	50	999307.95	3011.85	449231.05	2.2248054854	62979.99	1323.5	46079.4	1.3962288614	0	0	0	0
Generator Sets75	Generator Sets	75	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets100	Generator Sets	100	4501043.95	755.4	86764.15	5.188128392	0	0	0	0	0	0	0	0
Generator Sets175	Generator Sets	175	737195.05	71.39	8201.55	6.988429018	0	0	0	0	58418.25	46.61	5354.55	10.91002049
Generator Sets300	Generator Sets	300	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets600	Generator Sets	600	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets750	Generator Sets	750	0	0	0	0	0	0	0	0	0	0	0	0
Generator Sets9999	Generator Sets	9999	0	0	0	0	0	0	0	0	0	0	0	0
Graders25	Graders	25	0	0	0	0	0	0	0	0	0	0	0	0
Graders50	Graders	50	0	0	0	0	1729.162318	5.652621808	2102.598821	0.8223929893	0	0	0	0
Graders75	Graders	75	0	0	0	0	998.8427112	2.174085311	726.571251	1.3747247451	0	0	0	0
Graders100	Graders	100	0	0	0	0	49291.12219	58.25548833	24738.59614	1.8711387058	0	0	0	0
Graders175	Graders	175	0	0	0	0	524058.4033	348.0710583	166417.8655	3.1490513329	0	0	0	0
Graders300	Graders	300	0	0	0	0	1078562.849	304.1545335	237195.0262	4.5471550262	0	0	0	0
Graders600	Graders	600	0	0	0	0	73258.98358	12.17487774	10646.47211	6.8810573496	0	0	0	0
Graders750	Graders	750	0	0	0	0	0	0	0	0	0	0	0	0
Graders9999	Graders	9999	0	0	0	0	37516.04912	1.304451186	980.4612756	38.26367259	0	0	0	0
Pavers25	Pavers	25	18976.35	42.16	16720.65	1.1349050419	3507.65	5.04	412.45	0.8504424478	0	0	0	0
Pavers50	Pavers	50	14545.25	15.84	3215.95	2.3399882256	8591.826009	25.33561712	9273.670129	0.9264754267	0	0	0	0
Pavers75	Pavers	75	0	0	0	0	12579.21642	21.32414441	8209.066528	1.5323564496	0	0	0	0
Pavers100	Pavers	100	129784	8.71	3412.75	1.8033285561	70152.3167	100.9210282	40457.42465	1.7339776801	0	0	0	0
Pavers175	Pavers	175	0	0	0	0	11207.86017	84.02979675	33423.92531	1.3960503318	0	0	0	0
Pavers300	Pavers	300	0	0	0	0	88605.1076	40.11472711	18588.0949	4.7642034435	0	0	0	0
Pavers600	Pavers	600	0	0	0	0	16330.76879	4.644863138	2106.566641	7.7428121379	0	0	0	0
Pavers750	Pavers	750	0	0	0	0	3321.310263	0.422260285	206.0041548	16.1322487	0	0	0	0
Pavers9999	Pavers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Paving Equipment25	Paving Equipment	25	4024932.8	4617.51	873499.75	0.4607818151	4175.416399	8.910790613	7273.029413	0.5740959601	0	0	0	0
Paving Equipment50	Paving Equipment	50	16914.1	43.27	7573.75	2.2332581013	10670.7358	30.98622004	15111.73945	0.7061222272	0	0	0	0
Paving Equipment75	Paving Equipment	75	0	0	0	0	1529.884113	5.583450411	1217.851391	1.2561745318	0	0	0	0
Paving Equipment100	Paving Equipment	100	6978.8	11.13	1956.4	3.5671641791	44236.29194	56.07039293	27040.5174	1.6359226339	0	0	0	0
Paving Equipment175	Paving Equipment	175	0	0	0	0	68809.30319	38.7854723	18338.14606	2.6505773549	0	0	0	0
Paving Equipment300	Paving Equipment	300	0	0	0	0	31324.28735	15.59850533	7437.756866	4.2115223433	0	0	0	0
Paving Equipment600	Paving Equipment	600	0	0	0	0	39140.66659	10.11794984	4985.331472	7.2496092456	0	0	0	0
Paving Equipment750	Paving Equipment	750	0	0	0	0	6440.191689	1.053953063	550.6965559	11.69462855	0	0	0	0
Paving Equipment9999	Paving Equipment	9999	0	0	0	0	9139.635598	0.421581225	202.6921038	15.4896959	0	0	0	0
Rollers25	Rollers	25	93815.65	499.6	124421.2	0.7540190057	76407.48888	287.3571735	109797.4338	0.3624224776	0	0	0	0
Rollers50	Rollers	50	19133.1	11.33	6938.65	2.7574966555	176428.8305	640.4445864	228747.6438	0.7712830647	0	0	0	0
Rollers75	Rollers	75	0	0	0	0	1790.976791	5.429336948	1279.593992	1.3761196564	0	0	0	0
Rollers100	Rollers	100	59555.55	20.96	13023.2	4.5423206238	273919.3221	472.3523145	161666.4641	1.6943448443	0	0	0	0
Rollers175	Rollers	175	0	0	0	0	284994.6407	276.2446619	102216.7816	2.7881339402	0	0	0	0
Rollers300	Rollers	300	0	0	0	0	48685.90299	36.05079733	11508.82916	4.2317795893	0	0	0	0
Rollers600	Rollers	600	0	0	0	0	26133.35559	12.16174781	3799.114561	6.8788801671	0	0	0	0
Rollers750	Rollers	750	0	0	0	0	0	0	0	0	0	0	0	0
Rollers9999	Rollers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rough Terrain Forklifts25	Rough Terrain Forklifts	25	0	0	0	0	124.4491113	0.751869442	215.3000359	0.5780264422	0	0	0	0
Rough Terrain Forklifts50	Rough Terrain Forklifts	50	3076.95	2.22	919.8	1.3452380952	8856.630942	28.32041564	7992.091094	1.1081743316	0	0	0	0
Rough Terrain Forklifts75	Rough Terrain Forklifts	75	0	0	0	0	298.6791767	1.002405788	230.3528554	1.2932474703	0	0	0	0
Rough Terrain Forklifts100	Rough Terrain Forklifts	100	66805.95	31.66	13088.9	5.1040155616	708257.2107	1215.271641	353262.1781	2.0049052309	0	0	0	0
Rough Terrain Forklifts175	Rough Terrain Forklifts	175	3755.85	1.1	463.55	8.1023622006	147641.1634	195.9873031	56125.67829	2.6305457	0	0	0	0
Rough Terrain Forklifts300	Rough Terrain Forklifts	300	0	0	0	0	11711.1689	10.27545904	2657.434508	4.4089045451	0	0	0	0
Rough Terrain Forklifts600	Rough Terrain Forklifts	600	0	0	0	0	3852.29692	1.754362031	463.087053	8.3187316	0	0	0	0
Rough Terrain Forklifts750	Rough Terrain Forklifts	750	0	0	0	0	724.7218612	0.250123147	55.81852872	12.98535574	0	0	0	0
Rough Terrain Forklifts9999	Rough Terrain Forklifts	9999	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers25	Rubber Tired Dozers	25	0	0	0	0	0	0	0	0	0	0	0	0
Rubber Tired Dozers50	Rubber Tired Dozers	50	0	0	0	0	7778.956125	8.471421824	8300.320316	0.9371874459	0	0	0	0
Rubber Tired Dozers75	Rubber Tired Dozers	75	0	0	0	0	9463.491144	7.644916348	6349.05113	1.4905302847	0	0	0	0
Rubber Tired Dozers100	Rubber Tired Dozers	100	0	0	0	0	25018.24421	16.32298352	14383.24508	1.7394013816	0	0	0	0
Rubber Tired Dozers175	Rubber Tired Dozers	175	0	0	0	0	33531.31353	14.25678307	11261.01608	2.9771116725	0	0	0	0
Rubber Tired Dozers300	Rubber Tired Dozers	300	0	0	0	0	39508.44565	12.19058263	8830.48208	4.5777791W	0	0	0	0
Rubber Tired Dozers600	Rubber Tired Dozers	600	0	0	0	0	389796.7901	68.59785477	51557.18775	7.5606742344	0	0	0	0
Rubber Tired Dozers750	Rubber Tired Dozers	750	0	0	0	0	14568.48722	1.031030222	1071.321246	13.6135126919	0	0	0	0
Rubber Tired Dozers9999	Rubber Tired Dozers	9999	0	0	0	0	0	0	0	0	0	0	0	0
Scrapers25	Scrapers	25	0	0	0	0	62.65421332	0.212036651	90.33331199	0.6935819241	0	0	0	0
Scrapers50	Scrapers	50	0	0	0	0	496.679485	1.277618765	671.3915551	1.0565643286	0	0	0	0
Scrapers75	Scrapers	75	0	0	0	0	4000.676951	4.897538597	2364.725367	1.6918146622	0	0	0	0
Scrapers100	Scrapers	100	0	0	0	0	21356.14203	16.39610748	9453.130174	2.2593163894	0	0	0	0
Scrapers175	Scrapers	175	0	0	0	0	270779.032	138.4086995	64384.56627	4.2056510863	0	0	0	0
Scrapers300	Scrapers	300	0	0	0	0	311146.0147	134.1499703	55758.27386	5.5828534916	0	0	0	0
Scrapers600	Scrapers	600	0	0	0	0	3879980.32	746.5552314	368439.9706	10.5303834496	0	0	0	0
Scrapers750	Scrapers	750	0	0	0	0	86249.96047	11.07269598	5662.569863	15.2855304	0	0	0	0
Scrapers9999	Scrapers	9999	0	0	0	0	90305.28725	5.536347936	2266.864278	39.83893898	0	0	0	0
Skid Steer Loaders25	Skid Steer Loaders	25	307264.3	872.44	278546.1	1.1031003491	3366.915	642.58	5363.523	0.6276455	0	0	0	0
Skid Steer Loaders50	Skid Steer Loaders	50	90275.45	152.12	47194.5	1.913183836	133381.2916	443.4373991	144018.3113	0.9261412	0	0	0	0
Skid Steer Loaders75	Skid Steer Loaders	75	0	0	0	0	708532.688	1430.14398	526119.093	1.3482033863	0	0	0	0
Skid Steer Loaders100	Skid Steer Loaders	100	120552.2	91	28229.5	4.2704991228	2503116.668	6109549924	1355.449808	1.8141627996	0	0	0	0
Skid Steer Loaders175	Skid Steer Loaders	175	0	0	0	0	4792.492344	5.935949318	1653.920765	2.8976553446	0	0	0	0
Skid Steer Loaders300	Skid Steer Loaders	300	0	0	0	0	6454.152523	3.737449571	1137.588672	3.9156533361	0	0	0	0
Skid Steer Loaders600	Skid Steer Loaders	600	0	0	0	0	1285.639383	0.43999995	142.4909408	9.0228613816	0	0	0	0
Skid Steer Loaders750	Skid Steer Loaders	750	0	0	0	0	38522.29892	1.754362031	463.087053	8.3187316	0	0	0	0
Skid Steer Loaders9999	Skid Steer Loaders	9999	0	0	0	0	1740.291597	0.4396995	91.45269896	19.02940227	0	0	0	0
Surfacing Equipment25	Surfacing Equipment	25	1965226.95	1246.16	533184.7	0.3685807513	0	0	0	0	0	0	0	0
Surfacing Equipment50	Surfacing Equipment	50	0	0	0	0	1233.626007	7.778125573	1956.881307	0.6304094779	0	0	0	0
Surfacing Equipment75	Surfacing Equipment	75	0	0	0	0	752.4982628	2.991740604	748.3437521	1.0055516807	0	0	0	0
Surfacing Equipment100	Surfacing Equipment	100	0	0	0	0	8003.055303	19.34658924	5628.563358	1.4218053393	0	0	0	0
Surfacing Equipment175	Surfacing Equipment	175	0	0	0	0	6055.112995	10.90771556	2731.193937	2.1956413116	0	0	0	0
Surfacing Equipment300	Surfacing Equipment	300	0	0	0	0	12015.35491	11.76200678	3424.659804	3.5086505059	0	0	0	0
Surfacing Equipment600	Surfac

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Los Angeles (SC)	2026 TRU - Out-of-State Genset TRU	Aggregate	50	Diesel	0.005037245	0.006095066	0.007253632	0.094922112	0.0985629	1.914233132	0.000315873	0.000290603	1.76656E-05	1.57285E-05	1215.08585	732003.5901	5920.255201	2305813	
Los Angeles (SC)	2026 TRU - Out-of-State Trailer TRU	Aggregate	50	Diesel	0.082598074	0.099945669	0.118941226	1.299132066	0.815850057	20.82817911	0.004511544	0.004169021	0.000191381	0.000171137	13220.97361	5293676.903	25229.16084	1.8E-08	
Los Angeles (SC)	2026 TRU - Railcar TRU	Aggregate	50	Diesel	0.008549965	0.010345457	0.012311949	0.134476998	0.084451612	2.155984851	0.000469073	0.000431547	1.98104E-05	1.77149E-05	1368.541084	547963.7539	1699.481295	18630768	

EMFAC Fuel Usage: Year 2024

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	152,659	14,345	10.64	0	0	0.00	0
LDA	148,818,024	4,671,011	31.86	1,479,530	29,812	49.63	0	0	0.00	4,518,576
LDT1	17,673,621	645,437	27.38	5,684	255	22.29	0	0	0.00	255,128
LDT2	52,511,433	2,021,022	25.98	427,073	11,690	36.53	0	0	0.00	705,899
LHD1	3,766,960	352,708	10.68	3,028,302	135,096	22.42	0	0	0.00	0
LHD2	625,803	67,294	9.30	1,179,926	58,473	20.18	0	0	0.00	0
MCY	1,288,390	36,306	35.49	0	0	0.00	0	0	0.00	0
MDV	32,284,082	1,532,106	21.07	870,334	30,765	28.29	0	0	0.00	437,605
MH	191,783	36,247	5.29	66,619	6,157	10.82	0	0	0.00	0
Motor coach	0	0	0.00	94,455	13,987	6.75	0	0	0.00	0
OBUS	155,998	30,411	5.13	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	78,022	14,938	5.22	0	0	0.00	0
SBUS	62,194	6,630	9.38	111,550	14,309	7.80	0	0	0.00	0
T6	801,588	154,302	5.19	4,353,533	390,361	11.15	0	0	0.00	0
T7	6,082	1,413	4.30	7,013,825	987,351	7.10	120,686	52,270	2.31	0
UBUS	33,379	7,243	4.61	1,181	209	5.66	442,306	112,443	3.93	1,070
Total	**258,219,336**	**9,562,129**	**27.00**	**18,862,693**	**1,707,747**	**11.05**	**562,992**	**164,713**	**3.42**	**5,918,277**

3,318,058,703

0.35%

81875000 11525716.03

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2024	All Other Buses	Aggregate	Aggregate	DSL	2507.924484	152659.3111	21066.56566	14.34483756
Los Angeles (SC)	2024	LDA	Aggregate	Aggregate	GAS	4021900.074	148818024	18978442.95	4671.010856
Los Angeles (SC)	2024	LDA	Aggregate	Aggregate	DSL	38501.07281	1479530.051	182905.2219	29.81248246
Los Angeles (SC)	2024	LDA	Aggregate	Aggregate	ELEC	106845.8544	4518575.527	531934.2031	0
Los Angeles (SC)	2024	LDT1	Aggregate	Aggregate	GAS	486400.7655	17673621.24	2255127.586	645.4368189
Los Angeles (SC)	2024	LDT1	Aggregate	Aggregate	DSL	234.7727133	5684.021112	832.856787	0.254959916
Los Angeles (SC)	2024	LDT1	Aggregate	Aggregate	ELEC	5879.20802	255127.5247	29473.49424	0
Los Angeles (SC)	2024	LDT2	Aggregate	Aggregate	GAS	1423190.933	52511432.89	6691338.255	2021.021699
Los Angeles (SC)	2024	LDT2	Aggregate	Aggregate	DSL	10554.80961	427072.609	51733.15953	11.68952346
Los Angeles (SC)	2024	LDT2	Aggregate	Aggregate	ELEC	22560.95292	705898.5423	113549.0395	0
Los Angeles (SC)	2024	LHD1	Aggregate	Aggregate	GAS	105026.6205	3766959.671	1564740.156	352.7082005
Los Angeles (SC)	2024	LHD1	Aggregate	Aggregate	DSL	73357.19754	3028301.786	922741.2616	135.0962581
Los Angeles (SC)	2024	LHD2	Aggregate	Aggregate	GAS	18080.14015	625803.0034	269367.1488	67.29375602
Los Angeles (SC)	2024	LHD2	Aggregate	Aggregate	DSL	29768.23755	1179926.342	374446.98	58.47275234
Los Angeles (SC)	2024	MCY	Aggregate	Aggregate	GAS	190348.3854	1288390.153	380696.7708	36.30573273
Los Angeles (SC)	2024	MDV	Aggregate	Aggregate	GAS	941489.7366	32284082.37	4376581.951	1532.105557
Los Angeles (SC)	2024	MDV	Aggregate	Aggregate	DSL	23002.44645	870333.9934	112429.6903	30.76509027
Los Angeles (SC)	2024	MDV	Aggregate	Aggregate	ELEC	13602.33231	437604.9715	69087.01662	0
Los Angeles (SC)	2024	MH	Aggregate	Aggregate	GAS	18822.07195	191782.5832	1882.960078	36.24675511
Los Angeles (SC)	2024	MH	Aggregate	Aggregate	DSL	6460.410652	66619.07665	646.0410652	6.15692445
Los Angeles (SC)	2024	Motor Coach	Aggregate	Aggregate	DSL	678.2424309	94455.31673	9902.339491	13.98682771
Los Angeles (SC)	2024	OBUS	Aggregate	Aggregate	GAS	3958.891451	155997.8277	79209.50015	30.41137693
Los Angeles (SC)	2024	PTO	Aggregate	Aggregate	DSL	0	78021.88069	0	14.93785593
Los Angeles (SC)	2024	SBUS	Aggregate	Aggregate	GAS	1584.677682	62194.10493	6338.710727	6.630326024
Los Angeles (SC)	2024	SBUS	Aggregate	Aggregate	DSL	3527.518186	111549.9025	40707.0708	14.30938908
Los Angeles (SC)	2024	T6 Ag	Aggregate	Aggregate	DSL	12.05761943	92.02238142	53.05352549	0.010587275
Los Angeles (SC)	2024	T6 CAIRP heavy	Aggregate	Aggregate	DSL	292.9737915	55948.91958	4277.417356	4.606415135
Los Angeles (SC)	2024	T6 CAIRP small	Aggregate	Aggregate	DSL	154.1455999	7835.504274	2250.525759	0.693198823
Los Angeles (SC)	2024	T6 instate construction heavy	Aggregate	Aggregate	DSL	2650.219386	172806.9504	11981.5388	16.02873739
Los Angeles (SC)	2024	T6 instate construction small	Aggregate	Aggregate	DSL	8095.748927	444863.2364	36600.56614	40.87032028
Los Angeles (SC)	2024	T6 instate heavy	Aggregate	Aggregate	DSL	11161.35175	1509601.756	128800.4517	129.3548221
Los Angeles (SC)	2024	T6 instate small	Aggregate	Aggregate	DSL	39428.08263	2037409.216	454994.6071	185.6465197
Los Angeles (SC)	2024	T6 OOS heavy	Aggregate	Aggregate	DSL	169.1090119	32340.43231	2468.991574	2.661667322
Los Angeles (SC)	2024	T6 OOS small	Aggregate	Aggregate	DSL	88.81818726	4491.79632	1296.745534	0.397667786
Los Angeles (SC)	2024	T6 Public	Aggregate	Aggregate	DSL	4516.492267	71042.57543	13700.02653	8.390086221
Los Angeles (SC)	2024	T6 utility	Aggregate	Aggregate	DSL	1024.210832	17100.83697	11778.42456	1.700801636
Los Angeles (SC)	2024	T6TS	Aggregate	Aggregate	GAS	14759.51384	801587.7755	295308.3529	154.3015303
Los Angeles (SC)	2024	T7 Ag	Aggregate	Aggregate	DSL	6.009096854	73.97272745	26.44002616	0.013325928
Los Angeles (SC)	2024	T7 CAIRP	Aggregate	Aggregate	DSL	6074.83944	1105706.171	88692.65583	152.2409443
Los Angeles (SC)	2024	T7 CAIRP construction	Aggregate	Aggregate	DSL	679.2465248	124128.7336	3070.847129	16.15710136
Los Angeles (SC)	2024	T7 NNOOS	Aggregate	Aggregate	DSL	6955.11324	1347857.593	101544.6533	175.0088623
Los Angeles (SC)	2024	T7 NOOS	Aggregate	Aggregate	DSL	2414.358836	434453.6439	35249.639	61.38317256
Los Angeles (SC)	2024	T7 POLA	Aggregate	Aggregate	DSL	8709.300953	1191474.419	66190.68724	184.6865334
Los Angeles (SC)	2024	T7 Public	Aggregate	Aggregate	DSL	5602.402193	113498.9197	16993.9533	18.93664376
Los Angeles (SC)	2024	T7 Single	Aggregate	Aggregate	DSL	5977.693003	392933.7865	68981.74848	56.25200991
Los Angeles (SC)	2024	T7 single construction	Aggregate	Aggregate	DSL	4405.551189	307940.557	19917.32564	42.86075886
Los Angeles (SC)	2024	T7 SWCV	Aggregate	Aggregate	DSL	1141.578768	46643.05884	4452.157197	23.00637543
Los Angeles (SC)	2024	T7 SWCV	Aggregate	Aggregate	NG	2963.309642	120685.728	11556.9076	52.27010461
Los Angeles (SC)	2024	T7 tractor	Aggregate	Aggregate	DSL	12883.30858	1686713.793	163618.019	219.9306868
Los Angeles (SC)	2024	T7 tractor construction	Aggregate	Aggregate	DSL	3730.610403	254023.8482	16865.94458	35.56472406
Los Angeles (SC)	2024	T7 utility	Aggregate	Aggregate	DSL	412.8480139	8376.025785	4747.752159	1.30969788
Los Angeles (SC)	2024	T7IS	Aggregate	Aggregate	GAS	52.04562781	6082.283607	1041.328921	1.413481111
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	GAS	466.0453396	33378.61148	1864.181359	7.242737574
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	DSL	10.1389	1181.230112	40.5556	0.208621865
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	ELEC	12	1070.403311	48	0
Los Angeles (SC)	2024	UBUS	Aggregate	Aggregate	NG	4178.335668	442305.8977	16713.34267	112.4427001

EMFAC Fuel Usage: Year 2020

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	156,515	14,394	10.87	0	0	0.00	0
LDA	148,167,345	4,516,274	32.81	1,525,959	29,889	51.05	0	0	0.00	5,311,624
LDT1	17,936,853	637,692	28.13	5,299	233	22.70	0	0	0.00	319,788
LDT2	52,839,723	1,962,899	26.92	447,478	11,900	37.60	0	0	0.00	833,022
LHD1	3,739,638	345,048	10.84	3,150,817	138,299	22.78	0	0	0.00	0
LHD2	625,282	66,285	9.43	1,228,534	59,919	20.50	0	0	0.00	0
MCY	1,308,121	36,893	35.46	0	0	0.00	0	0	0.00	0
MDV	32,309,578	1,481,124	21.81	911,875	31,312	29.12	0	0	0.00	536,507
MH	192,125	35,666	5.39	68,685	6,249	10.99	0	0	0.00	0
Motor coach	0	0	0.00	95,960	13,930	6.89	0	0	0.00	0
OBUS	153,093	29,326	5.22	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	78,695	14,912	5.28	0	0	0.00	0
SBUS	65,361	6,892	9.48	112,277	14,224	7.89	0	0	0.00	0
T6	806,296	152,446	5.29	4,438,143	391,326	11.34	0	0	0.00	0
T7	6,279	1,424	4.41	7,131,734	985,650	7.24	127,328	54,194	2.35	0
UBUS	33,573	6,958	4.82	752	133	5.66	445,327	113,215	3.93	1,070
Total	**258,183,266**	**9,278,926**	**27.82**	**19,352,724**	**1,712,373**	**11.30**	**572,655**	**167,408**	**3.42**	**7,002,011**

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2025	All Other Buses	Aggregate	Aggregate	DSL	2633.948756	156514.92	22125.17	14.39428357
Los Angeles (SC)	2025	LDA	Aggregate	Aggregate	GAS	4055770.858	148167345	19132328	4516.273745
Los Angeles (SC)	2025	LDA	Aggregate	Aggregate	DSL	40165.35984	1525959.1	191059	29.88927868
Los Angeles (SC)	2025	LDA	Aggregate	Aggregate	ELEC	123387.1977	5311624	613370.1	0
Los Angeles (SC)	2025	LDT1	Aggregate	Aggregate	GAS	499962.2227	17936853	2319231	637.691517
Los Angeles (SC)	2025	LDT1	Aggregate	Aggregate	DSL	219.2677433	5298.9162	778.9717	0.233410874
Los Angeles (SC)	2025	LDT1	Aggregate	Aggregate	ELEC	7239.827908	319787.92	36254.16	0
Los Angeles (SC)	2025	LDT2	Aggregate	Aggregate	GAS	1449451.693	52839723	6815060	1962.898565
Los Angeles (SC)	2025	LDT2	Aggregate	Aggregate	DSL	11309.01748	447477.78	55247.73	11.90026273
Los Angeles (SC)	2025	LDT2	Aggregate	Aggregate	ELEC	27208.13081	833021.53	136529.9	0
Los Angeles (SC)	2025	LHD1	Aggregate	Aggregate	GAS	105035.2402	3739637.8	1564869	345.0477724
Los Angeles (SC)	2025	LHD1	Aggregate	Aggregate	DSL	77839.37602	3150817.4	979121.4	138.2991985
Los Angeles (SC)	2025	LHD2	Aggregate	Aggregate	GAS	18214.5893	625282.37	271370.2	66.28505578
Los Angeles (SC)	2025	LHD2	Aggregate	Aggregate	DSL	31626.3724	1228534	397820	59.91935776
Los Angeles (SC)	2025	MCY	Aggregate	Aggregate	GAS	196539.6797	1308120.5	393079.4	36.89265812
Los Angeles (SC)	2025	MDV	Aggregate	Aggregate	GAS	951896.8886	32309578	4428023	1481.123516
Los Angeles (SC)	2025	MDV	Aggregate	Aggregate	DSL	24603.85227	911875.04	119860.5	31.31238413
Los Angeles (SC)	2025	MDV	Aggregate	Aggregate	ELEC	17082.56563	536506.72	86444.7	0
Los Angeles (SC)	2025	MH	Aggregate	Aggregate	GAS	18896.58635	192124.87	1890.414	35.66648538
Los Angeles (SC)	2025	MH	Aggregate	Aggregate	DSL	6745.29341	68685.089	674.5293	6.249345763
Los Angeles (SC)	2025	Motor Coach	Aggregate	Aggregate	DSL	723.4754499	95960.202	10562.74	13.93016159
Los Angeles (SC)	2025	OBUS	Aggregate	Aggregate	GAS	3952.687638	153092.68	79085.37	29.32641139
Los Angeles (SC)	2025	PTO	Aggregate	Aggregate	DSL	0	78695.242	0	14.91240417
Los Angeles (SC)	2025	SBUS	Aggregate	Aggregate	GAS	1686.657165	65361.134	6746.629	6.892426709
Los Angeles (SC)	2025	SBUS	Aggregate	Aggregate	DSL	3551.771731	112277.37	40986.95	14.22448756
Los Angeles (SC)	2025	T6 Ag	Aggregate	Aggregate	DSL	12.35616239	86.822055	54.36711	0.010051913
Los Angeles (SC)	2025	T6 CAIRP heavy	Aggregate	Aggregate	DSL	303.4417676	56893.484	4430.25	4.551713238
Los Angeles (SC)	2025	T6 CAIRP small	Aggregate	Aggregate	DSL	160.7644159	7970.9648	2347.16	0.690784502
Los Angeles (SC)	2025	T6 instate constr	Aggregate	Aggregate	DSL	2697.402469	171486.92	12194.85	15.72959066
Los Angeles (SC)	2025	T6 instate constr	Aggregate	Aggregate	DSL	8241.141036	441465.04	37257.88	39.94948128
Los Angeles (SC)	2025	T6 instate heavy	Aggregate	Aggregate	DSL	11842.54037	1548256.9	136661.3	130.3006253
Los Angeles (SC)	2025	T6 instate small	Aggregate	Aggregate	DSL	41336.93597	2085415	477022.5	187.068827
Los Angeles (SC)	2025	T6 OOS heavy	Aggregate	Aggregate	DSL	175.282021	32903.723	2559.118	2.631617615
Los Angeles (SC)	2025	T6 OOS small	Aggregate	Aggregate	DSL	92.65306108	4569.2799	1352.735	0.396343397
Los Angeles (SC)	2025	T6 Public	Aggregate	Aggregate	DSL	4558.435405	71848.38	13827.25	8.320071445
Los Angeles (SC)	2025	T6 utility	Aggregate	Aggregate	DSL	1035.885739	17246.559	11912.69	1.677261429
Los Angeles (SC)	2025	T6TS	Aggregate	Aggregate	GAS	14915.38467	806295.88	298427	152.4460731
Los Angeles (SC)	2025	T7 Ag	Aggregate	Aggregate	DSL	6.430609971	58.315751	28.29468	0.010848044
Los Angeles (SC)	2025	T7 CAIRP	Aggregate	Aggregate	DSL	6116.772215	1123146.8	89304.87	150.8855643
Los Angeles (SC)	2025	T7 CAIRP constru	Aggregate	Aggregate	DSL	674.2765782	123180.55	3048.378	15.67799378
Los Angeles (SC)	2025	T7 NNOOS	Aggregate	Aggregate	DSL	7191.700861	1369101.1	104998.8	172.7421909
Los Angeles (SC)	2025	T7 NOOS	Aggregate	Aggregate	DSL	2436.750698	441312.33	35576.56	60.88888045
Los Angeles (SC)	2025	T7 POLA	Aggregate	Aggregate	DSL	8841.445085	1251082.4	67194.98	192.3469655
Los Angeles (SC)	2025	T7 Public	Aggregate	Aggregate	DSL	5661.997921	114708.81	17174.73	18.80892036
Los Angeles (SC)	2025	T7 Single	Aggregate	Aggregate	DSL	5982.445754	396324.97	69036.59	56.13352654
Los Angeles (SC)	2025	T7 single constru	Aggregate	Aggregate	DSL	4367.272924	305588.28	19744.27	41.97945309
Los Angeles (SC)	2025	T7 SWCV	Aggregate	Aggregate	DSL	1037.16178	42376.75	4044.931	20.89805029
Los Angeles (SC)	2025	T7 SWCV	Aggregate	Aggregate	NG	3125.983996	127327.55	12191.34	54.19370706
Los Angeles (SC)	2025	T7 tractor	Aggregate	Aggregate	DSL	13517.51996	1704322.4	171672.5	219.0653006
Los Angeles (SC)	2025	T7 tractor constr	Aggregate	Aggregate	DSL	3714.464836	252083.42	16792.95	34.90601908
Los Angeles (SC)	2025	T7 utility	Aggregate	Aggregate	DSL	416.4631953	8448.0227	4789.327	1.305977537
Los Angeles (SC)	2025	T7IS	Aggregate	Aggregate	GAS	51.50915854	6279.2257	1030.595	1.42364563
Los Angeles (SC)	2025	UBUS	Aggregate	Aggregate	GAS	469.1198848	33573.257	1876.48	6.958292358
Los Angeles (SC)	2025	UBUS	Aggregate	Aggregate	DSL	6.0834	752.23951	24.3336	0.132856087
Los Angeles (SC)	2025	UBUS	Aggregate	Aggregate	ELEC	12	1070.4033	48	0
Los Angeles (SC)	2025	UBUS	Aggregate	Aggregate	NG	4206.886006	445327.3	16827.54	113.214754

EMFAC Fuel Usage: Year 2026

Vehicle type	GAS			DSL			NG			ELEC
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	0.00	160,450	14,464	11.09	0	0	0.00	0
LDA	147,318,014	4,372,706	33.69	1,563,064	29,862	52.34	0	0	0.00	5,860,862
LDT1	18,140,785	629,420	28.82	4,769	206	23.21	0	0	0.00	370,714
LDT2	53,075,475	1,909,300	27.80	464,980	12,065	38.54	0	0	0.00	949,986
LHD1	3,717,562	337,660	11.01	3,264,486	140,930	23.16	0	0	0.00	0
LHD2	625,329	65,286	9.58	1,273,409	61,104	20.84	0	0	0.00	0
MCY	1,325,899	37,426	35.43	0	0	0.00	0	0	0.00	0
MDV	32,288,122	1,433,424	22.53	947,295	31,712	29.87	0	0	0.00	628,110
MH	192,468	35,150	5.48	70,604	6,334	11.15	0	0	0.00	0
Motor coach	0	0	0.00	97,457	13,886	7.02	0	0	0.00	0
OBUS	150,651	28,384	5.31	0	0	0.00	0	0	0.00	0
PTO	0	0	0.00	79,359	14,875	5.33	0	0	0.00	0
SBUS	68,451	7,146	9.58	112,842	14,109	8.00	0	0	0.00	0
T6	811,588	150,912	5.38	4,522,849	392,299	11.53	0	0	0.00	0
T7	6,485	1,438	4.51	7,261,677	983,614	7.38	133,911	56,019	2.39	0
UBUS	33,768	6,978	4.84	752	133	5.66	447,920	113,873	3.93	1,070
Total	**257,754,597**	**9,015,229**	**28.59**	**19,823,994**	**1,715,594**	**11.56**	**581,831**	**169,892**	**3.42**	**7,810,743**

Source: EMFAC2017 (v1.0.3) Emissions Inventory
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2026
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumptior

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
Los Angeles (SC)	2026	All Other Buses	Aggregate	Aggregate	DSL	2753.020528	160449.6571	23125.37243	14.46445585
Los Angeles (SC)	2026	LDA	Aggregate	Aggregate	GAS	4090601.617	147318013.9	19290382.59	4372.706055
Los Angeles (SC)	2026	LDA	Aggregate	Aggregate	DSL	41623.62917	1563064.329	198431.1961	29.86208325
Los Angeles (SC)	2026	LDA	Aggregate	Aggregate	ELEC	139021.4265	5860861.823	689511.1639	0
Los Angeles (SC)	2026	LDT1	Aggregate	Aggregate	GAS	513240.7592	18140785.4	2381370.087	629.4199475
Los Angeles (SC)	2026	LDT1	Aggregate	Aggregate	DSL	193.5385565	4769.026067	700.8255928	0.205506157
Los Angeles (SC)	2026	LDT1	Aggregate	Aggregate	ELEC	8582.987977	370714.4313	42877.65896	0
Los Angeles (SC)	2026	LDT2	Aggregate	Aggregate	GAS	1476859.969	53075475.07	6942314.117	1909.29953
Los Angeles (SC)	2026	LDT2	Aggregate	Aggregate	DSL	12043.32006	464979.6307	58610.23482	12.0645518
Los Angeles (SC)	2026	LDT2	Aggregate	Aggregate	ELEC	31734.15436	949985.5866	158675.4778	0
Los Angeles (SC)	2026	LHD1	Aggregate	Aggregate	GAS	105129.9063	3717561.638	1566278.96	337.6596421
Los Angeles (SC)	2026	LHD1	Aggregate	Aggregate	DSL	82210.76283	3264486.035	1034107.975	140.9304936
Los Angeles (SC)	2026	LHD2	Aggregate	Aggregate	GAS	18355.21568	625329.2366	273465.3643	65.28633342
Los Angeles (SC)	2026	LHD2	Aggregate	Aggregate	DSL	33430.48487	1273408.816	420513.4441	61.10361206
Los Angeles (SC)	2026	MCY	Aggregate	Aggregate	GAS	202507.8565	1325899.182	405015.713	37.42633733
Los Angeles (SC)	2026	MDV	Aggregate	Aggregate	GAS	962945.0184	32288122.37	4481666.086	1433.423553
Los Angeles (SC)	2026	MDV	Aggregate	Aggregate	DSL	26134.9324	947294.9608	126908.4618	31.71217829
Los Angeles (SC)	2026	MDV	Aggregate	Aggregate	ELEC	20494.97172	628110.4296	103282.2996	0
Los Angeles (SC)	2026	MH	Aggregate	Aggregate	GAS	18969.00212	192467.7015	1897.658972	35.1496909
Los Angeles (SC)	2026	MH	Aggregate	Aggregate	DSL	7024.301149	70603.92393	702.4301149	6.334379784
Los Angeles (SC)	2026	Motor Coach	Aggregate	Aggregate	DSL	759.8494889	97457.0566	11093.80254	13.88619922
Los Angeles (SC)	2026	OBUS	Aggregate	Aggregate	GAS	3949.808418	150651.0027	79027.76683	28.38402363
Los Angeles (SC)	2026	PTO	Aggregate	Aggregate	DSL	0	79359.45711	0	14.87529048
Los Angeles (SC)	2026	SBUS	Aggregate	Aggregate	GAS	1787.113773	68451.01434	7148.455093	7.146440907
Los Angeles (SC)	2026	SBUS	Aggregate	Aggregate	DSL	3571.323292	112842.3294	41212.57564	14.10943979
Los Angeles (SC)	2026	T6 Ag	Aggregate	Aggregate	DSL	12.60057105	81.48968032	55.44251263	0.009498993
Los Angeles (SC)	2026	T6 CAIRP heavy	Aggregate	Aggregate	DSL	312.7057513	57823.11285	4565.50397	4.502054215
Los Angeles (SC)	2026	T6 CAIRP small	Aggregate	Aggregate	DSL	166.8650882	8104.259786	2436.230288	0.688248154
Los Angeles (SC)	2026	T6 instate constructio	Aggregate	Aggregate	DSL	2737.257805	170991.3528	12375.03611	15.54954745
Los Angeles (SC)	2026	T6 instate constructio	Aggregate	Aggregate	DSL	8393.700156	440189.2773	37947.59206	39.20824583
Los Angeles (SC)	2026	T6 instate heavy	Aggregate	Aggregate	DSL	12512.0825	1585103.509	144387.6973	131.1899999
Los Angeles (SC)	2026	T6 instate small	Aggregate	Aggregate	DSL	43131.36434	2132427.67	497729.9645	188.2438489
Los Angeles (SC)	2026	T6 OOS heavy	Aggregate	Aggregate	DSL	180.7304295	33455.03689	2638.66427	2.604100763
Los Angeles (SC)	2026	T6 OOS small	Aggregate	Aggregate	DSL	96.20509587	4645.476321	1404.5944	0.394945161
Los Angeles (SC)	2026	T6 Public	Aggregate	Aggregate	DSL	4603.562206	72636.95395	13964.13868	8.252760157
Los Angeles (SC)	2026	T6 utility	Aggregate	Aggregate	DSL	1046.636654	17390.98306	12036.32152	1.655348281
Los Angeles (SC)	2026	T6TS	Aggregate	Aggregate	GAS	15092.18214	811587.7155	301964.3803	150.9117004
Los Angeles (SC)	2026	T7 Ag	Aggregate	Aggregate	DSL	6.694377464	46.60745615	29.45526084	0.008984672
Los Angeles (SC)	2026	T7 CAIRP	Aggregate	Aggregate	DSL	6119.768941	1140510.216	89348.62654	148.8367658
Los Angeles (SC)	2026	T7 CAIRP construction	Aggregate	Aggregate	DSL	671.126945	122824.5741	3034.138825	15.25628763
Los Angeles (SC)	2026	T7 NNOOS	Aggregate	Aggregate	DSL	7416.492076	1390251.616	108280.7843	170.7843612
Los Angeles (SC)	2026	T7 NOOS	Aggregate	Aggregate	DSL	2441.487541	448140.5322	35645.71809	60.1018517
Los Angeles (SC)	2026	T7 POLA	Aggregate	Aggregate	DSL	8989.427006	1320246.866	68319.64525	200.4938602
Los Angeles (SC)	2026	T7 Public	Aggregate	Aggregate	DSL	5717.880759	115819.4142	17344.23829	18.63172191
Los Angeles (SC)	2026	T7 Single	Aggregate	Aggregate	DSL	5987.270464	399670.0886	69092.27105	55.97371065
Los Angeles (SC)	2026	T7 single constructior	Aggregate	Aggregate	DSL	4348.125261	304705.1771	19657.70525	41.31317474
Los Angeles (SC)	2026	T7 SWCV	Aggregate	Aggregate	DSL	927.006312	37875.97593	3615.324617	18.65774631
Los Angeles (SC)	2026	T7 SWCV	Aggregate	Aggregate	NG	3287.811116	133910.853	12822.46335	56.01901622
Los Angeles (SC)	2026	T7 tractor	Aggregate	Aggregate	DSL	14080.57824	1721711.824	178823.3436	217.8678573
Los Angeles (SC)	2026	T7 tractor constructio	Aggregate	Aggregate	DSL	3696.909853	251354.9446	16713.58571	34.38713885
Los Angeles (SC)	2026	T7 utility	Aggregate	Aggregate	DSL	420.0504552	8519.61674	4830.580235	1.300454045
Los Angeles (SC)	2026	T7IS	Aggregate	Aggregate	GAS	50.91574998	6484.979819	1018.722326	1.437696711
Los Angeles (SC)	2026	UBUS	Aggregate	Aggregate	GAS	471.84223	33767.90257	1887.36892	6.978152022
Los Angeles (SC)	2026	UBUS	Aggregate	Aggregate	DSL	6.0834	752.2395132	24.3336	0.132856087
Los Angeles (SC)	2026	UBUS	Aggregate	Aggregate	ELEC	12	1070.403311	48	0
Los Angeles (SC)	2026	UBUS	Aggregate	Aggregate	NG	4231.380844	447919.7142	16925.52338	113.8731988

Appendix E Construction Health Risk Assessment Background and Modeling Data

Appendices

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1. Construction Health Risk Assessment

1.1 INTRODUCTION

The Santa Monica-Malibu Unified School District (SMMUSD), the project applicant, is proposing the redevelopment and modernization of the existing Malibu Middle School and High School campus and former Juan Cabrillo Elementary School campus (proposed project or project). The approximately 40-acre project site is bounded by single family residences to the north, Merritt Drive to the east, Via Cabrillo Street to the west, and Morning View Drive to the south, in the City of Malibu, Los Angeles County, California. The project is a school redevelopment project that would result in demolition of the existing school buildings and construction of new school buildings to create three distinct areas: Middle School Core, High School Core, and shared facilities. The proposed project would involve demolition, site preparation, grading, trenching, building construction, architectural coating, paving, and finishing and landscaping. The following provides the background methodology used for the construction health risk assessment for the proposed project.

Project construction is anticipated to take place starting at the beginning of June 2022 and be completed by May 2031 (approximately 2,348 workdays). The nearest sensitive receptors to the project site include the student on campus and the single-family residence to the northwest of the project site. Guidance from the California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment (OEHHA), California Air Pollution Control Officers Association (CAPCOA), and the South Coast Air Quality Management District (South Coast AQMD) recommend the completion of health risk assessments (HRA) to determine the impacts of hazardous air emissions upon sensitive receptors in the vicinity of the project. As a result, a site-specific construction health risk assessment (HRA) has been prepared for the proposed project. This HRA considers the health impact to sensitive receptors (adults and children in the nearby residences) of construction emissions at the project site from diesel equipment exhaust (diesel particulate matter or DPM).

It should be noted that these health impacts are based on conservative (i.e., health protective) assumptions. The United States Environmental Protection Agency (USEPA, 2005) and the Office of Environmental Health Hazard Assessment (OEHHA, 2015) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks. Therefore, the estimated risks may not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of exposure and thus risk.

For residential-based receptors, the following conservative assumptions were used:

- It was assumed that maximum-exposed off-site residential receptors (both children and adults) stood outdoors and are subject to DPM at their residence for 8 hours per day, and approximately 260 construction days per year. In reality, California residents typically will spend on average 2 hours per day

outdoors at their residences (USEPA, 2011). This would result in lower exposures to construction related DPM emissions and lower estimated risk values.

- The calculated risk for infants from third trimester to age 2 is multiplied by a factor of 10 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

1.2 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

For this HRA, the South Coast AQMD significance thresholds were deemed to be appropriate and the thresholds that were used for this project are shown below:

- Excess cancer risk of more than 10 in a million
- Non-cancer hazard index (chronic or acute) greater than 1.0

The methodology used in this HRA is consistent with the following South Coast AQMD and the OEHHA guidance documents:

- OEHHA. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* February, 2015.

Potential exposures to DPM from proposed project construction were evaluated for off-site sensitive receptors in close proximity to the site. Pollutant concentrations were estimated using an air dispersion model, and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds adopted for this HRA.

1.3 CONSTRUCTION EMISSIONS

Construction emissions were calculated as average daily emissions in pounds per day, using the proposed construction schedule and the latest version of California Emissions Estimation Model, known as CalEEMod Version 2020.4 (CAPCOA, 2021). Construction modeling considered years 2022-2024 for Phase 1 construction activities and years 2024-2026 to represent the worst-case Phase 2 through 4 activities for the most conservative results. DPM emissions were based on the CalEEMod construction runs, using annual exhaust PM_{10} construction emissions presented in pounds (lbs) per day.

The project was assumed to take place over 108 months (2348 workdays or 9.00 years) from the beginning of June 2022 through May 2031. The average daily emission rates from construction equipment used during the proposed project were determined by dividing the annual average emissions for each construction year by the number of construction days per year for each calendar year of construction (i.e., 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, and 2031). To account for construction from 2024 through 2031 under the program-level analysis of Phases 2 through 4, the emissions from the worst-case construction model were applied to Phases 2 and 3 as well as the two sets of activities for Phase 4. Because some activities from different phases would overlap, the 2024 emissions from Phase 1 were added with the worst-case emissions data from the Phase 2 through 4 model to represent the overlap in phases. The off-site hauling emission rates were adjusted to evaluate localized emissions from the 0.38-mile haul route within 1,000 feet of the project

site. The CalEEMod construction emissions output and emission rate calculations are provided in Appendix A of the HRA.

1.4 DISPERSION MODELING

Air quality modeling was performed using the AERMOD atmospheric dispersion model to assess the impact of emitted compounds on sensitive receptors near the project. The model is a steady state Gaussian plume model and is an approved model by South Coast AQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain. The on-site construction emissions for the project were modeled as poly-area sources. The off-site mobile sources were modeled as adjacent line volume sources. The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for the construction emission rates are those described in Section 1.3. Meteorological data obtained from the South Coast AQMD for the nearest representative meteorological station (Santa Monica Airport) with the five latest available years (2012 to 2016) of record were used to represent local weather conditions and prevailing winds. The prevailing wind direction at the Santa Monica Airport meteorological station is to the northeast, and the wind rose is provided in Appendix A.

The modeling analysis also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator (UTM) coordinates for each source location. In addition, digital elevation model (DEM) data for the area were obtained and included in the model runs to account for complex terrain. An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and diesel truck traffic, and an initial vertical dispersion parameter of 1.93 m was used, per California Air Resources Board (CARB) guidance (2000).

To determine contaminant impacts during construction hours, the model's Hour-By-Day-of-Week (HRDOW) scalar option was invoked to predict flagpole-level concentrations (0 m for ground-floor receptors and 6.1 m for 2nd-floor) for construction emissions generated between the hours of 7:00 AM and 4:00 PM with a 1-hour lunch break.

A unit emission rate of 1 gram per second was used for all modeling runs. The unit emission rates were proportioned over the poly-area sources for on-site construction emissions and divided between the volume sources for off-site hauling emissions. The maximum modeled concentrations from the output files were then multiplied by the emission rates calculated in Appendix A to obtain the maximum flagpole-level concentrations at the off-site maximum exposed receptor (MER). As shown in Figure 1, the MER is the multifamily residence north of the site along College Place. The MER location is the receptor location associated with the maximum AERMOD predicted DPM concentrations from the on-site emission source because the calculated on-site emission rates are approximately 2 orders of magnitude higher than the calculated off-site emission rates (see Appendix A). Therefore, the maximum concentrations associated with the on-site emission sources produce the highest overall ground-level MER concentrations and, consequently, highest calculated health risks.

The air dispersion model output for the emission sources is presented in Appendix B. The model output DPM concentrations from the construction emission sources are provided in Appendix C.

1.5 RISK CHARACTERIZATION

1.5.1 Carcinogenic Chemical Risk

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Therefore, any exposure will have some associated risk. The South Coast AQMD has established a maximum incremental cancer risk of 10 in a million (1×10^{-5} or 10×10^{-6}) for CEQA projects and the OEHHA also sets a typical risk management level as 10 in a million (OEHHA, 2015).

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$), averaged over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, the following dose algorithm was used to accommodate the unique exposures associated with each receptor type.

$$\text{Dose}_{\text{AIR,per age group}} = \left(C_{\text{air}} \times \text{EF} \times \left[\frac{\text{BR}}{\text{BW}}\right] \times \text{A} \times \text{CF}\right)$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days/365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)
A	=	inhalation absorption factor (default = 1)
CF	=	conversion factor ($1x10^{-6}$, µg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. The default value of 1 was used for this assessment. For residential receptors, the exposure frequency (EF) of 0.96 is used to represent 350 days per year to allow for a two-week period away from home each year (OEHHA, 2015). The 95th percentile daily breathing rates (BR/BW), exposure duration (ED), age sensitivity factors (ASFs), and fraction of time at home (FAH) for the various age groups are provided herein:

Age Groups	BR/BW (L/kg-day)	ED	ASF	FAH
Third trimester	361	0.25	10	0.85
0-2 age group	1,090	2	10	0.85
2-9 age group	861	7	3	0.72
2-16 age group	745	14	3	0.72
16-30 age group	335	14	1	0.73
16-70 age group	290	54	1	0.73

For construction analysis, the exposure duration spans the length of construction (e.g., 2348 workdays or 9.00 years). In addition, the construction duration each year was considered in the risk calculations to account for the number of days residents are exposed to construction emissions from 2022 through 2031. As the length of construction is longer than 2.25 years, the third trimester, 0-2, and 2-9 age bins apply to the construction analysis for the off-site residential receptors.

To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \text{FAH} \times \frac{\text{ED}}{AT}$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
CPF	=	cancer potency factor, chemical-specific $(\text{mg/kg-day})^{-1}$
ASF	=	age sensitivity factor, per age group
FAH	=	fraction of time at home, per age group (for residential receptors only)
ED	=	exposure duration (years)
AT	=	averaging time period over which exposure duration is averaged (70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. The excess lifetime cancer risks during the construction period to the maximally exposed resident were calculated based on the factors provided above. The cancer risks for each age group are summed to estimate the total cancer risk for each toxic chemical species. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of $1x10^6$ (i.e., 1 million).

The calculated results are provided in Appendix C.

1.5.2 Non-Carcinogenic Hazards

An evaluation was also conducted of the potential non-cancer effects of chronic chemical exposures. Adverse health effects are evaluated by comparing the annual receptor level (flagpole) concentration of each chemical compound with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

The hazard index approach was used to quantify non-carcinogenic impacts. The hazard index assumes that chronic sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). Target organs presented in regulatory guidance were used for each discrete chemical exposure. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. This ratio is summed for compounds affecting the same toxicological endpoint. A health hazard is presumed to exist where the total equals or exceeds one.

The chronic hazard analysis for DPM is provided in Appendix C. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of non-carcinogenic exposures.

1.6 CONSTRUCTION HRA RESULTS

The calculated results are provided in Appendix C and the results are summarized in Table 1.

TABLE 1. CONSTRUCTION RISK SUMMARY - UNMITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards
Maximum Exposed Receptor – Off-site Resident	19.0	0.082
Maximum Exposed Receptor – On-site Student	10.3	0.209
South Coast AQMD Threshold	10	1.0
Exceeds Threshold?	**Yes**	**No**

Note: Cancer risk calculated using 2015 OEHHA HRA guidance.

Cancer risk for the maximum exposed off-site resident from construction activities related to the Proposed Project were calculated to be 19.0 in a million and would exceed the 10 in a million-significance threshold. In addition, cancer risk for the maximum exposed on-site student receptor from construction activities be 10.3 in a million and would also exceed the 10 in a million-significance threshold. In accordance with the latest 2015 OEHHA guidance, the calculated total cancer risk conservatively assumes that the risk for the MER consists of a pregnant woman in the third trimester that subsequently gives birth to an infant during the approximately 108-month construction period; therefore, all calculated risk values were multiplied by a factor of 10. In addition, it was conservatively assumed that the residents were outdoors 8 hours a day and exposed to all of the daily construction emissions. For non-carcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for all the off-site sensitive receptors. Therefore, chronic non-carcinogenic hazards are less than significant.

Because cancer risk for the MER would exceed South Coast AQMD significance threshold due to construction activities associated with the proposed project, the following mitigation measure is proposed:

> **Mitigation Measure AQ-1:** The proposed project's construction contractors shall use equipment that meets the United States Environmental Protection Agency Tier 4 interim emissions standards for off-road diesel-powered construction equipment with more than 50 horsepower, unless it can be demonstrated that such equipment is not available. Any emissions control device used by the

contractor shall achieve emissions reductions that are no less than what could be achieved by a Tier 4 interim emissions standard for a similarly sized engine, as defined by the California Air Resources Board's regulations. The requirement to use Tier 4 interim equipment for engines over 50 horsepower shall be identified in construction bids.

- Have engines that meet either US EPA or California Air Resources Board (CARB) Tier 4 Interim emission standards. Ensure that all construction plans clearly show the selected emission reduction strategy for construction equipment over 50 horsepower.

- Maintain a list of all operating equipment in use on the project site for verification by the District. The construction equipment list shall state the makes, models, and number of construction equipment on-site. Ensure that all equipment shall be properly serviced and maintained in accordance with the manufacturer's recommendations.

- Communicate with all sub-contractors in contracts and construction documents that all non-essential idling of construction equipment is restricted to 5 minutes or less in compliance with California Air Resources Board Rule 2449 and is responsible for ensuring that this requirement is met.

Mitigation Measure AQ-1 would reduce the project's localized construction emissions, as shown in the following table. The results indicate that, with mitigation, cancer risk and the maximum annual $PM_{2.5}$ concentration would be less than the South Coast AQMD's significance thresholds for residential-based receptors. Therefore, the project would not expose off-site sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be *less than significant* with mitigation.

TABLE 2. CONSTRUCTION RISK SUMMARY - MITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards
Maximum Exposed Receptor – Off-site Resident	2.4	0.010
Maximum Exposed Receptor – On-site Student	1.4	0.029
South Coast AQMD Threshold	10	1.0
Exceeds Threshold?	**No**	**No**

Risks incorporate Mitigation Measure AQ-1, which includes using construction equipment which meets USEPA Tier 4 Interim engine requirements for equipment over 50 horsepower.
Note: Cancer risk calculated using 2015 OEHHA HRA guidance.

Figure 1 - Phase 1 Project Site and Offsite Receptor Locations

Map Source: Nearmap, 2021; Data: PlaceWorks, 2021

Figure 2 - Phase 2-4B Project Site and Offsite Receptor Locations

Map Source: Nearmap, 2021; Data: PlaceWorks, 2021

2. References

California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod). Version 2020.4. Prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

California Air Resources Board (CARB). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* Dated February 2015.

South Coast Air Quality Management District (South Coast AQMD). 2021, May 20 (accessed). 2012-2016. Meteorological Data Set for Santa Monica Airport Meteorological Station. http://www.aqmd.gov/home/air-quality/meteorological-data/data-for-aermod.

United States Environmental Protection Agency (USEPA). 2011. *Exposure Factors Handbook 2011 Edition (Final).* EPA/600/R-09/052F, 2011.

_____. 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

Appendix A. Emission Rate Calculations

	Number of Construction Days Per Year			Total Construction Days Per Year		
2022	6/1/2022	12/31/2022	153	1/1/2022	12/31/2022	260
2023	1/1/2023	12/31/2023	260	1/1/2023	12/31/2023	260
2024, P1	1/1/2024	8/31/2024	175	1/1/2024	12/31/2024	262
2024, P2-4	7/1/2024	12/31/2024	132	1/1/2024	12/31/2024	262
2025	1/1/2025	12/31/2025	261	1/1/2025	12/31/2025	261
2026	1/1/2026	12/31/2026	261	1/1/2026	12/31/2026	261
2027	1/1/2027	12/31/2027	261	1/1/2027	12/31/2027	261
2028	1/1/2028	12/31/2028	260	1/1/2028	12/31/2028	260
2029	1/1/2029	12/31/2029	261	1/1/2029	12/31/2029	261
2030	1/1/2030	12/31/2030	261	1/1/2030	12/31/2030	261
2031	1/1/2031	5/31/2031	108	1/1/2031	12/31/2031	261
		CONSTRUCTION DAYS	2348		**TOTAL DAYS**	2608

Onsite Construction PM10 Exhaust Emissions - Unmitigated Scenario [1]

Year	Annual PM10 Exhaust Emissions (Tons/Year)	Annual PM10 Exhaust Emissions (lbs/Year)	# of Construction Days/Year	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)	# of Workdays/ Year	Construction Duration[2]
2022	0.0460	91.98	153	0.60	7.51E-02	9.47E-03	260	0.59
2023	0.0923	184.62	260	0.71	8.88E-02	1.12E-02	260	1.00
2024, Phase 1	0.0322	64.44	175	0.37	4.60E-02	5.80E-03	262	0.67
2024, Phase 2	0.0519	103.70	132	0.79	9.82E-02	1.24E-02	262	0.50
2025	0.0689	137.80	261	0.53	6.60E-02	8.32E-03	261	1.00
2026	0.0796	159.28	261	0.61	7.63E-02	9.61E-03	261	1.00
2027	0.0689	137.80	261	0.53	6.60E-02	8.32E-03	261	1.00
2028	0.0796	159.28	260	0.61	7.66E-02	9.65E-03	260	1.00
2029	0.0689	137.80	261	0.53	6.60E-02	8.32E-03	261	1.00
2030	0.0796	159.28	261	0.61	7.63E-02	9.61E-03	261	1.00
2031	0.0103	20.64	108	0.19	2.39E-02	3.01E-03	261	0.41

Offsite Construction PM10 Exhaust Emissions - Unmitigated Scenario [1]

Year	Annual PM10 Exhaust Emissions (Tons/Year)	Annual PM10 Exhaust Emissions (lbs/Year)	# of Construction Days/Year	Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2022	0.0039	7.86	153	0.05	9.87E-04	1.23E-04	1.55E-05
2023	0.0022	4.40	260	0.02	3.25E-04	4.06E-05	5.12E-06
2024, Phase 1	0.0006	1.16	175	0.01	1.27E-04	1.59E-05	2.01E-06
2024, Phase 2	0.0024	4.78	132	0.04	6.96E-04	8.70E-05	1.10E-05
2025	0.0025	5.08	261	0.02	3.74E-04	4.67E-05	5.89E-06
2026	0.0030	6.06	261	0.02	4.46E-04	5.58E-05	7.03E-06
2027	0.0025	5.08	261	0.02	3.74E-04	4.67E-05	5.89E-06
2028	0.0030	6.06	260	0.02	4.48E-04	5.60E-05	7.05E-06
2029	0.0025	5.08	261	0.02	3.74E-04	4.67E-05	5.89E-06
2030	0.0030	6.06	261	0.02	4.46E-04	5.58E-05	7.03E-06
2031	0.0000	0.04	108	0.00	7.12E-06	8.89E-07	1.12E-07

Note: Emissions evenly distributed over 62 modeled volume sources.

Hauling Length (miles) [3]	20.0	miles
Haul Length within 1,000 ft of Site (mile) [4]	0.38	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [5]	8	hours

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

[3] Based on CalEEMod default 20 mile hauling distance.

[4] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances , are adjusted to evaluate emissions from the 0.51-mile route within 1,000 of the project site.

[5] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App C - Air Dispersion Model Output Files).

[6] Based on CalEEMod default 20 mile hauling distance.

PHASE 1 MODEL

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road	0.03	0.22	0.26	0.00		0.01	0.01		0.01	0.01
Total	0.03	0.22	0.26	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.07	0.08	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.07	0.08	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.07	0.00	0.07	0.03	0.00	0.03
Off-Road	0.04	0.48	0.26	0.00		0.02	0.02		0.02	0.02
Total	0.04	0.48	0.26	0.00	0.07	0.02	0.09	0.03	0.02	0.05

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.07	0.08	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.07	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.12	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.12	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.01	0.34	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.34	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.08	0.12	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.08	0.12	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.09	0.10	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.09	0.10	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total	0.00	0.02	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.9 Building Construction 1 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.18	1.61	1.82	0.00		0.08	0.08		0.07	0.07
Total	0.18	1.61	1.82	0.00		0.08	0.08		0.07	0.07

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.21	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01
Worker	0.04	0.03	0.45	0.00	0.13	0.00	0.14	0.04	0.00	0.04
Total	0.05	0.24	0.53	0.00	0.17	0.00	0.17	0.04	0.00	0.05

3.10 Building Construction and Fine Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.11	0.11	0.00		0.01	0.01		0.00	0.00
Total	0.01	0.11	0.11	0.00	0.00	0.01	0.01	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total	0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.11 Building Construction 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.02	0.18	0.20	0.00		0.01	0.01		0.01	0.01
Total	0.02	0.18	0.20	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.00	0.00
Total	0.01	0.03	0.06	0.00	0.02	0.00	0.02	0.01	0.00	0.01

3.11 Building Construction 2 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.05	0.44	0.53	0.00		0.02	0.02		0.02	0.02
Total	0.05	0.44	0.53	0.00		0.02	0.02		0.02	0.02

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.06	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.04	0.00	0.04	0.01	0.00	0.01
Total	0.01	0.07	0.14	0.00	0.05	0.00	0.05	0.01	0.00	0.01

3.12 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Archit. Coating	0.08					0.00	0.00		0.00	0.00
Off-Road	0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00
Total	0.09	0.01	0.02	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.13 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.02	0.20	0.31	0.00		0.01	0.01		0.01	0.01
Paving	0.00					0.00	0.00		0.00	0.00
Total	0.02	0.20	0.31	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.14 Finishing/Landscaping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.00	0.03	0.07	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.03	0.07	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PHASE 2-4B MODEL

3.2 Building and Asphalt Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.05	0.47	0.44	0.00		0.02	0.02		0.02	0.02
Total	0.05	0.47	0.44	0.00		0.02	0.02		0.02	0.02

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Building and Asphalt Demolition Debris Haul - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.03	0.00	0.03	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.4 Rough Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.10	0.00	0.10	0.05	0.00	0.05
Off-Road	0.05	0.55	0.48	0.00		0.02	0.02		0.02	0.02
Total	0.05	0.55	0.48	0.00	0.10	0.02	0.12	0.05	0.02	0.07

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.01	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.5 Rough Grading Soil Haul - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.30	0.08	0.00	0.03	0.00	0.04	0.01	0.00	0.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.30	0.08	0.00	0.03	0.00	0.04	0.01	0.00	0.01

3.6 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.02	0.15	0.18	0.00		0.01	0.01		0.01	0.01
Total	0.02	0.15	0.18	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.00	0.00
Total	0.01	0.03	0.06	0.00	0.02	0.00	0.02	0.01	0.00	0.01

3.6 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.18	1.63	2.10	0.00		0.07	0.07		0.06	0.06
Total	0.18	1.63	2.10	0.00		0.07	0.07		0.06	0.06

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.29	0.10	0.00	0.04	0.00	0.04	0.01	0.00	0.01
Worker	0.05	0.04	0.55	0.00	0.19	0.00	0.19	0.05	0.00	0.05
Total	0.06	0.33	0.65	0.00	0.23	0.00	0.23	0.06	0.00	0.06

3.6 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.04	0.40	0.51	0.00		0.02	0.02		0.02	0.02
Total	0.04	0.40	0.51	0.00		0.02	0.02		0.02	0.02

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.07	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker	0.01	0.01	0.13	0.00	0.05	0.00	0.05	0.01	0.00	0.01
Total	0.01	0.08	0.15	0.00	0.06	0.00	0.06	0.02	0.00	0.02

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Archit. Coating	0.27					0.00	0.00		0.00	0.00
Off-Road	0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00
Total	0.27	0.01	0.02	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8 Paving - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.02	0.18	0.31	0.00		0.01	0.01		0.01	0.01
Paving	0.00					0.00	0.00		0.00	0.00
Total	0.02	0.18	0.31	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9 Finishing/Landscaping - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.00	0.03	0.07	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.03	0.07	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Onsite Construction PM10 Exhaust Emissions - Mitigated Scenario [1]

Year	Annual PM10 Exhaust Emissions (Tons/Year)	Annual PM10 Exhaust Emissions (lbs/Year)	# of Construction Days/Year	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)	# of Workdays/ Year	Construction Duration[2]
2022	0.0076	15.12	153	0.10	1.24E-02	1.56E-03	260	0.59
2023	0.0122	24.30	260	0.09	1.17E-02	1.47E-03	260	1.00
2024, Phase 1	0.0038	7.60	175	0.04	5.43E-03	6.84E-04	262	0.67
2024, Phase 2	0.0039	7.80	132	0.06	7.39E-03	9.31E-04	262	0.50
2025	0.0103	20.60	261	0.08	9.87E-03	1.24E-03	261	1.00
2026	0.0075	14.90	261	0.06	7.14E-03	8.99E-04	261	1.00
2027	0.0103	20.60	261	0.08	9.87E-03	1.24E-03	261	1.00
2028	0.0075	14.90	260	0.06	7.16E-03	9.03E-04	260	1.00
2029	0.0103	20.60	261	0.08	9.87E-03	1.24E-03	261	1.00
2030	0.0075	14.90	261	0.06	7.14E-03	8.99E-04	261	1.00
2031	0.0010	1.98	108	0.02	2.29E-03	2.89E-04	261	0.41

Offsite Construction PM10 Exhaust Emissions - Mitigated Scenario [1]

Year	Annual PM10 Exhaust Emissions (Tons/Year)	Annual PM10 Exhaust Emissions (lbs/Year)	# of Construction Days/Year	Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2022	0.0039	7.86	153	0.05	9.87E-04	1.23E-04	1.55E-05
2023	0.0022	4.40	260	0.02	3.25E-04	4.06E-05	5.12E-06
2024, Phase 1	0.0006	1.16	175	0.01	1.27E-04	1.59E-05	2.01E-06
2024, Phase 2	0.0024	4.78	132	0.04	6.96E-04	8.70E-05	1.10E-05
2025	0.0025	5.08	261	0.02	3.74E-04	4.67E-05	5.89E-06
2026	0.0030	6.06	261	0.02	4.46E-04	5.58E-05	7.03E-06
2027	0.0025	5.08	261	0.02	3.74E-04	4.67E-05	5.89E-06
2028	0.0030	6.06	260	0.02	4.48E-04	5.60E-05	7.05E-06
2029	0.0025	5.08	261	0.02	3.74E-04	4.67E-05	5.89E-06
2030	0.0030	6.06	261	0.02	4.46E-04	5.58E-05	7.03E-06
2031	0.0000	0.04	108	0.00	7.12E-06	8.89E-07	1.12E-07

Note: Emissions evenly distributed over 62 modeled volume sources.

Hauling Length (miles) [3]	20.0	miles
Haul Length within 1,000 ft of Site (mile) [4]	0.38	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [5]	8	hours

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

[3] Based on CalEEMod default 20 mile hauling distance.

[4] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances , are adjusted to evaluate emissions from the 0.51-mile route within 1,000 of the project site.

[5] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App C - Air Dispersion Model Output Files).

PHASE 1 MODEL

3.2 Building and Asphalt Demolition - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road	0.01	0.24	0.44	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.24	0.44	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Building and Asphalt Demolition Debris Haul - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4 Building and Asphalt Demolition and Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.00	0.07	0.12	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.07	0.12	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5 Rough Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.07	0.00	0.07	0.03	0.00	0.03
Off-Road	0.01	0.18	0.35	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.18	0.35	0.00	0.07	0.00	0.07	0.03	0.00	0.03

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.6 Rough Grading Soil Import - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.05	0.08	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.05	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.12	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.12	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.7 Rough Grading Soil Export - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.01	0.34	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.34	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01

3.8 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.00	0.08	0.13	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.08	0.13	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9 Building Construction 1 - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.00	0.06	0.11	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.06	0.11	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total	0.00	0.02	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.9 Building Construction 1 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.08	1.20	2.02	0.00		0.01	0.01		0.01	0.01
Total	0.08	1.20	2.02	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.21	0.08	0.00	0.03	0.00	0.03	0.01	0.00	0.01
Worker	0.04	0.03	0.45	0.00	0.13	0.00	0.14	0.04	0.00	0.04
Total	0.05	0.24	0.53	0.00	0.17	0.00	0.17	0.04	0.00	0.05

3.10 Building Construction and Fine Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.07	0.13	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.07	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total	0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.11 Building Construction 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.13	0.23	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.13	0.23	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.00	0.00
Total	0.01	0.03	0.06	0.00	0.02	0.00	0.02	0.01	0.00	0.01

3.11 Building Construction 2 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.02	0.35	0.59	0.00		0.00	0.00		0.00	0.00
Total	0.02	0.35	0.59	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.06	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.04	0.00	0.04	0.01	0.00	0.01
Total	0.01	0.07	0.14	0.00	0.05	0.00	0.05	0.01	0.00	0.01

3.12 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Archit. Coating	0.08					0.00	0.00		0.00	0.00
Off-Road	0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00
Total	0.08	0.01	0.02	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.13 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.22	0.37	0.00		0.00	0.00		0.00	0.00
Paving	0.00					0.00	0.00		0.00	0.00
Total	0.01	0.22	0.37	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.14 Finishing/Landscaping - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.00	0.05	0.09	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.05	0.09	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PHASE 2-4B MODEL

3.2 Building and Asphalt Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.31	0.56	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.31	0.56	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3 Building and Asphalt Demolition Debris Haul - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.03	0.00	0.03	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.4 Rough Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.10	0.00	0.10	0.05	0.00	0.05
Off-Road	0.02	0.34	0.62	0.00		0.00	0.00		0.00	0.00
Total	0.02	0.34	0.62	0.00	0.10	0.00	0.10	0.05	0.00	0.05

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.01	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00

3.5 Rough Grading Soil Haul - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.30	0.08	0.00	0.03	0.00	0.04	0.01	0.00	0.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.30	0.08	0.00	0.03	0.00	0.04	0.01	0.00	0.01

3.6 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.12	0.20	0.00		0.00	0.00		0.00	0.00
Total	0.01	0.12	0.20	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.05	0.00	0.02	0.00	0.02	0.00	0.00	0.00
Total	0.01	0.03	0.06	0.00	0.02	0.00	0.02	0.01	0.00	0.01

3.6 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.09	1.38	2.35	0.00		0.01	0.01		0.01	0.01
Total	0.09	1.38	2.35	0.00		0.01	0.01		0.01	0.01

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.29	0.10	0.00	0.04	0.00	0.04	0.01	0.00	0.01
Worker	0.05	0.04	0.55	0.00	0.19	0.00	0.19	0.05	0.00	0.05
Total	0.06	0.33	0.65	0.00	0.23	0.00	0.23	0.06	0.00	0.06

3.6 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.02	0.34	0.58	0.00		0.00	0.00		0.00	0.00
Total	0.02	0.34	0.58	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.07	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker	0.01	0.01	0.13	0.00	0.05	0.00	0.05	0.01	0.00	0.01
Total	0.01	0.08	0.15	0.00	0.06	0.00	0.06	0.02	0.00	0.02

3.7 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Archit. Coating	0.27					0.00	0.00		0.00	0.00
Off-Road	0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00
Total	0.27	0.01	0.02	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.8 Paving - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.01	0.22	0.37	0.00		0.00	0.00		0.00	0.00
Paving	0.00					0.00	0.00		0.00	0.00
Total	0.01	0.22	0.37	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9 Finishing/Landscaping - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Off-Road	0.00	0.05	0.09	0.00		0.00	0.00		0.00	0.00
Total	0.00	0.05	0.09	0.00		0.00	0.00		0.00	0.00

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Category										
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix B. Air Dispersion Model Output

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for   63 Source(s),
  for Total of   1 Urban Area(s):
  Urban Population = 10040000.0 ; Urban Roughness Length = 1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes: 63 Source(s);   2 Source Group(s); and   160 Receptor(s)

               with: 0 POINT(s), including
                          0 POINTCAP(s) and   0 POINTHOR(s)
                and: 62 VOLUME source(s)
                and: 1 AREA type source(s)
                and: 0 LINE source(s)
                and: 0 RLINE/RLINEXT source(s)
                and: 0 OPENPIT source(s)
                and: 0 BUOYANT LINE source(s) with   0 line(s)

```
**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  16216

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    53.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   SMM-06.err
**File for Summary of Results:   SMM-06.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.16129E-01	331183.6	3766360.3	34.1	4.15	4.66	3.26	YES	HRDOW
L0000002	0	0.16129E-01	331192.2	3766355.2	34.0	4.15	4.66	3.26	YES	HRDOW
L0000003	0	0.16129E-01	331200.9	3766350.2	33.8	4.15	4.66	3.26	YES	HRDOW
L0000004	0	0.16129E-01	331209.5	3766345.1	33.6	4.15	4.66	3.26	YES	HRDOW
L0000005	0	0.16129E-01	331218.1	3766340.0	33.3	4.15	4.66	3.26	YES	HRDOW
L0000006	0	0.16129E-01	331226.7	3766335.0	33.0	4.15	4.66	3.26	YES	HRDOW
L0000007	0	0.16129E-01	331235.4	3766329.9	32.8	4.15	4.66	3.26	YES	HRDOW
L0000008	0	0.16129E-01	331244.0	3766324.8	32.5	4.15	4.66	3.26	YES	HRDOW
L0000009	0	0.16129E-01	331252.6	3766319.8	32.1	4.15	4.66	3.26	YES	HRDOW
L0000010	0	0.16129E-01	331261.3	3766314.7	31.5	4.15	4.66	3.26	YES	HRDOW
L0000011	0	0.16129E-01	331269.9	3766309.6	30.8	4.15	4.66	3.26	YES	HRDOW
L0000012	0	0.16129E-01	331278.5	3766304.6	30.1	4.15	4.66	3.26	YES	HRDOW
L0000013	0	0.16129E-01	331287.2	3766299.5	29.5	4.15	4.66	3.26	YES	HRDOW
L0000014	0	0.16129E-01	331295.8	3766294.4	29.1	4.15	4.66	3.26	YES	HRDOW
L0000015	0	0.16129E-01	331304.4	3766289.3	28.7	4.15	4.66	3.26	YES	HRDOW
L0000016	0	0.16129E-01	331313.1	3766284.3	28.4	4.15	4.66	3.26	YES	HRDOW
L0000017	0	0.16129E-01	331321.7	3766279.2	28.2	4.15	4.66	3.26	YES	HRDOW
L0000018	0	0.16129E-01	331330.3	3766274.1	27.9	4.15	4.66	3.26	YES	HRDOW
L0000019	0	0.16129E-01	331339.0	3766269.1	27.6	4.15	4.66	3.26	YES	HRDOW
L0000020	0	0.16129E-01	331347.6	3766264.0	27.2	4.15	4.66	3.26	YES	HRDOW
L0000021	0	0.16129E-01	331356.2	3766258.9	26.9	4.15	4.66	3.26	YES	HRDOW
L0000022	0	0.16129E-01	331364.9	3766253.9	26.7	4.15	4.66	3.26	YES	HRDOW
L0000023	0	0.16129E-01	331373.5	3766248.8	26.6	4.15	4.66	3.26	YES	HRDOW
L0000024	0	0.16129E-01	331382.1	3766243.7	26.4	4.15	4.66	3.26	YES	HRDOW
L0000025	0	0.16129E-01	331386.7	3766235.6	26.1	4.15	4.66	3.26	YES	HRDOW
L0000026	0	0.16129E-01	331389.3	3766225.9	25.8	4.15	4.66	3.26	YES	HRDOW
L0000027	0	0.16129E-01	331392.0	3766216.2	25.7	4.15	4.66	3.26	YES	HRDOW
L0000028	0	0.16129E-01	331394.6	3766206.6	25.8	4.15	4.66	3.26	YES	HRDOW
L0000029	0	0.16129E-01	331397.3	3766196.9	25.9	4.15	4.66	3.26	YES	HRDOW
L0000030	0	0.16129E-01	331399.0	3766187.2	25.8	4.15	4.66	3.26	YES	HRDOW
L0000031	0	0.16129E-01	331398.3	3766177.2	25.4	4.15	4.66	3.26	YES	HRDOW
L0000032	0	0.16129E-01	331397.7	3766167.2	25.0	4.15	4.66	3.26	YES	HRDOW
L0000033	0	0.16129E-01	331397.0	3766157.2	24.6	4.15	4.66	3.26	YES	HRDOW
L0000034	0	0.16129E-01	331396.3	3766147.2	24.2	4.15	4.66	3.26	YES	HRDOW
L0000035	0	0.16129E-01	331395.6	3766137.3	23.9	4.15	4.66	3.26	YES	HRDOW
L0000036	0	0.16129E-01	331394.9	3766127.3	23.7	4.15	4.66	3.26	YES	HRDOW
L0000037	0	0.16129E-01	331394.2	3766117.3	23.5	4.15	4.66	3.26	YES	HRDOW
L0000038	0	0.16129E-01	331389.3	3766108.9	22.6	4.15	4.66	3.26	YES	HRDOW
L0000039	0	0.16129E-01	331383.2	3766101.0	21.3	4.15	4.66	3.26	YES	HRDOW
L0000040	0	0.16129E-01	331377.1	3766093.0	20.8	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.16129E-01	331371.0	3766085.1	20.4	4.15	4.66	3.26	YES	HRDOW
L0000042	0	0.16129E-01	331364.9	3766077.1	20.1	4.15	4.66	3.26	YES	HRDOW
L0000043	0	0.16129E-01	331358.9	3766069.2	19.8	4.15	4.66	3.26	YES	HRDOW
L0000044	0	0.16129E-01	331352.8	3766061.2	19.4	4.15	4.66	3.26	YES	HRDOW
L0000045	0	0.16129E-01	331346.7	3766053.2	19.0	4.15	4.66	3.26	YES	HRDOW
L0000046	0	0.16129E-01	331340.6	3766045.3	18.7	4.15	4.66	3.26	YES	HRDOW
L0000047	0	0.16129E-01	331334.6	3766037.3	18.4	4.15	4.66	3.26	YES	HRDOW
L0000048	0	0.16129E-01	331328.5	3766029.4	17.6	4.15	4.66	3.26	YES	HRDOW
L0000049	0	0.16129E-01	331322.4	3766021.4	17.1	4.15	4.66	3.26	YES	HRDOW
L0000050	0	0.16129E-01	331316.3	3766013.5	16.6	4.15	4.66	3.26	YES	HRDOW
L0000051	0	0.16129E-01	331310.2	3766005.5	16.0	4.15	4.66	3.26	YES	HRDOW
L0000052	0	0.16129E-01	331304.2	3765997.6	15.2	4.15	4.66	3.26	YES	HRDOW
L0000053	0	0.16129E-01	331298.1	3765989.6	14.6	4.15	4.66	3.26	YES	HRDOW
L0000054	0	0.16129E-01	331292.0	3765981.7	14.0	4.15	4.66	3.26	YES	HRDOW
L0000055	0	0.16129E-01	331285.9	3765973.7	13.1	4.15	4.66	3.26	YES	HRDOW
L0000056	0	0.16129E-01	331279.9	3765965.8	11.7	4.15	4.66	3.26	YES	HRDOW
L0000057	0	0.16129E-01	331273.8	3765957.8	10.4	4.15	4.66	3.26	YES	HRDOW
L0000058	0	0.16129E-01	331267.7	3765949.8	10.0	4.15	4.66	3.26	YES	HRDOW
L0000059	0	0.16129E-01	331261.6	3765941.9	9.3	4.15	4.66	3.26	YES	HRDOW
L0000060	0	0.16129E-01	331255.5	3765933.9	8.2	4.15	4.66	3.26	YES	HRDOW
L0000061	0	0.16129E-01	331249.5	3765926.0	6.9	4.15	4.66	3.26	YES	HRDOW
L0000062	0	0.16129E-01	331243.4	3765918.0	6.6	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1	0	0.43115E-04	331169.4	3766373.7	34.3	4.15	9	0.00	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ONSITE	1 ,
OFFSITE	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 ,
	L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 ,
	L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 ,
	L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 ,
	L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 , L0000040 ,
	L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 , L0000048 ,
	L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 , L0000056 ,
	L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	10040000.	1 , L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 ,
		L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 ,
		L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 ,
		L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 ,
		L0000032 , L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 ,
		L0000040 , L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 ,
		L0000048 , L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 ,
		L0000056 , L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 1   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 TO L0000062   ; SOURCE TYPE = VOLUME   :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
					DAY OF WEEK = WEEKDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SATURDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SUNDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file: ..\metdata-53m\KSMO_v9.SFC   Met Version: 16216
  Profile file: ..\metdata-53m\KSMO_v9.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:   93197   Upper air station no.:   3190
                Name: UNKNOWN   Name: UNKNOWN
                Year: 2012   Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	131.	10.1	283.1	2.0
12	01	01	1	02	-7.6	0.121	-9.000	-9.000	-999.	101.	21.3	0.17	2.20	1.00	1.35	232.	10.1	282.0	2.0
12	01	01	1	03	-3.3	0.082	-9.000	-9.000	-999.	57.	15.3	0.17	2.20	1.00	0.86	46.	10.1	280.9	2.0
12	01	01	1	04	-5.4	0.102	-9.000	-9.000	-999.	79.	17.9	0.17	2.20	1.00	1.14	82.	10.1	281.4	2.0
12	01	01	1	05	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	205.	10.1	281.4	2.0
12	01	01	1	06	-7.4	0.119	-9.000	-9.000	-999.	99.	20.9	0.17	2.20	1.00	1.33	254.	10.1	280.9	2.0
12	01	01	1	07	-4.6	0.094	-9.000	-9.000	-999.	70.	16.6	0.17	2.20	1.00	1.04	39.	10.1	279.2	2.0
12	01	01	1	08	-16.0	0.197	-9.000	-9.000	-999.	209.	43.0	0.17	2.20	0.54	2.10	63.	10.1	282.0	2.0
12	01	01	1	09	36.8	0.255	0.339	0.005	38.	309.	-40.8	0.17	2.20	0.31	2.27	33.	10.1	292.0	2.0
12	01	01	1	10	102.6	0.234	0.691	0.006	117.	271.	-11.3	0.17	2.20	0.23	1.79	204.	10.1	289.2	2.0
12	01	01	1	11	154.6	0.178	1.118	0.005	327.	181.	-3.3	0.17	2.20	0.20	1.11	119.	10.1	296.4	2.0
12	01	01	1	12	182.0	0.295	1.459	0.005	618.	385.	-12.8	0.17	2.20	0.19	2.30	76.	10.1	300.9	2.0
12	01	01	1	13	175.0	0.355	1.686	0.005	991.	507.	-23.0	0.17	2.20	0.19	2.98	179.	10.1	293.8	2.0
12	01	01	1	14	148.1	0.374	1.737	0.005	1282.	549.	-31.9	0.17	2.20	0.20	3.25	211.	10.1	292.0	2.0
12	01	01	1	15	98.0	0.291	1.572	0.005	1436.	380.	-22.7	0.17	2.20	0.23	2.44	231.	10.1	290.9	2.0
12	01	01	1	16	28.2	0.303	1.044	0.005	1460.	400.	-89.0	0.17	2.20	0.32	2.85	217.	10.1	289.2	2.0
12	01	01	1	17	-22.4	0.259	-9.000	-9.000	-999.	317.	73.7	0.17	2.20	0.58	2.73	226.	10.1	287.0	2.0
12	01	01	1	18	-8.7	0.131	-9.000	-9.000	-999.	124.	23.3	0.17	2.20	1.00	1.45	230.	10.1	286.4	2.0
12	01	01	1	19	-13.2	0.163	-9.000	-9.000	-999.	157.	29.4	0.17	2.20	1.00	1.77	225.	10.1	285.9	2.0
12	01	01	1	20	-5.7	0.106	-9.000	-9.000	-999.	83.	18.6	0.17	2.20	1.00	1.18	182.	10.1	284.9	2.0
12	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.17	2.20	1.00	0.00	0.	10.1	284.2	2.0
12	01	01	1	22	-7.3	0.119	-9.000	-9.000	-999.	99.	21.1	0.17	2.20	1.00	1.33	202.	10.1	285.4	2.0
12	01	01	1	23	-6.0	0.108	-9.000	-9.000	-999.	86.	19.1	0.17	2.20	1.00	1.21	251.	10.1	284.9	2.0
12	01	01	1	24	-5.4	0.102	-9.000	-9.000	-999.	78.	18.0	0.17	2.20	1.00	1.14	224.	10.1	284.2	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.1	1	131.	1.26	283.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: ONSITE   ***

INCLUDING SOURCE(S):   1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC		X-COORD (M)	Y-COORD (M)	CONC
331155.82	3766750.02	0.41380		331008.32	3766395.70	1.86747
331048.43	3766366.09	2.45368		331093.81	3766296.36	1.45782
331179.30	3766310.69	1.39829		330868.50	3766337.26	0.56365
330827.28	3766361.37	0.43600		330897.28	3766381.59	0.69865
330945.49	3766348.15	0.94122		330917.50	3766286.71	0.64678
330933.05	3766257.16	0.62392		330975.05	3766268.05	0.79374
331097.93	3766206.61	0.58304		331140.70	3766205.05	0.50829
331150.81	3766227.61	0.60232		331066.04	3766128.84	0.33056
331050.49	3766156.06	0.41696		331108.04	3766129.61	0.30844
331129.81	3766068.17	0.20707		331168.70	3766096.95	0.21814
331200.90	3766209.90	0.40027		331278.36	3766261.05	0.32593
331268.71	3766178.62	0.21892		330936.16	3766491.40	0.80157
330833.75	3766481.90	0.38419		330805.25	3766491.05	0.31812
330816.16	3766527.30	0.30090		330856.70	3766558.34	0.33648
331208.38	3766614.84	4.34000	Res Onsite MER	330938.53	3766574.42	0.52630
331039.85	3766640.66	0.54255		330908.33	3766666.96	0.25201
330888.85	3766645.04	0.26082		331270.24	3766756.90	0.77060
331172.48	3766738.02	0.50698		331056.34	3766689.67	0.38150
331292.37	3766805.79	0.52875		331236.72	3765997.67	0.10900
331325.18	3766091.36	0.10786		331214.97	3766171.31	0.28085
331222.87	3766130.38	0.21363		331204.20	3766077.00	0.17556
330920.76	3766632.61	0.32771		330939.62	3766709.25	0.19821
331350.25	3766700.96	2.05255		331488.82	3766162.03	0.05676
331595.98	3766073.19	0.03197		331655.66	3766029.10	0.02520
331470.42	3766037.93	0.05006		331459.64	3765992.85	0.04801
331409.66	3765956.09	0.05372		331422.89	3766028.13	0.05989
331344.48	3765999.71	0.07585		331802.76	3766199.80	0.01857
331607.69	3766017.55	0.02903		331340.85	3766796.42	0.74186
331307.10	3766905.86	0.25355		331378.31	3766924.27	0.29758
331411.15	3766915.68	0.34647		331397.34	3766820.53	0.68363
331430.80	3766834.95	0.64446		331451.06	3766857.97	0.55919
331304.03	3766839.56	0.41757		331322.50	3766971.48	0.17649
331428.97	3766954.49	0.28340		331469.95	3766951.99	0.31990
331553.92	3766868.02	0.57086		331607.90	3766843.53	0.58976
331557.42	3766906.01	0.45967		331613.40	3766883.02	0.50383
331417.62	3765825.72	0.04055		331506.12	3765728.59	0.02707
331599.65	3765800.54	0.02300		331648.57	3765769.60	0.01950
331673.04	3765839.39	0.01964		331609.72	3765845.87	0.02355
331705.41	3765918.54	0.01939		331785.28	3765871.05	0.01484
331745.22	3765800.06	0.01587		330994.52	3767067.20	0.04327

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331155.82	3766750.02	0.38596	331008.32	3766395.70	1.94349
331048.43	3766366.09	2.54293	331093.81	3766296.36	1.47870
331179.30	3766310.69	1.29625	330868.50	3766337.26	0.57966
330827.28	3766361.37	0.44771	330897.28	3766381.59	0.71806
330945.49	3766348.15	0.97297	330917.50	3766286.71	0.66934
330933.05	3766257.16	0.64634	330975.05	3766268.05	0.82158
331097.93	3766206.61	0.60372	331140.70	3766205.05	0.52761
331150.81	3766227.61	0.62314	331066.04	3766128.84	0.34276
331050.49	3766156.06	0.43287	331108.04	3766129.61	0.32025
331129.81	3766068.17	0.21432	331168.70	3766096.95	0.22561
331200.90	3766209.90	0.41357	331278.36	3766261.05	0.32906
331268.71	3766178.62	0.22368	330936.16	3766491.40	0.81246
330833.75	3766481.90	0.39106	330805.25	3766491.05	0.32269
330816.16	3766527.30	0.30453	330856.70	3766558.34	0.33941
331208.38	3766614.84	3.64478	330938.53	3766574.42	0.51455
331039.85	3766640.66	0.49284	330908.33	3766666.96	0.23876
330888.85	3766645.04	0.25628	331270.24	3766756.90	0.72268
331172.48	3766738.02	0.47217	331056.34	3766689.67	0.35128
331292.37	3766805.79	0.50264	331236.72	3765997.67	0.11221
331325.18	3766091.36	0.11086	331214.97	3766171.31	0.29046
331222.87	3766130.38	0.22019	331204.20	3766077.00	0.18073
330920.76	3766632.61	0.32427	330939.62	3766709.25	0.18510
331350.25	3766700.96	1.92401	331488.82	3766162.03	0.05184
331595.98	3766073.19	0.03228	331655.66	3766029.10	0.02529
331470.42	3766037.93	0.04926	331459.64	3765992.85	0.04815
331409.66	3765956.09	0.05441	331422.89	3766028.13	0.06025
331344.48	3765999.71	0.07748	331802.76	3766199.80	0.01719
331607.69	3766017.55	0.02857	331340.85	3766796.42	0.70448
331307.10	3766905.86	0.24469	331378.31	3766924.27	0.28775
331411.15	3766915.68	0.33499	331397.34	3766820.53	0.65418
331430.80	3766834.95	0.61899	331451.06	3766857.97	0.53894
331304.03	3766839.56	0.39913	331322.50	3766971.48	0.17141
331428.97	3766954.49	0.27489	331469.95	3766951.99	0.31044
331553.92	3766868.02	0.55364	331607.90	3766843.53	0.57334
331557.42	3766906.01	0.44651	331613.40	3766883.02	0.49033
331417.62	3765825.72	0.04094	331506.12	3765728.59	0.02719
331599.65	3765800.54	0.02275	331648.57	3765769.60	0.01941

331673.04	3765839.39	0.01867	331609.72	3765845.87	0.02235
331705.41	3765918.54	0.01829	331785.28	3765871.05	0.01429
331745.22	3765800.06	0.01521	330994.52	3767067.20	0.04200

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331155.82	3766750.02	0.07411	331008.32	3766395.70	0.30733
331048.43	3766366.09	0.45913	331093.81	3766296.36	0.77394
331179.30	3766310.69	3.41084	330868.50	3766337.26	0.16245
330827.28	3766361.37	0.13355	330897.28	3766381.59	0.17246
330945.49	3766348.15	0.23279	330917.50	3766286.71	0.21664
330933.05	3766257.16	0.23833	330975.05	3766268.05	0.29738
331097.93	3766206.61	0.62488	331140.70	3766205.05	0.84399
331150.81	3766227.61	1.00770	331066.04	3766128.84	0.46581
331050.49	3766156.06	0.43336	331108.04	3766129.61	0.59520
331129.81	3766068.17	0.67764	331168.70	3766096.95	0.86757
331200.90	3766209.90	1.36192	331278.36	3766261.05	5.59873
331268.71	3766178.62	1.96606	330936.16	3766491.40	0.15443
330833.75	3766481.90	0.11028	330805.25	3766491.05	0.09837
330816.16	3766527.30	0.09424	330856.70	3766558.34	0.09811
331208.38	3766614.84	0.17468	330938.53	3766574.42	0.11670
331039.85	3766640.66	0.09744	330908.33	3766666.96	0.07751
330888.85	3766645.04	0.08248	331270.24	3766756.90	0.08289
331172.48	3766738.02	0.07780	331056.34	3766689.67	0.08133
331292.37	3766805.79	0.06872	331236.72	3765997.67	2.98900
331325.18	3766091.36	6.11926	331214.97	3766171.31	1.27321
331222.87	3766130.38	1.27229	331204.20	3766077.00	1.16836
330920.76	3766632.61	0.09295	330939.62	3766709.25	0.05996
331350.25	3766700.96	0.15861	331488.82	3766162.03	3.02103
331595.98	3766073.19	0.62448	331655.66	3766029.10	0.28208
331470.42	3766037.93	1.39557	331459.64	3765992.85	1.00687
331409.66	3765956.09	1.18258	331422.89	3766028.13	2.57576
331344.48	3765999.71	8.25026	331802.76	3766199.80	0.24155
331607.69	3766017.55	0.32658	331340.85	3766796.42	0.08471
331307.10	3766905.86	0.04716	331378.31	3766924.27	0.05191
331411.15	3766915.68	0.05767	331397.34	3766820.53	0.08540
331430.80	3766834.95	0.08670	331451.06	3766857.97	0.08161
331304.03	3766839.56	0.06108	331322.50	3766971.48	0.03881
331428.97	3766954.49	0.05196	331469.95	3766951.99	0.05827
331553.92	3766868.02	0.10452	331607.90	3766843.53	0.12967

331557.42	3766906.01	0.08695	331613.40	3766883.02	0.10960
331417.62	3765825.72	0.33324	331506.12	3765728.59	0.14232
331599.65	3765800.54	0.12337	331648.57	3765769.60	0.09889
331673.04	3765839.39	0.09996	331609.72	3765845.87	0.13467
331705.41	3765918.54	0.10456	331785.28	3765871.05	0.06551
331745.22	3765800.06	0.07061	330994.52	3767067.20	0.02215

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331155.82	3766750.02	0.06783	331008.32	3766395.70	0.29731
331048.43	3766366.09	0.43624	331093.81	3766296.36	0.73442
331179.30	3766310.69	2.69900	330868.50	3766337.26	0.15824
330827.28	3766361.37	0.13213	330897.28	3766381.59	0.16760
330945.49	3766348.15	0.22641	330917.50	3766286.71	0.21280
330933.05	3766257.16	0.23330	330975.05	3766268.05	0.28836
331097.93	3766206.61	0.60402	331140.70	3766205.05	0.81607
331150.81	3766227.61	0.97430	331066.04	3766128.84	0.45639
331050.49	3766156.06	0.41955	331108.04	3766129.61	0.57812
331129.81	3766068.17	0.64036	331168.70	3766096.95	0.81181
331200.90	3766209.90	1.30390	331278.36	3766261.05	4.17563
331268.71	3766178.62	1.79240	330936.16	3766491.40	0.14582
330833.75	3766481.90	0.10719	330805.25	3766491.05	0.09495
330816.16	3766527.30	0.09083	330856.70	3766558.34	0.09345
331208.38	3766614.84	0.15664	330938.53	3766574.42	0.10644
331039.85	3766640.66	0.08760	330908.33	3766666.96	0.06881
330888.85	3766645.04	0.07518	331270.24	3766756.90	0.07848
331172.48	3766738.02	0.07165	331056.34	3766689.67	0.07335
331292.37	3766805.79	0.06580	331236.72	3765997.67	2.37303
331325.18	3766091.36	4.63651	331214.97	3766171.31	1.20483
331222.87	3766130.38	1.17468	331204.20	3766077.00	1.06289
330920.76	3766632.61	0.08510	330939.62	3766709.25	0.05476
331350.25	3766700.96	0.14839	331488.82	3766162.03	2.54222
331595.98	3766073.19	0.55195	331655.66	3766029.10	0.24777
331470.42	3766037.93	1.17444	331459.64	3765992.85	0.84257
331409.66	3765956.09	0.97311	331422.89	3766028.13	2.06374
331344.48	3765999.71	5.49289	331802.76	3766199.80	0.22852
331607.69	3766017.55	0.28695	331340.85	3766796.42	0.08079
331307.10	3766905.86	0.04574	331378.31	3766924.27	0.05047
331411.15	3766915.68	0.05614	331397.34	3766820.53	0.08237
331430.80	3766834.95	0.08394	331451.06	3766857.97	0.07927
331304.03	3766839.56	0.05875	331322.50	3766971.48	0.03787
331428.97	3766954.49	0.05072	331469.95	3766951.99	0.05686
331553.92	3766868.02	0.10145	331607.90	3766843.53	0.12610

331557.42	3766906.01	0.08478	331613.40	3766883.02	0.10674
331417.62	3765825.72	0.29704	331506.12	3765728.59	0.12860
331599.65	3765800.54	0.10897	331648.57	3765769.60	0.08700
331673.04	3765839.39	0.08865	331609.72	3765845.87	0.11855
331705.41	3765918.54	0.09361	331785.28	3765871.05	0.05923
331745.22	3765800.06	0.06301	330994.52	3767067.20	0.02093

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
ONSITE	1ST HIGHEST VALUE IS	4.34000 AT	(331208.38,	3766614.84,	42.38,	137.30,	0.00)	DC	
	2ND HIGHEST VALUE IS	3.64478 AT	(331208.38,	3766614.84,	42.38,	137.30,	6.10)	DC	
	3RD HIGHEST VALUE IS	2.54293 AT	(331048.43,	3766366.09,	28.24,	28.24,	6.10)	DC	
	4TH HIGHEST VALUE IS	2.45368 AT	(331048.43,	3766366.09,	28.24,	28.24,	0.00)	DC	
	5TH HIGHEST VALUE IS	2.05255 AT	(331350.25,	3766700.96,	48.61,	137.30,	0.00)	DC	
	6TH HIGHEST VALUE IS	1.94349 AT	(331008.32,	3766395.70,	25.40,	137.02,	6.10)	DC	
	7TH HIGHEST VALUE IS	1.92401 AT	(331350.25,	3766700.96,	48.61,	137.30,	6.10)	DC	
	8TH HIGHEST VALUE IS	1.86747 AT	(331008.32,	3766395.70,	25.40,	137.02,	0.00)	DC	
	9TH HIGHEST VALUE IS	1.47870 AT	(331093.81,	3766296.36,	29.31,	29.31,	6.10)	DC	
	10TH HIGHEST VALUE IS	1.45782 AT	(331093.81,	3766296.36,	29.31,	29.31,	0.00)	DC	
OFFSITE	1ST HIGHEST VALUE IS	8.25026 AT	(331344.48,	3765999.71,	20.97,	28.01,	0.00)	DC	
	2ND HIGHEST VALUE IS	6.11926 AT	(331325.18,	3766091.36,	20.16,	52.86,	0.00)	DC	
	3RD HIGHEST VALUE IS	5.59873 AT	(331278.36,	3766261.05,	29.05,	51.19,	0.00)	DC	
	4TH HIGHEST VALUE IS	5.49289 AT	(331344.48,	3765999.71,	20.97,	28.01,	6.10)	DC	
	5TH HIGHEST VALUE IS	4.63651 AT	(331325.18,	3766091.36,	20.16,	52.86,	6.10)	DC	
	6TH HIGHEST VALUE IS	4.17563 AT	(331278.36,	3766261.05,	29.05,	51.19,	6.10)	DC	
	7TH HIGHEST VALUE IS	3.41084 AT	(331179.30,	3766310.69,	32.50,	32.50,	0.00)	DC	
	8TH HIGHEST VALUE IS	3.02103 AT	(331488.82,	3766162.03,	37.43,	51.20,	0.00)	DC	
	9TH HIGHEST VALUE IS	2.98900 AT	(331236.72,	3765997.67,	16.26,	16.26,	0.00)	DC	
	10TH HIGHEST VALUE IS	2.69900 AT	(331179.30,	3766310.69,	32.50,	32.50,	6.10)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   2 Warning Message(s)
A Total of   799 Informational Message(s)

A Total of   43848 Hours Were Processed

A Total of   455 Calm Hours Identified

A Total of   344 Missing Hours Identified (0.78 Percent)

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
ME W186   991   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used   0.50
ME W187   991   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

   ****
   *** AERMOD Finishes Successfully ***
   ****

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for   63 Source(s),
  for Total of   1 Urban Area(s):
  Urban Population = 10040000.0 ; Urban Roughness Length = 1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes: 63 Source(s);   2 Source Group(s); and   128 Receptor(s)

               with: 0 POINT(s), including
                          0 POINTCAP(s) and   0 POINTHOR(s)
                and: 62 VOLUME source(s)
                and: 1 AREA type source(s)
                and: 0 LINE source(s)
                and: 0 RLINE/RLINEXT source(s)
                and: 0 OPENPIT source(s)
                and: 0 BUOYANT LINE source(s) with   0 line(s)

```
**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  16216

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    53.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   SMM-06 P1 Students.err
**File for Summary of Results:   SMM-06 P1 Students.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.16129E-01	331183.6	3766360.3	34.1	4.15	4.66	3.26	YES	HRDOW
L0000002	0	0.16129E-01	331192.2	3766355.2	34.0	4.15	4.66	3.26	YES	HRDOW
L0000003	0	0.16129E-01	331200.9	3766350.2	33.8	4.15	4.66	3.26	YES	HRDOW
L0000004	0	0.16129E-01	331209.5	3766345.1	33.6	4.15	4.66	3.26	YES	HRDOW
L0000005	0	0.16129E-01	331218.1	3766340.0	33.3	4.15	4.66	3.26	YES	HRDOW
L0000006	0	0.16129E-01	331226.7	3766335.0	33.0	4.15	4.66	3.26	YES	HRDOW
L0000007	0	0.16129E-01	331235.4	3766329.9	32.8	4.15	4.66	3.26	YES	HRDOW
L0000008	0	0.16129E-01	331244.0	3766324.8	32.5	4.15	4.66	3.26	YES	HRDOW
L0000009	0	0.16129E-01	331252.6	3766319.8	32.1	4.15	4.66	3.26	YES	HRDOW
L0000010	0	0.16129E-01	331261.3	3766314.7	31.5	4.15	4.66	3.26	YES	HRDOW
L0000011	0	0.16129E-01	331269.9	3766309.6	30.8	4.15	4.66	3.26	YES	HRDOW
L0000012	0	0.16129E-01	331278.5	3766304.6	30.1	4.15	4.66	3.26	YES	HRDOW
L0000013	0	0.16129E-01	331287.2	3766299.5	29.5	4.15	4.66	3.26	YES	HRDOW
L0000014	0	0.16129E-01	331295.8	3766294.4	29.1	4.15	4.66	3.26	YES	HRDOW
L0000015	0	0.16129E-01	331304.4	3766289.3	28.7	4.15	4.66	3.26	YES	HRDOW
L0000016	0	0.16129E-01	331313.1	3766284.3	28.4	4.15	4.66	3.26	YES	HRDOW
L0000017	0	0.16129E-01	331321.7	3766279.2	28.2	4.15	4.66	3.26	YES	HRDOW
L0000018	0	0.16129E-01	331330.3	3766274.1	27.9	4.15	4.66	3.26	YES	HRDOW
L0000019	0	0.16129E-01	331339.0	3766269.1	27.6	4.15	4.66	3.26	YES	HRDOW
L0000020	0	0.16129E-01	331347.6	3766264.0	27.2	4.15	4.66	3.26	YES	HRDOW
L0000021	0	0.16129E-01	331356.2	3766258.9	26.9	4.15	4.66	3.26	YES	HRDOW
L0000022	0	0.16129E-01	331364.9	3766253.9	26.7	4.15	4.66	3.26	YES	HRDOW
L0000023	0	0.16129E-01	331373.5	3766248.8	26.6	4.15	4.66	3.26	YES	HRDOW
L0000024	0	0.16129E-01	331382.1	3766243.7	26.4	4.15	4.66	3.26	YES	HRDOW
L0000025	0	0.16129E-01	331386.7	3766235.6	26.1	4.15	4.66	3.26	YES	HRDOW
L0000026	0	0.16129E-01	331389.3	3766225.9	25.8	4.15	4.66	3.26	YES	HRDOW
L0000027	0	0.16129E-01	331392.0	3766216.2	25.7	4.15	4.66	3.26	YES	HRDOW
L0000028	0	0.16129E-01	331394.6	3766206.6	25.8	4.15	4.66	3.26	YES	HRDOW
L0000029	0	0.16129E-01	331397.3	3766196.9	25.9	4.15	4.66	3.26	YES	HRDOW
L0000030	0	0.16129E-01	331399.0	3766187.2	25.8	4.15	4.66	3.26	YES	HRDOW
L0000031	0	0.16129E-01	331398.3	3766177.2	25.4	4.15	4.66	3.26	YES	HRDOW
L0000032	0	0.16129E-01	331397.7	3766167.2	25.0	4.15	4.66	3.26	YES	HRDOW
L0000033	0	0.16129E-01	331397.0	3766157.2	24.6	4.15	4.66	3.26	YES	HRDOW
L0000034	0	0.16129E-01	331396.3	3766147.2	24.2	4.15	4.66	3.26	YES	HRDOW
L0000035	0	0.16129E-01	331395.6	3766137.3	23.9	4.15	4.66	3.26	YES	HRDOW
L0000036	0	0.16129E-01	331394.9	3766127.3	23.7	4.15	4.66	3.26	YES	HRDOW
L0000037	0	0.16129E-01	331394.2	3766117.3	23.5	4.15	4.66	3.26	YES	HRDOW
L0000038	0	0.16129E-01	331389.3	3766108.9	22.6	4.15	4.66	3.26	YES	HRDOW
L0000039	0	0.16129E-01	331383.2	3766101.0	21.3	4.15	4.66	3.26	YES	HRDOW
L0000040	0	0.16129E-01	331377.1	3766093.0	20.8	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.16129E-01	331371.0	3766085.1	20.4	4.15	4.66	3.26	YES	HRDOW
L0000042	0	0.16129E-01	331364.9	3766077.1	20.1	4.15	4.66	3.26	YES	HRDOW
L0000043	0	0.16129E-01	331358.9	3766069.2	19.8	4.15	4.66	3.26	YES	HRDOW
L0000044	0	0.16129E-01	331352.8	3766061.2	19.4	4.15	4.66	3.26	YES	HRDOW
L0000045	0	0.16129E-01	331346.7	3766053.2	19.0	4.15	4.66	3.26	YES	HRDOW
L0000046	0	0.16129E-01	331340.6	3766045.3	18.7	4.15	4.66	3.26	YES	HRDOW
L0000047	0	0.16129E-01	331334.6	3766037.3	18.4	4.15	4.66	3.26	YES	HRDOW
L0000048	0	0.16129E-01	331328.5	3766029.4	17.6	4.15	4.66	3.26	YES	HRDOW
L0000049	0	0.16129E-01	331322.4	3766021.4	17.1	4.15	4.66	3.26	YES	HRDOW
L0000050	0	0.16129E-01	331316.3	3766013.5	16.6	4.15	4.66	3.26	YES	HRDOW
L0000051	0	0.16129E-01	331310.2	3766005.5	16.0	4.15	4.66	3.26	YES	HRDOW
L0000052	0	0.16129E-01	331304.2	3765997.6	15.2	4.15	4.66	3.26	YES	HRDOW
L0000053	0	0.16129E-01	331298.1	3765989.6	14.6	4.15	4.66	3.26	YES	HRDOW
L0000054	0	0.16129E-01	331292.0	3765981.7	14.0	4.15	4.66	3.26	YES	HRDOW
L0000055	0	0.16129E-01	331285.9	3765973.7	13.1	4.15	4.66	3.26	YES	HRDOW
L0000056	0	0.16129E-01	331279.9	3765965.8	11.7	4.15	4.66	3.26	YES	HRDOW
L0000057	0	0.16129E-01	331273.8	3765957.8	10.4	4.15	4.66	3.26	YES	HRDOW
L0000058	0	0.16129E-01	331267.7	3765949.8	10.0	4.15	4.66	3.26	YES	HRDOW
L0000059	0	0.16129E-01	331261.6	3765941.9	9.3	4.15	4.66	3.26	YES	HRDOW
L0000060	0	0.16129E-01	331255.5	3765933.9	8.2	4.15	4.66	3.26	YES	HRDOW
L0000061	0	0.16129E-01	331249.5	3765926.0	6.9	4.15	4.66	3.26	YES	HRDOW
L0000062	0	0.16129E-01	331243.4	3765918.0	6.6	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1	0	0.43115E-04	331169.4	3766373.7	34.3	4.15	9	0.00	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ONSITE	1 ,
OFFSITE	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 ,
	L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 ,
	L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 ,
	L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 ,
	L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 , L0000040 ,
	L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 , L0000048 ,
	L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 , L0000056 ,
	L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	10040000.	1 , L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 ,
		L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 ,
		L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 ,
		L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 ,
		L0000032 , L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 ,
		L0000040 , L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 ,
		L0000048 , L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 ,
		L0000056 , L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 1   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 TO L0000062 ; SOURCE TYPE = VOLUME   :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(331368.6,	3766313.4,	31.7,	53.9,	0.0);	(331368.6,	3766333.4,	32.4,	53.9,	0.0);
(331228.6,	3766353.4,	33.4,	33.4,	0.0);	(331248.6,	3766353.4,	33.1,	33.1,	0.0);
(331268.6,	3766353.4,	32.4,	32.4,	0.0);	(331288.6,	3766353.4,	31.5,	46.0,	0.0);
(331308.6,	3766353.4,	31.5,	52.9,	0.0);	(331329.3,	3766359.3,	31.7,	137.0,	0.0);
(331367.5,	3766349.1,	32.9,	53.9,	0.0);	(331228.6,	3766373.4,	33.5,	33.5,	0.0);
(331248.6,	3766373.4,	33.0,	33.0,	0.0);	(331268.6,	3766373.4,	32.6,	32.6,	0.0);
(331288.6,	3766373.4,	32.3,	137.0,	0.0);	(331308.6,	3766373.4,	32.5,	137.0,	0.0);
(331328.6,	3766373.4,	32.4,	137.0,	0.0);	(331348.6,	3766373.4,	32.4,	137.0,	0.0);
(331368.6,	3766373.4,	33.6,	137.0,	0.0);	(331238.3,	3766388.1,	33.1,	137.0,	0.0);
(331248.6,	3766393.4,	33.0,	137.0,	0.0);	(331308.6,	3766393.4,	33.3,	137.0,	0.0);
(331328.6,	3766393.4,	33.3,	137.0,	0.0);	(331348.6,	3766393.4,	33.2,	137.3,	0.0);
(331368.6,	3766393.4,	34.4,	137.0,	0.0);	(331268.6,	3766413.4,	33.8,	137.0,	0.0);
(331308.6,	3766413.4,	33.8,	137.3,	0.0);	(331328.6,	3766413.4,	33.9,	137.3,	0.0);
(331348.6,	3766413.4,	34.0,	137.3,	0.0);	(331257.6,	3766428.4,	34.2,	137.0,	0.0);
(331268.6,	3766433.4,	34.3,	137.3,	0.0);	(331308.6,	3766433.4,	34.3,	137.3,	0.0);
(331328.6,	3766433.4,	34.5,	137.3,	0.0);	(331270.3,	3766457.1,	35.0,	137.3,	0.0);
(331288.6,	3766453.4,	35.0,	137.3,	0.0);	(331308.6,	3766453.4,	35.4,	137.3,	0.0);
(331326.0,	3766453.4,	35.9,	137.3,	0.0);	(331288.6,	3766473.4,	36.4,	137.3,	0.0);
(331308.6,	3766473.4,	38.5,	137.3,	0.0);	(331328.6,	3766473.4,	39.7,	137.3,	0.0);
(331345.7,	3766473.7,	40.4,	137.3,	0.0);	(331293.4,	3766491.0,	38.2,	137.3,	0.0);
(331308.6,	3766493.4,	40.0,	137.3,	0.0);	(331328.6,	3766493.4,	41.0,	137.3,	0.0);
(331348.6,	3766493.4,	41.2,	137.3,	0.0);	(331368.6,	3766493.4,	41.1,	137.3,	0.0);
(331423.0,	3766498.0,	42.1,	137.3,	0.0);	(331328.6,	3766513.4,	41.2,	137.3,	0.0);
(331348.6,	3766513.4,	41.2,	137.3,	0.0);	(331366.3,	3766514.8,	41.2,	137.3,	0.0);
(331388.6,	3766513.4,	41.4,	137.3,	0.0);	(331408.6,	3766502.8,	41.3,	137.3,	0.0);
(331422.8,	3766510.1,	42.0,	137.3,	0.0);	(331356.8,	3766563.9,	41.9,	137.3,	0.0);
(331288.6,	3766533.4,	39.8,	137.3,	0.0);	(331375.0,	3766528.3,	41.3,	137.3,	0.0);
(331395.3,	3766526.3,	41.6,	137.3,	0.0);	(331408.6,	3766533.4,	41.8,	137.3,	0.0);
(331428.6,	3766533.4,	42.9,	137.3,	0.0);	(331248.6,	3766553.4,	37.0,	137.3,	0.0);
(331267.4,	3766543.2,	38.1,	137.3,	0.0);	(331368.6,	3766555.0,	41.7,	137.3,	0.0);
(331389.1,	3766549.4,	42.0,	137.3,	0.0);	(331408.0,	3766548.1,	42.4,	137.3,	0.0);
(331245.9,	3766568.2,	36.2,	137.3,	0.0);	(331348.4,	3766575.7,	42.1,	137.3,	0.0);
(331368.6,	3766313.4,	31.7,	53.9,	6.1);	(331368.6,	3766333.4,	32.4,	53.9,	6.1);
(331228.6,	3766353.4,	33.4,	33.4,	6.1);	(331248.6,	3766353.4,	33.1,	33.1,	6.1);
(331268.6,	3766353.4,	32.4,	32.4,	6.1);	(331288.6,	3766353.4,	31.5,	46.0,	6.1);
(331308.6,	3766353.4,	31.5,	52.9,	6.1);	(331329.3,	3766359.3,	31.7,	137.0,	6.1);
(331367.5,	3766349.1,	32.9,	53.9,	6.1);	(331228.6,	3766373.4,	33.5,	33.5,	6.1);
(331248.6,	3766373.4,	33.0,	33.0,	6.1);	(331268.6,	3766373.4,	32.6,	32.6,	6.1);
(331288.6,	3766373.4,	32.3,	137.0,	6.1);	(331308.6,	3766373.4,	32.5,	137.0,	6.1);
(331328.6,	3766373.4,	32.4,	137.0,	6.1);	(331348.6,	3766373.4,	32.4,	137.0,	6.1);
(331368.6,	3766373.4,	33.6,	137.0,	6.1);	(331238.3,	3766388.1,	33.1,	137.0,	6.1);
(331248.6,	3766393.4,	33.0,	137.0,	6.1);	(331308.6,	3766393.4,	33.3,	137.0,	6.1);
(331328.6,	3766393.4,	33.3,	137.0,	6.1);	(331348.6,	3766393.4,	33.2,	137.3,	6.1);
(331368.6,	3766393.4,	34.4,	137.0,	6.1);	(331268.6,	3766413.4,	33.8,	137.0,	6.1);
(331308.6,	3766413.4,	33.8,	137.3,	6.1);	(331328.6,	3766413.4,	33.9,	137.3,	6.1);

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(331348.6,	3766413.4,	34.0,	137.3,	6.1);	(331257.6,	3766428.4,	34.2,	137.0,	6.1);
(331268.6,	3766433.4,	34.3,	137.3,	6.1);	(331308.6,	3766433.4,	34.3,	137.3,	6.1);
(331328.6,	3766433.4,	34.5,	137.3,	6.1);	(331270.3,	3766457.1,	35.0,	137.3,	6.1);
(331288.6,	3766453.4,	35.0,	137.3,	6.1);	(331308.6,	3766453.4,	35.4,	137.3,	6.1);
(331326.0,	3766453.4,	35.9,	137.3,	6.1);	(331288.6,	3766473.4,	36.4,	137.3,	6.1);
(331308.6,	3766473.4,	38.5,	137.3,	6.1);	(331328.6,	3766473.4,	39.7,	137.3,	6.1);
(331345.7,	3766473.7,	40.4,	137.3,	6.1);	(331293.4,	3766491.0,	38.2,	137.3,	6.1);
(331308.6,	3766493.4,	40.0,	137.3,	6.1);	(331328.6,	3766493.4,	41.0,	137.3,	6.1);
(331348.6,	3766493.4,	41.2,	137.3,	6.1);	(331368.6,	3766493.4,	41.1,	137.3,	6.1);
(331423.0,	3766498.0,	42.1,	137.3,	6.1);	(331328.6,	3766513.4,	41.2,	137.3,	6.1);
(331348.6,	3766513.4,	41.2,	137.3,	6.1);	(331366.3,	3766514.8,	41.2,	137.3,	6.1);
(331388.6,	3766513.4,	41.4,	137.3,	6.1);	(331408.6,	3766502.8,	41.3,	137.3,	6.1);
(331422.8,	3766510.1,	42.0,	137.3,	6.1);	(331356.8,	3766563.9,	41.9,	137.3,	6.1);
(331288.6,	3766533.4,	39.8,	137.3,	6.1);	(331375.0,	3766528.3,	41.3,	137.3,	6.1);
(331395.3,	3766526.3,	41.6,	137.3,	6.1);	(331408.6,	3766533.4,	41.8,	137.3,	6.1);
(331428.6,	3766533.4,	42.9,	137.3,	6.1);	(331248.6,	3766553.4,	37.0,	137.3,	6.1);
(331267.4,	3766543.2,	38.1,	137.3,	6.1);	(331368.6,	3766555.0,	41.7,	137.3,	6.1);
(331389.1,	3766549.4,	42.0,	137.3,	6.1);	(331408.0,	3766548.1,	42.4,	137.3,	6.1);
(331245.9,	3766568.2,	36.2,	137.3,	6.1);	(331348.4,	3766575.7,	42.1,	137.3,	6.1);

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

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1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file: ..\..\metdata-53m\KSMO_v9.SFC   Met Version: 16216
  Profile file: ..\..\metdata-53m\KSMO_v9.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:   93197   Upper air station no.:   3190
                Name: UNKNOWN   Name: UNKNOWN
                Year: 2012   Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	131.	10.1	283.1	2.0
12	01	01	1	02	-7.6	0.121	-9.000	-9.000	-999.	101.	21.3	0.17	2.20	1.00	1.35	232.	10.1	282.0	2.0
12	01	01	1	03	-3.3	0.082	-9.000	-9.000	-999.	57.	15.3	0.17	2.20	1.00	0.86	46.	10.1	280.9	2.0
12	01	01	1	04	-5.4	0.102	-9.000	-9.000	-999.	79.	17.9	0.17	2.20	1.00	1.14	82.	10.1	281.4	2.0
12	01	01	1	05	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	205.	10.1	281.4	2.0
12	01	01	1	06	-7.4	0.119	-9.000	-9.000	-999.	99.	20.9	0.17	2.20	1.00	1.33	254.	10.1	280.9	2.0
12	01	01	1	07	-4.6	0.094	-9.000	-9.000	-999.	70.	16.6	0.17	2.20	1.00	1.04	39.	10.1	279.2	2.0
12	01	01	1	08	-16.0	0.197	-9.000	-9.000	-999.	209.	43.0	0.17	2.20	0.54	2.10	63.	10.1	282.0	2.0
12	01	01	1	09	36.8	0.255	0.339	0.005	38.	309.	-40.8	0.17	2.20	0.31	2.27	33.	10.1	292.0	2.0
12	01	01	1	10	102.6	0.234	0.691	0.006	117.	271.	-11.3	0.17	2.20	0.23	1.79	204.	10.1	289.2	2.0
12	01	01	1	11	154.6	0.178	1.118	0.005	327.	181.	-3.3	0.17	2.20	0.20	1.11	119.	10.1	296.4	2.0
12	01	01	1	12	182.0	0.295	1.459	0.005	618.	385.	-12.8	0.17	2.20	0.19	2.30	76.	10.1	300.9	2.0
12	01	01	1	13	175.0	0.355	1.686	0.005	991.	507.	-23.0	0.17	2.20	0.19	2.98	179.	10.1	293.8	2.0
12	01	01	1	14	148.1	0.374	1.737	0.005	1282.	549.	-31.9	0.17	2.20	0.20	3.25	211.	10.1	292.0	2.0
12	01	01	1	15	98.0	0.291	1.572	0.005	1436.	380.	-22.7	0.17	2.20	0.23	2.44	231.	10.1	290.9	2.0
12	01	01	1	16	28.2	0.303	1.044	0.005	1460.	400.	-89.0	0.17	2.20	0.32	2.85	217.	10.1	289.2	2.0
12	01	01	1	17	-22.4	0.259	-9.000	-9.000	-999.	317.	73.7	0.17	2.20	0.58	2.73	226.	10.1	287.0	2.0
12	01	01	1	18	-8.7	0.131	-9.000	-9.000	-999.	124.	23.3	0.17	2.20	1.00	1.45	230.	10.1	286.4	2.0
12	01	01	1	19	-13.2	0.163	-9.000	-9.000	-999.	157.	29.4	0.17	2.20	1.00	1.77	225.	10.1	285.9	2.0
12	01	01	1	20	-5.7	0.106	-9.000	-9.000	-999.	83.	18.6	0.17	2.20	1.00	1.18	182.	10.1	284.9	2.0
12	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.17	2.20	1.00	0.00	0.	10.1	284.2	2.0
12	01	01	1	22	-7.3	0.119	-9.000	-9.000	-999.	99.	21.1	0.17	2.20	1.00	1.33	202.	10.1	285.4	2.0
12	01	01	1	23	-6.0	0.108	-9.000	-9.000	-999.	86.	19.1	0.17	2.20	1.00	1.21	251.	10.1	284.9	2.0
12	01	01	1	24	-5.4	0.102	-9.000	-9.000	-999.	78.	18.0	0.17	2.20	1.00	1.14	224.	10.1	284.2	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.1	1	131.	1.26	283.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: ONSITE   ***
INCLUDING SOURCE(S):   1   ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF OTHER   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
331368.60	3766313.37	0.18782	331368.60	3766333.37	0.21245	
331228.60	3766353.37	1.51247	331248.60	3766353.37	1.07723	
331268.60	3766353.37	0.78884	331288.60	3766353.37	0.59457	
331308.60	3766353.37	0.46440	331329.30	3766359.34	0.39668	
331367.55	3766349.15	0.24502	331228.60	3766373.37	2.30876	
331248.60	3766373.37	1.57673	331268.60	3766373.37	1.12465	
331288.60	3766373.37	0.82994	331308.60	3766373.37	0.63391	
331328.60	3766373.37	0.49625	331348.60	3766373.37	0.39832	
331368.60	3766373.37	0.32762	331238.26	3766388.10	3.22798	
331248.60	3766393.37	3.19966	331308.60	3766393.37	0.99267	
331328.60	3766393.37	0.74321	331348.60	3766393.37	0.57643	
331368.60	3766393.37	0.46043	331268.60	3766413.37	4.07244	
331308.60	3766413.37	1.66983	331328.60	3766413.37	1.18740	
331348.60	3766413.37	0.88505	331257.56	3766428.39	9.11150	
331268.60	3766433.37	7.49236	331308.60	3766433.37	2.76577	
331328.60	3766433.37	1.89378	331270.34	3766457.10	12.67551	
331288.60	3766453.37	6.90889	331308.60	3766453.37	4.20606	
331325.97	3766453.37	2.89632	331288.60	3766473.37	10.00888	
331308.60	3766473.37	5.68285	331328.60	3766473.37	3.65058	
331345.67	3766473.66	2.66276	331293.37	3766490.99	11.62894	
331308.60	3766493.37	7.78964	331328.60	3766493.37	5.02391	
331348.60	3766493.37	3.49820	331368.60	3766493.37	2.54847	
331423.04	3766498.05	1.29014	331328.60	3766513.37	6.71409	
331348.60	3766513.37	4.65513	331366.26	3766514.81	3.55538	
331388.60	3766513.37	2.50794	331408.60	3766502.83	1.67234	
331422.75	3766510.15	1.52875	331356.78	3766563.89	5.45187	
331288.60	3766533.37	16.91600	331375.02	3766528.33	3.58959	
331395.33	3766526.34	2.63529	331408.60	3766533.37	2.36704	
331428.60	3766533.37	1.82966	331248.60	3766553.37	22.91299	Phase 1 MER Location
331267.36	3766543.17	21.21902	331368.60	3766554.99	4.62122	
331389.14	3766549.42	3.42881	331408.01	3766548.10	2.67053	
331245.93	3766568.23	17.74606	331348.42	3766575.71	5.89465	
331368.60	3766313.37	0.17866	331368.60	3766333.37	0.19580	
331228.60	3766353.37	1.19790	331248.60	3766353.37	0.93463	
331268.60	3766353.37	0.70208	331288.60	3766353.37	0.54319	
331308.60	3766353.37	0.42356	331329.30	3766359.34	0.35527	
331367.55	3766349.15	0.21845	331228.60	3766373.37	1.68171	
331248.60	3766373.37	1.26000	331268.60	3766373.37	0.92433	
331288.60	3766373.37	0.69661	331308.60	3766373.37	0.53246	
331328.60	3766373.37	0.42080	331348.60	3766373.37	0.34044	

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331368.60	3766373.37	0.26746	331238.26	3766388.10	2.34265
331248.60	3766393.37	2.27010	331308.60	3766393.37	0.74911
331328.60	3766393.37	0.57511	331348.60	3766393.37	0.45632
331368.60	3766393.37	0.35818	331268.60	3766413.37	2.78647
331308.60	3766413.37	1.23708	331328.60	3766413.37	0.89984
331348.60	3766413.37	0.68206	331257.56	3766428.39	6.12891
331268.60	3766433.37	5.14277	331308.60	3766433.37	2.07818
331328.60	3766433.37	1.44584	331270.34	3766457.10	8.75062
331288.60	3766453.37	5.01025	331308.60	3766453.37	3.23265
331325.97	3766453.37	2.30471	331288.60	3766473.37	7.18183
331308.60	3766473.37	4.40545	331328.60	3766473.37	2.97762
331345.67	3766473.66	2.22877	331293.37	3766490.99	8.23547
331308.60	3766493.37	5.93632	331328.60	3766493.37	4.08584
331348.60	3766493.37	2.95542	331368.60	3766493.37	2.20479
331423.04	3766498.05	1.15547	331328.60	3766513.37	5.43766
331348.60	3766513.37	3.95712	331366.26	3766514.81	3.10273
331388.60	3766513.37	2.22954	331408.60	3766502.83	1.49347
331422.75	3766510.15	1.37902	331356.78	3766563.89	4.88618
331288.60	3766533.37	11.81663	331375.02	3766528.33	3.18911
331395.33	3766526.34	2.37164	331408.60	3766533.37	2.15390
331428.60	3766533.37	1.67546	331248.60	3766553.37	15.69162
331267.36	3766543.17	14.47066	331368.60	3766554.99	4.16176
331389.14	3766549.42	3.11955	331408.01	3766548.10	2.44915
331245.93	3766568.23	13.11871	331348.42	3766575.71	5.28835

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . .

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331368.60	3766313.37	6.81859	331368.60	3766333.37	5.19986
331228.60	3766353.37	14.47393	331248.60	3766353.37	11.08698
331268.60	3766353.37	8.83441	331288.60	3766353.37	7.28463
331308.60	3766353.37	6.18124	331329.30	3766359.34	4.91399
331367.55	3766349.15	4.34056	331228.60	3766373.37	8.25598
331248.60	3766373.37	7.05248	331268.60	3766373.37	6.04906
331288.60	3766373.37	5.24888	331308.60	3766373.37	4.61537
331328.60	3766373.37	4.11479	331348.60	3766373.37	3.70257
331368.60	3766373.37	3.32722	331238.26	3766388.10	5.31707
331248.60	3766393.37	4.54738	331308.60	3766393.37	3.51295
331328.60	3766393.37	3.22195	331348.60	3766393.37	2.96587
331368.60	3766393.37	2.72269	331268.60	3766413.37	2.92809
331308.60	3766413.37	2.69080	331328.60	3766413.37	2.54311
331348.60	3766413.37	2.39569	331257.56	3766428.39	2.20546
331268.60	3766433.37	2.05712	331308.60	3766433.37	2.06290
331328.60	3766433.37	2.00869	331270.34	3766457.10	1.39602
331288.60	3766453.37	1.55011	331308.60	3766453.37	1.58308
331325.97	3766453.37	1.58319	331288.60	3766473.37	1.15285
331308.60	3766473.37	1.18090	331328.60	3766473.37	1.19871
331345.67	3766473.66	1.20125	331293.37	3766490.99	0.90207
331308.60	3766493.37	0.89575	331328.60	3766493.37	0.93502
331348.60	3766493.37	0.96676	331368.60	3766493.37	0.98760
331423.04	3766498.05	0.94553	331328.60	3766513.37	0.74453
331348.60	3766513.37	0.78388	331366.26	3766514.81	0.79893
331388.60	3766513.37	0.83073	331408.60	3766502.83	0.91843
331422.75	3766510.15	0.86149	331356.78	3766563.89	0.48680
331288.60	3766533.37	0.51771	331375.02	3766528.33	0.71206
331395.33	3766526.34	0.74389	331408.60	3766533.37	0.70947
331428.60	3766533.37	0.71415	331248.60	3766553.37	0.36905
331267.36	3766543.17	0.43606	331368.60	3766554.99	0.54718
331389.14	3766549.42	0.60034	331408.01	3766548.10	0.62421
331245.93	3766568.23	0.32521	331348.42	3766575.71	0.42484
331368.60	3766313.37	5.05575	331368.60	3766333.37	4.16754
331228.60	3766353.37	9.72161	331248.60	3766353.37	7.84099

331268.60	3766353.37	6.78800	331288.60	3766353.37	6.00817
331308.60	3766353.37	5.18602	331329.30	3766359.34	4.24362
331367.55	3766349.15	3.63581	331228.60	3766373.37	6.22396
331248.60	3766373.37	5.69342	331268.60	3766373.37	5.12998
331288.60	3766373.37	4.58402	331308.60	3766373.37	4.05813
331328.60	3766373.37	3.64253	331348.60	3766373.37	3.29233

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331368.60	3766373.37	2.92492	331238.26	3766388.10	4.43406
331248.60	3766393.37	3.92894	331308.60	3766393.37	3.17267
331328.60	3766393.37	2.92069	331348.60	3766393.37	2.69659
331368.60	3766393.37	2.45044	331268.60	3766413.37	2.62752
331308.60	3766413.37	2.47164	331328.60	3766413.37	2.34189
331348.60	3766413.37	2.20669	331257.56	3766428.39	1.94721
331268.60	3766433.37	1.84274	331308.60	3766433.37	1.90361
331328.60	3766433.37	1.85940	331270.34	3766457.10	1.23528
331288.60	3766453.37	1.39806	331308.60	3766453.37	1.44341
331325.97	3766453.37	1.45011	331288.60	3766473.37	1.02669
331308.60	3766473.37	1.06269	331328.60	3766473.37	1.09086
331345.67	3766473.66	1.09973	331293.37	3766490.99	0.80482
331308.60	3766493.37	0.80911	331328.60	3766493.37	0.85233
331348.60	3766493.37	0.88839	331368.60	3766493.37	0.91378
331423.04	3766498.05	0.88616	331328.60	3766513.37	0.68024
331348.60	3766513.37	0.72184	331366.26	3766514.81	0.74016
331388.60	3766513.37	0.77435	331408.60	3766502.83	0.85926
331422.75	3766510.15	0.80858	331356.78	3766563.89	0.45033
331288.60	3766533.37	0.46514	331375.02	3766528.33	0.66179
331395.33	3766526.34	0.69499	331408.60	3766533.37	0.66501
331428.60	3766533.37	0.67200	331248.60	3766553.37	0.32121
331267.36	3766543.17	0.38465	331368.60	3766554.99	0.50785
331389.14	3766549.42	0.56034	331408.01	3766548.10	0.58523
331245.93	3766568.23	0.28305	331348.42	3766575.71	0.39217

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
ONSITE	1ST HIGHEST VALUE IS	22.91299 AT	(331248.60,	3766553.37,	36.97,	137.30,	0.00)	DC	
	2ND HIGHEST VALUE IS	21.21902 AT	(331267.36,	3766543.17,	38.08,	137.30,	0.00)	DC	
	3RD HIGHEST VALUE IS	17.74606 AT	(331245.93,	3766568.23,	36.16,	137.30,	0.00)	DC	
	4TH HIGHEST VALUE IS	16.91600 AT	(331288.60,	3766533.37,	39.84,	137.30,	0.00)	DC	
	5TH HIGHEST VALUE IS	15.69162 AT	(331248.60,	3766553.37,	36.97,	137.30,	6.10)	DC	
	6TH HIGHEST VALUE IS	14.47066 AT	(331267.36,	3766543.17,	38.08,	137.30,	6.10)	DC	
	7TH HIGHEST VALUE IS	13.11871 AT	(331245.93,	3766568.23,	36.16,	137.30,	6.10)	DC	
	8TH HIGHEST VALUE IS	12.67551 AT	(331270.34,	3766457.10,	35.03,	137.30,	0.00)	DC	
	9TH HIGHEST VALUE IS	11.81663 AT	(331288.60,	3766533.37,	39.84,	137.30,	6.10)	DC	
	10TH HIGHEST VALUE IS	11.62894 AT	(331293.37,	3766490.99,	38.19,	137.30,	0.00)	DC	
OFFSITE	1ST HIGHEST VALUE IS	14.47393 AT	(331228.60,	3766353.37,	33.37,	33.37,	0.00)	DC	
	2ND HIGHEST VALUE IS	11.08698 AT	(331248.60,	3766353.37,	33.11,	33.11,	0.00)	DC	
	3RD HIGHEST VALUE IS	9.72161 AT	(331228.60,	3766353.37,	33.37,	33.37,	6.10)	DC	
	4TH HIGHEST VALUE IS	8.83441 AT	(331268.60,	3766353.37,	32.45,	32.45,	0.00)	DC	
	5TH HIGHEST VALUE IS	8.25598 AT	(331228.60,	3766373.37,	33.47,	33.47,	0.00)	DC	
	6TH HIGHEST VALUE IS	7.84099 AT	(331248.60,	3766353.37,	33.11,	33.11,	6.10)	DC	
	7TH HIGHEST VALUE IS	7.28463 AT	(331288.60,	3766353.37,	31.54,	46.02,	0.00)	DC	
	8TH HIGHEST VALUE IS	7.05248 AT	(331248.60,	3766373.37,	32.99,	32.99,	0.00)	DC	
	9TH HIGHEST VALUE IS	6.81859 AT	(331368.60,	3766313.37,	31.66,	53.87,	0.00)	DC	
	10TH HIGHEST VALUE IS	6.78800 AT	(331268.60,	3766353.37,	32.45,	32.45,	6.10)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   2 Warning Message(s)
A Total of   799 Informational Message(s)

A Total of   43848 Hours Were Processed

A Total of   455 Calm Hours Identified

A Total of   344 Missing Hours Identified (0.78 Percent)

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
ME W186   991   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used   0.50
ME W187   991   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

   ****
   *** AERMOD Finishes Successfully ***
   ****

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for   64 Source(s),
  for Total of   1 Urban Area(s):
  Urban Population = 10040000.0 ; Urban Roughness Length = 1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes: 64 Source(s);   2 Source Group(s); and   158 Receptor(s)

               with: 0 POINT(s), including
                          0 POINTCAP(s) and   0 POINTHOR(s)
                and: 62 VOLUME source(s)
                and: 2 AREA type source(s)
                and: 0 LINE source(s)
                and: 0 RLINE/RLINEXT source(s)
                and: 0 OPENPIT source(s)
                and: 0 BUOYANT LINE source(s) with   0 line(s)

```
**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  16216

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    53.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   SMM-06 (P2-4B) Residential.err
**File for Summary of Results:   SMM-06 (P2-4B) Residential.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.16129E-01	331183.6	3766360.3	34.1	4.15	4.66	3.26	YES	HRDOW
L0000002	0	0.16129E-01	331192.2	3766355.2	34.0	4.15	4.66	3.26	YES	HRDOW
L0000003	0	0.16129E-01	331200.9	3766350.2	33.8	4.15	4.66	3.26	YES	HRDOW
L0000004	0	0.16129E-01	331209.5	3766345.1	33.6	4.15	4.66	3.26	YES	HRDOW
L0000005	0	0.16129E-01	331218.1	3766340.0	33.3	4.15	4.66	3.26	YES	HRDOW
L0000006	0	0.16129E-01	331226.8	3766335.0	33.0	4.15	4.66	3.26	YES	HRDOW
L0000007	0	0.16129E-01	331235.4	3766329.9	32.8	4.15	4.66	3.26	YES	HRDOW
L0000008	0	0.16129E-01	331244.0	3766324.8	32.5	4.15	4.66	3.26	YES	HRDOW
L0000009	0	0.16129E-01	331252.6	3766319.8	32.1	4.15	4.66	3.26	YES	HRDOW
L0000010	0	0.16129E-01	331261.3	3766314.7	31.5	4.15	4.66	3.26	YES	HRDOW
L0000011	0	0.16129E-01	331269.9	3766309.6	30.8	4.15	4.66	3.26	YES	HRDOW
L0000012	0	0.16129E-01	331278.5	3766304.6	30.1	4.15	4.66	3.26	YES	HRDOW
L0000013	0	0.16129E-01	331287.2	3766299.5	29.5	4.15	4.66	3.26	YES	HRDOW
L0000014	0	0.16129E-01	331295.8	3766294.4	29.1	4.15	4.66	3.26	YES	HRDOW
L0000015	0	0.16129E-01	331304.4	3766289.4	28.7	4.15	4.66	3.26	YES	HRDOW
L0000016	0	0.16129E-01	331313.1	3766284.3	28.4	4.15	4.66	3.26	YES	HRDOW
L0000017	0	0.16129E-01	331321.7	3766279.2	28.2	4.15	4.66	3.26	YES	HRDOW
L0000018	0	0.16129E-01	331330.3	3766274.1	27.9	4.15	4.66	3.26	YES	HRDOW
L0000019	0	0.16129E-01	331339.0	3766269.1	27.6	4.15	4.66	3.26	YES	HRDOW
L0000020	0	0.16129E-01	331347.6	3766264.0	27.2	4.15	4.66	3.26	YES	HRDOW
L0000021	0	0.16129E-01	331356.2	3766258.9	26.9	4.15	4.66	3.26	YES	HRDOW
L0000022	0	0.16129E-01	331364.9	3766253.9	26.7	4.15	4.66	3.26	YES	HRDOW
L0000023	0	0.16129E-01	331373.5	3766248.8	26.6	4.15	4.66	3.26	YES	HRDOW
L0000024	0	0.16129E-01	331382.1	3766243.7	26.4	4.15	4.66	3.26	YES	HRDOW
L0000025	0	0.16129E-01	331386.7	3766235.6	26.1	4.15	4.66	3.26	YES	HRDOW
L0000026	0	0.16129E-01	331389.3	3766225.9	25.8	4.15	4.66	3.26	YES	HRDOW
L0000027	0	0.16129E-01	331392.0	3766216.2	25.7	4.15	4.66	3.26	YES	HRDOW
L0000028	0	0.16129E-01	331394.6	3766206.6	25.8	4.15	4.66	3.26	YES	HRDOW
L0000029	0	0.16129E-01	331397.3	3766196.9	25.9	4.15	4.66	3.26	YES	HRDOW
L0000030	0	0.16129E-01	331399.0	3766187.2	25.8	4.15	4.66	3.26	YES	HRDOW
L0000031	0	0.16129E-01	331398.3	3766177.2	25.4	4.15	4.66	3.26	YES	HRDOW
L0000032	0	0.16129E-01	331397.7	3766167.2	25.0	4.15	4.66	3.26	YES	HRDOW
L0000033	0	0.16129E-01	331397.0	3766157.2	24.6	4.15	4.66	3.26	YES	HRDOW
L0000034	0	0.16129E-01	331396.3	3766147.3	24.2	4.15	4.66	3.26	YES	HRDOW
L0000035	0	0.16129E-01	331395.6	3766137.3	23.9	4.15	4.66	3.26	YES	HRDOW
L0000036	0	0.16129E-01	331394.9	3766127.3	23.7	4.15	4.66	3.26	YES	HRDOW
L0000037	0	0.16129E-01	331394.2	3766117.3	23.5	4.15	4.66	3.26	YES	HRDOW
L0000038	0	0.16129E-01	331389.2	3766108.9	22.6	4.15	4.66	3.26	YES	HRDOW

L0000039	0	0.16129E-01	331383.2	3766101.0	21.3	4.15	4.66	3.26	YES	HRDOW
L0000040	0	0.16129E-01	331377.1	3766093.0	20.8	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.16129E-01	331371.0	3766085.1	20.4	4.15	4.66	3.26	YES	HRDOW
L0000042	0	0.16129E-01	331364.9	3766077.1	20.1	4.15	4.66	3.26	YES	HRDOW
L0000043	0	0.16129E-01	331358.9	3766069.2	19.8	4.15	4.66	3.26	YES	HRDOW
L0000044	0	0.16129E-01	331352.8	3766061.2	19.4	4.15	4.66	3.26	YES	HRDOW
L0000045	0	0.16129E-01	331346.7	3766053.2	19.0	4.15	4.66	3.26	YES	HRDOW
L0000046	0	0.16129E-01	331340.6	3766045.3	18.7	4.15	4.66	3.26	YES	HRDOW
L0000047	0	0.16129E-01	331334.6	3766037.3	18.4	4.15	4.66	3.26	YES	HRDOW
L0000048	0	0.16129E-01	331328.5	3766029.4	17.6	4.15	4.66	3.26	YES	HRDOW
L0000049	0	0.16129E-01	331322.4	3766021.4	17.1	4.15	4.66	3.26	YES	HRDOW
L0000050	0	0.16129E-01	331316.3	3766013.5	16.6	4.15	4.66	3.26	YES	HRDOW
L0000051	0	0.16129E-01	331310.2	3766005.5	16.0	4.15	4.66	3.26	YES	HRDOW
L0000052	0	0.16129E-01	331304.2	3765997.6	15.2	4.15	4.66	3.26	YES	HRDOW
L0000053	0	0.16129E-01	331298.1	3765989.6	14.6	4.15	4.66	3.26	YES	HRDOW
L0000054	0	0.16129E-01	331292.0	3765981.7	14.0	4.15	4.66	3.26	YES	HRDOW
L0000055	0	0.16129E-01	331285.9	3765973.7	13.1	4.15	4.66	3.26	YES	HRDOW
L0000056	0	0.16129E-01	331279.9	3765965.8	11.7	4.15	4.66	3.26	YES	HRDOW
L0000057	0	0.16129E-01	331273.8	3765957.8	10.4	4.15	4.66	3.26	YES	HRDOW
L0000058	0	0.16129E-01	331267.7	3765949.8	10.0	4.15	4.66	3.26	YES	HRDOW
L0000059	0	0.16129E-01	331261.6	3765941.9	9.3	4.15	4.66	3.26	YES	HRDOW
L0000060	0	0.16129E-01	331255.5	3765933.9	8.2	4.15	4.66	3.26	YES	HRDOW
L0000061	0	0.16129E-01	331249.5	3765926.0	6.9	4.15	4.66	3.26	YES	HRDOW
L0000062	0	0.16129E-01	331243.4	3765918.0	6.6	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1	0	0.16590E-04	331171.4	3766377.3	34.5	4.15	35	1.93	YES	HRDOW
3	0	0.15647E-03	331585.6	3766245.0	34.7	4.15	10	1.93	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ONSITE	1 , 3 ,
OFFSITE	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 ,
	L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 ,
	L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 ,
	L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 ,
	L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 , L0000040 ,
	L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 , L0000048 ,
	L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 , L0000056 ,
	L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	10040000.	1 , L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 ,
		L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 ,
		L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 ,
		L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 ,
		L0000032 , L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 ,
		L0000040 , L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 ,
		L0000048 , L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 ,
		L0000056 , L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 , 3 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 1   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
					DAY OF WEEK = WEEKDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SATURDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SUNDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 TO L0000062   ; SOURCE TYPE = VOLUME   :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
					DAY OF WEEK = WEEKDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SATURDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SUNDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 3   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(331155.8,	3766750.0,	47.0,	189.9,	0.0);	(331008.3,	3766395.7,	25.4,	189.9,	0.0);
(331048.4,	3766366.1,	28.2,	189.9,	0.0);	(331093.8,	3766296.4,	29.3,	189.9,	0.0);
(331179.3,	3766310.7,	32.5,	189.9,	0.0);	(330868.5,	3766337.3,	21.7,	189.9,	0.0);
(330827.3,	3766361.4,	16.2,	189.9,	0.0);	(330897.3,	3766381.6,	22.9,	189.9,	0.0);
(330945.5,	3766348.1,	23.4,	189.9,	0.0);	(330917.5,	3766286.7,	19.0,	189.9,	0.0);
(330933.0,	3766257.2,	20.1,	189.9,	0.0);	(330975.0,	3766268.0,	24.0,	189.9,	0.0);
(331097.9,	3766206.6,	25.5,	189.9,	0.0);	(331140.7,	3766205.0,	24.9,	189.9,	0.0);
(331150.8,	3766227.6,	26.6,	189.9,	0.0);	(331066.0,	3766128.8,	15.6,	189.9,	0.0);
(331050.5,	3766156.1,	21.2,	189.9,	0.0);	(331108.0,	3766129.6,	17.3,	189.9,	0.0);
(331129.8,	3766068.2,	17.9,	189.9,	0.0);	(331168.7,	3766096.9,	20.7,	189.9,	0.0);
(331200.9,	3766209.9,	25.9,	189.9,	0.0);	(331278.4,	3766261.0,	29.1,	189.9,	0.0);
(331268.7,	3766178.6,	26.6,	189.9,	0.0);	(330936.2,	3766491.4,	27.1,	189.9,	0.0);
(330833.8,	3766481.9,	22.1,	189.9,	0.0);	(330805.2,	3766491.0,	23.3,	189.9,	0.0);
(330816.2,	3766527.3,	23.8,	189.9,	0.0);	(330856.7,	3766558.3,	25.5,	189.9,	0.0);
(331208.4,	3766614.8,	42.4,	189.9,	0.0);	(330938.5,	3766574.4,	30.1,	189.9,	0.0);
(331039.8,	3766640.7,	42.0,	189.9,	0.0);	(330908.3,	3766667.0,	33.2,	189.9,	0.0);
(330888.8,	3766645.0,	29.9,	189.9,	0.0);	(331270.2,	3766756.9,	58.8,	189.9,	0.0);
(331172.5,	3766738.0,	49.3,	189.9,	0.0);	(331056.3,	3766689.7,	43.4,	189.9,	0.0);
(331292.4,	3766805.8,	64.5,	189.9,	0.0);	(331236.7,	3765997.7,	16.3,	189.9,	0.0);
(331325.2,	3766091.4,	20.2,	189.9,	0.0);	(331215.0,	3766171.3,	23.8,	189.9,	0.0);
(331222.9,	3766130.4,	23.2,	189.9,	0.0);	(331204.2,	3766077.0,	22.1,	189.9,	0.0);
(330920.8,	3766632.6,	29.3,	189.9,	0.0);	(330939.6,	3766709.2,	44.2,	189.9,	0.0);
(331350.2,	3766701.0,	48.6,	189.9,	0.0);	(331488.8,	3766162.0,	37.4,	189.9,	0.0);
(331596.0,	3766073.2,	25.7,	189.9,	0.0);	(331655.7,	3766029.1,	28.5,	189.9,	0.0);
(331470.4,	3766037.9,	32.1,	189.9,	0.0);	(331459.6,	3765992.8,	28.9,	189.9,	0.0);
(331409.7,	3765956.1,	24.3,	189.9,	0.0);	(331422.9,	3766028.1,	28.2,	189.9,	0.0);
(331344.5,	3765999.7,	21.0,	189.9,	0.0);	(331802.8,	3766199.8,	49.4,	49.4,	0.0);
(331607.7,	3766017.5,	32.9,	57.2,	0.0);	(331340.8,	3766796.4,	60.0,	189.9,	0.0);
(331307.1,	3766905.9,	73.6,	189.9,	0.0);	(331378.3,	3766924.3,	74.7,	189.9,	0.0);
(331411.1,	3766915.7,	75.9,	189.9,	0.0);	(331397.3,	3766820.5,	67.1,	189.9,	0.0);
(331430.8,	3766834.9,	70.0,	189.9,	0.0);	(331451.1,	3766858.0,	73.0,	189.9,	0.0);
(331304.0,	3766839.6,	67.2,	189.9,	0.0);	(331322.5,	3766971.5,	79.8,	189.9,	0.0);
(331429.0,	3766954.5,	78.3,	189.9,	0.0);	(331470.0,	3766952.0,	76.3,	189.9,	0.0);
(331553.9,	3766868.0,	65.9,	189.9,	0.0);	(331607.9,	3766843.5,	66.4,	189.9,	0.0);
(331557.4,	3766906.0,	72.6,	189.9,	0.0);	(331613.4,	3766883.0,	67.8,	189.9,	0.0);
(331417.6,	3765825.7,	24.7,	24.7,	0.0);	(331506.1,	3765728.6,	27.2,	27.2,	0.0);
(331599.6,	3765800.5,	32.5,	32.5,	0.0);	(331648.6,	3765769.6,	30.7,	30.7,	0.0);
(331673.0,	3765839.4,	35.7,	35.7,	0.0);	(331609.7,	3765845.9,	33.8,	33.8,	0.0);
(331705.4,	3765918.5,	39.3,	56.4,	0.0);	(331785.3,	3765871.0,	42.5,	54.1,	0.0);
(331745.2,	3765800.1,	36.4,	36.4,	0.0);	(331155.8,	3766750.0,	47.0,	189.9,	6.1);
(331008.3,	3766395.7,	25.4,	189.9,	6.1);	(331048.4,	3766366.1,	28.2,	189.9,	6.1);
(331093.8,	3766296.4,	29.3,	189.9,	6.1);	(331179.3,	3766310.7,	32.5,	189.9,	6.1);

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( 330868.5, 3766337.3,      21.7,     189.9,       6.1);        ( 330827.3, 3766361.4,      16.2,     189.9,       6.1);
( 330897.3, 3766381.6,      22.9,     189.9,       6.1);        ( 330945.5, 3766348.1,      23.4,     189.9,       6.1);
( 330917.5, 3766286.7,      19.0,     189.9,       6.1);        ( 330933.0, 3766257.2,      20.1,     189.9,       6.1);
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*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(330975.0,	3766268.0,	24.0,	189.9,	6.1);	(331097.9,	3766206.6,	25.5,	189.9,	6.1);
(331140.7,	3766205.0,	24.9,	189.9,	6.1);	(331150.8,	3766227.6,	26.6,	189.9,	6.1);
(331066.0,	3766128.8,	15.6,	189.9,	6.1);	(331050.5,	3766156.1,	21.2,	189.9,	6.1);
(331108.0,	3766129.6,	17.3,	189.9,	6.1);	(331129.8,	3766068.2,	17.9,	189.9,	6.1);
(331168.7,	3766096.9,	20.7,	189.9,	6.1);	(331200.9,	3766209.9,	25.9,	189.9,	6.1);
(331278.4,	3766261.0,	29.1,	189.9,	6.1);	(331268.7,	3766178.6,	26.6,	189.9,	6.1);
(330936.2,	3766491.4,	27.1,	189.9,	6.1);	(330833.8,	3766481.9,	22.1,	189.9,	6.1);
(330805.2,	3766491.0,	23.3,	189.9,	6.1);	(330816.2,	3766527.3,	23.8,	189.9,	6.1);
(330856.7,	3766558.3,	25.5,	189.9,	6.1);	(331208.4,	3766614.8,	42.4,	189.9,	6.1);
(330938.5,	3766574.4,	30.1,	189.9,	6.1);	(331039.8,	3766640.7,	42.0,	189.9,	6.1);
(330908.3,	3766667.0,	33.2,	189.9,	6.1);	(330888.8,	3766645.0,	29.9,	189.9,	6.1);
(331270.2,	3766756.9,	58.8,	189.9,	6.1);	(331172.5,	3766738.0,	49.3,	189.9,	6.1);
(331056.3,	3766689.7,	43.4,	189.9,	6.1);	(331292.4,	3766805.8,	64.5,	189.9,	6.1);
(331236.7,	3765997.7,	16.3,	189.9,	6.1);	(331325.2,	3766091.4,	20.2,	189.9,	6.1);
(331215.0,	3766171.3,	23.8,	189.9,	6.1);	(331222.9,	3766130.4,	23.2,	189.9,	6.1);
(331204.2,	3766077.0,	22.1,	189.9,	6.1);	(330920.8,	3766632.6,	29.3,	189.9,	6.1);
(330939.6,	3766709.2,	44.2,	189.9,	6.1);	(331350.2,	3766701.0,	48.6,	189.9,	6.1);
(331488.8,	3766162.0,	37.4,	189.9,	6.1);	(331596.0,	3766073.2,	25.7,	189.9,	6.1);
(331655.7,	3766029.1,	28.5,	189.9,	6.1);	(331470.4,	3766037.9,	32.1,	189.9,	6.1);
(331459.6,	3765992.8,	28.9,	189.9,	6.1);	(331409.7,	3765956.1,	24.3,	189.9,	6.1);
(331422.9,	3766028.1,	28.2,	189.9,	6.1);	(331344.5,	3765999.7,	21.0,	189.9,	6.1);
(331802.8,	3766199.8,	49.4,	49.4,	6.1);	(331607.7,	3766017.5,	32.9,	57.2,	6.1);
(331340.8,	3766796.4,	60.0,	189.9,	6.1);	(331307.1,	3766905.9,	73.6,	189.9,	6.1);
(331378.3,	3766924.3,	74.7,	189.9,	6.1);	(331411.1,	3766915.7,	75.9,	189.9,	6.1);
(331397.3,	3766820.5,	67.1,	189.9,	6.1);	(331430.8,	3766834.9,	70.0,	189.9,	6.1);
(331451.1,	3766858.0,	73.0,	189.9,	6.1);	(331304.0,	3766839.6,	67.2,	189.9,	6.1);
(331322.5,	3766971.5,	79.8,	189.9,	6.1);	(331429.0,	3766954.5,	78.3,	189.9,	6.1);
(331470.0,	3766952.0,	76.3,	189.9,	6.1);	(331553.9,	3766868.0,	65.9,	189.9,	6.1);
(331607.9,	3766843.5,	66.4,	189.9,	6.1);	(331557.4,	3766906.0,	72.6,	189.9,	6.1);
(331613.4,	3766883.0,	67.8,	189.9,	6.1);	(331417.6,	3765825.7,	24.7,	24.7,	6.1);
(331506.1,	3765728.6,	27.2,	27.2,	6.1);	(331599.6,	3765800.5,	32.5,	32.5,	6.1);
(331648.6,	3765769.6,	30.7,	30.7,	6.1);	(331673.0,	3765839.4,	35.7,	35.7,	6.1);
(331609.7,	3765845.9,	33.8,	33.8,	6.1);	(331705.4,	3765918.5,	39.3,	56.4,	6.1);
(331785.3,	3765871.0,	42.5,	54.1,	6.1);	(331745.2,	3765800.1,	36.4,	36.4,	6.1);

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\metdata-53m\KSMO_v9.SFC Met Version: 16216
Profile file: ..\..\metdata-53m\KSMO_v9.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 93197 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2012 Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	131.	10.1	283.1	2.0
12	01	01	1	02	-7.6	0.121	-9.000	-9.000	-999.	101.	21.3	0.17	2.20	1.00	1.35	232.	10.1	282.0	2.0
12	01	01	1	03	-3.3	0.082	-9.000	-9.000	-999.	57.	15.3	0.17	2.20	1.00	0.86	46.	10.1	280.9	2.0
12	01	01	1	04	-5.4	0.102	-9.000	-9.000	-999.	79.	17.9	0.17	2.20	1.00	1.14	82.	10.1	281.4	2.0
12	01	01	1	05	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	205.	10.1	281.4	2.0
12	01	01	1	06	-7.4	0.119	-9.000	-9.000	-999.	99.	20.9	0.17	2.20	1.00	1.33	254.	10.1	280.9	2.0
12	01	01	1	07	-4.6	0.094	-9.000	-9.000	-999.	70.	16.6	0.17	2.20	1.00	1.04	39.	10.1	279.2	2.0
12	01	01	1	08	-16.0	0.197	-9.000	-9.000	-999.	209.	43.0	0.17	2.20	0.54	2.10	63.	10.1	282.0	2.0
12	01	01	1	09	36.8	0.255	0.339	0.005	38.	309.	-40.8	0.17	2.20	0.31	2.27	33.	10.1	292.0	2.0
12	01	01	1	10	102.6	0.234	0.691	0.006	117.	271.	-11.3	0.17	2.20	0.23	1.79	204.	10.1	289.2	2.0
12	01	01	1	11	154.6	0.178	1.118	0.005	327.	181.	-3.3	0.17	2.20	0.20	1.11	119.	10.1	296.4	2.0
12	01	01	1	12	182.0	0.295	1.459	0.005	618.	385.	-12.8	0.17	2.20	0.19	2.30	76.	10.1	300.9	2.0
12	01	01	1	13	175.0	0.355	1.686	0.005	991.	507.	-23.0	0.17	2.20	0.19	2.98	179.	10.1	293.8	2.0
12	01	01	1	14	148.1	0.374	1.737	0.005	1282.	549.	-31.9	0.17	2.20	0.20	3.25	211.	10.1	292.0	2.0
12	01	01	1	15	98.0	0.291	1.572	0.005	1436.	380.	-22.7	0.17	2.20	0.23	2.44	231.	10.1	290.9	2.0
12	01	01	1	16	28.2	0.303	1.044	0.005	1460.	400.	-89.0	0.17	2.20	0.32	2.85	217.	10.1	289.2	2.0
12	01	01	1	17	-22.4	0.259	-9.000	-9.000	-999.	317.	73.7	0.17	2.20	0.58	2.73	226.	10.1	287.0	2.0
12	01	01	1	18	-8.7	0.131	-9.000	-9.000	-999.	124.	23.3	0.17	2.20	1.00	1.45	230.	10.1	286.4	2.0
12	01	01	1	19	-13.2	0.163	-9.000	-9.000	-999.	157.	29.4	0.17	2.20	1.00	1.77	225.	10.1	285.9	2.0
12	01	01	1	20	-5.7	0.106	-9.000	-9.000	-999.	83.	18.6	0.17	2.20	1.00	1.18	182.	10.1	284.9	2.0
12	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.17	2.20	1.00	0.00	0.	10.1	284.2	2.0
12	01	01	1	22	-7.3	0.119	-9.000	-9.000	-999.	99.	21.1	0.17	2.20	1.00	1.33	202.	10.1	285.4	2.0
12	01	01	1	23	-6.0	0.108	-9.000	-9.000	-999.	86.	19.1	0.17	2.20	1.00	1.21	251.	10.1	284.9	2.0
12	01	01	1	24	-5.4	0.102	-9.000	-9.000	-999.	78.	18.0	0.17	2.20	1.00	1.14	224.	10.1	284.2	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.1	1	131.	1.26	283.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 , 3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC	
331155.82	3766750.02	0.22642	331008.32	3766395.70	0.57635	
331048.43	3766366.09	0.78948	331093.81	3766296.36	1.03087	
331179.30	3766310.69	2.15067	330868.50	3766337.26	0.30964	
330827.28	3766361.37	0.25149	330897.28	3766381.59	0.33094	
330945.49	3766348.15	0.43190	330917.50	3766286.71	0.38826	
330933.05	3766257.16	0.41683	330975.05	3766268.05	0.50928	
331097.93	3766206.61	0.77321	331140.70	3766205.05	0.88487	
331150.81	3766227.61	1.01927	331066.04	3766128.84	0.54152	
331050.49	3766156.06	0.56748	331108.04	3766129.61	0.60926	
331129.81	3766068.17	0.55711	331168.70	3766096.95	0.66017	
331200.90	3766209.90	1.08212	331278.36	3766261.05	1.88347	
331268.71	3766178.62	1.11864	330936.16	3766491.40	0.31639	
330833.75	3766481.90	0.21065	330805.25	3766491.05	0.18747	
330816.16	3766527.30	0.17905	330856.70	3766558.34	0.19034	
331208.38	3766614.84	1.01194	330938.53	3766574.42	0.24846	
331039.85	3766640.66	0.26934	330908.33	3766666.96	0.16262	
330888.85	3766645.04	0.16436	331270.24	3766756.90	0.32816	
331172.48	3766738.02	0.25442	331056.34	3766689.67	0.22526	
331292.37	3766805.79	0.25159	331236.72	3765997.67	0.60350	
331325.18	3766091.36	1.02369	331214.97	3766171.31	0.93575	
331222.87	3766130.38	0.83355	331204.20	3766077.00	0.69049	
330920.76	3766632.61	0.19007	330939.62	3766709.25	0.14110	
331350.25	3766700.96	1.41114	331488.82	3766162.03	4.26599	Res Onsite MER
331595.98	3766073.19	3.10339	331655.66	3766029.10	0.78863	
331470.42	3766037.93	1.86109	331459.64	3765992.85	1.22844	
331409.66	3765956.09	0.84392	331422.89	3766028.13	1.35744	
331344.48	3765999.71	0.84666	331802.76	3766199.80	1.50931	
331607.69	3766017.55	1.24526	331340.85	3766796.42	0.37693	
331307.10	3766905.86	0.14630	331378.31	3766924.27	0.18023	
331411.15	3766915.68	0.21782	331397.34	3766820.53	0.41464	
331430.80	3766834.95	0.43240	331451.06	3766857.97	0.39014	
331304.03	3766839.56	0.21274	331322.50	3766971.48	0.11326	
331428.97	3766954.49	0.18722	331469.95	3766951.99	0.22571	
331553.92	3766868.02	0.53272	331607.90	3766843.53	0.66014	
331557.42	3766906.01	0.40395	331613.40	3766883.02	0.52418	
331417.62	3765825.72	0.42175	331506.12	3765728.59	0.23641	
331599.65	3765800.54	0.25773	331648.57	3765769.60	0.18812	

331673.04	3765839.39	0.22688	331609.72	3765845.87	0.31279
331705.41	3765918.54	0.25958	331785.28	3765871.05	0.12451
331745.22	3765800.06	0.13862	331155.82	3766750.02	0.21255

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 , 3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331008.32	3766395.70	0.58567	331048.43	3766366.09	0.79897
331093.81	3766296.36	1.04004	331179.30	3766310.69	2.02570
330868.50	3766337.26	0.31469	330827.28	3766361.37	0.25599
330897.28	3766381.59	0.33589	330945.49	3766348.15	0.43948
330917.50	3766286.71	0.39677	330933.05	3766257.16	0.42618
330975.05	3766268.05	0.51936	331097.93	3766206.61	0.79173
331140.70	3766205.05	0.90989	331150.81	3766227.61	1.04584
331066.04	3766128.84	0.55696	331050.49	3766156.06	0.58264
331108.04	3766129.61	0.62738	331129.81	3766068.17	0.57326
331168.70	3766096.95	0.67940	331200.90	3766209.90	1.11445
331278.36	3766261.05	1.93081	331268.71	3766178.62	1.14734
330936.16	3766491.40	0.31839	330833.75	3766481.90	0.21295
330805.25	3766491.05	0.18914	330816.16	3766527.30	0.18044
330856.70	3766558.34	0.19143	331208.38	3766614.84	0.87580
330938.53	3766574.42	0.24585	331039.85	3766640.66	0.25129
330908.33	3766666.96	0.15747	330888.85	3766645.04	0.16298
331270.24	3766756.90	0.30855	331172.48	3766738.02	0.23835
331056.34	3766689.67	0.21146	331292.37	3766805.79	0.23987
331236.72	3765997.67	0.62205	331325.18	3766091.36	1.05786
331214.97	3766171.31	0.96472	331222.87	3766130.38	0.85766
331204.20	3766077.00	0.70968	330920.76	3766632.61	0.18938
330939.62	3766709.25	0.13392	331350.25	3766700.96	1.22924
331488.82	3766162.03	3.53767	331595.98	3766073.19	3.31144
331655.66	3766029.10	0.81609	331470.42	3766037.93	1.81332
331459.64	3765992.85	1.25312	331409.66	3765956.09	0.87156
331422.89	3766028.13	1.38806	331344.48	3765999.71	0.87538
331802.76	3766199.80	1.31995	331607.69	3766017.55	1.16847
331340.85	3766796.42	0.35533	331307.10	3766905.86	0.14184
331378.31	3766924.27	0.17455	331411.15	3766915.68	0.21056
331397.34	3766820.53	0.39338	331430.80	3766834.95	0.41156
331451.06	3766857.97	0.37336	331304.03	3766839.56	0.20405
331322.50	3766971.48	0.11051	331428.97	3766954.49	0.18170
331469.95	3766951.99	0.21875	331553.92	3766868.02	0.51180
331607.90	3766843.53	0.63535	331557.42	3766906.01	0.38992
331613.40	3766883.02	0.50609	331417.62	3765825.72	0.43229
331506.12	3765728.59	0.23978	331599.65	3765800.54	0.25326
331648.57	3765769.60	0.18739	331673.04	3765839.39	0.20675

331609.72	3765845.87	0.28657	331705.41	3765918.54	0.22519
331785.28	3765871.05	0.11364	331745.22	3765800.06	0.12690

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331155.82	3766750.02	0.07411	331008.32	3766395.70	0.30732
331048.43	3766366.09	0.45912	331093.81	3766296.36	0.77390
331179.30	3766310.69	3.41033	330868.50	3766337.26	0.16245
330827.28	3766361.37	0.13355	330897.28	3766381.59	0.17246
330945.49	3766348.15	0.23278	330917.50	3766286.71	0.21664
330933.05	3766257.16	0.23833	330975.05	3766268.05	0.29738
331097.93	3766206.61	0.62487	331140.70	3766205.05	0.84396
331150.81	3766227.61	1.00765	331066.04	3766128.84	0.46581
331050.49	3766156.06	0.43336	331108.04	3766129.61	0.59520
331129.81	3766068.17	0.67765	331168.70	3766096.95	0.86757
331200.90	3766209.90	1.36186	331278.36	3766261.05	5.59807
331268.71	3766178.62	1.96601	330936.16	3766491.40	0.15443
330833.75	3766481.90	0.11028	330805.25	3766491.05	0.09837
330816.16	3766527.30	0.09424	330856.70	3766558.34	0.09811
331208.38	3766614.84	0.17468	330938.53	3766574.42	0.11670
331039.85	3766640.66	0.09744	330908.33	3766666.96	0.07751
330888.85	3766645.04	0.08248	331270.24	3766756.90	0.08289
331172.48	3766738.02	0.07780	331056.34	3766689.67	0.08133
331292.37	3766805.79	0.06872	331236.72	3765997.67	2.98925
331325.18	3766091.36	6.11975	331214.97	3766171.31	1.27318
331222.87	3766130.38	1.27228	331204.20	3766077.00	1.16838
330920.76	3766632.61	0.09295	330939.62	3766709.25	0.05996
331350.25	3766700.96	0.15861	331488.82	3766162.03	3.02103
331595.98	3766073.19	0.62446	331655.66	3766029.10	0.28207
331470.42	3766037.93	1.39550	331459.64	3765992.85	1.00681
331409.66	3765956.09	1.18250	331422.89	3766028.13	2.57558
331344.48	3765999.71	8.24911	331802.76	3766199.80	0.24155
331607.69	3766017.55	0.32657	331340.85	3766796.42	0.08471
331307.10	3766905.86	0.04716	331378.31	3766924.27	0.05191
331411.15	3766915.68	0.05767	331397.34	3766820.53	0.08540
331430.80	3766834.95	0.08670	331451.06	3766857.97	0.08161
331304.03	3766839.56	0.06108	331322.50	3766971.48	0.03881
331428.97	3766954.49	0.05196	331469.95	3766951.99	0.05827
331553.92	3766868.02	0.10452	331607.90	3766843.53	0.12967

331557.42	3766906.01	0.08695	331613.40	3766883.02	0.10960
331417.62	3765825.72	0.33323	331506.12	3765728.59	0.14232
331599.65	3765800.54	0.12337	331648.57	3765769.60	0.09889
331673.04	3765839.39	0.09996	331609.72	3765845.87	0.13467
331705.41	3765918.54	0.10456	331785.28	3765871.05	0.06551
331745.22	3765800.06	0.07061	331155.82	3766750.02	0.06783

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331008.32	3766395.70	0.29730	331048.43	3766366.09	0.43623
331093.81	3766296.36	0.73439	331179.30	3766310.69	2.69867
330868.50	3766337.26	0.15824	330827.28	3766361.37	0.13213
330897.28	3766381.59	0.16760	330945.49	3766348.15	0.22641
330917.50	3766286.71	0.21280	330933.05	3766257.16	0.23329
330975.05	3766268.05	0.28836	331097.93	3766206.61	0.60401
331140.70	3766205.05	0.81604	331150.81	3766227.61	0.97426
331066.04	3766128.84	0.45639	331050.49	3766156.06	0.41954
331108.04	3766129.61	0.57811	331129.81	3766068.17	0.64037
331168.70	3766096.95	0.81181	331200.90	3766209.90	1.30385
331278.36	3766261.05	4.17527	331268.71	3766178.62	1.79235
330936.16	3766491.40	0.14582	330833.75	3766481.90	0.10719
330805.25	3766491.05	0.09495	330816.16	3766527.30	0.09083
330856.70	3766558.34	0.09345	331208.38	3766614.84	0.15664
330938.53	3766574.42	0.10644	331039.85	3766640.66	0.08760
330908.33	3766666.96	0.06881	330888.85	3766645.04	0.07518
331270.24	3766756.90	0.07848	331172.48	3766738.02	0.07165
331056.34	3766689.67	0.07335	331292.37	3766805.79	0.06580
331236.72	3765997.67	2.37318	331325.18	3766091.36	4.63678
331214.97	3766171.31	1.20480	331222.87	3766130.38	1.17467
331204.20	3766077.00	1.06290	330920.76	3766632.61	0.08510
330939.62	3766709.25	0.05476	331350.25	3766700.96	0.14839
331488.82	3766162.03	2.54221	331595.98	3766073.19	0.55193
331655.66	3766029.10	0.24776	331470.42	3766037.93	1.17438
331459.64	3765992.85	0.84252	331409.66	3765956.09	0.97305
331422.89	3766028.13	2.06360	331344.48	3765999.71	5.49225
331802.76	3766199.80	0.22851	331607.69	3766017.55	0.28694
331340.85	3766796.42	0.08079	331307.10	3766905.86	0.04574
331378.31	3766924.27	0.05047	331411.15	3766915.68	0.05614
331397.34	3766820.53	0.08237	331430.80	3766834.95	0.08394
331451.06	3766857.97	0.07927	331304.03	3766839.56	0.05875
331322.50	3766971.48	0.03787	331428.97	3766954.49	0.05072
331469.95	3766951.99	0.05686	331553.92	3766868.02	0.10145
331607.90	3766843.53	0.12610	331557.42	3766906.01	0.08478

331613.40	3766883.02	0.10674	331417.62	3765825.72	0.29703
331506.12	3765728.59	0.12859	331599.65	3765800.54	0.10897
331648.57	3765769.60	0.08700	331673.04	3765839.39	0.08865
331609.72	3765845.87	0.11855	331705.41	3765918.54	0.09361
331785.28	3765871.05	0.05923	331745.22	3765800.06	0.06301

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ONSITE	1ST HIGHEST VALUE IS	4.26599	AT (331488.82, 3766162.03, 37.43, 189.92, 0.00)	DC	
	2ND HIGHEST VALUE IS	3.53767	AT (331488.82, 3766162.03, 37.43, 189.92, 6.10)	DC	
	3RD HIGHEST VALUE IS	3.31144	AT (331595.98, 3766073.19, 25.71, 189.92, 6.10)	DC	
	4TH HIGHEST VALUE IS	3.10339	AT (331595.98, 3766073.19, 25.71, 189.92, 0.00)	DC	
	5TH HIGHEST VALUE IS	2.15067	AT (331179.30, 3766310.69, 32.50, 189.92, 0.00)	DC	
	6TH HIGHEST VALUE IS	2.02570	AT (331179.30, 3766310.69, 32.50, 189.92, 6.10)	DC	
	7TH HIGHEST VALUE IS	1.93081	AT (331278.36, 3766261.05, 29.05, 189.92, 6.10)	DC	
	8TH HIGHEST VALUE IS	1.88347	AT (331278.36, 3766261.05, 29.05, 189.92, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.86109	AT (331470.42, 3766037.93, 32.12, 189.92, 0.00)	DC	
	10TH HIGHEST VALUE IS	1.81332	AT (331470.42, 3766037.93, 32.12, 189.92, 6.10)	DC	
OFFSITE	1ST HIGHEST VALUE IS	8.24911	AT (331344.48, 3765999.71, 20.97, 189.92, 0.00)	DC	
	2ND HIGHEST VALUE IS	6.11975	AT (331325.18, 3766091.36, 20.16, 189.92, 0.00)	DC	
	3RD HIGHEST VALUE IS	5.59807	AT (331278.36, 3766261.05, 29.05, 189.92, 0.00)	DC	
	4TH HIGHEST VALUE IS	5.49225	AT (331344.48, 3765999.71, 20.97, 189.92, 6.10)	DC	
	5TH HIGHEST VALUE IS	4.63678	AT (331325.18, 3766091.36, 20.16, 189.92, 6.10)	DC	
	6TH HIGHEST VALUE IS	4.17527	AT (331278.36, 3766261.05, 29.05, 189.92, 6.10)	DC	
	7TH HIGHEST VALUE IS	3.41033	AT (331179.30, 3766310.69, 32.50, 189.92, 0.00)	DC	
	8TH HIGHEST VALUE IS	3.02103	AT (331488.82, 3766162.03, 37.43, 189.92, 0.00)	DC	
	9TH HIGHEST VALUE IS	2.98925	AT (331236.72, 3765997.67, 16.26, 189.92, 0.00)	DC	
	10TH HIGHEST VALUE IS	2.69867	AT (331179.30, 3766310.69, 32.50, 189.92, 6.10)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   2 Warning Message(s)
A Total of   799 Informational Message(s)

A Total of   43848 Hours Were Processed

A Total of   455 Calm Hours Identified

A Total of   344 Missing Hours Identified (0.78 Percent)

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
ME W186   1026   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used   0.50
ME W187   1026   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

   ****
   *** AERMOD Finishes Successfully ***
   ****

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for   64 Source(s),
  for Total of   1 Urban Area(s):
  Urban Population = 10040000.0 ; Urban Roughness Length = 1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes: 64 Source(s);   2 Source Group(s); and   76 Receptor(s)

               with: 0 POINT(s), including
                          0 POINTCAP(s) and   0 POINTHOR(s)
                and: 62 VOLUME source(s)
                and: 2 AREA type source(s)
                and: 0 LINE source(s)
                and: 0 RLINE/RLINEXT source(s)
                and: 0 OPENPIT source(s)
                and: 0 BUOYANT LINE source(s) with   0 line(s)

```
**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  16216

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    53.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   SMM-06 (P2-4B) Students.err
**File for Summary of Results:   SMM-06 (P2-4B) Students.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.16129E-01	331183.6	3766360.3	34.1	4.15	4.66	3.26	YES	HRDOW
L0000002	0	0.16129E-01	331192.2	3766355.2	34.0	4.15	4.66	3.26	YES	HRDOW
L0000003	0	0.16129E-01	331200.9	3766350.2	33.8	4.15	4.66	3.26	YES	HRDOW
L0000004	0	0.16129E-01	331209.5	3766345.1	33.6	4.15	4.66	3.26	YES	HRDOW
L0000005	0	0.16129E-01	331218.1	3766340.0	33.3	4.15	4.66	3.26	YES	HRDOW
L0000006	0	0.16129E-01	331226.8	3766335.0	33.0	4.15	4.66	3.26	YES	HRDOW
L0000007	0	0.16129E-01	331235.4	3766329.9	32.8	4.15	4.66	3.26	YES	HRDOW
L0000008	0	0.16129E-01	331244.0	3766324.8	32.5	4.15	4.66	3.26	YES	HRDOW
L0000009	0	0.16129E-01	331252.6	3766319.8	32.1	4.15	4.66	3.26	YES	HRDOW
L0000010	0	0.16129E-01	331261.3	3766314.7	31.5	4.15	4.66	3.26	YES	HRDOW
L0000011	0	0.16129E-01	331269.9	3766309.6	30.8	4.15	4.66	3.26	YES	HRDOW
L0000012	0	0.16129E-01	331278.5	3766304.6	30.1	4.15	4.66	3.26	YES	HRDOW
L0000013	0	0.16129E-01	331287.2	3766299.5	29.5	4.15	4.66	3.26	YES	HRDOW
L0000014	0	0.16129E-01	331295.8	3766294.4	29.1	4.15	4.66	3.26	YES	HRDOW
L0000015	0	0.16129E-01	331304.4	3766289.4	28.7	4.15	4.66	3.26	YES	HRDOW
L0000016	0	0.16129E-01	331313.1	3766284.3	28.4	4.15	4.66	3.26	YES	HRDOW
L0000017	0	0.16129E-01	331321.7	3766279.2	28.2	4.15	4.66	3.26	YES	HRDOW
L0000018	0	0.16129E-01	331330.3	3766274.1	27.9	4.15	4.66	3.26	YES	HRDOW
L0000019	0	0.16129E-01	331339.0	3766269.1	27.6	4.15	4.66	3.26	YES	HRDOW
L0000020	0	0.16129E-01	331347.6	3766264.0	27.2	4.15	4.66	3.26	YES	HRDOW
L0000021	0	0.16129E-01	331356.2	3766258.9	26.9	4.15	4.66	3.26	YES	HRDOW
L0000022	0	0.16129E-01	331364.9	3766253.9	26.7	4.15	4.66	3.26	YES	HRDOW
L0000023	0	0.16129E-01	331373.5	3766248.8	26.6	4.15	4.66	3.26	YES	HRDOW
L0000024	0	0.16129E-01	331382.1	3766243.7	26.4	4.15	4.66	3.26	YES	HRDOW
L0000025	0	0.16129E-01	331386.7	3766235.6	26.1	4.15	4.66	3.26	YES	HRDOW
L0000026	0	0.16129E-01	331389.3	3766225.9	25.8	4.15	4.66	3.26	YES	HRDOW
L0000027	0	0.16129E-01	331392.0	3766216.2	25.7	4.15	4.66	3.26	YES	HRDOW
L0000028	0	0.16129E-01	331394.6	3766206.6	25.8	4.15	4.66	3.26	YES	HRDOW
L0000029	0	0.16129E-01	331397.3	3766196.9	25.9	4.15	4.66	3.26	YES	HRDOW
L0000030	0	0.16129E-01	331399.0	3766187.2	25.8	4.15	4.66	3.26	YES	HRDOW
L0000031	0	0.16129E-01	331398.3	3766177.2	25.4	4.15	4.66	3.26	YES	HRDOW
L0000032	0	0.16129E-01	331397.7	3766167.2	25.0	4.15	4.66	3.26	YES	HRDOW
L0000033	0	0.16129E-01	331397.0	3766157.2	24.6	4.15	4.66	3.26	YES	HRDOW
L0000034	0	0.16129E-01	331396.3	3766147.3	24.2	4.15	4.66	3.26	YES	HRDOW
L0000035	0	0.16129E-01	331395.6	3766137.3	23.9	4.15	4.66	3.26	YES	HRDOW
L0000036	0	0.16129E-01	331394.9	3766127.3	23.7	4.15	4.66	3.26	YES	HRDOW
L0000037	0	0.16129E-01	331394.2	3766117.3	23.5	4.15	4.66	3.26	YES	HRDOW
L0000038	0	0.16129E-01	331389.2	3766108.9	22.6	4.15	4.66	3.26	YES	HRDOW
L0000039	0	0.16129E-01	331383.2	3766101.0	21.3	4.15	4.66	3.26	YES	HRDOW
L0000040	0	0.16129E-01	331377.1	3766093.0	20.8	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.16129E-01	331371.0	3766085.1	20.4	4.15	4.66	3.26	YES	HRDOW
L0000042	0	0.16129E-01	331364.9	3766077.1	20.1	4.15	4.66	3.26	YES	HRDOW
L0000043	0	0.16129E-01	331358.9	3766069.2	19.8	4.15	4.66	3.26	YES	HRDOW
L0000044	0	0.16129E-01	331352.8	3766061.2	19.4	4.15	4.66	3.26	YES	HRDOW
L0000045	0	0.16129E-01	331346.7	3766053.2	19.0	4.15	4.66	3.26	YES	HRDOW
L0000046	0	0.16129E-01	331340.6	3766045.3	18.7	4.15	4.66	3.26	YES	HRDOW
L0000047	0	0.16129E-01	331334.6	3766037.3	18.4	4.15	4.66	3.26	YES	HRDOW
L0000048	0	0.16129E-01	331328.5	3766029.4	17.6	4.15	4.66	3.26	YES	HRDOW
L0000049	0	0.16129E-01	331322.4	3766021.4	17.1	4.15	4.66	3.26	YES	HRDOW
L0000050	0	0.16129E-01	331316.3	3766013.5	16.6	4.15	4.66	3.26	YES	HRDOW
L0000051	0	0.16129E-01	331310.2	3766005.5	16.0	4.15	4.66	3.26	YES	HRDOW
L0000052	0	0.16129E-01	331304.2	3765997.6	15.2	4.15	4.66	3.26	YES	HRDOW
L0000053	0	0.16129E-01	331298.1	3765989.6	14.6	4.15	4.66	3.26	YES	HRDOW
L0000054	0	0.16129E-01	331292.0	3765981.7	14.0	4.15	4.66	3.26	YES	HRDOW
L0000055	0	0.16129E-01	331285.9	3765973.7	13.1	4.15	4.66	3.26	YES	HRDOW
L0000056	0	0.16129E-01	331279.9	3765965.8	11.7	4.15	4.66	3.26	YES	HRDOW
L0000057	0	0.16129E-01	331273.8	3765957.8	10.4	4.15	4.66	3.26	YES	HRDOW
L0000058	0	0.16129E-01	331267.7	3765949.8	10.0	4.15	4.66	3.26	YES	HRDOW
L0000059	0	0.16129E-01	331261.6	3765941.9	9.3	4.15	4.66	3.26	YES	HRDOW
L0000060	0	0.16129E-01	331255.5	3765933.9	8.2	4.15	4.66	3.26	YES	HRDOW
L0000061	0	0.16129E-01	331249.5	3765926.0	6.9	4.15	4.66	3.26	YES	HRDOW
L0000062	0	0.16129E-01	331243.4	3765918.0	6.6	4.15	4.66	3.26	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1	0	0.14931E-04	331171.4	3766377.3	34.5	4.15	35	1.93	YES	HRDOW
3	0	0.15647E-04	331585.6	3766245.0	34.7	4.15	10	1.93	YES	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
OFFSITE	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 , L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 , L0000040 , L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 , L0000048 , L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 , L0000056 , L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 ,
ONSITE	1 , 3 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	10040000.	1 , L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 ,
		L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 ,
		L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 ,
		L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 ,
		L0000032 , L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 ,
		L0000040 , L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 ,
		L0000048 , L0000049 , L0000050 , L0000051 , L0000052 , L0000053 , L0000054 , L0000055 ,
		L0000056 , L0000057 , L0000058 , L0000059 , L0000060 , L0000061 , L0000062 , 3 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 1   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY							
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 TO L0000062   ; SOURCE TYPE = VOLUME   :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
					DAY OF WEEK = WEEKDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SATURDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
					DAY OF WEEK = SUNDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 3   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(331233.8, 3766556.0,	35.9,	189.9,	0.0);	(331133.7, 3766398.5,	34.3,	189.9,	0.0);
(331153.7, 3766398.5,	34.7,	189.9,	0.0);	(331173.7, 3766398.5,	34.9,	189.9,	0.0);
(331113.7, 3766418.5,	33.6,	189.9,	0.0);	(331133.7, 3766418.5,	35.0,	189.9,	0.0);
(331153.7, 3766418.5,	35.1,	189.9,	0.0);	(331173.7, 3766418.5,	35.1,	189.9,	0.0);
(331193.7, 3766418.5,	35.0,	189.9,	0.0);	(331213.7, 3766418.5,	34.8,	189.9,	0.0);
(331113.7, 3766438.5,	34.2,	189.9,	0.0);	(331133.7, 3766438.5,	35.2,	189.9,	0.0);
(331153.7, 3766438.5,	35.4,	189.9,	0.0);	(331173.7, 3766438.5,	35.5,	189.9,	0.0);
(331193.7, 3766438.5,	35.4,	189.9,	0.0);	(331213.7, 3766438.5,	35.3,	189.9,	0.0);
(331233.7, 3766438.5,	35.0,	189.9,	0.0);	(331113.7, 3766458.5,	34.5,	189.9,	0.0);
(331133.7, 3766458.5,	35.4,	189.9,	0.0);	(331153.7, 3766458.5,	35.8,	189.9,	0.0);
(331173.7, 3766458.5,	35.9,	189.9,	0.0);	(331193.7, 3766458.5,	35.8,	189.9,	0.0);
(331213.7, 3766458.5,	35.8,	189.9,	0.0);	(331233.7, 3766458.5,	35.8,	189.9,	0.0);
(331253.7, 3766458.5,	35.2,	189.9,	0.0);	(331113.7, 3766478.5,	34.2,	189.9,	0.0);
(331133.7, 3766478.5,	35.8,	189.9,	0.0);	(331153.7, 3766478.5,	36.0,	189.9,	0.0);
(331173.7, 3766478.5,	36.1,	189.9,	0.0);	(331193.7, 3766478.5,	36.2,	189.9,	0.0);
(331213.7, 3766478.5,	36.2,	189.9,	0.0);	(331233.7, 3766478.5,	36.2,	189.9,	0.0);
(331253.7, 3766478.5,	36.2,	189.9,	0.0);	(331133.7, 3766498.5,	35.8,	189.9,	0.0);
(331153.7, 3766498.5,	35.9,	189.9,	0.0);	(331173.7, 3766498.5,	36.0,	189.9,	0.0);
(331193.7, 3766498.5,	36.1,	189.9,	0.0);	(331213.7, 3766498.5,	36.3,	189.9,	0.0);
(331233.7, 3766498.5,	36.4,	189.9,	0.0);	(331253.7, 3766498.5,	36.8,	189.9,	0.0);
(331273.7, 3766498.5,	37.4,	189.9,	0.0);	(331133.7, 3766518.5,	34.7,	189.9,	0.0);
(331153.7, 3766518.5,	35.3,	189.9,	0.0);	(331173.7, 3766518.5,	35.8,	189.9,	0.0);
(331193.7, 3766518.5,	36.0,	189.9,	0.0);	(331213.7, 3766518.5,	36.3,	189.9,	0.0);
(331233.7, 3766518.5,	36.6,	189.9,	0.0);	(331253.7, 3766518.5,	37.1,	189.9,	0.0);
(331273.7, 3766518.5,	38.2,	189.9,	0.0);	(331173.7, 3766538.5,	35.1,	189.9,	0.0);
(331193.7, 3766538.5,	36.0,	189.9,	0.0);	(331213.7, 3766538.5,	36.3,	189.9,	0.0);
(331233.7, 3766538.5,	36.9,	189.9,	0.0);	(331253.7, 3766538.5,	37.3,	189.9,	0.0);
(331133.7, 3766418.5,	35.0,	189.9,	6.1);	(331153.7, 3766418.5,	35.1,	189.9,	6.1);
(331173.7, 3766418.5,	35.1,	189.9,	6.1);	(331193.7, 3766418.5,	35.0,	189.9,	6.1);
(331213.7, 3766418.5,	34.8,	189.9,	6.1);	(331133.7, 3766438.5,	35.2,	189.9,	6.1);
(331153.7, 3766438.5,	35.4,	189.9,	6.1);	(331173.7, 3766438.5,	35.5,	189.9,	6.1);
(331193.7, 3766438.5,	35.4,	189.9,	6.1);	(331213.7, 3766438.5,	35.3,	189.9,	6.1);
(331133.7, 3766458.5,	35.4,	189.9,	6.1);	(331153.7, 3766458.5,	35.8,	189.9,	6.1);
(331173.7, 3766458.5,	35.9,	189.9,	6.1);	(331193.7, 3766458.5,	35.8,	189.9,	6.1);
(331213.7, 3766458.5,	35.8,	189.9,	6.1);	(331233.7, 3766458.5,	35.8,	189.9,	6.1);
(331153.7, 3766478.5,	36.0,	189.9,	6.1);	(331173.7, 3766478.5,	36.1,	189.9,	6.1);
(331193.7, 3766478.5,	36.2,	189.9,	6.1);	(331213.7, 3766478.5,	36.2,	189.9,	6.1);
(331233.7, 3766478.5,	36.2,	189.9,	6.1);	(331253.7, 3766478.5,	36.2,	189.9,	6.1);

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file: ..\..\metdata-53m\KSMO_v9.SFC   Met Version: 16216
  Profile file: ..\..\metdata-53m\KSMO_v9.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:   93197   Upper air station no.:   3190
                Name: UNKNOWN   Name: UNKNOWN
                Year: 2012   Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	131.	10.1	283.1	2.0
12	01	01	1	02	-7.6	0.121	-9.000	-9.000	-999.	101.	21.3	0.17	2.20	1.00	1.35	232.	10.1	282.0	2.0
12	01	01	1	03	-3.3	0.082	-9.000	-9.000	-999.	57.	15.3	0.17	2.20	1.00	0.86	46.	10.1	280.9	2.0
12	01	01	1	04	-5.4	0.102	-9.000	-9.000	-999.	79.	17.9	0.17	2.20	1.00	1.14	82.	10.1	281.4	2.0
12	01	01	1	05	-6.6	0.113	-9.000	-9.000	-999.	91.	19.8	0.17	2.20	1.00	1.26	205.	10.1	281.4	2.0
12	01	01	1	06	-7.4	0.119	-9.000	-9.000	-999.	99.	20.9	0.17	2.20	1.00	1.33	254.	10.1	280.9	2.0
12	01	01	1	07	-4.6	0.094	-9.000	-9.000	-999.	70.	16.6	0.17	2.20	1.00	1.04	39.	10.1	279.2	2.0
12	01	01	1	08	-16.0	0.197	-9.000	-9.000	-999.	209.	43.0	0.17	2.20	0.54	2.10	63.	10.1	282.0	2.0
12	01	01	1	09	36.8	0.255	0.339	0.005	38.	309.	-40.8	0.17	2.20	0.31	2.27	33.	10.1	292.0	2.0
12	01	01	1	10	102.6	0.234	0.691	0.006	117.	271.	-11.3	0.17	2.20	0.23	1.79	204.	10.1	289.2	2.0
12	01	01	1	11	154.6	0.178	1.118	0.005	327.	181.	-3.3	0.17	2.20	0.20	1.11	119.	10.1	296.4	2.0
12	01	01	1	12	182.0	0.295	1.459	0.005	618.	385.	-12.8	0.17	2.20	0.19	2.30	76.	10.1	300.9	2.0
12	01	01	1	13	175.0	0.355	1.686	0.005	991.	507.	-23.0	0.17	2.20	0.19	2.98	179.	10.1	293.8	2.0
12	01	01	1	14	148.1	0.374	1.737	0.005	1282.	549.	-31.9	0.17	2.20	0.20	3.25	211.	10.1	292.0	2.0
12	01	01	1	15	98.0	0.291	1.572	0.005	1436.	380.	-22.7	0.17	2.20	0.23	2.44	231.	10.1	290.9	2.0
12	01	01	1	16	28.2	0.303	1.044	0.005	1460.	400.	-89.0	0.17	2.20	0.32	2.85	217.	10.1	289.2	2.0
12	01	01	1	17	-22.4	0.259	-9.000	-9.000	-999.	317.	73.7	0.17	2.20	0.58	2.73	226.	10.1	287.0	2.0
12	01	01	1	18	-8.7	0.131	-9.000	-9.000	-999.	124.	23.3	0.17	2.20	1.00	1.45	230.	10.1	286.4	2.0
12	01	01	1	19	-13.2	0.163	-9.000	-9.000	-999.	157.	29.4	0.17	2.20	1.00	1.77	225.	10.1	285.9	2.0
12	01	01	1	20	-5.7	0.106	-9.000	-9.000	-999.	83.	18.6	0.17	2.20	1.00	1.18	182.	10.1	284.9	2.0
12	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.17	2.20	1.00	0.00	0.	10.1	284.2	2.0
12	01	01	1	22	-7.3	0.119	-9.000	-9.000	-999.	99.	21.1	0.17	2.20	1.00	1.33	202.	10.1	285.4	2.0
12	01	01	1	23	-6.0	0.108	-9.000	-9.000	-999.	86.	19.1	0.17	2.20	1.00	1.21	251.	10.1	284.9	2.0
12	01	01	1	24	-5.4	0.102	-9.000	-9.000	-999.	78.	18.0	0.17	2.20	1.00	1.14	224.	10.1	284.2	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
12	01	01	01	10.1	1	131.	1.26	283.2	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . .

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
331233.84	3766555.97	0.34246	331133.73	3766398.51	1.07619
331153.73	3766398.51	1.49119	331173.73	3766398.51	2.07799
331113.73	3766418.51	0.66625	331133.73	3766418.51	0.81154
331153.73	3766418.51	1.02199	331173.73	3766418.51	1.29540
331193.73	3766418.51	1.68112	331213.73	3766418.51	2.15210
331113.73	3766438.51	0.54423	331133.73	3766438.51	0.63126
331153.73	3766438.51	0.74810	331173.73	3766438.51	0.89658
331193.73	3766438.51	1.09691	331213.73	3766438.51	1.35578
331233.73	3766438.51	1.61419	331113.73	3766458.51	0.44944
331133.73	3766458.51	0.50457	331153.73	3766458.51	0.57612
331173.73	3766458.51	0.66643	331193.73	3766458.51	0.78414
331213.73	3766458.51	0.93606	331233.73	3766458.51	1.10298
331253.73	3766458.51	1.26499	331113.73	3766478.51	0.38008
331133.73	3766478.51	0.41106	331153.73	3766478.51	0.46146
331173.73	3766478.51	0.52123	331193.73	3766478.51	0.59551
331213.73	3766478.51	0.68913	331233.73	3766478.51	0.79914
331253.73	3766478.51	0.91271	331133.73	3766498.51	0.34558
331153.73	3766498.51	0.38210	331173.73	3766498.51	0.42451
331193.73	3766498.51	0.47539	331213.73	3766498.51	0.53744
331233.73	3766498.51	0.61073	331253.73	3766498.51	0.68765
331273.73	3766498.51	0.75990	331133.73	3766518.51	0.30282
331153.73	3766518.51	0.32687	331173.73	3766518.51	0.35604
331193.73	3766518.51	0.39088	331213.73	3766518.51	0.43393
331233.73	3766518.51	0.48316	331253.73	3766518.51	0.53691
331273.73	3766518.51	0.58607	331173.73	3766538.51	0.30582
331193.73	3766538.51	0.32807	331213.73	3766538.51	0.35923
331233.73	3766538.51	0.39291	331253.73	3766538.51	0.43303
331133.73	3766418.51	0.64799	331153.73	3766418.51	0.78963
331173.73	3766418.51	0.97286	331193.73	3766418.51	1.25257
331213.73	3766418.51	1.67373	331133.73	3766438.51	0.51455
331153.73	3766438.51	0.59885	331173.73	3766438.51	0.70765
331193.73	3766438.51	0.86232	331213.73	3766438.51	1.08548
331133.73	3766458.51	0.41746	331153.73	3766458.51	0.47210
331173.73	3766458.51	0.54194	331193.73	3766458.51	0.63675

331213.73	3766458.51	0.76657	331233.73	3766458.51	0.92352
331153.73	3766478.51	0.38374	331173.73	3766478.51	0.43152
331193.73	3766478.51	0.49299	331213.73	3766478.51	0.57421
331233.73	3766478.51	0.67542	331253.73	3766478.51	0.78661

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 , 3 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

X-COORD (M)	Y-COORD (M)	** CONC OF OTHER IN MICROGRAMS/M**3 CONC		X-COORD (M)	Y-COORD (M)	** CONC
331233.84	3766555.97	3.76564		331133.73	3766398.51	1.50398
331153.73	3766398.51	2.11789		331173.73	3766398.51	3.44091
331113.73	3766418.51	1.07984		331133.73	3766418.51	1.36741
331153.73	3766418.51	1.80678		331173.73	3766418.51	2.58286
331193.73	3766418.51	4.30687		331213.73	3766418.51	7.00547
331113.73	3766438.51	1.00017		331133.73	3766438.51	1.23082
331153.73	3766438.51	1.55503		331173.73	3766438.51	2.05955
331193.73	3766438.51	2.96004		331213.73	3766438.51	4.55222
331233.73	3766438.51	7.28623		331113.73	3766458.51	0.92372
331133.73	3766458.51	1.11643		331153.73	3766458.51	1.37894
331173.73	3766458.51	1.76209		331193.73	3766458.51	2.36721
331213.73	3766458.51	3.36682		331233.73	3766458.51	5.10743
331253.73	3766458.51	9.07349	Phase 2-4B MER	331113.73	3766478.51	0.85257
331133.73	3766478.51	1.01752		331153.73	3766478.51	1.24777
331173.73	3766478.51	1.56792		331193.73	3766478.51	2.03500
331213.73	3766478.51	2.74946		331233.73	3766478.51	3.92637
331253.73	3766478.51	6.27451		331133.73	3766498.51	0.93603
331153.73	3766498.51	1.14592		331173.73	3766498.51	1.43507
331193.73	3766498.51	1.84483		331213.73	3766498.51	2.44044
331233.73	3766498.51	3.34173		331253.73	3766498.51	4.83435
331273.73	3766498.51	8.46291		331133.73	3766518.51	0.86885
331153.73	3766518.51	1.06272		331173.73	3766518.51	1.33131
331193.73	3766518.51	1.72372		331213.73	3766518.51	2.30856
331233.73	3766518.51	3.16880		331253.73	3766518.51	4.42487
331273.73	3766518.51	6.38737		331173.73	3766538.51	1.23598
331193.73	3766538.51	1.61951		331213.73	3766538.51	2.28415
331233.73	3766538.51	3.36188		331253.73	3766538.51	4.99808
331133.73	3766418.51	1.19462		331153.73	3766418.51	1.51889
331173.73	3766418.51	2.02137		331193.73	3766418.51	3.07726
331213.73	3766418.51	4.85698		331133.73	3766438.51	1.08607
331153.73	3766438.51	1.34082		331173.73	3766438.51	1.71068
331193.73	3766438.51	2.31286		331213.73	3766438.51	3.34944
331133.73	3766458.51	0.99129		331153.73	3766458.51	1.20512
331173.73	3766458.51	1.50450		331193.73	3766458.51	1.94997
331213.73	3766458.51	2.64184		331233.73	3766458.51	3.74027
331153.73	3766478.51	1.09693		331173.73	3766478.51	1.35515
331193.73	3766478.51	1.71526		331213.73	3766478.51	2.23446
331233.73	3766478.51	3.00984		331253.73	3766478.51	4.40960

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
OFFSITE	1ST HIGHEST VALUE IS	2.15210 AT	(331213.73,	3766418.51,	34.82,	189.92,	0.00)	DC	
	2ND HIGHEST VALUE IS	2.07799 AT	(331173.73,	3766398.51,	34.94,	189.92,	0.00)	DC	
	3RD HIGHEST VALUE IS	1.68112 AT	(331193.73,	3766418.51,	35.05,	189.92,	0.00)	DC	
	4TH HIGHEST VALUE IS	1.67373 AT	(331213.73,	3766418.51,	34.82,	189.92,	6.10)	DC	
	5TH HIGHEST VALUE IS	1.61419 AT	(331233.73,	3766438.51,	35.04,	189.92,	0.00)	DC	
	6TH HIGHEST VALUE IS	1.49119 AT	(331153.73,	3766398.51,	34.68,	189.92,	0.00)	DC	
	7TH HIGHEST VALUE IS	1.35578 AT	(331213.73,	3766438.51,	35.28,	189.92,	0.00)	DC	
	8TH HIGHEST VALUE IS	1.29540 AT	(331173.73,	3766418.51,	35.09,	189.92,	0.00)	DC	
	9TH HIGHEST VALUE IS	1.26499 AT	(331253.73,	3766458.51,	35.19,	189.92,	0.00)	DC	
	10TH HIGHEST VALUE IS	1.25257 AT	(331193.73,	3766418.51,	35.05,	189.92,	6.10)	DC	
ONSITE	1ST HIGHEST VALUE IS	9.07349 AT	(331253.73,	3766458.51,	35.19,	189.92,	0.00)	DC	
	2ND HIGHEST VALUE IS	8.46291 AT	(331273.73,	3766498.51,	37.43,	189.92,	0.00)	DC	
	3RD HIGHEST VALUE IS	7.28623 AT	(331233.73,	3766438.51,	35.04,	189.92,	0.00)	DC	
	4TH HIGHEST VALUE IS	7.00547 AT	(331213.73,	3766418.51,	34.82,	189.92,	0.00)	DC	
	5TH HIGHEST VALUE IS	6.38737 AT	(331273.73,	3766518.51,	38.22,	189.92,	0.00)	DC	
	6TH HIGHEST VALUE IS	6.27451 AT	(331253.73,	3766478.51,	36.24,	189.92,	0.00)	DC	
	7TH HIGHEST VALUE IS	5.10743 AT	(331233.73,	3766458.51,	35.75,	189.92,	0.00)	DC	
	8TH HIGHEST VALUE IS	4.99808 AT	(331253.73,	3766538.51,	37.33,	189.92,	0.00)	DC	
	9TH HIGHEST VALUE IS	4.85698 AT	(331213.73,	3766418.51,	34.82,	189.92,	6.10)	DC	
	10TH HIGHEST VALUE IS	4.83435 AT	(331253.73,	3766498.51,	36.77,	189.92,	0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   2 Warning Message(s)
A Total of   799 Informational Message(s)

A Total of   43848 Hours Were Processed

A Total of   455 Calm Hours Identified

A Total of   344 Missing Hours Identified (0.78 Percent)

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
ME W186   1027   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used   0.50
ME W187   1027   MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

   ****
   *** AERMOD Finishes Successfully ***
   ****

Results Summary

SMM-06 MMHS Phase 1 Construction HRA
Malibu, Residential Receptors

Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		8.25026	ug/m^3	331344.48	3765999.71	20.97	0.00	28.01	

Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		4.34000	ug/m^3	331208.38	3766614.84	42.38	0.00	137.30	

Results Summary

SMM-06 MMHS Phase 1 Construction HRA
Malibu, Student Receptors

Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		14.47393	ug/m^3	331228.60	3766353.37	33.37	0.00	33.37	

Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		22.91299	ug/m^3	331248.60	3766553.37	36.97	0.00	137.30	

Results Summary

SMM-06 MMHS Phase 2-4B Construction HRA
Malibu, Residential Receptors

Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		8.24911	ug/m^3	331344.48	3765999.71	20.97	0.00	189.92	

Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		4.26599	ug/m^3	331488.82	3766162.03	37.43	0.00	189.92	

Results Summary

SMM-06 (MMHS Phase 2-4B Student) Construction HRA
Malibu

Concentration - Source Group: OFFSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		2.15210	ug/m^3	331213.73	3766418.51	34.82	0.00	189.92	

Concentration - Source Group: ONSITE

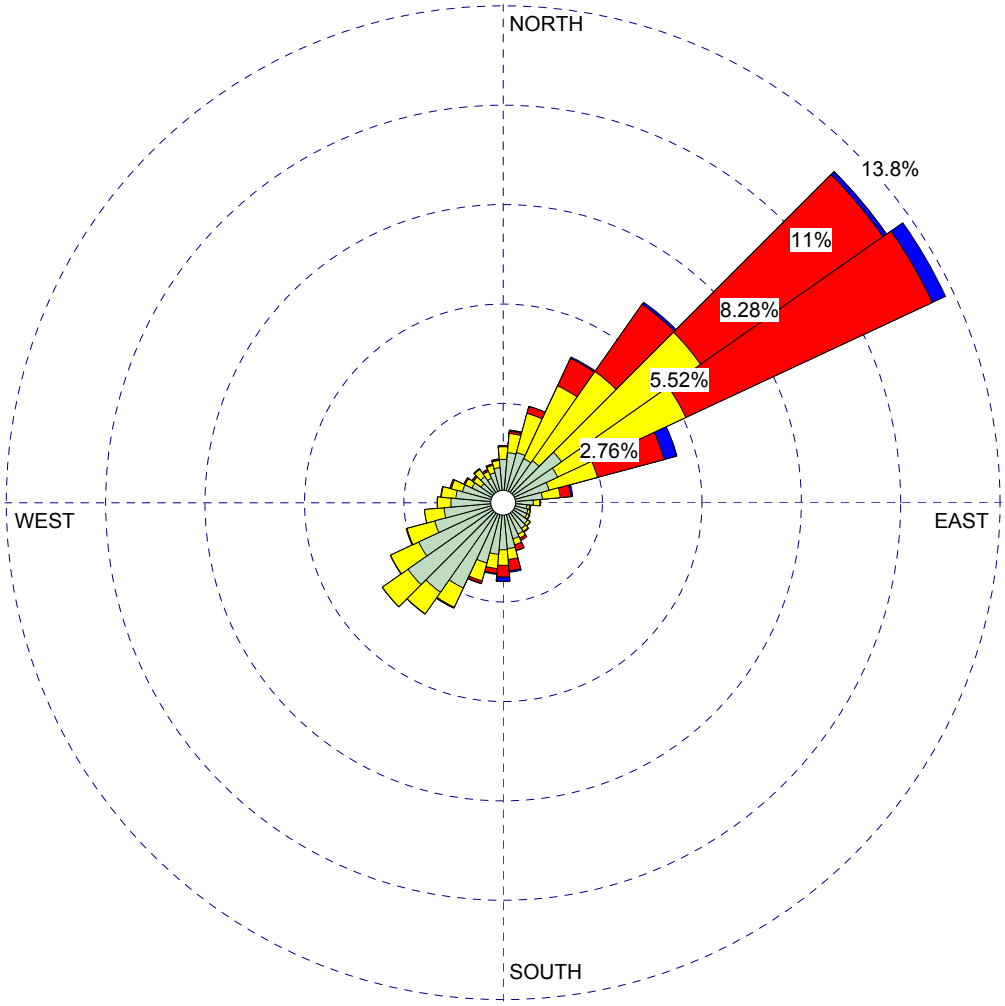
Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
PERIOD		9.07349	ug/m^3	331253.73	3766458.51	35.19	0.00	189.92	

WIND ROSE PLOT:

Station #93197

DISPLAY:

Wind Speed
Flow Vector (blowing to)



WIND SPEED
(Knots)

- >= 21.58
- 17.11 - 21.58
- 11.08 - 17.11
- 7.00 - 11.08
- 4.08 - 7.00
- 0.97 - 4.08

Calms: 1.04%

COMMENTS:	DATA PERIOD: **Start Date: 1/1/2012 - 00:00** **End Date: 12/31/2016 - 23:59**	COMPANY NAME:	
		MODELER:	
	CALM WINDS: **1.04%**	TOTAL COUNT: **43748 hrs.**	
	AVG. WIND SPEED: **4.78 Knots**	DATE: **6/30/2021**	PROJECT NO.:

Appendix C. Construction Risk Calculations

Table C1
Residential MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)	Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)	(c)	(g)	(h)	(i)
Residential Receptors - Unmitigated							**Mitigated, Tier 4 Interim > 50 hp**			
DPM	2022	On-Site Emissions	4.34	9.47E-03	4.11E-02	4.11E-02	4.34	1.56E-03	6.76E-03	6.76E-03
		Truck Route	0.17	1.55E-05	2.72E-06		0.17	1.55E-05	2.72E-06	
[Phase 1]	2023	On-Site Emissions	4.34	1.12E-02	4.85E-02	4.85E-02	4.34	1.47E-03	6.39E-03	6.39E-03
		Truck Route	0.17	5.12E-06	8.95E-07		0.17	5.12E-06	8.95E-07	
	2024	On-Site Emissions	4.34	5.80E-03	2.52E-02	2.52E-02	4.34	6.84E-04	2.97E-03	2.97E-03
		Truck Route	0.17	2.01E-06	3.50E-07		0.17	2.01E-06	3.50E-07	
[Phase 2-4]	2024	On-Site Emissions	4.27	1.24E-02	5.28E-02	5.28E-02	4.27	9.31E-04	3.97E-03	4.00E-03
		Truck Route	3.02	1.10E-05	3.31E-05		3.02	1.10E-05	3.31E-05	
	2025	On-Site Emissions	4.27	8.32E-03	3.55E-02	3.55E-02	4.27	1.24E-03	5.30E-03	5.32E-03
		Truck Route	3.02	5.89E-06	1.78E-05		3.02	5.89E-06	1.78E-05	
	2026	On-Site Emissions	4.27	9.61E-03	4.10E-02	4.10E-02	4.27	8.99E-04	3.84E-03	3.86E-03
		Truck Route	3.02	7.03E-06	2.12E-05		3.02	7.03E-06	2.12E-05	
	2027	On-Site Emissions	4.27	8.32E-03	3.55E-02	3.55E-02	4.27	1.24E-03	5.30E-03	5.32E-03
		Truck Route	3.02	5.89E-06	1.78E-05		3.02	5.89E-06	1.78E-05	
	2028	On-Site Emissions	4.27	9.65E-03	4.12E-02	4.12E-02	4.27	9.03E-04	3.85E-03	3.87E-03
		Truck Route	3.02	7.05E-06	2.13E-05		3.02	7.05E-06	2.13E-05	
	2029	On-Site Emissions	4.27	8.32E-03	3.55E-02	3.55E-02	4.27	1.24E-03	5.30E-03	5.32E-03
		Truck Route	3.02	5.89E-06	1.78E-05		3.02	5.89E-06	1.78E-05	
	2030	On-Site Emissions	4.27	9.61E-03	4.10E-02	4.10E-02	4.27	8.99E-04	3.84E-03	3.86E-03
		Truck Route	3.02	7.03E-06	2.12E-05		3.02	7.03E-06	2.12E-05	
	2031	On-Site Emissions	4.27	3.01E-03	1.28E-02	1.28E-02	4.27	2.89E-04	1.23E-03	1.23E-03
		Truck Route	3.02	1.12E-07	3.39E-07		3.02	1.12E-07	3.39E-07	

Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations

Maximum Exposed Individual Resident (MEIR) UTM coordinates: 331208.38 E, 3766614.84 N

[1] Model Output at the MEIR based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C2
Residential MER Health Risk Calculations
Unmitigated Scenario

Source		MEIR Conc. ($\mu g/m^3$)	Weight Fraction	Contaminant	URF $(\mu g/m^3)^{-1}$	CPF $(mg/kg/day)^{-1}$	Dose (by age bin) 3rd Trimester (mg/kg-day)	Dose (by age bin) 0 < 2 years (mg/kg-day)	Dose (by age bin) 2 < 9 years (mg/kg-day)	Carcinogenic Risks (by age bin) 3rd Trimester per million	Carcinogenic Risks (by age bin) 0 < 2 years per million	Carcinogenic Risks (by age bin) 2 < 9 years per million	**Total Cancer** per million	**Chronic Hazards [3]** REL ($\mu g/m^3$)	**Chronic Hazards [3]** RESP
(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Residential Receptors - Unmitigated															
2022	On & Off-Site Emissions	4.11E-02	1.0E+00	DPM	3.0E-04	1.1E+00	1.42E-05	4.30E-05		4.53E-01	1.85E+00		2.3	5.0E+00	8.22E-03
2023		4.85E-02						5.07E-05			6.47E+00		6.5		9.71E-03
2024, p1		2.52E-02						2.63E-05			2.24E+00		2.2		5.03E-03
2024, p2-4		5.28E-02						5.52E-05	4.36E-05		1.17E+00	4.76E-01	1.6		1.06E-02
2025		3.55E-02							2.93E-05			9.49E-01	0.9		7.10E-03
2026		4.10E-02							3.39E-05			1.10E+00	1.1		8.20E-03
2027		3.55E-02							2.93E-05			9.49E-01	0.9		7.10E-03
2028		4.12E-02							3.40E-05			1.10E+00	1.1		8.24E-03
2029		3.55E-02							2.93E-05			9.49E-01	0.9		7.10E-03
2030		4.10E-02							3.39E-05			1.10E+00	1.1		8.20E-03
2031		1.28E-02							1.06E-05			1.42E-01	0.1		2.57E-03
												Total	**19.0**		**0.082**

Maximum Exposed Individual Resident (MEIR) UTM coordinates: 331208.38 E, 3766614.84 N

		OEHHA age bin / exposure year(s)	3rd Trimester 2022	0 < 2 years 2022-2024	2 < 9 years 2024-2031
Dose Exposure Factors:		exposure frequency (days/year)	350	350	350
		inhalation rate (L/kg-day) [1]	361	1090	861
		inhalation absorption factor	1	1	1
		conversion factor (mg/µg; m^3/L)	1.0E-06	1.0E-06	1.0E-06
Risk Calculation Factors:		age sensitivity factor	10	10	3
		averaging time (years)	70	70	70
		per million	1.0E+06	1.0E+06	1.0E+06
		fraction of time at home	0.85	0.85	0.72

exposure durations per age bin		exposure durations (year)		
Construction Year	Const Duration [2]	3rd Trimester	0 < 2 years	2 < 9 years
2022	0.59	0.25	0.34	
2023	1.00		1.00	
2024 (p1)	0.67		0.67	
2024 (p2-4)	0.50		0.17	0.34
2025	1.00			1.00
2026	1.00			1.00
2027	1.00			1.00
2028	1.00			1.00
2029	1.00			1.00
2030	1.00			1.00
2031	0.41			0.41
Total	9.00	0.25	2.0	6.75

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015).

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Table C3
Residential MER Health Risk Calculations
Mitigation - Tier 4 Interim Engines Eq. > 50 hp

Source		MEIR Conc. ($\mu g/m^3$)	Weight Fraction	Contaminant	URF $(\mu g/m^3)^{-1}$	CPF $(mg/kg/day)^{-1}$	Dose (by age bin) 3rd Trimester (mg/kg-day)	Dose (by age bin) 0 < 2 years (mg/kg-day)	Dose (by age bin) 2 < 9 years (mg/kg-day)	Carcinogenic Risks (by age bin) 3rd Trimester per million	Carcinogenic Risks (by age bin) 0 < 2 years per million	Carcinogenic Risks (by age bin) 2 < 9 years per million	**Total Cancer** per million	**Chronic Hazards** [3] REL ($\mu g/m^3$)	**Chronic Hazards** [3] RESP
(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
Mitigated, Tier 4 Interim Engines for Eq. > 50 HP															
2022	On & Off-Site Emissions	6.76E-03	1.0E+00	DPM	3.0E-04	1.1E+00	2.34E-06	7.06E-06		7.46E-02	3.05E-01		0.4	5.0E+00	1.35E-03
2023		6.39E-03						6.68E-06			8.51E-01		0.9		1.28E-03
2024, p1		2.97E-03						3.10E-06			2.64E-01		0.3		5.94E-04
2024, p2-4		4.00E-03						4.18E-06	3.31E-06		8.89E-02	3.61E-02	0.1		8.01E-04
2025		5.32E-03							4.39E-06			1.42E-01	0.1		1.06E-03
2026		3.86E-03							3.18E-06			1.03E-01	0.1		7.71E-04
2027		5.32E-03							4.39E-06			1.42E-01	0.1		1.06E-03
2028		3.87E-03							3.20E-06			1.04E-01	0.1		7.74E-04
2029		5.32E-03							4.39E-06			1.42E-01	0.1		1.06E-03
2030		3.86E-03							3.18E-06			1.03E-01	0.1		7.71E-04
2031		1.23E-03							1.02E-06			1.36E-02	0.0		2.46E-04
												Total	**2.4**		**0.010**

Maximum Exposed Individual Resident (MEIR) UTM coordinates: 331208.38 E, 3766614.84 N

		OEHHA age bin / exposure year(s)	3rd Trimester 2022	0 < 2 years 2022-2024	2 < 9 years 2024-2031
Dose Exposure Factors:		exposure frequency (days/year)	350	350	350
		inhalation rate (L/kg-day) [1]	361	1090	861
		inhalation absorption factor	1	1	1
		conversion factor (mg/µg; m^3/L)	1.0E-06	1.0E-06	1.0E-06
Risk Calculation Factors:		age sensitivity factor	10	10	3
		averaging time (years)	70	70	70
		per million	1.0E+06	1.0E+06	1.0E+06
		fraction of time at home	0.85	0.85	0.72

exposure durations per age bin		exposure durations (year)		
Construction Year	Const Duration [2]	3rd Trimester	0 < 2 years	2 < 9 years
2022	0.59	0.25	0.34	
2023	1.00		1.00	
2024 (p1)	0.67		0.67	
2024 (p2-4)	0.50		0.17	0.34
2025	1.00			1.00
2026	1.00			1.00
2027	1.00			1.00
2028	1.00			1.00
2029	1.00			1.00
2030	1.00			1.00
2031	0.41			0.41
Total	9.00	0.25	2.0	6.75

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015).

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

Table C4
Middle/High School MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)	(g)	(h)	(i)
Student Receptors - Unmitigated							**Mitigated, Tier 4 Interim > 50 hp**		
DPM	2022	On-Site Emissions	22.91	9.47E-03	2.17E-01	2.17E-01	1.56E-03	3.57E-02	3.57E-02
		Truck Route	0.37	1.55E-05	5.74E-06		1.55E-05	5.74E-06	
[Phase 1]	2023	On-Site Emissions	22.91	1.12E-02	2.56E-01	2.56E-01	1.47E-03	3.37E-02	3.37E-02
		Truck Route	0.37	5.12E-06	1.89E-06		5.12E-06	1.89E-06	
	2024	On-Site Emissions	22.91	5.80E-03	1.33E-01	1.33E-01	6.84E-04	1.57E-02	1.57E-02
		Truck Route	0.37	2.01E-06	7.40E-07		2.01E-06	7.40E-07	
[Phase 2-4]	2024	On-Site Emissions	9.07	1.24E-02	1.12E-01	1.12E-01	9.31E-04	8.44E-03	8.46E-03
		Truck Route	1.26	1.10E-05	1.39E-05		1.10E-05	1.39E-05	
	2025	On-Site Emissions	9.07	8.32E-03	7.55E-02	7.55E-02	1.24E-03	1.13E-02	1.13E-02
		Truck Route	1.26	5.89E-06	7.45E-06		5.89E-06	7.45E-06	
	2026	On-Site Emissions	9.07	9.61E-03	8.72E-02	8.72E-02	8.99E-04	8.16E-03	8.17E-03
		Truck Route	1.26	7.03E-06	8.89E-06		7.03E-06	8.89E-06	
	2027	On-Site Emissions	9.07	8.32E-03	7.55E-02	7.55E-02	1.24E-03	1.13E-02	1.13E-02
		Truck Route	1.26	5.89E-06	7.45E-06		5.89E-06	7.45E-06	
	2028	On-Site Emissions	9.07	9.65E-03	8.75E-02	8.76E-02	9.03E-04	8.19E-03	8.20E-03
		Truck Route	1.26	7.05E-06	8.92E-06		7.05E-06	8.92E-06	
	2029	On-Site Emissions	9.07	8.32E-03	7.55E-02	7.55E-02	1.24E-03	1.13E-02	1.13E-02
		Truck Route	1.26	5.89E-06	7.45E-06		5.89E-06	7.45E-06	
	2030	On-Site Emissions	9.07	9.61E-03	8.72E-02	8.72E-02	8.99E-04	8.16E-03	8.17E-03
		Truck Route	1.26	7.03E-06	8.89E-06		7.03E-06	8.89E-06	
	2031	On-Site Emissions	9.07	3.01E-03	2.73E-02	2.73E-02	2.89E-04	2.62E-03	2.62E-03
		Truck Route	1.26	1.12E-07	1.42E-07		1.12E-07	1.42E-07	

Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations

Maximum Exposed School Receptor (MEIR) UTM coordinates: 331248.6 E, 3766553.37 N

[1] Model Output at the MEIR based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C5
Middle School/High School Health Risk Calculations

Source		MER Conc. ($\mu g/m^3$)	Weight Fraction	Contaminant	URF $(\mu g/m^3)^{-1}$	CPF $(mg/kg/day)^{-1}$	Dose (by age bin) Middle School 2 < 16 years (mg/kg-day)	Exposure Duration[2] (yr)	Carcinogenic Risks Middle School 2 < 16 years per million	**Chronic Hazards[3]** REL ($\mu g/m^3$)	RESP
(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Student Receptors - Unmitigated											
2022	On & Off-Site Emissions	2.17E-01	1.0E+00	DPM	3.0E-04	1.1E+00	5.56E-05	0.59	1.47	5.0E+00	4.34E-02
2023		2.56E-01					6.57E-05	1.00	2.96		5.13E-02
2024, p1		1.33E-01					3.41E-05	0.67	1.02		2.66E-02
2024, p2-4		1.12E-01					2.88E-05	0.50	0.65		2.25E-02
2025		7.55E-02					1.94E-05	1.00	0.87		1.51E-02
2026		8.72E-02					2.24E-05	1.00	1.01		1.74E-02
2027		7.55E-02					1.94E-05	1.00	0.87		1.51E-02
2028		8.76E-02					2.25E-05	1.00	1.01		1.75E-02
2029		7.55E-02					1.94E-05	1.00	0.87		1.51E-02
2030		8.72E-02					2.24E-05	1.00	1.01		1.74E-02
2031		2.73E-02					7.00E-06	0.41	0.13		5.46E-03
								See below for summed cancer risk calculation			Summed below
Mitigated, Tier 4 Interim Engines for Eq. > 50 HP											
2022	On & Off-Site Emissions	3.57E-02	1.0E+00	DPM	3.0E-04	1.1E+00	9.15E-06	0.59	0.24	5.0E+00	7.13E-03
2023		3.37E-02					8.65E-06	1.00	0.39		6.75E-03
2024, p1		1.57E-02					4.02E-06	0.67	0.12		3.13E-03
2024, p2-4		8.46E-03					2.17E-06	0.50	0.05		1.69E-03
2025		1.13E-02					2.89E-06	1.00	0.13		2.26E-03
2026		8.17E-03					2.09E-06	1.00	0.09		1.63E-03
2027		1.13E-02					2.89E-06	1.00	0.13		2.26E-03
2028		8.20E-03					2.10E-06	1.00	0.09		1.64E-03
2029		1.13E-02					2.89E-06	1.00	0.13		2.26E-03
2030		8.17E-03					2.09E-06	1.00	0.09		1.63E-03
2031		2.62E-03					6.72E-07	0.41	0.01		5.24E-04
								See below for summed cancer risk calculation			Summed below

		Middle School 2 < 16 years
	OEHHA age bin	
	exposure year(s)	2022-2031
Dose Exposure Factors:	exposure frequency (days/year)	180
	8-hour inhalation rate (L/kg-day)[1]	520
	inhalation absorption factor	1
	conversion factor (mg/µg; m^3/L)	1.0E-06
Risk Calculation Factors:	age sensitivity factor	3
	averaging time (years)	70
	per million	1.0E+06

[1] Inhalation rate taken as the 8-hour 95th percentile breathing rates, Moderate Activity (OEHHA, 2015).

[2] Construction durations determined for each year to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) fo the Respiratory Toxicological Endpoint.

Cancer Risk - Middle School + High School (7 years)				Chronic Hazards - MS/HS		
Start Yr	End Yr	Cancer Risk Sum		Cancer Risk Sum	Unmit	Mit
2022	2029	9.87		1.38	0.209	0.029
2023	2030	10.27		1.23	0.198	0.023
2024	2031	7.44		0.86	0.152	0.017
Max Unmitigated Risk		**10.3**	**Max Mitigated Risk**	**1.4**	**0.209**	**0.029**

Appendix F Biological Technical Reports

Appendices

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Biological Assessment Report

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project in Malibu, Los Angeles County, California

Prepared for

Santa Monica-Malibu Unified School District
Facility Improvement Projects
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October 2021

TABLE OF CONTENTS

Section **Page**

1.0 Introduction 1

1.1 Project Location and Physical Environmental Setting 1

1.2 Project Description and Background 1

1.2.1 Alternatives 2

1.3 Regulatory Setting 3

1.3.1 Federal 3
1.3.2 State 5
1.3.3 Local 7
1.3.4 Definitions of Special Status Biological Resources 7

2.0 Survey Methods 9

2.1 Literature Review 9

2.2 Vegetation Mapping and General Biological Surveys 9

2.3 Jurisdictional Delineation and ESHA Mapping 10

2.4 Focused Biological Surveys 10

2.4.1 Special Status Plant Species 10
2.4.2 Special Status Bird Survey 12
2.4.3 Raptor Survey 12
2.4.4 Tree Survey 13

3.0 Existing Biological Resources 15

3.1 Fire History 15

3.2 Unauthorized Development 16

3.3 Vegetation Types and Other Areas 16

3.3.1 California Sagebrush Scrub 17
3.3.2 Coyote Brush – California Sagebrush Scrub 18
3.3.3 Coyote Brush – California Sagebrush Scrub/Upland Mustards 18
3.3.4 Coyote Brush – California Sagebrush Scrub/Annual Grassland 18
3.3.5 Disturbed Coyote Brush – California Sagebrush Scrub 18
3.3.6 Upland Mustards/Disturbed Upland Mustards 19
3.3.7 Disturbed Wild Oats and Annual Brome Grassland 19
3.3.8 Riparian Herb 19
3.3.9 Arroyo Willow Thicket 20
3.3.10 Eucalyptus Grove 20
3.3.11 California Sycamore – Coast Live Oak Planting 20
3.3.12 Ornamental – Native Planting 21
3.3.13 Turf 21
3.3.14 Developed/Ornamental 21
3.3.15 Disturbed 22

3.4 Common Wildlife 22

3.4.1 Wildlife Movement 24

3.5 Special Status Biological Resources 26

3.5.1 Special Status Vegetation Types 26
3.5.2 Special Status Plant Species 27
3.5.3 Special Status Wildlife 31
3.5.4 Jurisdictional Resources 36
3.5.5 Regulated Tree Resources 36

3.6 Environmentally Sensitive Habitat Area 36

3.7 Critical Habitat 37

4.0 Project Impacts 38

4.1 Significance Criteria 38

4.2 Direct Impacts 40

4.2.1 Vegetation Types and Other Areas Impacts 40
4.2.2 Common Wildlife 43
4.2.3 Special Status Biological Resource Impacts 43
4.2.4 Jurisdictional Resources 45
4.2.5 Trees 45
4.2.6 Environmentally Sensitive Habitat Area 46

4.3 Indirect Impacts 46

4.3.1 Increased Dust and Urban Pollutants 47
4.3.2 Night Lighting 47
4.3.3 Invasive Exotic Plant Species 47
4.3.4 Human Activity 47

5.0 Mitigation Measures 48

5.1 MM 1 – Vegetation Assessments 48

5.2 MM 2 – Special Status Vegetation Types 48

5.3 MM 3 – Pre-Construction Burrowing Owl Surveys 49

5.4 MM 4 – Pre-Construction Nesting Bird Surveys 49

5.5 MM 5 – RWQCB and CDFW Jurisdiction Areas 50

5.6 MM 6 – Adherence to City of Malibu Tree Protection Ordinance 51

6.0 Alternatives Assessment 52

6.1 No Project Alternative 52

6.2 Alternative 2: Development of Phases 1 and 2 Only 52

6.3 Alternative 3: Elimination of Parking Lot F 52

7.0 Cumulative Impacts 54

8.0 References 55

TABLES

Table		Page
1	Precipitation Recorded at the Malibu Canyon Sensor	11
2	Reference Populations Monitored in the Project Region	11
3	Summary of Special Status Bird Species Survey Conditions	12
4	Summary of Raptor Survey Conditions	13
5	Summary of Owl Survey Conditions	13
6	Vegetation Types and Other Areas in the Study Area	17
7	Special Status Plant Species of the Project Region	28
8	Special Status Wildlife Species Reported From the Project Area	32
9	Summary of Jurisdictional Resources in the Study Area	36
10	Impacts to Vegetation Types and Other Areas in the Study Area	41
11	Summary of Jurisdictional Impacts	45

EXHIBITS

Exhibit		Follows Page
1	Regional Location	1
2	Local Vicinity	1
3	Vegetation Types and Other Areas	1
4	Soils Map	1
5	Special Status Plant Survey Results	12
6	Special Status Wildlife Observations	31
7	Jurisdictional Resources - Ordinary High Water Mark	36
8	Jurisdictional Resources - Top of Bank/Riparian Canopy	36
9	Mapped ESHA	37
10	Project Impacts – Biological Resources	38
11	Project Impacts – Ordinary High Water Mark	45
12	Project Impacts – Top of Bank/Riparian Canopy	45

APPENDICES

Appendix	
A	Representative Site Photos
B-1	Plant Compendium
B-2	Wildlife Compendium
C	Draft Jurisdictional Delineation Report
D	Tree Report

1.0 INTRODUCTION

This Biological Assessment Report has been prepared for the Santa Monica-Malibu Unified School District (District) as required by City of Malibu's Local Coastal Program Local Implementation Plan section 4.4.2 (Local Implementation Plan), as one phase of the Malibu Middle and High School Campus Specific Plan Project (hereinafter referred to as the "Project"). Additionally, the Project is within 200 feet of an identified Environmentally Sensitive Habitat Area (ESHA), which also requires a Biological Assessment per the Local Implementation Plan, and initial surveys on the Project Site have identified special status resources within the Project boundary. This report is also intended to satisfy supporting documentation requirements for California Environmental Quality Act (CEQA) threshold determinations for biological resources.

1.1 PROJECT LOCATION AND PHYSICAL ENVIRONMENTAL SETTING

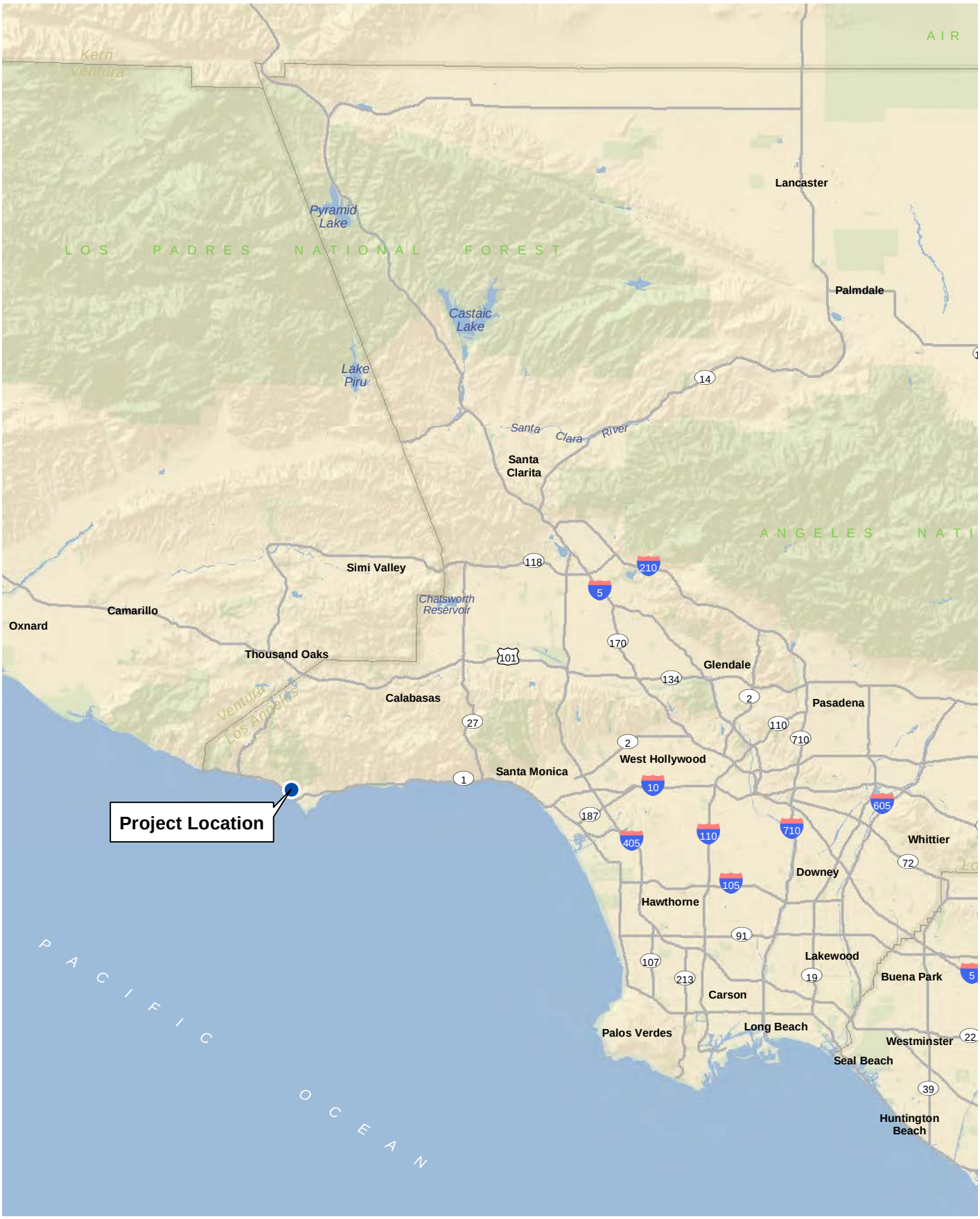
The Project Study Area is located within the City of Malibu (Exhibit 1). It is located within the Santa Monica Bay Watershed on the U.S. Geological Survey's (USGS') Point Dume 7.5-minute topographic quadrangle map in Township 02S, Range 19W, Section 01 (Exhibit 2). Elevations in the Study Area range from approximately 90 to 210 feet above mean sea level (msl). The Study Area encompasses approximately 80 acres over nine parcels. These parcels include the existing Malibu Equestrian Park in the eastern part of the Study Area, the existing Malibu Middle and High School (MMHS) campus in the center, and the former Juan Cabrillo Elementary School (JCES) campus in the west. The east side of the MMHS campus is adjacent to Malibu Equestrian Park, which is on District owned land. The northwest edge borders along a drainage feature which is also an ESHA. The MMHS campus slopes toward the Pacific Ocean and is surrounded by single-family residences.

The Project Study Area is set amongst rolling hills, and its associated buildings and athletic fields are terraced into a hillside setting. A total of four drainages and one basin occur in the Survey Area. Topography on the Study Area is hilly with elevations ranging from approximately 90 to 210 feet above msl. Most of the vegetation occurring in the Study Area is ornamental (native and non-native species) and turf grass where the athletic fields are located. Native vegetation types such as scrub and riparian occur at the perimeter of the Study Area, along with disturbed vegetation (Exhibit 3).

Soil types in the Study Area generally consist of the Cropley, coastal – Urban land – Haploxererts complex, 0 to 30 percent slopes and Cropley, coastal – Xerorthents, landscaped – Urban land complex, 0 to 9 percent slopes (Exhibit 4). These soils are not listed as hydric on the National List for the soil Survey Area in which they occur (USDA NRCS 2019).

1.2 PROJECT DESCRIPTION AND BACKGROUND

As the design concepts in the Campus Plan are set to develop in several phases over a long period of time, the City recommended preparation of a specific plan so that a consistent set of development standards could be adopted. Once adopted, the standards in the specific plan would become the regulations against which later phases of the Project would be reviewed by the City. Based on the City's recommendation, the Malibu Middle and High School Campus Specific Plan establishes the development standards and plan for the MMHS Campus over the next 10 to 15 years (PlaceWorks 2021). The existing MMHS campus was constructed as Malibu Park Junior High School beginning in 1963, and in 1992 the school was converted for use as a high school. The Project Site is situated on three of nine parcels: Assessor's Parcel Numbers 4469-017-900 (40.06 acres), 4469-018-900 (9.4 acres), and 4459-018-904 (2.57 acres). The total acreage of the Project Site is 52.03 acres (PlaceWorks 2021).



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Regional Location

Exhibit 1

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N
W E
S

10 5 0 10 Miles

PSOMAS

(Rev: 9-02-2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_RL.pdf

Source: USGS 7.5 Minute Quadrangle
Point Dume
Township: 02S
Range: 19W
Section: 01

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Local Vicinity

Exhibit 2

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N
W E
S

1,000 500 0 1,000
Feet

PSOMAS

(Rev: 9-02-2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_LV.pdf

Study Area

Vegetation and Other Area Types

- California Sagebrush Scrub
- Coyote Brush - California Sagebrush Scrub
- Coyote Brush - California Sagebrush Scrub/Annual Grassland
- Coyote Brush - California Sagebrush Scrub/Upland Mustards
- Disturbed Coyote Brush - California Sagebrush Scrub
- Disturbed Wild Oats and Annual Brome Grassland
- Upland Mustards
- Disturbed Upland Mustards
- Riparian Herb
- Arroyo Willow Thicket
- Eucalyptus Grove
- California Sycamore - Coast Live Oak Planting
- Ornamental - Native Planting
- Turf
- Developed/Ornamental
- Disturbed

Filaree Heights Rd
Floris Heights Rd
Clover Heights Ave
Busch Dr
Harvester Rd
Little Busch Dr
Via Cabrillo
Morning View Dr
Pacific Coast Hwy
1
Ebbtide Way
Merritt Dr

Aerial Source: Hexagon Geosystems 2018

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Vegetation Types and Other Areas

Exhibit 3

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

350 175 0 350 Feet

PSOMAS

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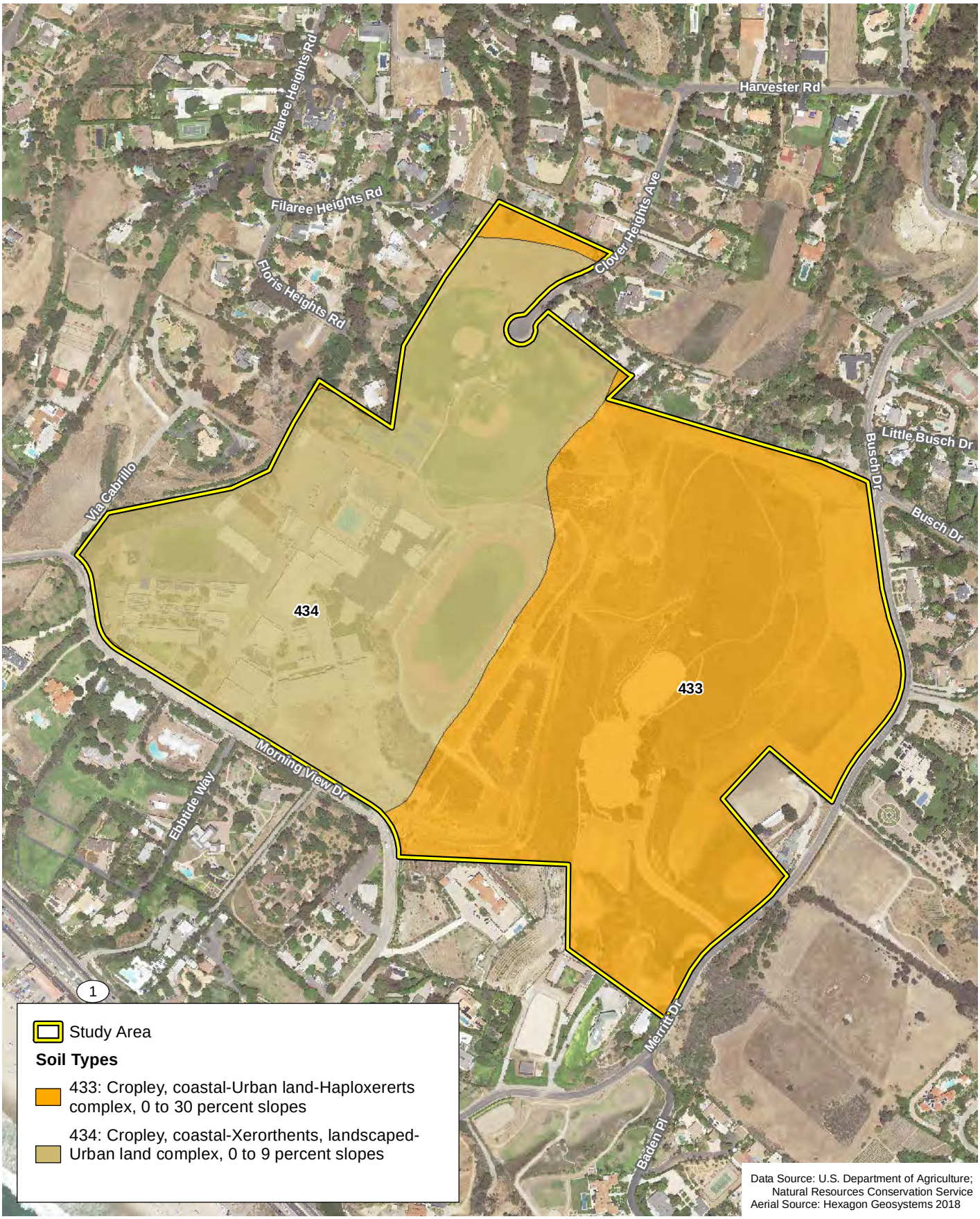

Data Source: U.S. Department of Agriculture; Natural Resources Conservation Service
Aerial Source: Hexagon Geosystems 2018

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Soils Map

Exhibit 4

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

450 225 0 450

Feet

PSOMAS

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Apart from the recently completed Buildings A/B and E, many of the existing buildings no longer meet the District's needs for flexible classrooms with the ability to support multiple learning zones. The Specific Plan would result in the demolition of 18 existing buildings on the combined campuses, with only the existing athletic fields, and the nearly or recently completed Buildings A/B and E on the MMHS campus remaining, and the construction of a new campus with dedicated spaces for Middle and High School. The Specific Plan would result in 32 classrooms and 8 labs and a total of 173,595 square feet of new building space, providing the MMHS campus with a total of 47 classrooms and 12 labs and a total of 222,425 square feet of building space (PlaceWorks 2021).

While the Specific Plan reflects the anticipated buildout condition of the MMHS campus, only Phase I of the Plan is designed and funded for construction. Construction of subsequent Phases will require additional financial resources before they can proceed. The Specific Plan relies on established City of Malibu land use and zoning regulations and procedures and provides development standards for the MMHS Campus Specific Plan. Both the City of Malibu Municipal Code and Local Coastal Plan (LCP) contain provisions for discretionary site plan review. The District anticipates that implementation of subsequent phases will be reviewed by the City for approval and compared to the Specific Plan and Environmental Impact Report for consistency.

1.2.1 Alternatives

1.2.1.1. Alternative 1 – No Project

The CEQA Guidelines require the analysis of a No Project Alternative. Under CEQA, the No Project Alternative must consider the effects of not approving the Proposed Project. The No Project Alternative describes the environmental conditions that exist at the time that the environmental analysis commences, as well as what would reasonably be expected to occur in the foreseeable future if the Proposed Project was not approved (CEQA Guidelines section 15126.6(e)(2)).

Under the No Project Alternative, the District would not approve any portion of the Proposed Project on the Project Site, and none of the mitigation measures identified within this Draft Environmental Impact Report would be necessary. No demolition would occur under the No Project Alternative, because the existing structures on the Project Site would be retained. Under the No Project Alternative, it is assumed that the reasonably foreseeable future at the Project Site would be the continued occupation of the existing buildings within the MMHS campus as in current conditions. MMHS would not be redeveloped and modernized, and buildings that are part of the former JCES would be used by existing students as needed (portable buildings and Building E, Library) or remain unoccupied. The school would continue to operate under its current conditions, and no changes would take place.

1.2.1.2. Alternative 2 – Development of Phase 1 and 2 Only

Under this Alternative, the Proposed Project would be limited to those activities included in Phases 1 and 2 only. Phases 3 and 4 would not be developed. Phase 1 consists of demolition of all existing former JCES campus buildings and portables P6 and P7 and construction of Building C (the High School Core building that includes classrooms, student support services, and administrative and campus support), Parking Lot C, Parking Lot D, and the drop-off/pick-up area. Phase 1 would also include infrastructure improvements, including drainage management areas and septic improvements. Construction of Phase 1 is anticipated to begin in fall 2022 and be completed by summer 2024. Phase 2 would consist of construction of Building D (Gymnasium/Fitness/PE and Student Activities and Food Services) and the Middle School Quad. Phase 2 would also include infrastructure improvements, including drainage management areas, septic improvements, and development of the solar panel system. Construction of Phase 2 is

anticipated to begin in fall 2024 and be completed by fall 2026 (contingent on passage of a new Bond measure). Under this alternative, the Project would construct a total of 90,395 square feet of new building space, which consists of 68,019 square feet under Phase 1 and 22,376 square feet under Phase 2.

Alternative 2 would not include development of Phases 3 and 4. As such, demolition of MMHS Buildings F, I, K, J, J1, Field House, Portables, Pool, Pool Building, JCES Portables P1-P5, Restroom Portables, Bus Barn, and M&O Warehouse would no longer occur. Construction of Buildings J (High School Gymnasium), and Buildings L, M, H, and I (shared facilities); Parking Lot E, F; the relocation of the bus barn; and relocation of the Boys and Girls Club would also not occur. Infrastructure improvements associated with Phases 3 and 4 also would not occur. Alternative 2 would result in an overall reduction of 93,200 square feet of redevelopment than the Proposed Project, and a reduction in demolition of 111,630 square feet of existing structures. Construction of Alternative 2 would be completed by fall 2026. Under this alternative, the ESHA would only be partially restored.

1.2.1.3. Alternative 3 – Elimination of Parking Lot F

Under Alternative 3, the Proposed Project would still be developed as described with the exception of Parking Lot F, located on the north end of the MMHS campus. This alternative results in 14 less vehicle parking spaces compared to the Proposed Project. Overall ground disturbance of approximately 5,600 square feet associated with Parking Lot F would be eliminated. Parking to serve the existing sports fields on the north side of the campus, especially for after-school programmed activities, would be from Lots D and E, and they would be accessed similar as in existing conditions. Clover Heights Avenue would continue to remain limited only to pedestrian access with locked gates during school hours. Operational use of the fields would be the same during the Proposed Project and existing conditions.

1.3 REGULATORY SETTING

1.3.1 Federal

Federal Endangered Species Act

The Federal Endangered Species Act of 1973 (FESA, 16 *United States Code* [USC] 153 et seq.) protects plants and animals that are listed by the federal government as “Endangered” or “Threatened”. The FESA is implemented by enforcing Sections 7 and 9 of the Act. A federally listed species is protected from unauthorized “take” pursuant to Section 9 of the FESA. “Take”, as defined by the FESA, means “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct”. All persons are presently prohibited from taking a federally listed species unless and until (1) the appropriate Section 10(a) permit has been issued by the U.S. Fish and Wildlife Service (USFWS) or (2) an Incidental Take Statement is obtained as a result of formal consultation between a federal agency and the USFWS pursuant to Section 7 of the FESA and the implementing regulations that pertain to it (50 *Code of Federal Regulations* [CFR] 402). It should be noted that the Proposed Project must have a federal nexus in order to request “take” pursuant to Section 7. If there is no federal nexus and there are impacts to federally listed species, preparation of a Habitat Conservation Plan will likely be required. “Person” is defined in the FESA as “an individual, corporation, partnership, trust, association, or any private entity; any officer, employee, agent, department, or instrument of the federal government; any State, Municipality, or political subdivision of the state; or any other entity subject to the jurisdiction of the United States”. The Project Applicant is a “person” for purposes of the FESA.

Section 404 and 401 of the Clean Water Act of 1972

Section 404 of the Clean Water Act (CWA, 33 USC 1251 et seq.) regulates the discharge of dredged or filled material into "Waters of the U.S.", including wetlands. "Waters of the U.S." include navigable coastal and inland waters, lakes, rivers, streams, and their tributaries; interstate waters and their tributaries; wetlands adjacent to such waters; intermittent streams; and other waters that could affect interstate commerce. The U.S. Army Corps of Engineers (USACE) is the designated regulatory agency responsible for administering the 404 permit program and for making jurisdictional determinations. This permitting authority applies to all "Waters of the U.S." where the material has the effect of (1) replacing any portion of "Waters of the U.S." with dry land or (2) changing the bottom elevation of any portion of "Waters of the U.S.". These fill materials would include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in the "Waters of the U.S.". Dredge and fill activities are typically associated with development projects; water-resource related projects; infrastructure development and wetland conversion to farming; forestry; and urban development.

Under Section 401 of the CWA, an activity requiring a USACE Section 404 permit must obtain a State Water Quality Certification (or waiver thereof) to ensure that the activity will not violate established State water quality standards. The U.S. Environmental Protection Agency is the federal regulatory agency responsible for implementing the CWA. However, the State Water Resources Control Board (SWRCB), in conjunction with the 9 California Regional Water Quality Control Boards (RWQCBs), has been delegated the responsibility for administering the Section 401 water quality certification program.

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act. The RWQCB's jurisdiction extends to all "Waters of the State" and to all "Waters of the U.S.", including wetlands (isolated and non-isolated). Section 401 requires the RWQCB to provide "certification that there is reasonable assurance that an activity which may result in the discharge to 'Waters of the U.S.' will not violate water quality standards". Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives that can be found in each of the 9 Regional Boards' Basin Plans.

Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act of 1918 (MBTA), as amended in 1972 (MBTA, 16 USC 703–711), makes it unlawful, unless permitted by regulations, to "pursue; hunt; take; capture; kill; attempt to take, capture or kill; possess; offer for sale; sell; offer to purchase; purchase; deliver for shipment; ship; cause to be shipped; deliver for transportation; transport; cause to be transported; carry or cause to be carried by any means whatever; receive for shipment, transportation, or carriage; or export, at any time, or in any manner, any migratory bird…for the protection of migratory birds…or any part, nest, or egg of any such bird" (16 USC 703).

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). The following 6 families of raptors that occur in North America were included in the amendment: *Accipitridae* (kites, hawks, and eagles), *Cathartidae* (New World vultures), *Falconidae* (falcons and caracaras), *Pandionidae* (ospreys), *Strigidae* (typical owls), and *Tytonidae* (barn owls). The provisions of the 1972 amendment to the MBTA protect all species and subspecies of these families.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and the golden eagle (*Aquila chrysaetos*) by prohibiting—except under certain specified conditions—the taking, possession, and commerce of these 2 bird species. The 1972 amendments increased penalties for violating provisions of the Act and strengthened other enforcement measures. A 1978 amendment authorizes the Secretary of the Interior to permit the taking of golden eagle nests that interfere with resource development or recovery operations. A 1994 Memorandum (59 CFR 22953, April 29, 1994) from President William J. Clinton to the heads of Executive Agencies and Departments sets out the policy concerning collection and distribution of eagle feathers for Native American religious purposes.

1.3.2 State

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA, *California Fish and Game Code,* Section 2050 et seq.) and Section 2081 of the *California Fish and Game Code,* an Incidental Take Permit from the California Department of Fish and Wildlife (CDFW) is required for projects that could result in the take of a State-listed Threatened or Endangered species. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include "harm" or "harass", as the federal act does. As a result, the threshold for take under the CESA is higher than that under the FESA. A CDFW-authorized Incidental Take Permit would be required where a project could result in the take of a State-listed Threatened or Endangered Species. The application for an Incidental Take Permit under Section 2081(b) has a number of requirements, including the preparation of a conservation plan, generally referred to as a Habitat Conservation Plan.

The State of California considers an Endangered Species to be one whose prospects of survival and reproduction are in immediate jeopardy; a Threatened Species as one present in such small numbers throughout its range that it is likely to become an Endangered Species in the near future in the absence of special protection or management; and a Rare Species as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. The Rare Species designation applies only to California native plants. The CESA authorizes the CDFW to issue permits authorizing incidental take of Threatened and Endangered Species. A California Species of Special Concern is an informal designation that the CDFW uses for some declining wildlife species that are not State Candidates for listing. This designation does not provide legal protection but signifies that these species are recognized as special status by the CDFW.

California Environmental Quality Act

State law (*California Fish and Game Code,* Section 1802) confers upon the CDFW the trustee responsibility and authority for the public trust resource of wildlife in California. The CDFW may play various roles under the CEQA process. By State law, the CDFW has jurisdiction over the conservation, protection, and management of the wildlife, native plants, and habitat necessary to maintain biologically sustainable populations. The CDFW is responsible for consulting with CEQA lead and responsible agencies and provides the requisite biological expertise to review and comment upon environmental documents and impacts arising from Project activities.

As a trustee agency, the CDFW has jurisdiction over certain resources held in trust for the people of California. Trustee agencies are generally required to be notified of CEQA documents relevant to their jurisdiction, whether or not these agencies have actual permitting authority or approval power over aspects of the underlying project (14 *California Code of Regulations*, Section 15386).

The CDFW, as a trustee agency, must be notified of CEQA documents regarding projects involving fish and wildlife of the State, as well as Rare and Endangered native plants, wildlife areas, and ecological reserves. Although, the CDFW, as a trustee agency, cannot approve or disapprove a project, CEQA lead and responsible agencies are required to consult with the CDFW. The CDFW, as the trustee agency, has the authority to make recommendations regarding those resources held in trust for the people of California (*California Fish and Game Code,* Section 1802).

Lake and Streambed Alteration Program

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that support wildlife resources and/or riparian vegetation are subject to CDFW regulations, pursuant to Sections 1600 through 1616 of the *California Fish and Game Code.* Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by CDFW as waters within their jurisdiction without first notifying CDFW of such activity. Additionally, a person cannot use any material from the streambeds without first notifying the CDFW of such activity. For a project that may affect stream channels and/or riparian vegetation regulated under Sections 1600 through 1616 of the *California Fish and Game Code,* CDFW authorization is required in the form of a Streambed Alteration Agreement.

Native Plant Protection Act

The Native Plant Protection Act (*California Fish and Game Code,* Section 1900 et seq.) provides for the preservation, protection, and enhancement of Endangered or Rare native plants in California. These sections also allow for the adoption of regulations governing the taking, possession, propagation, transportation, exportation, importation, or sale of any Endangered or Rare native plants.

California Fully Protected Species

Bird, mammal, reptile, amphibian, and fish species are defined as California Fully Protected Species in Sections 3511, 4700, 5050, and 5515 of the *California Fish and Game Code*. Fully protected animals may not be harmed, taken, or possessed.

Nesting Bird Protection

Nesting birds are protected in Sections 3503, 3503.5, and 3513 of the *California Fish and Game Code.* These sections state that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by or any regulation made pursuant to this code. Section 3503.5 explicitly provides protection for all birds of prey, including their eggs and nests. Section 3513 makes it unlawful to take or possess any migratory non-game bird as designated in the MBTA.

Threatened and Endangered Species

The *California Code of Regulations* (Sections 670.2 and 670.5) lists species, subspecies, and varieties of plants (Section 670.2) and animals (Section 670.5) that are designated as Threatened or Endangered (as defined by Section 2067 of the *California Fish and Game Code*) or Rare (as defined by Section 1901 of the *California Fish and Game Code*) in California.

California Porter-Cologne Water Quality Control Act

Pursuant to the California Porter-Cologne Water Quality Control Act, the SWRCB and the 9 RWQCBs may require permits (known as "Waste Discharge Requirements" [WDRs]) for the fill or alteration of the "Waters of the State". The term "Waters of the State" is defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (*California Water Code,* Section 13050[e]). The State and Regional Boards have interpreted their authority to require WDRs to extend to any proposal to fill or alter "Waters of the State", even if those same waters are not under USACE jurisdiction. Pursuant to this authority, the State and Regional Boards may require the submission of a "report of waste discharge" under Section 13260 of the *California Water Code*, which is treated as an application for WDRs.

1.3.3 Local

City of Malibu Local Coastal Program Local Implementation Plan

The City of Malibu Local Coastal Program Local Implementation Plan was adopted by the California Coastal Commission on September 13, 2002, pursuant to the provisions of California PRC Section 30166.5. The stated purpose of the Plan is to implement the policies of the California Coastal Act of 1976, to carry out the policies of the City of Malibu Land Use Plan, and, in part, to:

- Assure orderly, balanced utilization and conservation of coastal zone resources, taking into account the social and economic needs of the people of this City and of the State;
- Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and manmade resources;
- To protect and enhance the quality of the natural environment;
- To ensure that any development in the coastal zone preserves and enhances coastal resources; and protects coastal views and access; and guides growth, development, and environmental management in a manner consistent with the provisions of the Land Use Plan of the Local Coastal Program; and
- To provide adequate light and air, clean ground water, and non-polluting waste disposal.

This Biological Assessment Report was drafted in accordance with the requirements of the City of Malibu Local Coastal Program Local Implementation Plan for projects with potential for sensitive species or habitat, or if the proposed development (including required fuel modification) occurs within 200 feet of a known (mapped) ESHA.

1.3.4 Definitions of Special Status Biological Resources

A federally **Endangered** species is one facing extinction throughout all or a significant portion of its geographic range. A federally **Threatened** species is one likely to become Endangered within the foreseeable future throughout all or a significant portion of its range. The presence of any federally Threatened or Endangered species within a Project impact area generally imposes severe constraints on development, particularly if an action would result in "take" of the species or its habitat. The FESA defines the term "take" as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct. Harm, in this sense, can include any disturbance of habitats used by the species during any portion of its life history.

Proposed species or **Candidate** species are those officially proposed by the USFWS for addition to the federal Threatened and Endangered species list. Because proposed species may soon be listed as Threatened or Endangered, the presence of a Proposed or Candidate species may

impose constraints on development if they are listed prior to an action, particularly if the action would result in "take" of the species or its habitat.

The State of California considers an Endangered species as one whose prospects of survival and reproduction are in immediate jeopardy; a Threatened species as one present in such small numbers throughout its range that it is likely to become an Endangered species in the near future in the absence of special protection or management; and a Rare species as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. Rare species applies only to California native plants; these species are treated as State-listed species. State-listed Threatened and Endangered species are fully protected against take unless an Incidental Take Permit is obtained from the resource agencies. The presence of any State-listed Rare, Threatened, or Endangered species generally imposes constraints on proposed actions, particularly if the action would result in "take" of the species or its habitat.

California Species of Special Concern is an informal designation used by the CDFW for some declining wildlife species that are not State Candidates. This designation does not provide legal protection but signifies that these species are recognized as special status by the CDFW.

Species that are **California Fully Protected** and **Protected** include those protected by special legislation for various reasons, such as the mountain lion and white-tailed kite (*Elanus leucurus*). Fully Protected species may not be taken or possessed at any time. California Protected species include those species that may not be taken or possessed at any time except under special permit from the CDFW issued pursuant to the *California Code of Regulations* (Title 14, Sections 650, 670.7) or Section 2081 of the *California Fish and Game Code*.

The California Rare Plant Rank (CRPR), formerly known as California Native Plant Society (CNPS) List, is a ranking system by the Rare Plant Status Review group[1] and managed by the CNPS and the CDFW. A CRPR summarizes information on the distribution, rarity, and endangerment of California's vascular plants. Plants with a CRPR of **1A** are presumed extinct in California because they have not been seen in the wild for many years. Plants with a CRPR of **1B** are Rare, Threatened, or Endangered throughout their range. Plants with a CRPR of **2A** are presumed extirpated from California but are more common elsewhere. Plants with a CRPR of **2B** are considered Rare, Threatened, or Endangered in California, but are more common elsewhere. Plants with a CRPR of **3** require more information before they can be assigned to another rank or rejected; this is a "review" list. Plants with a CRPR of **4** are of limited distribution or infrequent throughout a broader area in California; this is a "watch" list. The Threat Rank is an extension added onto the CRPR to designate the level of endangerment by a 1 to 3 ranking. An extension of **.1** is assigned to plants that are considered to be "seriously threatened" in California (i.e., over 80 percent of the occurrences are threatened or having a high degree and immediacy of threat). Extension **.2** indicates the plant is "fairly threatened" in California (i.e., between 20 and 80 percent of the occurrences are threatened or have a moderate degree and immediacy of threat). Extension **.3** is assigned to plants that are considered "not very threatened" in California (i.e., less than 20 percent of occurrences are threatened or have a low degree and immediacy of threat or no current threats known). The absence of a threat code extension indicates plants lacking any threat information.

[1] A group of over 300 botanical experts from the government, academia, non-governmental organizations, and the private sector.

2.0 SURVEY METHODS

This section describes the methods used to conduct a literature review; perform general biological surveys; and assess the potential for the Study Area to support special status species. Representative site photos can be found in Appendix A.

2.1 LITERATURE REVIEW

An initial biological resource literature review was conducted based on existing records for the region. The CNPS's Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021) and the CDFW's California Natural Diversity Database (CDFW 2021b) were reviewed to identify special status plants, wildlife, and habitats reported to occur within the Project vicinity. These standard databases searched the USGS' Point Dume, Malibu Beach, Triunfo Pass, Newbury Park, Thousand Oaks, and Calabasas 7.5-minute topographic quadrangles. A review of FESA critical habitat documents was used to identify any portion of the Study Area occurring within proposed or designated Critical Habitat. Additionally, readily available environmental documents created for the Malibu Middle and High School Campus Improvements Project were reviewed (GLA 2009).

2.2 VEGETATION MAPPING AND GENERAL BIOLOGICAL SURVEYS

A general biological survey was conducted by Psomas Senior Biologist Jonathan Aguayo and Senior Botanist Allison Rudalevige on November 12, 2019, and again on April 15, 2021.[2] to evaluate the potential presence of habitats that could support special status plant and wildlife species. Vegetation was mapped in the field by Ms. Rudalevige on an aerial photograph at a scale of 1-inch equals 200 feet (1″=200′).

Plants-Plant species were identified in the field or collected for subsequent identification using keys in Jepson eFlora (Jepson Flora Project 2019). Nomenclature of plant taxa conform to the Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2021d) for special status species and the Jepson eFlora (Jepson Flora Project 2019) for all other taxa; ornamental species not listed in the Jepson eFlora are named based on the Sunset Western Garden Book (Brenzel 2007). A list of plant species observed is included as Appendix B-1.

Wildlife-Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and by auditory recognition. Searches for mammals were conducted during the day and included searching for and identifying diagnostic sign, including scat, footprints, burrows, and trails. Nomenclature of wildlife taxa conform to the Special Animals List (CDFW 2021c) for special status species; nomenclature for non-special status wildlife generally follows Crother (2017) for amphibians and reptiles, American Ornithologists' Union (2021) for birds, and the Bradley et al. 2014 for mammals. All species observed were recorded in field notes. A list of wildlife species observed is included as Appendix B-2.

[2] Psomas Biologists Allison Rudalevige and Sarah Thomas visited the site to conduct a general survey and map the vegetation in the eastern portion of the Study Area, as the Study Area had expanded to include the area up to Merritt Drive.

2.3 JURISDICTIONAL DELINEATION AND ESHA MAPPING

Psomas Senior Biologist Irena Mendez and Land Surveyors Juan Jimenez and Philip Berredo conducted a topographic survey effort in order to map the California Coastal Commission (CCC) ESHA boundaries on May 21 and May 23, 2019. An initial jurisdictional assessment was conducted on November 12, 2019, by Psomas Senior Regulatory Specialist Allison Rudalevige and Psomas Senior Biologist Jonathan Aguayo. A jurisdictional delineation to further refine USACE, RWQCB, CDFW, and CCC jurisdictions was conducted on January 16, 2020, by Ms. Rudalevige and Mrs. Mendez. The topographic relief of the ESHA was established with a Leica Nova MS60 Multi-station with a Leica Allegro Controller for data collection. The data was processed using CAD and a 1-inch equals 20 feet (1″ = 20′) map was generated. Areas under USACE, RWQCB, and CDFW authority were delineated using a 1-inch equals 100 feet (1″ = 100′) scale aerial photograph loaded onto Avenza Maps application on an Apple iPad. Drainage features were delineated as a centerline with corresponding width measurements and waterbodies were delineated as polygons. Soil test pits were dug in areas that exhibited potential hydrophytic vegetation and wetland hydrology. It should be noted that private property was observed from the Study Area and was not directly accessed. Detailed methods for how the jurisdictional delineation was conducted can be found in Appendix C, Jurisdictional Delineation Report for the Malibu Middle and High School Specific Plan and LCP Amendment Project (Psomas 2021b).

2.4 FOCUSED BIOLOGICAL SURVEYS

2.4.1 Special Status Plant Species

Special status plant surveys were floristic in nature and conducted following the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018).

Rainfall received in the fall through spring determines the germination of many annual and perennial herb species. The Malibu Canyon sensor (CDEC Station MCY) is located along Malibu Canyon Road at Tapia Park, approximately 7.5 miles northeast of the Study Area. Its available data ranges are 2006 – 2007 and 2010 – 2021 (there is incomplete data for April to November 2005 and November 2007 to December 2009). The average annual precipitation for years with available data is 14.22 inches (Table 1). Rainfall during the current year (April 1, 2020 to March 31, 2021) is 8.49 inches, which is approximately 60 percent of the average for the years with available data.

TABLE 1
PRECIPITATION RECORDED AT THE MALIBU CANYON SENSOR

Year	Precipitation from April 1 to March 31 (inches)
2005 – 2006	Missing Data (>13.71)[a]
2006 – 2007	10.99
2007 – 2008	Missing Data [a]
2008 – 2009	Missing Data [a]
2009 – 2010	Missing Data (>18.02) [a]
2010 – 2011	25.90
2011 – 2012	11.85
2012 – 2013	8.99
2013 – 2014	5.46
2014 – 2015	9.96
2015 – 2016	10.00
2016 – 2017	22.91
2017 – 2018	9.12
2018 – 2019	25.20
2019 – 2020	15.99
Average 2005 – 2020	**14.22**
2020 – 2021	8.49

a The CDEC Station MCY was offline for a portion of this time period. Values in parentheses represent available data but are not included in the average between 2005 and 2020.

Reference populations of special status plants were monitored for annual and difficult-to-detect target species to ensure that the surveys were performed when target special status species were in bloom, and thus detectable (Table 2). This is especially relevant during periods of unusual rainfall patterns or below average rainfall. If conditions at a nearby reference population are suitable for germination and growth, then it can be inferred that conditions would also be suitable in the Study Area. Reference populations were not monitored for large perennials that would normally be identifiable throughout the year, or for species lacking a publicly accessible reference population.

TABLE 2
REFERENCE POPULATIONS MONITORED IN THE PROJECT REGION

Species	Date Observed	Location	Phenology
Calochortus clavatus var. *gracilis* Slender mariposa-lily	May 11, 2020	Santa Clarita	In bloom
Pentachaeta lyonia Lyon's pentachaeta	April 28, 2020	Westlake	In bloom

Surveys were conducted on May 4 and June 11, 2020, by Psomas Senior Biologist Allison Rudalevige. The total number of person-hours spent surveying was 5.75 hours. A systematic survey was conducted in all areas of suitable special status plant habitat in the Study Area[3] (Exhibit 5). All plant species observed were recorded in field notes.

Any special status plant species observed in the Study Area were mapped with a Global Positioning System (GPS) unit and data were collected on the number and phenology of individuals (estimated for large populations); and microsite characteristics such as slope, aspect, soil texture, surrounding habitat, and associated species.

2.4.2 Special Status Bird Survey

A total of two surveys were conducted for special status bird species, one during the breeding season (i.e., March 15 – August 31) and one during the non-breeding season (i.e., September 1 – March 14). Special status bird surveys were conducted by Mr. Aguayo on December 9, 2019, and May 21, 2020. Mr. Aguayo conducted the surveys during weather conditions appropriate for bird detection. Mr. Aguayo walked the entire Study Area using binoculars to survey all shrubs, trees, and potential bird foraging, roosting, and/or nesting locations. Survey dates, times, and weather data are shown in Table 3. All wildlife species detected during the surveys were recorded and are listed in Appendix B-2.

TABLE 3
SUMMARY OF SPECIAL STATUS BIRD
SPECIES SURVEY CONDITIONS

Survey Number	Survey Date	Time (Start/End)	Surveying Biologist	Weather Conditions		
				Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%)
1	December 9, 2019	7:30 AM–10:50 AM	Aguayo	58/67	0–1/1–2	0
2	May 21, 2020	7:15 AM–9:10 AM	Aguayo	56/66	3/1	0
°F: degrees Fahrenheit; mph: miles per hour: %: percent						

2.4.3 Raptor Survey

Five morning surveys were conducted for raptors by Mr. Aguayo on January 8, March 26, April 23, June 3, and May 21, 2020. The surveys were conducted at least one week apart and during the early morning hours between dawn and 10:00 AM. In order to account for seasonal variations, surveys were conducted during the spring/breeding season (i.e., March 1 – June 15) as well as winter/non-breeding (i.e., December 1 – March 15). One raptor survey was conducted in the eastern portion of the Study Area by Psomas Biologist Sarah Thomas. Mr. Aguayo and Ms. Thomas conducted the surveys during weather conditions appropriate for diurnal raptor detection and walked the entire Study Area using binoculars to survey all shrubs, trees, and potential raptor foraging, roosting, and/or nesting locations. Survey dates, times, and weather data are shown in Table 4.

[3] The Survey Area expanded in 2021, after special status plant surveys were conducted; however, any special status plant species observed incidentally during vegetation mapping conducted in 2021 were recorded and mapped.

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Special Status Plant Survey Results

Exhibit 5

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

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TABLE 4
SUMMARY OF RAPTOR SURVEY CONDITIONS

Survey Number	Survey Date	Time (Start/End)	Surveying Biologist	Weather Conditions		
				Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%)
1	January 8, 2020	6:40 AM–10:00 AM	Aguayo	48/57	3–4/4–5	30–70
2	March 26, 2020	6:40 AM–8:50 AM	Aguayo	43/46	2	0
3	April 23, 2020	7:05 AM–9:38 AM	Aguayo	64/74	1/3	0
4	June 3, 2020	7:30 AM–10:00 AM	Aguayo	69/72	4	10–0
5	May 21, 2020	7:15 AM–9:10 AM	Aguayo	56/66	3/1	0
6	June 21, 2021	7:30 AM–10:00 AM	Thomas	61/67	0/0	100%
°F: degrees Fahrenheit; mph: miles per hour: %: percent						

Since there was appropriate habitat for owls on site, three additional surveys were conducted during the period immediately before nightfall. A total of three owl surveys were by Mr. Aguayo on February 27, March 27, and April 27, 2020. Mr. Aguayo conducted the surveys during weather conditions appropriate for owl detection. Mr. Aguayo walked the entire Study Area using binoculars to survey all shrubs, trees, and potential owl foraging, roosting and/or nesting locations. Survey dates, times, and weather data are shown in Table 5. All wildlife species detected during the surveys were recorded and are listed in Appendix B-2.

TABLE 5
SUMMARY OF OWL SURVEY CONDITIONS

Survey Number	Survey Date	Time (Start/End)	Surveying Biologist	Weather Conditions		
				Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%)
1	February 27, 2020	4:45 PM–6:15 PM	Aguayo	73/71	1–2/2–3	100
2	March 27, 2020	6:00 PM–7:30 PM	Aguayo	56/54	4	0
3	April 27, 2020	6:30 PM–8:00 PM	Aguayo	69/66	3/2	0
°F: degrees Fahrenheit; mph: miles per hour: %: percent						

2.4.4 Tree Survey

Psomas Certified Arborist Trevor Bristle (International Society of Arboriculture Certificate No. WE-10233A) performed the evaluation on February 1 and 2, and April 19th 2021, to document the type, quantity, and condition of trees present within the Project boundary. Each tree was assigned a numeric identifier and the trunk, branches, and foliage were carefully examined. During the evaluation, the following data were recorded: tree species, number of trunks, trunk diameter at breast height (dbh), tree height, and canopy diameter. Each tree was also given a qualitative assessment rating on health and aesthetic.

Trees within the Specific Plan area are regulated by the City of Malibu Native Tree Protection Ordinance (Chapter 5 of the City of Malibu LCP Local Implementation Plan). The LCP defines trees as plants reaching 15 feet tall with at least one well-defined stem or trunk. Native protected trees are specified as oak (*Quercus* sp.), California walnut (*Juglans californica*), western

sycamore (*Platanus racemosa*), alder (*Alnus rhombifolia*), or toyon (*Heteromeles arbutifolia*) with at least one trunk measuring 6 inches or more in dbh, or a combination of any two trunks measuring a total of 8 inches dbh or more.

Additional trees not protected by the City were recorded at the request of the District. All trees with one trunk measuring 3 inches dbh or more, or a combination of any two trunks measuring 1.5 inches dbh or more in diameter were documented.

3.0 EXISTING BIOLOGICAL RESOURCES

This section describes the biological resources that occur or potentially occur on the Project Site or within nearby off-site areas associated with the Project. The following topics are discussed below: fire history; unauthorized development; vegetation types and other areas; common wildlife; wildlife movement; special status biological resources, jurisdictional resources, and Environmentally Sensitive Habitat Area.

3.1 FIRE HISTORY

Traditionally, the fire season in Southern California is from May through September (OCFA 2008). In the past, fires were started by lightning and typically moved down slopes due to falling brands and coals; they only occasionally formed the hot runs on steep slopes that are typical of today's fires (Howard 1992). This fire regime resulted in a mosaic of numerous small burns. New fires were limited by recently burned regions with very little fuel; dead wood and other fuels could not accumulate for long.

Mediterranean shrub communities, including those found in the Study Area, are resilient to wildfires at a frequency range of every 20 to 50 years (Keeley 1986). Many plant species associated with chaparral and scrub communities exhibit characteristics that constitute adaptations to frequent fires. One of the effects of fire on native habitats is the opportunity for new growth and reproduction. Without fire, a mature chaparral stand may become senile, where growth and reproduction are reduced (Schoenherr 1992). Mature chaparral is highly flammable after 30 to 60 years without fire (Howard 1992). A new fire will then typically burn hot and high into the canopy, killing much of the aboveground biomass. These canopy fires can facilitate seed establishment by removing shrub cover and eliminating competitors. In the first few years after a fire, herbs and herbaceous shrubs—such as deerweed (*Acmispon glaber*), lupines (*Lupinus* spp.), paintbrushes (*Castilleja* spp.), and phacelias (*Phacelia* spp.)—are abundant. Because chaparral fires burn nitrogenous compounds in plant tissues and detritus, there is a large loss of nitrogen from the ecosystem. This allows species equipped with nitrogen-fixing bacteria to grow quickly after a fire.

While herbaceous species are establishing, the previously dominant chaparral species are also returning. Many chaparral species rely on fire to release and germinate seeds. Others resprout from roots or buds at the base of the stem. As the shrub canopy closes, whether due to resprouting of individuals burned by the fire or growth of seedlings, these herbaceous species decrease in importance.

Although natural fires are essential to the existence of chaparral and scrub communities, both unnatural increases and decreases in fire frequency can have a negative impact. Now most wildfires are started by humans, either through arson or accidents (Schoenherr 1992). Drought conditions contribute to an increase in dead fuels; dryer and more explosive fuels; and more intense fire behavior. In addition, sustained Santa Ana Winds increase the speed of fire and magnify the effects on the available fuel bed. Santa Ana Winds are strong, warm, and dry winds that flow down into the valleys when stable; during these conditions, high pressure air is forced across and then down the lee-side slopes of a mountain range. The descending air is warmed and dried, which produces critical fire weather conditions.

Anthropogenic increases in fire frequency can change the natural resilience of chaparral and coastal sage scrub communities. In general, when an area burns too often for the community to mature, native plants may not be able to maintain dominance. Ruderal species, including annual grasses and invasive forbs, often thrive in post-fire conditions. As a result, fires often promote the spread of non-native species into native habitats, including chaparral and scrub communities. In

turn, this high degree of non-native grass and forb cover can lead to more frequent fire return intervals (e.g., intervals of less than eight years have been reported) (Minnich and Dezzani 1998).

A decrease in fire frequency may also hinder reproduction of fire-adapted species. In the past, government agencies tried to prevent and stop the spread of wildfires through a policy of fire suppression. These efforts were found to be unsuccessful; they occasionally resulted in larger and more catastrophic fires. While they are less frequent, unnaturally large fires may burn so hot and intense that even the seeds of fire-adapted plants are destroyed.

On November 8, 2018, a fire ignited in Woolsey Canyon near the Santa Susana Field Laboratory in the Santa Susana Mountains. Strong Santa Ana wind conditions pushed the fire in a southerly direction throughout the first day toward the Santa Monica Mountains. The blaze spread rapidly, reaching the Pacific Coast Highway in Malibu. Full containment was not achieved until November 21, 2018; by then, over 96,000 acres had burned, forcing the evacuation of communities in Bell Canyon, Malibu, and Oak Park communities, among others. Nearly 300,000 people were evacuated from approximately 100,000 residences. In Malibu, the fire burned along both sides of Pacific Coast Highway and at the Study Area including landscaped and undeveloped areas on the eastern portion of the property. Psomas conducted a Post-Woolsey Fire Site Assessment on December 27, 2018, to evaluate site recovery and provide recommendations regarding the status of recovering vegetation as part of ongoing efforts to address campus safety concerns. Vegetation on the Study Area is currently recovering from this fire.

3.2 UNAUTHORIZED DEVELOPMENT

Unauthorized development was not observed within the Study Area during the field visits.

3.3 VEGETATION TYPES AND OTHER AREAS

The following vegetation types and other areas occur in the Study Area: California sagebrush scrub, coyote brush – California sagebrush scrub, coyote brush – California sagebrush scrub/upland mustards, coyote brush – California sagebrush scrub/annual grassland, disturbed coyote brush – California sagebrush scrub, upland mustards, disturbed wild oats and annual brome grassland, riparian herb, arroyo willow thicket, eucalyptus grove, California sycamore – coast live oak planting, ornamental – native planting, turf, developed/ornamental, disturbed (Table 6; Exhibit 3).

TABLE 6
VEGETATION TYPES AND OTHER AREAS IN THE STUDY AREA

Vegetation Type or Other Area	Amount in Study Area (acres)	Sensitive Natural Community[a]
California Sagebrush Scrub	0.72	no
Coyote Brush – California Sagebrush Scrub	0.54	no
Coyote Brush – California Sagebrush Scrub/Upland Mustards	21.12	no
Coyote Brush – California Sagebrush Scrub/Annual Grassland	1.53	no
Disturbed Coyote Brush – California Sagebrush Scrub	1.45	no
Upland Mustards	5.45	no
Disturbed Upland Mustards	4.82	no
Disturbed Wild Oats and Annual Brome Grassland	2.17	no
Riparian Herb	0.11	no[b]
Arroyo Willow Thicket	0.40	yes
Eucalyptus Grove	0.38	no
California Sycamore – Coast Live Oak Planting	0.55	no[c]
Ornamental – Native Planting	2.18	no[d]
Turf	11.86	no
Developed/Ornamental	26.98	no
Disturbed	6.42	no
Total	**86.69**	

[a] As determined by CDFW (2021a).
[b] While the riparian herb vegetation along the drainage may be considered part of the *Salix lasiolepis* Association, these areas currently do not support a willow canopy and may not be considered sensitive by the CDFW (2021a). The *Typha* Association is not considered sensitive.
[c] While the *Platanus racemosa* – *Quercus agrifolia* Association is considered sensitive by the CDFW (2021a), the on-site vegetation consists of ornamental landscaping of these native trees and would not provide the same biological functions and values as natural woodland.
[d] While the *Juglans californica* Association is considered sensitive by the CDFW (2021a), the on-site vegetation consists of a small number of isolated trees and would not provide the same biological functions and values as natural woodland.

3.3.1 California Sagebrush Scrub

California sagebrush scrub occurs as an isolated patch near the southern end of the Study Area. This vegetation type contains the densest cover of native species (approximately 90 percent) observed in the Study Area. It is composed of a continuous canopy of California sagebrush (*Artemisia californica*) with scattered coyote brush (*Baccharis pilularis* ssp. *consanguinea*).

This area was mapped as “coastal sage scrub” in the 2009 Biological Assessment and generally matches the previous description of “Venturan coastal sage scrub” (GLA 2009). It conforms to the *Artemisia californica* Association in *A Manual of California Vegetation* (CNPS 2019). This Association is not considered a sensitive natural community by the CDFW (CDFW 2021a). It should be noted that in certain cases California sagebrush scrub would be considered locally sensitive habitat for its ability to support Threatened or Endangered species. However, the sagebrush scrub that occurs on the Project Site does not have the potential to support any Threatened or Endangered species, and therefore would not be considered a sensitive habitat type.

3.3.2 Coyote Brush – California Sagebrush Scrub

Coyote brush – California sagebrush scrub occurs on the eastern edge of the Study Area. This vegetation type contains a relatively dense cover (approximately 80 percent) of coyote brush and California sagebrush with a small amount of laurel sumac (*Malosma laurina*) and the non-native shortpod mustard (*Hirschfeldia incana*).

This area was mapped as "disturbed/coastal sage scrub" in the 2009 Biological Assessment but generally matches the previous description of "Venturan coastal sage scrub" (GLA 2009). It conforms to the Baccharis pilularis – Artemisia californica Association in A Manual of California Vegetation (CNPS 2019). This Association is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.3 Coyote Brush – California Sagebrush Scrub/Upland Mustards

Coyote brush – California sagebrush scrub/upland mustards occurs on the periphery of the campus facilities in undeveloped portions of the Study Area. This vegetation type has approximately 15 to 20 percent cover of native species, primarily coyote brush, California sagebrush, and saw-toothed goldenbush (*Hazardia squarrosa*). It has been heavily degraded by the presence of non-native, weedy species such as shortpod mustard and fennel (*Foeniculum vulgare*).

These areas were mapped as "coastal sage scrub", "disturbed/Venturan coastal sage scrub", and "disturbed/coyote brush" in the 2009 Biological Assessment and generally match the previous description of "disturbed/coastal sage scrub" (GLA 2009). They conform to the *Baccharis pilularis – Artemisia californica* Association in *A Manual of California Vegetation* (CNPS 2019), though they are heavily degraded. This Association is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.4 Coyote Brush – California Sagebrush Scrub/Annual Grassland

Coyote brush – California sagebrush scrub/annual grassland occurs along the eastern side of the Study Area. This vegetation type has approximately 20 to 25 percent cover of native species, primarily California sagebrush and coyote brush with laurel sumac, deerweed, California everlasting (*Pseudognaphalium californicum*), needle grass (*Stipa* sp.), chilicothe (*Marah macrocarpa*), and western blue-eyed-grass (*Sisyrinchium bellum*). It has been degraded by the presence of non-native, annual grasses such as red brome (*Bromus rubens*), wild oat (*Avena fatua*), and soft chess (*Bromus hordeaceus*) with non-native forbs, such as fennel and petty spurge (*Euphorbia peplus*).

This area is mapped as "ruderal" in the 2009 GLA Biological Assessment and generally matches a combination of the previous descriptions of "disturbed Venturan coastal sage scrub" and "ruderal" (GLA 2009). It conforms to a combination of the Baccharis pilularis – Artemisia californica Association and the Baccharis pilularis/annual grass–herb Association in A Manual of California Vegetation (CNPS 2019). This Association is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.5 Disturbed Coyote Brush – California Sagebrush Scrub

Disturbed coyote brush – California sagebrush scrub occurs on a cut slope along the track on the eastern portion of the Study Area. This vegetation type has approximately 10 to 15 percent cover of native species, including coyote brush, California sagebrush, California buckwheat (*Eriogonum fasciculatum*), and stephanomeria (*Stephanomeria* sp.). While it contains non-native, weedy species such as fennel, red brome, and Geraldton carnation weed (*Euphorbia terracina*), the

weed cover is relatively low compared to coyote brush – California sagebrush scrub/upland mustards.

This area was mapped as "disturbed/coastal sage scrub" in the 2009 GLA Biological Assessment and generally matches the previous vegetation description of "disturbed Venturan coastal sage scrub" (GLA 2009). It conforms to the *Baccharis pilularis – Artemisia californica* Association in *A Manual of California Vegetation* (CNPS 2019), though it is characterized by ground disturbance. This Association is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.6 Upland Mustards/Disturbed Upland Mustards

Areas of upland mustards occur on the periphery of the campus in undeveloped portions of the Study Area. This vegetation type is dominated by non-native, weedy species—primarily shortpod mustard with fennel, Russian thistle (*Salsola tragus*), and Bermuda grass (*Cynodon dactylon*). Some of these areas were mowed at the time of the survey (indicated as "disturbed upland mustards" on Exhibit 3).

These areas were mapped as "turf", "ruderal" and "coastal sage scrub" in the 2009 GLA Biological Assessment and generally match the previous description of "ruderal" (GLA 2009). They conform to the *Hirschfeldia incana* Association in *A Manual of California Vegetation* (CNPS 2019). This Association is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.7 Disturbed Wild Oats and Annual Brome Grassland

Disturbed wild oats and annual brome grassland occurs along the eastern edge of the Study Area. This vegetation type is dominated by a mix of non-native, weedy grasses and forbs such as wild oat, red brome, ripgut grass (*Bromus diandrus*), soft chess, radish (*Raphanus sativus*), and petty spurge. These areas had previously been mowed.

These areas were mapped as "ruderal" in the 2009 GLA Biological Assessment and generally match the previous description of "ruderal" (GLA 2009). They conform to the *Avena* spp. – *Bromus* spp. Alliance in *A Manual of California Vegetation* (CNPS 2019). This Alliance is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.8 Riparian Herb

Riparian herb grows along the bed of the main drainage feature and in an adjacent basin on the western edge of the Study Area. The drainage contains patches of species typical of riparian understory such as watercress (*Nasturtium officinale*), California rose (*Rosa californica*), and California blackberry (*Rubus ursinus*) with non-native species including castor bean (*Ricinus communis*), garden nasturtium (*Tropaeolum majus*), and Saint Augustine grass (*Stenotaphrum secundatum*). No single species is dominant throughout the length of the drainage.

Vegetation in the drainage was included as part of the "arroyo willow riparian forest" in the 2009 Biological Assessment (GLA 2009), though the willow canopy has since burned. *A Manual of California Vegetation* (CNPS 2019) does not provide an Alliance or Association classification for areas dominated by a variety of riparian understory vegetation. On-site vegetation does not have a high enough relative cover of California rose or California blackberry for it to be considered part of the *Rosa californica* or *Rubus ursinus* Association and there is no classification for an area dominated by watercress or castor bean. Given that the area formerly had a more extensive willow canopy, it could be considered part of the *Salix lasiolepis* Association (CNPS 2019). This Association is considered sensitive by the CDFW (2019); however, the resource agencies may not consider areas currently lacking willows to be a sensitive natural community.

The basin is dominated by a patch of cattail (*Typha* sp.) surrounded by scattered natives such as an arroyo willow sapling (*Salix lasiolepis*), coyote brush, mule fat (*Baccharis salicifolia* ssp. *salicifolia*), and beardless wild-rye (*Elymus triticoides*).

Based on historic aerial images, the basin appears to have been constructed following the 2009 survey and so was not part of the 2009 GLA Biological Assessment (GLA 2009). It conforms to a *Typha* Association in *A Manual of California Vegetation* (CNPS 2019). This Association is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.9 Arroyo Willow Thicket

Arroyo willow thicket occurs along the main drainage feature on the western edge of the Study Area and along a drainage feature in the eastern portion of the Study Area. This vegetation type is characterized by individuals and patches of arroyo willows. The non-native castor bean is present in the understory. The patch in the eastern portion of the Study Area also contains blue elderberry (*Sambucus nigra* ssp. *caerulea*). Prior to the Woolsey fire, the vegetation on the western edge of the Study Area was more extensive. Many of the trees burned and some are regrowing while others remain as dead standing snags. Understory vegetation, where present, is similar to riparian herb, described above.

These areas were mapped as "arroyo willow riparian forest" in the 2009 Biological Assessment and generally match that previous vegetation description (GLA 2009). They conform to the *Salix lasiolepis* Association in *A Manual of California Vegetation* (CNPS 2019). This Association is considered sensitive by the CDFW (2019).

3.3.10 Eucalyptus Grove

Eucalyptus groves occur in two large patches at the northern end of the Study Area and in a patch adjacent to the equestrian center. This vegetation type consists of mature eucalyptus trees (*Eucalyptus* sp.), though some of the trees burned in the Woolsey fire and remain as standing snags.

These areas were included in the "ornamental vegetation" classification in the 2009 Biological Assessment (GLA 2009). It has been provided as its own vegetation category in the current report because *A Manual of California Vegetation* (CNPS 2019) includes a *Eucalyptus* Association and because coastal eucalyptus groves are known to support wintering monarch butterflies (discussed below in Section 4.3, Direct Impacts), a species of local concern and CDFW Special Animal. This non-native vegetation type is not considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.11 California Sycamore – Coast Live Oak Planting

A California sycamore – coast live oak planting occurs along a roadway at the southern end of the Study Area. This vegetation type consists of newly planted western sycamore and coast live oak saplings; many of the trees appeared dead or dying at the time of the survey. The understory consists of a planted prostrate coyote brush cultivar with scattered non-natives such as shortpod mustard and freeway iceplant (*Carpobrotus edulis*).

This area was not planted at the time of the 2009 Biological Assessment (GLA 2009) but is consistent with the "ornamental vegetation" classification used in that report. It generally conforms to the *Platanus racemosa – Quercus agrifolia* Association in *A Manual of California Vegetation* (CNPS 2019) due to the co-dominant tree species. This Association is considered a sensitive natural community by the CDFW (CDFW 2021a); however, the resource agencies would likely

not consider this landscaped area to provide the same biological functions and values as a natural sycamore – oak woodland.

3.3.12 Ornamental – Native Planting

Ornamental – native plantings occur primarily along the northwest periphery of the campus, near the equestrian center, and near the southern end of the Study Area. This vegetation type is very heterogeneous and consists of a mix of native and non-native planted individuals and naturalized weedy species. While this area could be considered part of the developed/ornamental vegetation type discussed below, the vegetation isn't as closely associated with structures and doesn't appear as "formally landscaped", even though many of the species appear to have been planted. The northern areas burned during the Woolsey fire. Species observed include natives such as coast live oak, Coulter's matilija poppy (*Romneya coulteri*) (a CRPR List 4.2 species), bladderpod (*Peritoma arborea*), laurel sumac, and California poppy (*Eschscholzia californica*) and non-natives such as European olive (*Olea europaea*), tree tobacco (*Nicotiana glauca*), Mexican sage (*Salvia leucantha*), shortpod mustard, castor bean, and Russian thistle. A patch of southern California black walnut (*Juglans californica*) occurs at the southeastern edge of the Study Area and consists of a few individual trees.

The areas along the northwest periphery of the campus were mapped as "ruderal" and "disturbed/coyote brush" in the 2009 GLA Biological Assessment (GLA 2009). The area near the equestrian center was mapped as "disturbed/developed". The southern California black walnut trees were mapped as "black walnut trees" but were not considered a "California walnut woodland" because the patch of trees is small, not contiguous with other woodland habitat, and functions as ornamental vegetation (GLA 2009). *A Manual of California Vegetation* (CNPS 2019) does not provide an Alliance or Association classification for vegetation as heterogeneous as is present in these areas. Due to the high diversity of non-native species, this vegetation type would not be considered a sensitive natural community by the CDFW (CDFW 2021a). Since the patch of black walnut trees is small and isolated, it would likely not be considered a sensitive natural community by the CDFW.

3.3.13 Turf

Turf occurs on the campus athletic fields throughout the Study Area. This vegetation consists of maintained turf grass. Unvegetated landcover closely associated with these fields (e.g., baseball diamonds, sidewalks, and dugouts) are included in this mapping.

These areas were mapped as "turf" in the 2009 GLA Biological Assessment (GLA 2009). *A Manual of California Vegetation* (CNPS 2019) does not provide an Alliance or Association classification for fields of cultivated grasses. As a non-native landscaped area, this vegetation type would not be considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.14 Developed/Ornamental

Developed/ornamental areas occur throughout the main campus and adjacent residential areas. This landcover includes buildings, paved roads, parking lots, the campus track, and other structures. A construction site that was active at the time of the field survey is also included in this landcover. Ornamental landscaping that is closely associated with these structures is included in this landcover and includes a variety of species such as pine (*Pinus* sp.), Mexican fan palm (*Washingtonia robusta*), pepper tree (*Schinus molle*), blue jacaranda (*Jacaranda mimosifolia*), southern magnolia (*Magnolia grandiflora*), bougainvillea (*Bougainvillea* sp.), cape leadwort (*Plumbago auriculata*), pampas grass (*Cortaderia selloana*), and turf grass.

These areas were mapped as "disturbed/developed" in the 2009 GLA Biological Assessment (GLA 2009). *A Manual of California Vegetation* (CNPS 2019) does not provide an Alliance or Association classification for developed areas or most ornamental landscaping. As a generally unvegetated area, this landcover would not be considered a sensitive natural community by the CDFW (CDFW 2021a).

3.3.15 Disturbed

Disturbed landcover occur throughout the Study Area. These areas consist of bare ground and are largely unvegetated (sparse weedy vegetation at less than 5 percent cover is present in some areas). Disturbed slopes had wattles placed along the slope contours to prevent erosion.

Some areas currently mapped as disturbed were vegetated at the time of the 2009 GLA Biological Assessment while other areas were not included in the 2009 study area (GLA 2009). *A Manual of California Vegetation* (CNPS 2019) does not provide an Alliance or Association classification for unvegetated areas. As an unvegetated area, this landcover would not be considered a sensitive natural community by the CDFW (CDFW 2021a).

3.4 COMMON WILDLIFE

The Study Area is comprised primarily of developed and non-native habitats, with some patchy native scrub habitat occurring scattered around the perimeter and center portions. Woodlands are also present on site, which consist of native plantings (California sycamore and coast live oak), and non-native eucalyptus plantings in the southeastern portion of the Survey Area. A small patch of arroyo willow thicket also occurs in the southeastern portion of the Survey Area. Common wildlife species observed or expected to occur in the Study Area are discussed below.

No portion of the Study Area supports perennial water, but there are no ponded areas. The seep in the upstream end of Drainage 1 has some intermittent flow. However, flow is only present a very short distance above ground and would not provide adequate habitat for fish. Therefore, no suitable habitat for fish species is present on the Study Area.

Amphibians require moisture for at least a portion of their life cycle and many require standing or flowing water for reproduction. Terrestrial species may or may not require standing water for reproduction. These species are able to survive in dry areas by aestivating (i.e., remaining beneath the soil in burrows or under logs and leaf litter and emerging only when temperatures are low and humidity is high). Many of these species' habitats are associated with water and they emerge to breed once the rainy season begins. Soil moisture conditions can remain high throughout the year in some habitat types depending on factors such as the amount of vegetation cover, elevation, and slope aspect. Amphibian species that may occur include western toad (*Anaxyrus boreas*) and Baja California treefrog (*Pseudacris hypochondriaca*).

Reptilian diversity and abundance typically vary with vegetation type and character. Many species prefer only one or two vegetation types; however, most species will forage in a variety of habitats. Most species occurring in open areas use rodent burrows for cover, protection from predators, and refuge during extreme weather conditions. The only reptile species observed in the Study Area was the western fence lizard (*Sceloporus occidentalis*). Other reptile species that may occur in all vegetation types on the Study Area include common side-blotched lizard (*Uta stansburiana*), southern alligator lizard (*Elgaria multicarinata*), California striped racer (*Masticophis lateralis lateralis*), San Diego night snake (*Hypsiglena ochrorhyncha*), San Diego gopher snake (*Pituophis catenifer annectens*), California lyresnake (*Trimorphodon lyrophanes*) and southern pacific rattlesnake (*Crotalus oreganus helleri*).

A variety of bird species are expected to be residents in the Study Area, using the habitats throughout the year. Other species are present only during certain seasons. For example, the white-crowned sparrow (*Zonotrichia leucophrys*) is expected to occur on the Project Site during the winter season and then migrate north in the spring to breed during the summer. On the Project Site, chaparral and scrub vegetation supports bird populations composed of species adapted to the dense vegetation that typifies these areas. Although large numbers of individuals can often be found inhabiting these vegetation types, species diversity is usually low to moderate, depending on the season. A relatively high proportion of the birds breeding in these habitats are year-round residents. Such species observed during the surveys include mourning dove (*Zenaida macroura*), Bewick's wren (*Thryomanes bewickii*), wrentit (*Chamaea fasciata*), northern mockingbird (*Mimus polyglottos*), spotted towhee (*Pipilo maculatus*), and California towhee (*Pipilo crissalis*).

Other bird species observed on the Study Area include Anna's hummingbird (*Calypte anna*), Allen's hummingbird (*Selasphorus sasin*), black-bellied plover (*Pluvialis squatarola*), killdeer (*Charadrius vociferus*), ring-billed gull (*Larus delawarensis*), western gull (*Larus occidentalis*), California gull (*Larus californicus*), Nuttall's woodpecker *(Picoides nuttallii*), nanday parakeet (*Aratinga nenday*), black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), Cassin's kingbird (*Tyrannus vociferans*), western kingbird (*Tyrannus verticalis*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), northern rough-winged swallow (*Stelgidopteryx serripennis*), cliff swallow (*Petrochelidon pyrrhonota*), barn swallow (*Hirundo rustica*), oak titmouse (*Baeolophus inornatus*), bushtit (*Psaltriparus minimus*), blue-gray gnatcatcher (*Polioptila caerulea*), ruby-crowned kinglet (*Regulus calendula*), wrentit (*Chamaea fasciata*), western bluebird (*Sialia mexicana*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), American pipit (*Anthus rubescens*), house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), song sparrow (*Melospiza melodia*), Lincoln's sparrow (*Melospiza lincolnii*), white-crowned sparrow, dark-eyed junco (*Junco hyemalis*), Bullock's oriole (*Icterus bullockii*), red-winged blackbird (*Agelaius phoeniceus*), brown-headed cowbird (*Molothrus ater*), Brewer's blackbird (*Euphagus cyanocephalus*), common yellowthroat (*Geothlypis trichas*), yellow-rumped warbler (*Setophaga coronata*), and Wilson's warbler (*Cardellina pusilla*).

Birds of prey (raptors) observed on the Study Area include northern harrier (*Circus cyaneus*), a California Species of Special Concern when nesting; red-shouldered hawk (*Buteo lineatus*); red-tailed hawk (*Buteo jamaicensis*); great horned owl (*Bubo virginianus*); burrowing owl (*Athene cunicularia*), a California Species of Special Concern when nesting and wintering; American kestrel (*Falco sparverius*); and American peregrine falcon (*Falco peregrinus anatum*) (flyover occurrence), a CDFW Fully Protected species. Other raptors expected to occur on the Project Site include the turkey vulture (*Cathartes aura*), Cooper's hawk (*Accipiter cooperii*), barn owl (*Tyto alba*), red-tailed hawk, barn owl, great horned owl, red-shouldered hawk, Cooper's hawk, and American kestrel. The burrowing owl may occur for wintering or breeding.

As with other taxonomic groups, the presence of different vegetation types on the Project Site offers mammals a variety of habitats. The Project Study Area being mostly developed, or disturbed habitat is expected to support a relatively low diversity, but potentially moderately high abundance, of mammals. Small, ground-dwelling mammals observed in the Study Area include western gray squirrel (*Sciurus griseus*), California ground squirrel (*Otospermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*). Other common small mammals that may occur on the Study Area include North American deermouse (*Peromyscus maniculatus*), California pocket mouse (*Chaetodipus californicus*), house mouse (*Mus musculus*), and black rat (*Rattus rattus*). Medium to large-sized mammals or their sign observed during the survey include desert cottontail (*Sylvilagus audubonii*), brush rabbit (*Sylvilagus bachmani*), and coyote (*Canis latrans*). Other common medium to large-sized mammals that may occur on the Study Area include striped skunk (*Mephitis mephitis*), bobcat (*Felis rufus*), mule deer (*Odocoileus hemionus*), Virginia

opossum (*Didelphis virginiana*), gray fox (*Urocyon cinereoargenteus*), and northern raccoon (*Procyon lotor*).

Bats occur throughout most of Southern California and may use any portion of the Project Site as foraging habitat. The trees in the Survey Area also provide potential roosting opportunities for the hoary bat (*Aeorestes cinereus*) or the western red bat (*Lasiurus frantzii*). Species that may occur include but are not limited to the Brazilian free-tailed bat (*Tadarida brasiliensis*), big brown bat (*Eptesicus fuscus*), canyon bat (*Parastrellus hesperus*), and California myotis (*Myotis californicus*) may all occur in the Study Area.

3.4.1 Wildlife Movement

Wildlife corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more mobile mammals, will not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967; Soule 1987; Harris and Gallagher 1989; Bennett 1990). Corridors mitigate the effects of this fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing routes for wildlife to escape from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (e.g., fire or disease) will result in population or local species extinction; and (3) serving as travel routes for individual animals as they move in their home ranges in search of food, water, mates, and other necessary resources (Noss 1983; Fahrig and Merriam 1985; Simberloff and Cox 1987; Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas or individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (e.g., foraging for food or water, defending territories or searching for mates, breeding areas, or cover). A number of terms such as "wildlife corridor", "travel route", "habitat linkage", and "wildlife crossing" have been used in various wildlife movement studies to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and to facilitate the discussion on wildlife movement in this analysis, these terms are defined as follows:

- **Travel Route –** a landscape feature (such as a ridgeline, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and to provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another. It contains adequate food, water, and/or cover while moving between habitat areas and it provides a relatively direct link between target habitat areas.
- **Wildlife Corridor –** a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bound by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and to facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat linkages" or "landscape linkages") can provide both transitory and resident habitat for a variety of species.
- **Wildlife Crossing –** a small, narrow area, relatively short in length and generally constricted in nature that allows wildlife to pass under or through an obstacle or barrier

that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These often represent "choke points" along a movement corridor, which may impede wildlife movement and increase the risk of predation.

It is important to note that, in a large open space area where there are few or no man-made or naturally occurring physical constraints to wildlife movement, wildlife corridors (as defined above) may not yet exist. Given an open space area that is both large enough to maintain viable populations of species and to provide a variety of travel routes (e.g., canyons, ridgelines, trails, riverbeds, and others), wildlife will use these "local" routes while searching for food, water, shelter, and mates and will not need to cross into other large open space areas. Based on their size, location, vegetative composition, and availability of food, some of these movement areas (e.g., large drainages and canyons) are used for longer lengths of time and serve as source areas for food, water and cover, particularly for small- and medium-sized animals. This is especially true if the travel route is within a larger open space area. However, once open space areas become constrained and/or fragmented as a result of urban development or construction of physical obstacles (e.g., roads and highways), the remaining landscape features or travel routes that connect the larger open space areas become corridors as long as they provide adequate space, cover, food, and water, and do not contain obstacles or distractions (e.g., man-made noise, lighting) that would generally hinder wildlife movement.

In general, animals discussed within the context of movement corridors typically include larger, more mobile species (e.g., mule deer, black bear, mountain lion, fox [*Urocyon* sp.], and coyote). Most of these species have relatively large home ranges through which they move to find adequate food, water, and breeding and wintering habitat. It is assumed that corridors that serve larger, more vagile species (i.e., those that can move freely, such as birds) also serve as corridors for many smaller, less mobile species, such as reptiles, amphibians, and rodents (generally discussed within the context of local movement). For smaller species, these local movements are compared to "stepping stones" as individuals move between populations; this facilitated gene flow on the regional scale.

The availability of open space corridors is generally considered less important for bird species. Most bird species are believed to fly in more or less direct paths to desired locations; however, some habitat-specific species may not move great distances from their preferred habitat types and are believed to be less inclined to travel across unsuitable areas.

Ideally, an open space corridor should encompass a heterogeneous mix of vegetation types to accommodate the ecological requirements of a wide variety of resident species in any particular region. Most species typically prefer adequate vegetation cover during movement, which can serve as both a food source and as protection from weather and predators. Drainages, riparian areas, and forested canyon bottoms typically serve as natural movement corridors because these features provide cover, food, and often water for a variety of species. Very few species will move across large expanses of open, uncovered habitat unless it is the only option available to them. For some species, landscape linkages must be able to support animals for sustained periods, not just for travel. Smaller or less mobile animals (e.g., rodents and reptiles) require long periods to traverse a corridor, so the corridor must contain adequate food and cover for survival.

The Study Area is relatively flat and does not contain any important travel routes or corridors such as canyons or ridgelines, and the Study Area does not connect any large regional open space areas. Any movement occurring in the Study Area would be restricted to local movement of resident wildlife species using the site to forage or disperse from breeding grounds. The overwhelming majority of Project impacts are contained to areas that were previously developed.

In addition, restoration occurring in and adjacent to the ESHA would be a net benefit for any local wildlife movement occurring in that area.

3.5 SPECIAL STATUS BIOLOGICAL RESOURCES

The following section addresses special status biological resources reported from the region. These resources include plant and wildlife species that have been afforded special status and/or are recognized by federal and State resource agencies, as well as private conservation organizations. In general, the principal reason an individual taxon (i.e., species, subspecies, or variety) is given such recognition is the documented or perceived decline or limitations of its population size, geographic range, and/or distribution resulting in most cases from habitat loss. This list includes species reported by the California Natural Diversity Database (CNDDB), and CNPS and is supplemented with species from the author's experience that could occur based on the presence of suitable habitat. In addition, special status biological resources include vegetation types and habitats that are either unique, of relatively limited distribution in the region, or of particularly high wildlife value. These resources have been defined by federal, State, and local government conservation programs. Sources used to determine the special status of biological resources are listed below.

Habitats – the CNDDB (CDFW 2021b) and the CDFW's *California Natural Communities List* (CDFW 2021a).

Plants – the Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021); the CNDDB (CDFW 2021b); various USFWS *Federal Register* notices regarding listing status of plant species; and the CDFW's *List of Special Vascular Plants, Bryophytes, and Lichens* (CDFW 2021d).

Wildlife – the CNDDB (CDFW 2021b); various USFWS *Federal Register* notices regarding listing status of wildlife species; and the CDFW's *List of Special Animals* (CDFW 2021c).

3.5.1 Special Status Vegetation Types

In addition to providing an inventory of special status plant and wildlife species, the CDFW provides a list of vegetation Alliances, Associations, and Special Stands that are considered "Sensitive Natural Communities" based on their rarity and threat (CDFW 2021a). Sensitive natural communities are "of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects"; they may or may not contain special status species (CDFW 2018). Determination of the level of imperilment is based on the NatureServe Heritage Program Status Ranks that rank both species and vegetation types on a global (**G**) and statewide (**S**) basis according to their rarity; trend in population size or area; and recognized threats (e.g., proposed developments, habitat degradation, and non-native species invasion). The ranks are scaled from 1 to 5. NatureServe considers **G1 or S1** communities to be critically imperiled and at a very high risk of extinction or elimination due to extreme rarity, very steep declines, or other factors; **G2 or S2** communities to be imperiled and at high risk of extinction or elimination due to very restricted range, very few populations or occurrences, steep declines, or other factors; **G3 or S3** communities to be vulnerable and at moderate risk of extinction or elimination due to a restricted range, relatively few populations or occurrences, recent and widespread declines, or other factors; **G4 or S4** communities to be apparently secure and uncommon but not rare with some cause for long-term concern due to declines or other factors; and **G5 or S5** communities to be secure (Faber-Langendoen et al. 2009).

All vegetation alliances[4] that have State ranks of S1 to S3 are considered to be highly imperiled. Currently, association ranks are not provided, but associations ranked as S3 or rarer are noted. One of the vegetation types on the Study Area is considered special status: arroyo willow thicket (Table 6).

3.5.2 Special Status Plant Species

Many special status plant species have been reported from the Project region. Table 7 provides a list of these species; their listing status; and their potential to occur in each portion of the Study Area. Locations of special status plant species can be found on Exhibit 5.

[4] A vegetation alliance is "a classification unit of vegetation, containing one or more associations and defined by one or more diagnostic species, often of high cover, in the uppermost layer or the layer with the highest canopy cover" (Sawyer et al. 2009).

TABLE 7
SPECIAL STATUS PLANT SPECIES OF THE PROJECT REGION

Scientific Name	Common Name	USFWS	CDFW	CRPR	Species Background	Potential
Abronia maritima	red sand-verbena			4.2	Perennial herb. Coastal dunes; 0–328 ft. Southern California County Distribution: Los Angeles, Orange, San Diego, and Ventura. Blooming period: February–November.	Not expected to occur; no suitable habitat.
Astragalus brauntonii	Braunton's milk-vetch	FE		1B.1	Perennial herb. Recently burned and disturbed areas, in sandstone and carbonite soils, in chaparral, coastal scrub, and grasslands; 13–2,099 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, Ventura. Blooming period: January–August.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Atriplex coulteri	Coulter's saltbush			1B.2	Perennial herb. Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, and grassland; 9–1,509 ft. Southern California County Distribution: Los Angeles, Orange, San Bernardino, San Diego, Ventura. Blooming period: March–October.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Atriplex serenana var. *davidsonii*	Davidson's saltscale			1B.2	Annual herb. Alkaline conditions in coastal bluff scrub and coastal scrub; 32–656 ft. Southern California County Distribution: Los Angeles (Presumed extirpated; Occurrence confirmed, but possibly extirpated), Orange, Riverside, San Diego, Ventura. Blooming period: April–October.	Not expected to occur; limited, marginally suitable habitat; few records in the region.
Baccharis malibuensis	Malibu baccharis			1B.1	Deciduous shrub. Chaparral, coastal scrub, cismontane and riparian woodland; 492–1,000 ft. Southern California County Distribution: Los Angeles, Orange. Blooming period: August.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Calochortus catalinae	Catalina mariposa lily			4.2	Perennial bulbiferous herb. Chaparral, cismontane woodland, coastal scrub, and grassland; 49–2,296 ft. Southern California County Distribution: Los Angeles, Orange, San Bernardino, San Diego, Ventura. Blooming period: February–June.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Calochortus clavatus var. *clavatus*	club-haired mariposa lily			4.3	Perennial bulbiferous herb. Clay, rocky, or serpentine soils in chaparral, coastal scrub, cismontane woodland, grassland; 246–4,264 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: May–June.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Calochortus clavatus var. *gracilis*	slender mariposa lily			1B.2	Perennial bulbiferous herb. Chaparral, coastal scrub, grassland; 0–3,280 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: March–June.	Limited potential to occur; marginally suitable habitat.
Calochortus plummerae	Plummer's mariposa lily			4.2	Perennial bulbiferous herb. Granitic and rocky areas in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and grassland; 0–5,576 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Bernardino, Ventura. Blooming period: May–July.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Camissoniopsis lewisii	Lewis' evening-primrose			3	Annual herb. Sandy or clay soils in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and grassland; 0–984 ft. Southern California County Distribution: Los Angeles, Orange (Presumed extirpated), San Diego. Blooming period: March–June.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Centromadia parryi ssp. *australis*	southern tarplant			1B.1	Annual herb. Found within the margin of marshes and swamps, vernally mesic soils in grassland, and vernal pools; 0–1,574 ft. Southern California County Distribution: Los Angeles, Orange, San Diego, Ventura. Blooming period: May–November.	Not expected to occur; no suitable habitat.
Cercocarpus betuloides var. *blancheae*	island mountain-mahogany			4.3	Evergreen shrub. Closed-cone coniferous forests and chaparral; 98–1,968 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: February–May.	Not expected to occur; no suitable habitat.
Chaenactis glabriuscula var. *orcuttiana*	Orcutt's pincushion			1B.1	Annual herb. Sandy soils in coastal bluff scrub and coastal dunes; 0–328 ft. Southern California County Distribution: Los Angeles, Orange (Presumed extirpated), San Diego, Ventura. Blooming period: January–August.	Not expected to occur; no suitable habitat.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower		SE	1B.1	Annual herb. Sandy soil in coastal scrub and grassland; 492–4,002 ft. Southern California County Distribution: Los Angeles, Orange (Presumed extirpated), Ventura. Blooming period: April–July.	Not expected to occur; no suitable soils.
Chorizanthe parryi var. *parryi*	Parry's spineflower			1B.1	Annual herb. Sandy or rocky openings in chaparral, coastal scrub, cismontane woodland, and grassland; 902–4,001 ft. Southern California County Distribution: Los Angeles, Riverside, San Bernardino. Blooming period: April–June.	Not expected to occur; outside current known elevational range.
Convolvulus simulans	small-flowered morning-glory			4.2	Annual herb. Friable clay soils or serpentine seeps in chaparral openings, coastal scrub, and grassland; 98–2,297 ft. Southern California County Distribution: Kern, Los Angeles, Orange, Riverside, San Diego. Blooming period: March–July.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Dichondra occidentalis	western dichondra			4.2	Perennial rhizomatous herb. Chaparral, cismontane woodland, coastal scrub, grassland; 164–1,640 ft. Southern California County Distribution: Los Angeles (Uncertain about distribution or identity), Orange, San Diego, Ventura. Blooming period: January–July.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Dudleya blochmaniae ssp. *blochmaniae*	Blochman's dudleya			1B.1	Perennial herb. Rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and grassland; 16–1,476 ft. Southern California County Distribution: Los Angeles, Orange, San Diego, Ventura. Blooming period: April–June.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.

TABLE 7
SPECIAL STATUS PLANT SPECIES OF THE PROJECT REGION

Scientific Name	Common Name	USFWS	CDFW	CRPR	Species Background	Potential
Dudleya cymosa ssp. *agourensis*	Agoura Hills dudleya	FT		1B.2	Perennial herb. Rocky and volcanic soils in chaparral and cismontane woodland; 656–1,640 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: May–June.	Not expected to occur; no suitable habitat.
Dudleya cymosa ssp. *marcescens*	marcescent dudleya	FT	SR	1B.2	Perennial herb. Rocky and volcanic soils in chaparral; 492–1,706 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: April–July.	Not expected to occur; no suitable habitat.
Dudleya cymosa ssp. *ovatifolia*	Santa Monica dudleya	FT		1B.1	Perennial herb. Shaded, volcanic or sedimentary rocky soils in chaparral and coastal scrub; 492–5,494 ft. Southern California County Distribution: Los Angeles, Orange. Blooming period: March–June.	Not expected to occur; no suitable habitat.
Hordeum intercedens	vernal barley			3.2	Annual herb. Coastal dunes, coastal scrub, saline flats and depressions in grassland, and vernal pools; 16–3,280 ft. Southern California County Distribution: Kern, Los Angeles, Orange, Riverside, San Diego, Ventura. Blooming period: March–June.	Not expected to occur; no suitable habitat.
Horkelia cuneata var. *puberula*	mesa horkelia			1B.1	Perennial herb. Sandy and gravelly soils in maritime chaparral, cismontane woodland, and coastal scrub; 229–2,657 ft. Southern California County Distribution: Los Angeles, Orange, Riverside (Presumed extirpated), San Bernardino, San Diego (Presumed extirpated), Ventura. Blooming period: February–July (September).	Not expected to occur; no suitable soils.
Isocoma menziesii var. *decumbens*	decumbent goldenbush			1B.2	Perennial shrub. Chaparral and in sandy coastal scrub, often in sandy disturbed areas; 33–443 ft. Southern California County Distribution: Los Angeles, Orange, San Diego. Blooming period: April–November.	Not expected to occur; no suitable habitat.
Juglans californica	Southern California black walnut			4.2	Deciduous tree. Alluvial areas in chaparral, cismontane woodland, and coastal scrub; 164–2,952 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura. Blooming period: March–August.	Observed; suitable habitat.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields			1B.1	Annual herb. Coastal salt marsh, coastal salt swamps, playas, vernal pools; 3–4,001 ft. Southern California County Distribution: Kern (Presumed extirpated), Los Angeles (Presumed extirpated), Orange, Riverside, San Bernardino (Presumed extirpated), San Diego, Ventura. Blooming period: February–June.	Not expected to occur; no suitable habitat.
Lepechinia fragrans	fragrant pitcher sage			4.2	Perennial herb. Chaparral; 66–4,297 ft. Southern California County Distribution: Los Angeles, San Bernardino, Ventura (Uncertain about distribution or identity). Blooming period: March–October.	Not expected to occur; no suitable habitat.
Lilium humboldtii ssp. *ocellatum*	ocellated Humboldt lily			4.2	Perennial bulbiferous herb. Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodland; 98–5,904 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura. Blooming period: March–July (August).	Not expected to occur; no suitable habitat.
Monardella hypoleuca ssp. *hypoleuca*	white-veined monardella			1B.3	Perennial herb. Chaparral and cismontane woodland; 164–5,002 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: April–December.	Not expected to occur; no suitable habitat.
Navarretia ojaiensis	Ojai navarretia			1B.1	Annual herb. Openings in chaparral and coastal sage scrub and grassland; 275–620 m (902–2,034 ft). Southern California County Distribution: Los Angeles (Uncertain about distribution or identity), Ventura. Blooming period: May–July.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Pentachaeta lyonii	Lyon's pentachaeta	FE	SE	1B.1	Annual herb. Rocky or clay soils in coastal scrub, grassland, and openings in chaparral; 98–2,066 ft. Southern California County Distribution: Los Angeles, Ventura. Blooming period: March–August.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Phacelia hubbyi	Hubby's phacelia			4.2	Annual herb. Gravelly to rocky soil or talus in chaparral, coastal scrub, grassland; 0–3,280 ft. Southern California County Distribution: Kern, Los Angeles, Ventura. Blooming period: April–July.	Not expected to occur; no suitable soils.
Phacelia ramosissima var. *austrolitoralis*	south coast branching phacelia			3.2	Perennial herb. Sandy, sometimes rocky soils in chaparral, coastal dunes, coastal scrub, coastal salt marshes and swamps; 16–984 ft. Southern California County Distribution: Orange, Los Angeles, San Diego, Ventura. Blooming period: March–August.	Not expected to occur; no suitable habitat.
Quercus dumosa	Nuttall's scrub oak			1B.1	Perennial evergreen shrub. Sandy or clay loam in closed-cone coniferous forest, chaparral, and coastal scrub; 49–1,312 ft. Southern California County Distribution: Los Angeles, Orange, San Diego, Ventura. Blooming period: February–August.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.
Romneya coulteri	Coulter's matilija poppy			4.2	Perennial rhizomatous herb. Chaparral and coastal scrub; often in burned areas; 65–3,936 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Diego. Blooming period: March–July.	Observed; suitable habitat.
Senecio aphanactis	chaparral ragwort			2B.2	Annual herb. Chaparral, cismontane woodland, coastal scrub, and alkaline flats; 49–2,624 ft. Southern California County Distribution: Los Angeles, Orange, Riverside, San Diego, Ventura. Blooming period: January–April.	Not expected to occur; no suitable habitat.

TABLE 7
SPECIAL STATUS PLANT SPECIES OF THE PROJECT REGION

Scientific Name	Common Name	USFWS	CDFW	CRPR	Species Background	Potential
Thelypteris puberula var. *sonorensis*	Sonoran maiden fern			2B.2	Perennial rhizomatous herb. Meadows, seeps, and streams; 164–2,001 ft. Southern California County Distribution: Los Angeles, Riverside, San Bernardino. Blooming period: January–September.	Not expected to occur; not observed during focused surveys; marginally suitable habitat.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank; ft: feet; m: meter.

Species Status

Federal (USFWS)	**State (CDFW)**
FE Endangered	SE Endangered
FT Threatened	SR Rare

CRPR

1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2B	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3	Plants about which we need more information – review list
4	Plants of limited distribution – watch list

CRPR Threat Code Extension

None	Plants lacking any threat information
.1	Seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat)
.2	Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)
.3	Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)

Species that were observed [on site] are shown in **boldface** type.

3.5.3 Special Status Wildlife

Many special status wildlife species have been reported from the Project region. Table 8 provides a list of these species; their listing status; and their potential to occur in each portion of the Survey Area. Locations of special status wildlife species can be found on Exhibit 6.

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Special Status Wildlife Observations

Exhibit 6

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

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TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROJECT AREA

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Invertebrates				
Danaus plexippus pop. 1 monarch (California overwintering population)[a]	Primarily occurs in coastal, lowland, and foothill areas with milkweed (*Ascelpias* spp.), though also in deserts and mountains; overwinters in large numbers on trees.	–	SA	May occur; limited suitable wintering habitat in eucalyptus grove. Eucalyptus groves will not be impacted by the Project.
Euphydryas editha quino Quino checkerspot butterfly	Sunny openings within chaparral and coastal sage shrublands in parts of Riverside and San Diego counties. Hills and mesas near the coast. Need high densities of food plants *Plantago erecta*, *P. insularis*, and *Orthocarpus purpurescens*.	FE	–	Not expected to occur; outside of species range.
Bombus crotchii Crotch bumble bee	Occurs in open grassland and scrub habitats; nests underground. Feeds on milkweed (*Asclepias* sp.), pincushion (*Chaenactis* sp,), lupine (*Lupinus* sp.), alfalfa (*Medicago* sp.), phacelia (*Phacelia* sp.), and sage (*Salvia* sp.), among others.	–	CE	Not expected to occur; no suitable habitat.
Fish				
Gila orcuttii arroyo chub	Occurs in coastal freshwater streams and rivers with sustained flows and emergent vegetation with substrates consisting primarily of sand or mud.	–	SSC	Not expected to occur; no suitable habitat.
Oncorhynchus mykiss irideus pop. 10 steelhead – southern California DPS	Occurs in perennial streams and rivers that connect to the ocean.	FE	–	Not expected to occur; no suitable habitat.
Eucyclogobius newberryi tidewater goby	Occurs in in waters of coastal lagoons, estuaries, and marshes.	FE	SSC	Not expected to occur; no suitable habitat.
Amphibians				
Anaxyrus californicus arroyo toad	Occurs in semi-arid regions near washes or intermittent streams; requires suitable breeding pools.	FE	SSC	Not expected to occur; no suitable habitat.
Spea hammondii western spadefoot	Occurs in a wide range of habitats including lowlands to foothills, grasslands, open chaparral, and pine-oak woodlands. It prefers shortgrass plains, and sandy or gravelly soil (e.g., alkali flats, washes, alluvial fans). It is fossorial and breeds in temporary rain pools and slow-moving streams (e.g., areas flooded by intermittent streams).	–	SSC	Not expected to occur; limited terrestrial habitat with no suitable breeding habitat (no breeding pools).

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROJECT AREA

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Reptiles				
Emys marmorata western pond turtle	Occurs in ponds, lakes, marshes, rivers, streams, and irrigation ditches with a rocky or muddy bottom and aquatic vegetation.	–	SSC	Not expected to occur; no suitable habitat.
Phrynosoma blainvillii coast horned lizard	Occurs in scrubland, grassland, coniferous forests, and broadleaf woodland vegetation types.	–	SSC	Not expected to occur; sage scrub habitat is too degraded and isolated.
Aspidoscelis tigris stejnegeri coastal whiptail	Occurs in hot and dry areas with sparse foliage and open areas. Found in forests, woodland, chaparral, and riparian areas.	–	SSC	May occur; limited suitable habitat. Only very rarely expected to occur within the Project impact area.
Anniella stebbinsi southern California legless lizard	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Sometimes found in suburban gardens in Southern California. Spends most of its life beneath the soil, under rocks, boards, driftwood, logs, debris, or in leaf litter. Prefers areas with loose, sandy soil, moisture, warmth, and plant cover.	–	SSC	Not expected to occur; no suitable habitat.
Thamnophis hammondii two-striped garter snake	Occurs in wetlands, freshwater marsh, and riparian habitats with perennial water.	–	SSC	Not expected to occur; no suitable habitat.
Birds				
Aquila chrysaetos golden eagle (nesting and wintering)	Nests in open and semi-open habitats, such as tundra, shrublands, grasslands, woodland-brushlands, coniferous forests, farmland, and riparian habitats. Forages in broad expanses of open country.	–	FP	Not expected to occur; no suitable habitat.
Circus cyaneus northern harrier (nesting)	Occurs from annual grassland up to lodgepole pine and alpine meadow habitats, as high as 3000 m (10,000 ft). Frequents meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands; seldom found in wooded areas. Permanent resident of the northeastern plateau and coastal areas; less common resident of the Central Valley. Widespread winter resident and migrant in suitable habitat. Uses tall grasses and forbs in wetland, or at wetland/field border, for cover.	–	SSC	Observed as a flyover (Exhibit 6); not expected to occur for breeding due to lack of suitable habitat. May forage in the undeveloped grassland and scrub habitat in the Study Area. Not expected to forage in the impact area.
Falco peregrinus anatum American peregrine falcon (nesting)	Nests on cliffs and tall buildings near wetlands, lakes, rivers, or other large water features.	–	FP	Observed as a flyover (Exhibit 6); not expected to occur for breeding. May forage in the undeveloped grassland and scrub habitat in the Study Area. Not expected to forage in the impact area.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROJECT AREA

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Athene cuniculari burrowing owl (burrow sites and some wintering sites)	Occurs in sparse vegetation in arid and semi-arid habitats such as grasslands, steppes, deserts, prairies, and agricultural areas. Nests in mammal burrows or man-made cavities.	–	SSC	Observed; may occur for breeding and wintering.
Polioptila californica californica coastal California gnatcatcher	In California, this species is an obligate resident of several distinct sub-associations of the coastal sage scrub vegetation type. The gnatcatcher has been recorded from sea level to approximately 3,000 feet above msl (USFWS 2003); however, greater than 90 percent of gnatcatcher records are from between sea level and 820 feet above msl along the coast and between sea level and 1,800 feet above msl inland (Atwood and Bolsinger 1992).	FT	SSC	Not expected to occur; limited suitable habitat; lack of historical records in the Project region; outside of species range.
Agelaius tricolor tricolored blackbird (nesting)	This colonial nesting species prefers to breed in freshwater marshes dominated by cattails and bulrushes, with willows and nettles (*Urtica* spp.) also common. The introduced mustards (*Brassica* spp.), blackberries (*Rubus* spp.), thistles (*Circium* spp.), and mallows (*Malva* spp.) have also been used for several decades.	–	ST, SSC	Not expected to occur; no suitable habitat.
Mammals				
Macrotus californicus California leaf-nosed bat	Occurs in desert riparian, desert wash, desert scrub, desert succulent scrub, alkali scrub, and palm oasis habitats.	–	SSC	Not expected to occur; no suitable habitat.
Euderma maculatum spotted bat	Occurs in a variety of habitats such as arid desert, grassland, and mixed conifer forest (Zeiner et al. 1990). Roosts in rock crevices (Williams 1986).	–	SSC	Not expected to occur; no suitable habitat.
Lasiurus blossevillii western red bat	Prefers riparian areas dominated by walnuts, oaks, willows, cottonwoods, and sycamores where they roost in these broad-leafed trees.	–	SSC	Low potential to occur; suitable foraging habitat and limited suitable roosting habitat.
Eumops perotis californicus western mastiff bat	Occurs in many open semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, palm oases, chaparral, desert scrub, and urban areas. Typically forages in open areas with high cliffs and roosts in crevices on cliff faces and occasionally in man-made structures with at least 15 ft of unobstructed space below roost.	–	SSC	May occur for foraging; suitable foraging habitat; not expected to occur for roosting; no suitable roosting habitat.

TABLE 8
SPECIAL STATUS WILDLIFE SPECIES REPORTED FROM THE PROJECT AREA

Species	General Habitat/Range Description	USFWS	CDFW	Potential for Occurrence
Taxidea taxus American badger	Most abundant in the drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. When inactive, occupies underground burrow.	–	SSC	Not expected to occur; no suitable habitat.
Neotoma lepida intermedia San Diego desert woodrat	Common to abundant in Joshua tree, pinyon-juniper, mixed and chamise-redshank chaparral, sagebrush, and most desert habitats. Also found in a variety of other habitats. Most abundant in rocky areas with Joshua trees. Elevational range from sea level to 8,500 ft. Northern and elevational distribution may be limited by temperature.	–	SSC	Not expected to occur; no suitable habitat.

USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; USFS: U.S. Forest Service; msl: mean sea level; ft: feet; m: meter.

[a]: This is a species of local concern because they historically roost in large numbers along the coast in large trees such as gum trees (*Eucalyptus* spp.) and it was therefore added to the table, however, other CDFW Special Animal species that may occur in the Project region are not included in this table.

Status Definitions

Federal (USFWS) Status

FE Endangered
FT Threatened

State (CDFW) Status

ST Threatened
CE Candidate for Listing as Endangered
SSC Species of Special Concern
FP California Fully Protected
WL Watch List
SA Special Animal (tracked by CNDDB)

Notes: Scientific and common names for wildlife species follow the most current list of Special Animals (July 2021) available from the CDFW (https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals).

3.5.4 Jurisdictional Resources

Riparian habitats are often under the jurisdiction of the USACE, the RWQCB, and/or the CDFW due to their association with wetlands, "Waters of the U.S.", or streambeds. However, it should be noted that the riparian habitats described above are not equivalent to delineated areas subject to the jurisdiction of the USACE, the RWQCB, and/or the CDFW. Only the portion of these habitats associated within a discernible streambed and/or adjacent wetlands that meet certain criteria are within the jurisdiction of these regulatory agencies. Similarly, upland habitat types (e.g., mixed coastal sage scrub and mixed chaparral) or disturbed and developed areas may be within the jurisdiction of these agencies if they occur within a discernible streambed.

A total of five potential jurisdictional features were mapped in the Study Area: Drainage 1, Drainage 2, Drainage 3, Drainage 4, and Basin (Exhibits 7 and 8). Table 9 summarizes the type and extent of the jurisdictional features in the Study Area. A detailed analysis of the jurisdictional resources found in the Survey Area can be found within the Draft Jurisdictional Delineation Report for the Malibu Middle and High School Campus Specific Plan (Psomas 2021b) included as Appendix C.

TABLE 9
SUMMARY OF JURISDICTIONAL RESOURCES IN THE STUDY AREA

	Existing Resources (Acres)					
	Drainage					
Jurisdictional Features	**1**	**2**	**3**	**4**	**Basin**	**Total**
USACE Waters of the United States						
Wetlands	0.007	n/a	n/a	n/a	n/a	0.007
Non-wetland Waters	0.063	n/a	n/a	n/a	n/a	0.063
Total USACE Waters of the United States	0.070	n/a	n/a	n/a	n/a	0.070
RWCQB Waters of the State						
Wetlands	0.007	n/a	n/a	n/a	n/a	0.007
Non-wetland Waters	0.063	0.076	0.030	0.023	0.033	0.225
Total RWQCB Waters of the State	**0.070**	**0.076**	**0.030**	**0.023**	**0.033**	**0.232**
Total CDFW Jurisdictional Resources	**0.681**	**0.127**	**0.030**	**0.331**	**0.033**	**1.202**
Total CCC Jurisdictional Resources	**0.681**	**0.127**	**0.030**	**0.331**	**0.033**	**1.202**

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife; CCC: California Coastal Commission.

3.5.5 Regulated Tree Resources

Trees protected pursuant to City ordinance within the Project Study Area include eight western sycamores, one Southern California black walnut, and one coast live oak. Their locations are provided on Exhibit 2 of the Tree Survey Report (Psomas 2021c) and denoted as "LCP Protected Trees". Generally, these trees are located on slopes or in drainages over 30 feet from existing structures. The walnut tree is located next to a residential structure in the southeast corner of the Study Area.

3.6 ENVIRONMENTALLY SENSITIVE HABITAT AREA

According to the City of Malibu Local Coastal Program ESHA Overlay Map 2: Zuma Beach to Escondido, a mapped ESHA in the northwestern portion of the Survey Area. The ESHA consists of an approximately 1,100-foot long drainage (Drainage 1) along the western edge of the Campus

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

Exhibit 7a

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 09/02/2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_JD_OHWM.pdf

Study Area

Sampling Points

Ordinary High Water Mark

Non-wetland

Wetland*

* Based on USACE three-parameter approach.

1A

1B

Drainage 1

Drainage 2

Match Line - Exhibit 7c

Match Line - Exhibit 7a

Map Extent

7a

7b

7c

7d

7e

7f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 7b

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

Exhibit 7c

N
W E
S

50 25 0 50 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

Exhibit 7d

N W E S

50 25 0 50 Feet

PSOMAS

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Match Line - Exhibit 7d

Study Area

Sampling Points

Ordinary High Water Mark

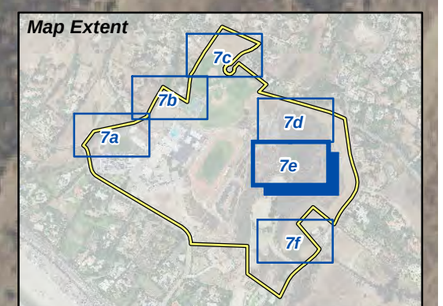
Non-wetland

Wetland*

* Based on USACE three-parameter approach.

Drainage 3

Map Extent



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

Exhibit 7e

N W E S

50 25 0 50 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 7f

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

Exhibit 8a

N W E S

60 30 0 60 Feet

PSOMAS

(Rev: 09/02/2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_JD_TOB_.pdf

Study Area
Limits of ESHA Delineated in the Field
Sampling Points
Top of Bank/Riparian Canopy

1A
1B
2
Drainage 1
Drainage 2
Match Line - Exhibit 8a
Match Line - Exhibit 8c

8a
8b
8c
8d
8e
8f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 8b

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N
W
E
S

60 30 0 60 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 8c

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

60 30 0 60 Feet

PSOMAS

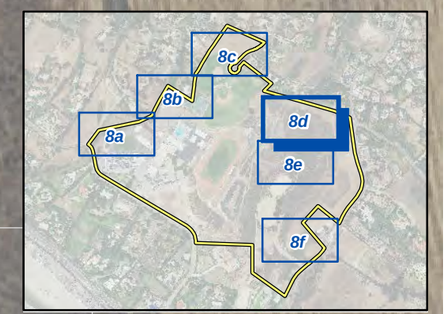
(Rev: 09/02/2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_JD_TOB_.pdf

Study Area

Top of Bank/Riparian Canopy

Drainage 3

Match Line - Exhibit 8e



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 8d

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

60 30 0 60 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 8e

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

60 30 0 60 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 8f

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

60 30 0 60 Feet

PSOMAS

(Rev: 09/02/2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_JD_TOB_.pdf

(Exhibit 9). It receives flow from an undeveloped lot north of the property, road runoff, and runoff from an adjacent parking lot. A culvert at the cul-de-sac of Clover Heights Avenue also carries flow underground and into this drainage. At the downstream end, the drainage flows into a corrugated pipe culvert under Morning View Drive. Based on aerial imagery and USGS topographic contours, this drainage continues primarily above ground until it is undergrounded at Pacific Coast Highway and discharges onto Zuma Beach at the Pacific Ocean (Psomas 2021a).

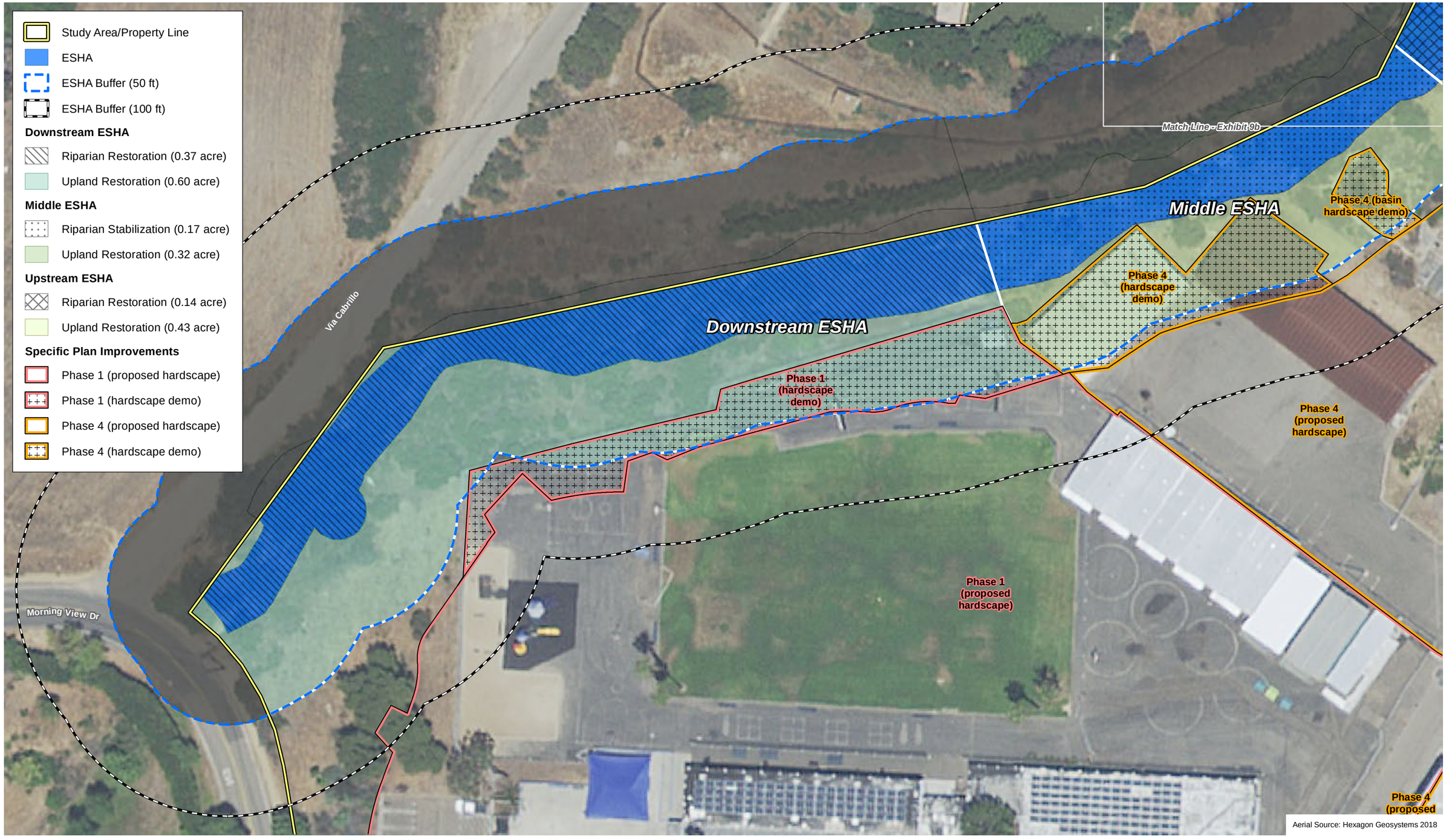
The drainage is unlined along its entire length in the Study Area. The upstream end of the drainage has a broad, concave cross-section with no abrupt break in bank slope. Soils in this area were saturated and surface water was present during multiple site visits. The middle and downstream end of the drainage is more incised, with steep slopes and a narrow channel bed. Some banks are eroded or undercut. Surface water was not present during multiple site visits and the soils were not saturated near the surface along the middle and downstream portions of the drainage.

Vegetation types within the ESHA and 50-foot buffer consist of riparian herb and arroyo willow thicket in the drainage bottom transitioning to coyote brush – California sagebrush scrub/upland mustards, upland mustards, and ornamental – native planting.

Drainage 4, which also contains riparian habitat (arroyo willow thicket), would also be considered an ESHA; however, this ESHA is not within 100 feet of planned impacts and is therefore not discussed further in this report.

3.7 CRITICAL HABITAT

The Study Area is not located within any USFWS Designated Critical Habitat. The nearest Designated Critical Habitat occurs approximately 0.80 mile to the north for Braunton's milk-vetch (*Astragalus brauntonii*).



Aerial Source: Hexagon Geosystems 2018

Mapped ESHA

Exhibit 9a

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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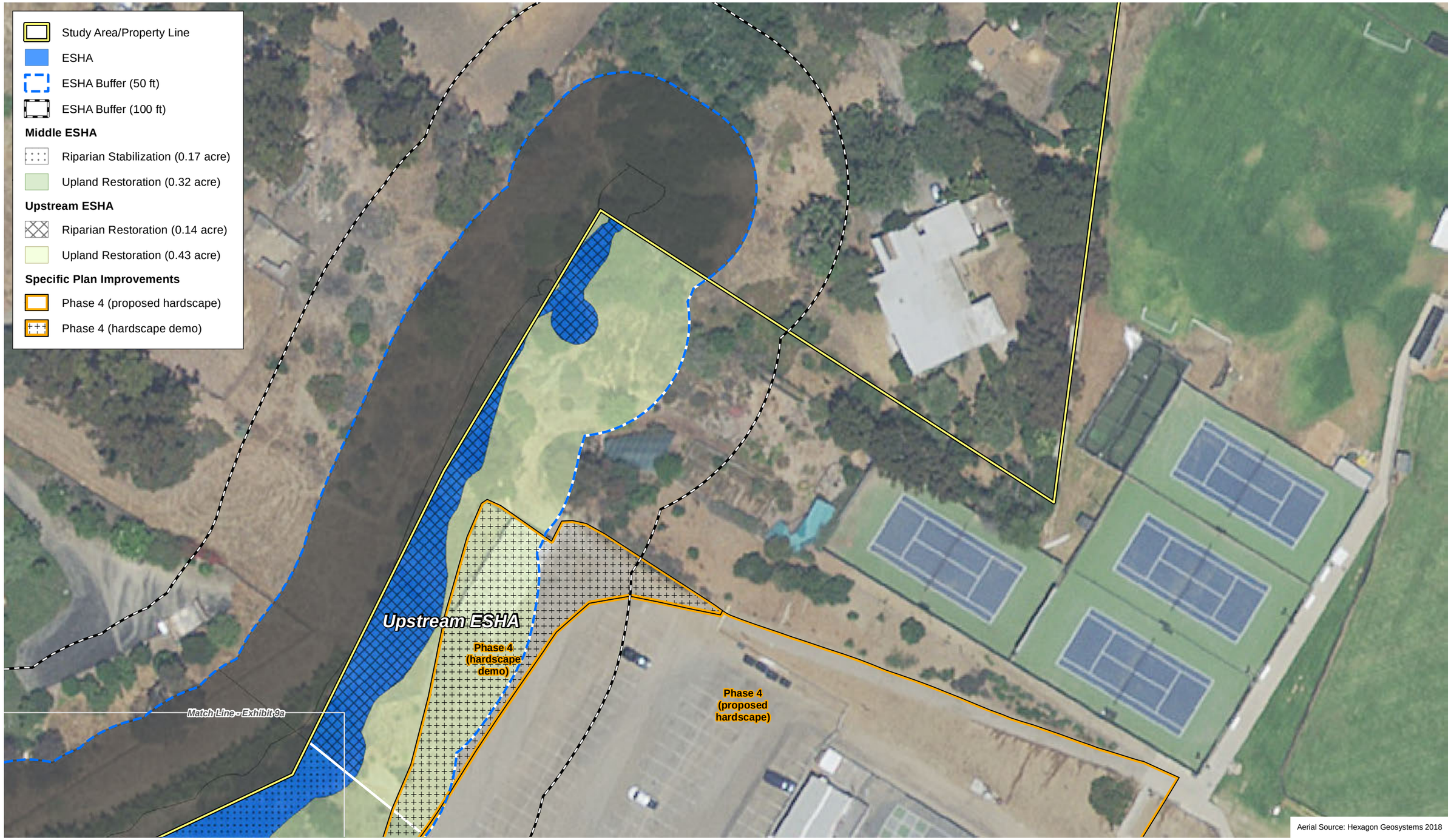

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Mapped ESHA

Exhibit 9b

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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4.0 PROJECT IMPACTS

This section presents a general impact analysis of the Project. The determination of impacts in this analysis is based on a comparison of maps depicting the Project impact boundary and maps of biological resources in the Study Area. All construction activities, including equipment storage and laydown areas, are assumed to be within the Project impact areas identified on Exhibit 10. Permanent impact areas are typically defined as changes to or removal of an existing vegetation type or "other areas," including disturbed or developed (e.g., paved) that are permanent as a result of Project implementation.

Temporary access/impact areas are typically defined as areas that may be subject to traversing vehicles or other mobile equipment, staging of equipment, stockpiles of soil, minor soil disturbance where there is no permanent alteration to the existing grade (e.g., no permanent holes, trenches, or berms), and no vegetation or tree removal.

Both direct and indirect impacts on biological resources have been evaluated. Direct impacts are those that involve the initial loss of habitats due to grading, construction, and construction-related activities. Indirect impacts are those that would be related to impacts on the adjacent remaining habitat due to construction activities (e.g., noise, dust) or operation of the Project (e.g., human activity, operational noise, indirect lighting).

Biological impacts associated with the Project were evaluated with respect to the following special status biological issues:

- Federally or State-listed Endangered or Threatened plant or wildlife species;
- Non-listed species that meet the criteria in the definition of "Rare" or "Endangered" in the CEQA Guidelines (i.e., 14 *California Code of Regulations,* Section 15380)[5];
- Species designated as California Species of Special Concern;
- Streambeds, wetlands, and their associated vegetation;
- Habitats suitable to support a federally or State-listed Endangered or Threatened plant or wildlife species;
- Habitats, other than wetlands, considered special status by regulatory agencies (e.g., the USFWS, the CDFW) or resource conservation organizations; and
- Other species or issues of concern to regulatory agencies or conservation organizations.

The actual and potential occurrence of these resources in the Project impact area was correlated with the significance criteria listed in the next section in order to determine whether Project impacts on these resources would be considered significant.

4.1 SIGNIFICANCE CRITERIA

The environmental impacts relative to biological resources are assessed using impact significance criteria that mirror the policy contained in CEQA, Section 21001(c) of the *California*

[5] Section 15380 of the CEQA Guidelines indicates that a lead agency can consider a non-listed species (e.g., CNPS List 1B plants) to be Endangered, Rare, or Threatened if the species can be shown to meet the criteria in the definition of Rare or Endangered. For the purposes of this discussion, the current scientific knowledge on the population size and distribution for each special status species was considered in determining if a non-listed species meets the definitions for Rare and Endangered according to Section 15380 of the CEQA Guidelines.

Study Area
Project Impacts
Southern California Black Walnut
Coulter's Matilija Poppy Population Location

Vegetation and Other Area Types

California Sagebrush Scrub
Coyote Brush - California Sagebrush Scrub
Coyote Brush - California Sagebrush Scrub/Annual Grassland
Coyote Brush - California Sagebrush Scrub/Upland Mustards
Disturbed Coyote Brush - California Sagebrush Scrub
Disturbed Wild Oats and Annual Brome Grassland
Upland Mustards
Disturbed Upland Mustards
Riparian Herb
Arroyo Willow Thicket
Eucalyptus Grove
California Sycamore - Coast Live Oak Planting
Ornamental - Native Planting
Turf
Developed/Ornamental
Disturbed

Filaree Heights Rd
Floris Heights Rd
Clover Heights Ave
Busch Dr
Harvester Rd
Little Busch Dr
Via Cabrillo
Morning View Dr
Pacific Coast Hwy
1
Ebbtide Way
Merritt Dr

Phase 3 (Lot F)
Population 1
Population 2
Phase 4 (hardscape demo)
Phase 4 (basin hardscape demo)
Phase 4 (hardscape demo)
Phase 1 (hardscape demo)
Phase 4 (proposed hardscape)
Phase 1 (proposed hardscape)
Phase 3
Phase 4B
Phase 2
Phase 2
Phase 4 (proposed hardscape)
Southern CA Black Walnut

Aerial Source: Hexagon Geosystems 2018

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Project Impacts – Biological Resources

Exhibit 10

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

350 175 0 350 Feet

PSOMAS

(Rev: 09/30/2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_ImpactMap.pdf

Public Resources Code. Accordingly, the State Legislature has established it to be the policy of the State to:

> Prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities…

Determining whether a project may have a significant effect, or impact, plays a critical role in the CEQA process. According to Section 15064.7, Thresholds of Significance, of the State CEQA Guidelines, each public agency is encouraged to develop and adopt (by ordinance, resolution, rule, or regulation) thresholds of significance that the agency uses in the determination of the significance of environmental effects. A significant threshold is a quantitative, qualitative, or performance level of a particular environmental effect. The agency would normally determine an impact to be "significant" if it exceeds the threshold. In the development of significance thresholds for impacts to biological resources, CEQA provides guidance primarily in Section 15065, Mandatory Findings of Significance, and Appendix G, Environmental Checklist Form, of the State CEQA Guidelines. Appendix G of the CEQA Guidelines is more specific in addressing biological resources and encompasses a broader range of resources to be considered, including candidate, sensitive, or special status species; riparian habitat or other sensitive natural vegetation types; federally protected wetlands; fish and wildlife movement corridors; local policies or ordinances protecting biological resources; and adopted habitat conservation plans. These factors are considered through the checklist of questions answered during the Initial Study process used to determine appropriate environmental documentation for a project (i.e., Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report [EIR]). Because these questions are derived from standards in other laws, regulations, and commonly used thresholds, it is reasonable to use these standards as a basis for defining significance thresholds in an EIR. For each of the thresholds identified below, the section of CEQA upon which the threshold was derived has been provided. For the purpose of this analysis, impacts to biological resources are considered significant (before considering offsetting mitigation measures) if one or more of the following conditions would result from implementation of the Proposed Project if it would:

1. *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 CDFW or USFWS;*
2. *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 CDFW or USFWS;*
3. *Have a substantial adverse effect on federally or State protected wetlands (including, but not limited to, marshes, vernal pools, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;*
4. *Interfere substantially with the movement of any native or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;*
5. *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or*
6. *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.*

An evaluation of whether an impact on biological resources would result in a "substantial adverse effect" must consider both the resource itself and how that resource fits into a regional context. For the Project, the regional setting includes the quadrangles used to conduct the literature review. The following analysis of impacts is based on the Project impact map relative to the amount of the biological resource within the Project Study Area and its distribution in the surrounding region.

For the purposes of the impact analysis, "substantial adverse effect" is defined as the loss or harm of a magnitude which, based on current scientific data and knowledge, would (1) substantially diminish population numbers of a species or distribution of a habitat type within the region or (2) eliminate the functions and values of a biological resource in the region.

4.2 DIRECT IMPACTS

The Specific Plan would be constructed in four phases, with construction activities anticipated to begin in fall 2022 and completed in summer 2030. Each phase would include the following activities—grading and excavation, trenching for site utilities, demolition, and construction of the buildings, paving, and finishing (PlaceWorks 2021). Direct impacts for the Proposed Project would include such impacts as indicated by a red boundary on Exhibit 10. A brief description of each Phase follows.

Phase 1

Phase 1 would consist of demolition of all existing former JCES campus buildings and associated portables and construction of Building C (see Figure 7 of the Specific Plan, Proposed Building C Elevation), Parking Lot C, Parking D, and the Drop-off/Pick-up area (see Figure 8 of the Specific Plan, Specific Plan Phasing-Construction). Phase I is anticipated to begin in Fall 2022 and completed by Summer 2024.

Phase 2

Phase 2 would consist of construction of the Building D and the Middle School Quad. Phase 2 is anticipated to begin in Fall 2024 and completed by Fall 2026.

Phase 3

Phase 3 would consist of demolition of MMHS Buildings F, I; the existing field house; and the portables adjacent to the existing pool, and construction of Buildings J, L, and M and Parking Lot E and F. Phase 3 is anticipated to begin in Fall 2028 and completed by Fall 2030.

Phase 4

Phase 4 would involve the demolition of MMHS Buildings K, J, J1; the pool and pool building; and Bus Barn, and the relocation of the Boys & Girls Club and construction of the new Buildings H and I. This phase would also require the demolition of the existing MMHS Building H. Phase 4 is anticipated to begin in Spring 2030 and completed by Spring 2031.

4.2.1 Vegetation Types and Other Areas Impacts

Vegetation types and other areas that will be impacted are listed in Table 10 and illustrated on Exhibit 3.

TABLE 10
IMPACTS TO VEGETATION TYPES AND OTHER AREAS IN THE STUDY AREA

Vegetation Type or Other Area	Phase 1	Phase 2	Phase 3	Phase 4	Total
California Sagebrush Scrub	–	0.04	–	–	0.04
Coyote Brush – California Sagebrush Scrub	–	-	–	–	–
Coyote Brush – California Sagebrush Scrub/Upland Mustards	–	0.24	–	–	0.24
Coyote Brush – California Sagebrush Scrub/Annual Grassland	–	–	–	–	–
Disturbed Coyote Brush – California Sagebrush Scrub	–	–	–	–	–
Upland Mustards	0.03	–	–	0.21	0.24
Disturbed Upland Mustards	–	–	0.17	–	–
Disturbed Wild Oats and Annual Brome Grassland	–	–	–	–	–
Riparian Herb	–	–	–	0.03	0.03
Arroyo Willow Thicket	–	–	–	–	–
Eucalyptus Grove	–	–	–	–	–
California Sycamore – Coast Live Oak Planting	–	0.29	–	–	0.29
Ornamental – Native Planting	–	–	–	0.29	0.29
Turf	0.77	–	–	–	0.77
Developed/Ornamental	5.09	1.64	3.30	6.90	16.87
Disturbed	0.05	1.63	0.04	0.25	1.97
Total	**5.93**	**3.84**	**3.50**	**7.68**	**20.95**

Approximately 0.04-acre of California sagebrush scrub would be impacted by the Project in Phase 2. California sagebrush scrub may be considered locally sensitive due to its ability to support the Federally Threatened coastal California gnatcatcher (*Polioptila californica californica*). However, the 0.04 acres of California sagebrush scrub in the Survey Area is isolated and limited in extent rendering it unsuitable to support breeding or foraging gnatcatcher. In addition, the coastal California gnatcatcher does not occur within the vicinity of the Study Area and is not expected to occur in the Study Area. Therefore, impacts to 0.04 acre of this vegetation type are considered adverse but less than significant, and no mitigation would be required.

Approximately 0.24-acre of coyote brush – California sagebrush scrub/upland mustards would be impacted by Project implementation in Phase 2. This is a small, isolated patch of degraded scrub habitat with relatively low biological value due to: (1) the low cover of native species and high cover of noxious weeds which are not preferred by wildlife; and (2) distance from healthy native habitat that would support a suite of native wildlife species. Impacts to 0.24-acre of this vegetation type are considered adverse but less than significant, and no mitigation would be required.

Approximately 0.24-acre of upland mustard by implementation of the Project in in Phases 1 and 4, and 0.17-acre of disturbed upland mustards habitat will be impacted by implementation of the Project in Phase 3. Upland mustard habitat is dominated by weedy non-native species, while disturbed upland mustard habitat is also dominated by weedy non-native species but also contains visible mechanical disturbances. These vegetation types are considered low biological value because they are not preferred by native wildlife species. Impacts to this vegetation type is considered less than significant, and no mitigation would be required.

Approximately 0.03-acre of riparian herb habitat will be impacted by implementation of the Project in Phase 4. Impacts on this vegetation type would be considered adverse but relatively minor because of the isolated nature, extremely limited extent, and the species composition is considered relatively common in the Project region. Therefore, impacts to this vegetation type are considered less than significant, and no mitigation would be required.

Approximately 0.29-acre of California sycamore – coast live oak planting would be impacted by Project implementation in Phase 2. This vegetation type is intended to be ornamental and therefore, offers much lower biological value than a naturally occurring woodland with mature trees and a healthy understory. Therefore, impacts to this vegetation type are considered less than significant, and no mitigation would be required.

Approximately 0.29-acre of ornamental – native planting would be impacted by Project implementation in Phase 4. This vegetation type is not naturally occurring and offers low biological value due to the high proportion of non-native weedy species. Impacts to this vegetation type are considered less than significant, and no mitigation would be required.

Approximately 0.77-acre of turf would be impacted by Project implementation in Phase 1. Impacts on this vegetation type would be considered adverse but relatively minor because this vegetation type is common throughout the region, not naturally occurring, and of low biological value. Therefore, impacts to these vegetation types are considered less than significant, and no mitigation would be required.

Approximately 16.87-acres of developed/ornamental and 1.97-acres of disturbed habitat would be impacted by Project implementation in Phases 1 through 4. Impacts on these vegetation types would be considered adverse but relatively minor because these vegetation types are considered common in the Project region and offer limited biological value because they are mostly devoid of any vegetation, and the vegetation that does occur is non-native which is not preferred by native wildlife species. Therefore, impacts to these vegetation types are considered less than significant, and no mitigation would be required.

The vegetation types discussed above are all common throughout the region. The special status vegetation type that occurs in the Study Area, arroyo willow thicket, will not be impacted during Project implement, therefore mitigation would not be required. Impacts to special status vegetation types would be considered potentially significant. Vegetation types in the Study Area may change over the course of time. In order to ensure no special status vegetation types are impacted during the course of the Project, Mitigation Measure (**MM**) **1** is included which requires future assessments of vegetation types to ensure conditions remain the same. If impacts to special status vegetation types are anticipated, **MM 2**, which requires habitat restoration, would be implemented to ensure impacts are reduced to less than significant.

Alternatives

Alternative 1, the no Project alternative, would not impact any vegetation types or other areas and no mitigation would be required.

Alternative 2, which would involve development of Phases 1 and 2 only, would impact 9.77 acres of non-native vegetation types and other areas (6.72 acres of developed/ornamental, 1.68 acres of disturbed, 0.77 acre of turf, and 0.03 acre of upland mustard). None of these vegetation types are considered special status and no mitigation would be required. Vegetation types in the Study Area may change over the course of time. **MM 1** and **MM 2**, as described above, would be implemented to ensure impacts are reduced to less than significant.

Alternative 3, which would eliminate parking lot F, would lessen impacts to disturbed upland mustards by 0.17-acre, and developed/ornamental by 0.05-acre vegetation types for a total of 0.21-acre combined. Project impacts would total 20.73-acres under Alternative 3. None of these vegetation types are considered special status and no mitigation would be required. Vegetation types in the Study Area may change over the course of time. **MM 1** and **MM 2**, as described above, would be implemented to ensure impacts are reduced to less than significant.

4.2.2 Common Wildlife

Native vegetation provides nesting, foraging, roosting, and denning opportunities for a variety of wildlife species. The Project would result in the loss of approximately 0.60-acre of native habitat. The Project would also impact approximately 16.87-acres of developed/ornamental vegetation and a total of approximately 1.97-acres of impacts to disturbed areas. A total of 1.01-acres of non-native or weedy vegetation (turf and upland mustards) would be impacted. A total of 0.29-acre of ornamental – planted habitat would be impacted by the Project. Removing or altering non-native habitats on the Project Site would result in the loss of small mammals, reptiles, amphibians, and animals of slow mobility that live in the Proposed Project's direct impact area. More mobile wildlife species now using the Project Site would be forced to move into remaining areas of open space, consequently increasing competition for available resources in those areas. This situation may result in the loss of individuals that cannot successfully compete. The loss of native and non-native vegetation that provides wildlife habitat is considered an adverse impact. However, the loss of a small pocket of native habitat (0.60 acre) and disturbed, developed, and/or non-native habitat (20.14 acres) would not be expected to reduce wildlife populations below self-sustaining levels because the combined 20.74 acres of habitat are expected to support small numbers of individuals due to the existing habitat's marginal suitability for resident wildlife based on its fragmented nature, lack of species diversity and lack of connectivity to adjacent native habitat, combined with existing developed areas surrounding the proposed Project. Therefore, impacts to these areas are considered adverse but less than significant, and no mitigation would be required.

Wildlife Movement and Habitat Fragmentation

The Project Site does not represent an area of important regional movement. The existing structures and paved parking lots, adjacent Pacific Coast Highway, and surrounding residential streets and structures present a barrier to movement for wildlife moving through the area. Wildlife looking to move through the foothills would likely utilize canyons in the open space north of the Project Site. Project activities would not impact these open space areas. The adjacent canyons would continue to be available for movement; thus, regional wildlife movement would not be disrupted, and impacts on regional wildlife movement would be considered less than significant, and no mitigation would be required.

Construction activities would create dust and noise within and adjacent to the Impact Area. During active construction, wildlife movement may be deterred by noise and human activity; however, most wildlife movement would occur at night while construction activities would occur during the day. Project implementation would not isolate any native habitats or create any bottle necks for wildlife movement because small amounts of native vegetation, on the edges of disturbance or development, would be impacted. Therefore, construction impacts on local wildlife movement would be considered adverse, but less than significant, and no mitigation would be required.

4.2.3 Special Status Biological Resource Impacts

Implementation of the Project may result in impacts on special status plant and wildlife species that occur in the Survey Area. Potential impacts on special status species were evaluated by determining the impacts on habitat that the species are expected to occupy or may occupy.

Special Status Plants

Of the 37 special status plant species known to occur in the region and listed in Table 2, 34 of these have no potential to occur in the Study Area due to lack of suitable habitat and/or they were not observed during focused surveys. Therefore, there would be no impact on those species. One of the species listed in Table 2, the slender mariposa lily, has limited potential to occur; and two species, the California black walnut and Coulter's matilija poppy, were observed within the Study Area, but outside the impact area for all Phases. While focused special status plant surveys were not conducted for the far eastern portion of the Study Area (which includes a portion of Phase 4 only), special status plants incidentally observed were mapped during vegetation mapping. Potentially suitable habitat for special status plant species does not occur within or adjacent to this portion of Phase 4, based on a habitat assessment during the April 15, 2021, field visit.

No impacts to special status plants would occur through Project implementation because no special status plants currently occur and are not expected to occur in the future within the Project Impact Area for all Phases. Habitat suitability for special status plants is expected to stay at baseline or degrade further in the future due anticipated future development in the surrounding area. Therefore, no impacts to special status plants would occur with Project implementation, and no mitigation would be required.

Wildlife

Eucalyptus groves within the Project boundary have the potential to support overwintering monarch butterflies. Monarch butterfly overwintering sites are not known from the Study Area but are known from the Project region in recent history and are presumed extant according to the California Natural Diversity Database (CDFW 2021b). No direct impacts to the eucalyptus groves in the Study Area will occur during Project implementation, and the groves are at enough distance (approximately 170 feet) that indirect impacts are not expected. No impacts to monarch butterflies are anticipated; therefore, no mitigation would be required.

One special status reptile has the potential to occur in the Project impact area, the San Diegan tiger whiptail. Project implementation would result in the loss of 0.31 acre of potentially suitable habitat types (e.g., California sagebrush scrub, coyote brush – California sagebrush scrub/upland mustards, and riparian herb) for this species. This 0.31 acre would support very small numbers of individuals and the loss is considered very small. These impacts would be considered adverse but not substantial enough to cause regional populations to drop below self-sustaining numbers. Therefore, these impacts are considered less than significant, and no mitigation would be required.

A burrowing owl was incidentally observed to be wintering on the Project Site in the north-central portion of the site (outside of the Project impact area) (Exhibit 6). Potentially suitable burrowing owl habitat occurs in Phase 3, Parking Lot F. Implementation of Phase 3 may directly impact 0.17-acre of potentially suitable habitat for the burrowing owl, while implementation of Phases 2 and 4 may indirectly impact the burrowing owl, if present in adjacent potentially suitable habitat. Any impacts to burrowing owl would be considered potentially significant. Implementation of **MM 3**, which requires adherence to the CDFW Burrowing Owl Mitigation Guidelines, would reduce potential impacts to less than significant.

Several common bird and raptor species may nest in the Survey Area. The MBTA protects migratory birds, their nests, and eggs. If construction is initiated during nesting season for passerines and raptors (i.e., February 1–August 31), it could impact nesting birds protected by the MBTA and *California Fish and Game Code* Sections 3503, 3503.5, and 3513. Common raptor species including owls have the potential to nest on the Project Site. Should an active raptor nest be found on the Project Site, the loss of an active nest would be considered a violation of the

California Fish and Game Code (Sections 3503, 3503.5, and 3513). The loss of any active bird or raptor nest would be considered a potentially significant impact. Implementation of **MM 4** requiring nesting bird surveys and protection would reduce this impact to a less than significant level.

The western mastiff bat has the potential to occur in the Study Area for foraging. There is no suitable roosting habitat in the Survey Area. Construction activities would only occur during daylight hours; therefore, nocturnal foraging would continue to be available over the Project Impact Area throughout the duration of construction and would remain unchanged following completion of the Project. There are no impacts to western mastiff bat would occur with Project implementation, and mitigation would not be required.

4.2.4 Jurisdictional Resources

The Proposed Project would impact a total of 0.033 acres of waters of the State under the jurisdiction of RWQCB(Exhibits 11 and 12, Table 11) (Appendix C). Phase 4 of the Project would impact a total of 0.033 acres of waters under the jurisdiction of CDFW. No other Phase of the Project impacts jurisdictional features. Jurisdictional resources are protected by Sections 401 and 404 of the CWA and by the *California Fish and Game Code* (Sections 1600 through 1616). Impacts on jurisdictional resources would be significant and would require permitting with each of the resource agencies. Implementation of **MM 5** would reduce this impact to less than significant.

TABLE 11
SUMMARY OF JURISDICTIONAL IMPACTS

Jurisdictional Resources	Total (acres)
Total USACE Jurisdiction	–
Total RWQCB Jurisdiction	0.033
Total CDFW Jurisdiction	0.033
USACE: U.S. Army of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife	

Alternatives

Alternative 2 would eliminate Project related jurisdictional impacts. Under this alternative, the ESHA would only be partially restored. Because there would be no Project related jurisdictional impacts, no mitigation would be required.

Alternative 3 would impact a total of 0.033 acres of waters of the State under the jurisdiction of RWQCB and a total of 0.033 acres of waters under the jurisdiction of CDFW, which is equal to the Proposed Project. Impacts on jurisdictional resources would be significant and would require permitting with each of the resource agencies. Implementation of **MM 5** would reduce this impact to less than significant.

4.2.5 Trees

The Malibu Local Coastal Program Native Tree Protection Ordinance protects five native tree species (oak [*Quercus* sp.], California walnut [*Juglans californica*], western sycamore [*Platanus racemosa*], alder [*Alnus rhombifolia*], and toyon [*Heteromeles arbutifolia*]) that have at least one trunk measuring six inches or more in diameter, or a combination of any two trunks measuring a total of eight inches or more in diameter. A number of protected trees have been mapped in the Study Area (Exhibit 2 of Appendix D). Protected tree species may occur within close proximity to Project activities. Impacts to protected trees may be potentially significant. Implementation of **MM 6**, which requires adherence to the Malibu Local Coastal Program Native Tree Protection

Study Area

Project Impacts

Sampling Points

Ordinary High Water Mark

Non-wetland

Wetland*

* Based on USACE three-parameter approach.

Match Line - Exhibit 11b

Drainage 1

Phase 4 (basin hardscape demo)

2

Basin

Phase 4 (hardscape demo)

Phase 1 (hardscape demo)

Phase 4 (proposed hardscape)

Phase 1 (proposed hardscape)

Map Extent

11b

11a

Phase 4 (proposed

Aerial Source: Hexagon Geosystems 2018

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Project Impacts – Ordinary High Water Mark

Exhibit 11a

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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Study Area
Project Impacts
Sampling Points

Ordinary High Water Mark

Non-wetland
Wetland*

* Based on USACE three-parameter approach.

1A
1B
Drainage 1
Drainage 2
Phase 4
(hardscape demo)
Phase 4 (proposed
hardscape)
Match Line - Exhibit 11a

Map Extent

11b
11a

Aerial Source: Hexagon Geosystems 2018

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Project Impacts – Ordinary High Water Mark

Exhibit 11b

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N
W
E
S

50 25 0 50 Feet

PSOMAS

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Study Area
Project Impacts
Sampling Points
Top of Bank/Riparian Canopy

Drainage 1

Basin

2

Phase 4 (basin hardscape demo)

Match Line - Exhibit 12b

Phase 4 (hardscape demo)

Phase 1 (hardscape demo)

Phase 4 (proposed hardscape)

Phase 1 (proposed hardscape)

12a

12b

Aerial Source: Hexagon Geosystems 2018

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Project Impacts - Top of Bank/Riparian Canopy

Exhibit 12a

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N
W E
S

60 30 0 60
Feet

PSOMAS

(Rev: 09/30/2021 MMD) R:\Projects\1SAN\082310\Graphics\BioTech\ex_JD_TOB_Impacts.pdf

Study Area
Project Impacts
Sampling Points
Top of Bank/Riparian Canopy

1A
1B
Drainage 1
Drainage 2
Phase 4
(hardscape demo)
Phase 4 (proposed
hardscape)
Phase 4 (basin
hardscape demo)
Match Line - Exhibit 12a
2
12b
12a

Aerial Source: Hexagon Geosystems 2018

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Project Impacts – Top of Bank/Riparian Canopy

Exhibit 12b

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

N
W E
S

60 30 0 60
Feet

PSOMAS

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Ordinance prior to the commencement of each Phase of construction, would reduce any potentially significant impacts to less than significant.

4.2.6 Environmentally Sensitive Habitat Area

Consistent with guidelines provided in the LCP, Psomas delineated the ESHA boundary as the outer edge of the canopy of riparian vegetation and where riparian vegetation was not present, the ESHA boundary was determined by the top of bank. While the LCP ESHA overlay zone specifies a buffer to "ensure continued protection of the habitat areas" and for new development specifically references a 100 foot buffer "from the outer edge of the bank of the subject stream as the area within the top of bank and outer riparian canopy boundaries", it was noted that over 85% of the ESHA's 100 foot buffer had been developed in the years prior to the enactment of the California Coastal Act of 1972.

During the early stages of the specific planning process, among other project objectives, the District recognized that the ESHA offered opportunities to enhance their educational goals of providing for outdoor learning spaces and interpretive opportunities; as well as providing an opportunity to restore the natural environment and improve campus connectivity through the development of the proposed pedestrian pathways. The District recognized that the existing conditions included incompatible development into the edge of the ESHA bank as well as the degraded nature of the ESHA itself. In discussions with the CCC the District decided that it could restore the degraded drainage comprised of approximately 0.7 acres as well as 1.35 acres of upland areas within the ESHA's 50-ft buffer, and still meet the educational and design goals for the campus. In addition, within the remaining 100 feet beyond the 50-foot ESHA buffer, the Proposed Project would include land uses compatible with the natural habitat that would not incur in significant impacts to the natural habitat, including a looping trail, and interpretive stations overlooking the ESHA. The restoration of the degraded 0.7-acre of drainage and 1.35-acres of upland areas within the ESHA's 50-foot buffer does not constitute mitigation for any significant impact to a biological resource, but rather is a voluntary effort on the part of the District that will be implemented during Phase 1 construction of the Project as well as Phase 4 construction planned for the future.

4.3 INDIRECT IMPACTS

Indirect impacts are those related to disturbance by construction (e.g., noise, dust, and urban pollutants), long-term use of the Project Site, and the Project's operational effect on adjacent habitat areas to common species. The indirect impact discussion below includes a general assessment of the potential indirect effects (i.e., noise, increased dust and urban pollutants, night lighting, and human activity) of the construction and operation of the Proposed Project. Noise Impacts

Noise levels in the Survey Area would be expected to increase over present levels during construction and operation of the Project. During construction and operation, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and/or denning activities for wildlife species occurring within or adjacent to Project Work Areas. Although final use may increase noise over ambient, it would be less than construction. Wildlife species stressed by noise may disperse from the habitat located in the immediate vicinity of the Project. Because the Project disturbance areas are limited in extent, this impact is considered adverse but less than significant, and no mitigation would be required. However, if raptor species are nesting in the vicinity of the Project during construction, they may be temporarily displaced by construction noise. Indirect noise impacts on these species would be considered significant because nesting birds are protected by the *California Fish and Game Code.* Impacts on active nests would be reduced to a less than significant level with implementation of **MM 3** requiring nesting bird surveys and protection.

4.3.1 Increased Dust and Urban Pollutants

Grading and other construction activities would disturb soils and result in the accumulation of dust on the surface of the leaves of trees, shrubs, and herbs within or immediately adjacent to Project Impact Area. The respiratory function of the plants in these areas could be impaired if dust accumulation is excessive. Because the Project Impact Area is limited in extent, this indirect impact is considered adverse but less than significant, and no mitigation would be required.

During construction and operation, excess silt, petroleum, or chemicals on the soil surface within the Project Impact Area could be washed into drainages during storms and may affect areas downstream of the Project. Adverse effects on water quality could indirectly impact species that use riparian areas within the watershed by affecting the food web interactions (e.g., abundance of insects or other prey) or through biomagnification (i.e., the buildup of pesticides to toxic levels in higher trophic levels). With implementation of standard Water Quality Best Management Practices required by the State's General Construction permit administered by the RWQCB through Stormwater Pollution Prevention Plan, this impact is expected to be less than significant, and no mitigation would be required.

4.3.2 Night Lighting

The Project does not include night lighting. Therefore, there would be no impact as a result of night lighting, and mitigation is not required.

4.3.3 Invasive Exotic Plant Species

Landscaping for Phase 1 would be provided along pathways, building perimeters, and within and around new parking lot areas. The plant pallet for all Phases does not include invasive species as listed by CAL-IPC. Therefore, there would be no impact as a result of invasive species, and no mitigation would be required.

4.3.4 Human Activity

The Project is not expected to result in increased human activity other than minimal, temporary increase during Project construction for all Phases. No new access points to open space are expected to result from the Project. The looping trail to be constructed beyond the 50-ft buffer of the ESHA is intended for passive recreation and use by student with interpretive stations overlooking the ESHA and not as an access point to the ESHA. Signage posted at the interpretive stations will alert users to stay on the trail. Therefore, there would be no impact as a result of human activity.

5.0 MITIGATION MEASURES

Strategies to mitigate each identified potentially significant impact to a less than significant level are described below.

5.1 MM 1 – VEGETATION ASSESSMENTS

Vegetation types shall be verified prior to work activities occurring in Phases 2 and 4 if seven years have elapsed from the latest point in time the vegetation mapping described in this Biological Assessment was conducted (April 15, 2021). Vegetation types in the Study Area shall be assessed during a field visit and compared to the vegetation types mapped and described herein. Any changes shall be documented in a revised vegetation map and provided to the City of Malibu and the District. Special status vegetation types shall be identified, and if impacts are anticipated, the Project shall comply with MM 2.

5.2 MM 2 – SPECIAL STATUS VEGETATION TYPES

The loss of special status vegetation types within the impact area is considered a significant impact. These vegetation types will be restored onsite or, if appropriate, offsite at a ratio of not less than 1:1, as agreed to by the City of Malibu and the District. A revegetation program will be implemented in accordance with a City-approved landscape palette on all graded areas not utilized for improvements or structures. The revegetation program will be submitted to the City of Malibu for review and approval by a qualified biologist prior to issuance of grading permits. Restoration will consist of seeding and container planting of appropriate species. Impacts are considered less than significant after implementation of the following measures:

A detailed restoration program will be developed prior to map recordation and implemented, and will contain the following items:

a. *Responsibilities and qualifications of the personnel to implement and supervise the plan*. The responsibilities of the landowner, specialists, and maintenance personnel that will supervise and implement the plan will be specified.

b. *Site selection*. The site(s) for mitigation will be determined in coordination with the District and the City of Malibu. The site will be located in a dedicated open space area and will be contiguous with other natural open space areas.

c. *Site preparation and planting implementation*. The site preparation will include the following: 1) protection of existing native species, 2) trash and weed removal, 3) native species salvage and reuse (i.e., duff), 4) soil treatments (i.e., imprinting, decompacting), 5) erosion control measures (i.e., rice or willow wattles), and 6) native seed mix application.

d. *Schedule.* Establishment of restoration/revegetation sites will be conducted between October 1 and January 30. Seeding and planting of container plants will take place immediately after preparation of the restoration sites.

e. *Maintenance plan/guidelines*. The maintenance plan will include the following: 1) weed control, 2) herbivory control, 3) trash removal, 4) irrigation system maintenance, 5) maintenance training, and 6) replacement planting.

f. *Monitoring Plan*. The monitoring plan will include the following: 1) qualitative monitoring (i.e., photographs and general observations), 2) quantitative monitoring (i.e., randomly placed transects), 3) performance criteria as approved by the City, 4) monthly reports for the first year and bimonthly reports thereafter, and 5) annual reports which will be

submitted to the City for three to five years. The monitoring will be conducted for three to five years, depending upon the performance of the mitigation site.

g. *Long-term preservation.* Long-term preservation of the site will be outlined in the conceptual mitigation plan to ensure the mitigation site is not impacted by future development.

h. *Performance standards will be identified and will apply for the revegetation of special status vegetation types.* Revegetation will be considered successful at three years if the percent cover and species diversity of the restored and/or created habitat areas are similar to percent cover and species diversity of adjacent existing habitats, as determined by quantitative testing of existing, restored, and created habitat areas.

In addition, earth-moving equipment will avoid maneuvering in areas outside the identified limits of grading in order to avoid disturbing open space areas that will remain undeveloped. Prior to grading, the construction boundary limits will be marked by the construction supervisor and the Project biologist. These limits will be identified on the grading plan. The District will submit a letter to the City of Malibu verifying that construction limits have been flagged in the field. No earth-moving equipment will be allowed outside of the construction boundary.

5.3 MM 3 – PRE-CONSTRUCTION BURROWING OWL SURVEYS

In the year prior to initiation of Project activities in Phases 3 and 4, the Project shall conduct pre-construction burrowing owl surveys in accordance with the 2012 CDFW Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines (CDFW 2012). If wintering or breeding burrowing owl are observed adjacent to the impact area, mitigation shall be conducted in accordance with the CDFW guidelines (CDFW 2012).

5.4 MM 4 – PRE-CONSTRUCTION NESTING BIRD SURVEYS

To the extent possible, vegetation removal will be conducted during the non-breeding season (i.e., September 1 to January 31) in order to minimize direct impacts on nesting birds and raptors. If construction activities would be initiated during the breeding season for nesting birds/raptors (i.e., February 1–August 31), a pre-construction survey will be conducted by a qualified Biologist within three days prior to the initiation of construction (including demolition of structures). The area will be surveyed for 2 hours between dawn and 10:00 AM on five occasions with at least one week between surveys. If there is appropriate habitat for owls on site, on at least three of the surveys, surveys will also be conducted during the period immediately before nightfall. The nesting bird/raptor Survey Area will include a buffer of 300 feet around the work area for nesting birds and a buffer of 500 feet around the work area for nesting raptors (including burrowing owl). If the Biologist does not find any active nests in or immediately adjacent to the impact area, construction activities can proceed.

If the Biologist detects an active nest within or immediately adjacent to the construction area and determines that the nest may be impacted or breeding activities substantially disrupted by increased activity around the nest, the Biologist will determine an appropriate protective buffer around the nest depending on the sensitivity of the species and the nature of the construction activity. The protective buffer shall be between 25 to 300 feet for nesting birds; 300 to 500 feet for nesting raptors. The active nest will be protected within the designated buffer until nesting activity has ended. Any protective buffers will be mapped on construction plans and designated as “Environmentally Sensitive Areas”. Construction can proceed within the protective buffer when the qualified Biologist has determined that the nest is no longer active (i.e., fledglings have left the nest or the nest has failed).

5.5 MM 5 – RWQCB AND CDFW JURISDICTION AREAS

Upon completion of construction activities, impacts to approximately 0.033-acre of non-wetland RWQCB and CDFW jurisdictional waters will be mitigated within the Project boundaries through the creation of 0.033-acre of non-wetland jurisdictional waters. Acquisition of a Section 1602 "lake or streambed alteration" agreement from the CDFW and waste discharge requirements from the RWQCB would be required.

Prior to the final submittal of a Report of Waste Discharge from the RWQCB, and/or CDFW notification of lake or streambed alteration, the District will develop a mitigation plan for the RWQCB, CDFW, and City of Malibu. The objective of the mitigation is to ensure no net loss of habitat values as a result of the Project. The detailed restoration program will contain the following items:

a. *Responsibilities and qualifications of the personnel to implement and supervise the plan*. The responsibilities of the landowner, specialists, and maintenance personnel that would supervise and implement the plan will be specified.

b. *Site selection*. The site(s) for the mitigation will be determined in coordination with the Project Applicant and resource agencies. The site will be located in a dedicated open space area and will be contiguous with other natural open space.

c. *Site preparation and planting implementation.* The site preparation will include the following: 1) protection of existing native species, 2) trash and weed removal, 3) native species salvage and reuse (i.e. duff), 4) soil treatments (i.e., imprinting, decompacting), 5) temporary irrigation installation, 6) erosion control measures (i.e., rice or willow wattles), 7) native seed mix application, and 8) native container species.

d. *Schedule. A* schedule will be developed which includes planting to occur in late fall and early winter, between October 1 and January 30.

e. *Maintenance plan/guidelines.* The maintenance plan will include the following: 1) weed control, 2) herbivory control, 3) trash removal, 4) irrigation system maintenance, 5) maintenance training, and 6) replacement planting.

f. *Monitoring Plan.* The monitoring plan will include the following: 1) qualitative monitoring (i.e., photographs and general observations), 2) quantitative monitoring (i.e., randomly placed transects), 3) performance criteria as approved by the resource agencies, 4) monthly reports for the first year and bimonthly reports thereafter, and 5) annual reports which will be submitted to the resource agencies for three to five years. The site will be monitored and maintained for five years to ensure successful establishment of riparian habitat within the restored and created areas; however, if there is successful coverage prior to five years, the District may request from RWQCB and CDFW to be released from monitoring requirements.

g. *Long-Term Preservation.* Long-term preservation of the site will be outlined in the conceptual mitigation plan to ensure the mitigation site is not impacted by future development.

h. Performance standards will be identified and will apply for the restoration of riparian habitat. Revegetation will be considered successful at three years if the percent cover and species diversity of the restored and/or created habitat areas are similar to percent cover and species diversity of adjacent existing habitats, as determined by quantitative testing of existing and restored and/or created habitat areas.

5.6 MM 6 – ADHERENCE TO CITY OF MALIBU TREE PROTECTION ORDINANCE

Prior to initiation of Project activities in each Phase of the Project, the tree survey map created for the Project (Psomas 2021c) shall be consulted and if impacts to any protected trees are anticipated, the Project shall comply with mitigation included in the Malibu Local Coastal Program Native Tree Protection Ordinance.

6.0 ALTERNATIVES ASSESSMENT

6.1 NO PROJECT ALTERNATIVE

Under Alterative 1, the No Project Alternative, none of the District's objectives for the Proposed Project would be met. No construction would occur under the No Project Alternative, and the campus would continue to operate as it currently does. Potential impacts to biological resources during construction (e.g., removal of trees) would be less than the less-than-significant impacts associated with the Proposed Project (after mitigation). Restoration of the adjacent ESHA would also not occur under this alternative. Operational impacts would be similar to current conditions and impacts to biological resources would be less than significant, as with the Proposed Project. However, this alternative would not realize the beneficial biological impacts of the ESHA restoration and therefore would not be preferable.

6.2 ALTERNATIVE 2: DEVELOPMENT OF PHASES 1 AND 2 ONLY

No shared facilities or separate middle school campus would be developed under this alterative. Therefore, the Development of Phase 1 and 2 Only Alternative would only partially meet Objectives 1, 8, and 9 as outlined in the Specific Plan. This alternative would meet Objectives 2, 3, 6, 7, and 10 but to a lesser extent than the Proposed Project. The Phase 1 and 2 Only Alternative would not meet Objectives 4 and 5.

This alternative would result in less construction than the Proposed Project, which would reduce direct and indirect impacts to vegetation and wildlife on-site, including reduction in tree removal and direct impacts to potentially suitable burrowing owl habitat. In addition, impacts to jurisdictional features would be eliminated. During construction, this alternative would result in a reduction of impacts compared to the Proposed Project, and impacts would be less than significant after mitigation, as under the Proposed Project.

This alternative would operate similar to existing conditions, which would reduce impacts compared to the Proposed Project. However, this alternative would not implement restoration efforts across the entire ESHA (upstream, middle, and downstream) since a portion of the restoration efforts would be implemented in later phases. As discussed in Chapter 3, Project Description, Phase 1 would include weed abatement, invasive species control, bank stabilization, and erosion controls within the upstream and downstream areas. Additionally, only the existing JCES campus within the 100 feet of the ESHA would be demolished. Other existing structures within 100 feet of the ESHA would remain, such as the bus barn and surface parking. Therefore, this alternative would not result in the full beneficial impacts of restoring the ESHA. The combination of reduced restoration efforts of the ESHA and the unrealized Objectives 4 and 5, and partially met Objectives 1, 2, 3, 6, 7, 8, 9, and 10, would render this alterative not preferable to the Preferred Project.

6.3 ALTERNATIVE 3: ELIMINATION OF PARKING LOT F

Alternative 3, Elimination of Parking Lot F, would fully meet all project objectives, except for Objective 6, improve access, circulation, and drop-off, and increase on-campus parking, which it would meet to a lesser extent compared to the Proposed Project.

Without Parking Lot F, the northern portion of the Project Site would remain in its existing condition, which consists of disturbed undeveloped land and ornamental/developed land. Since this alternative would result in a minor reduction of impacts to wildlife habitat (e.g., potentially suitable burrowing owl habitat) and vegetation such as trees, this alternative would slightly reduce the biological impacts compared to the Proposed Project during construction and operation.

Although the Proposed Project would result in direct impacts to an additional 0.21-acre relative to Alternative 3, these impacts are fully mitigable. Because the Proposed Project would meet all Project Objectives, the Proposed Project is the preferred alternative.

7.0 CUMULATIVE IMPACTS

Implementation of Proposed Project, inclusive of the mitigation measures, would result in a negligible impact on biological resources of the region. The Project Site largely occurs in developed/ornamental habitat of low biological value and other projects in the area are expected to have similar results due to limited development of undeveloped lands. With mitigation implementation, the biological effects of the Project and other proposed projects of the region are expected to be relatively minor and would be considered cumulatively less than significant.

8.0 REFERENCES

American Ornithological Society (AOU). 2021 (July). *Sixty-second Supplement to the American Ornithological Society's Check-list of North American Birds* (7th ed., as revised through 62st Supplement). Chicago, IL.: American Ornithological Society. https://academic.oup.com/auk/article/138/3/ukab037/6309332.

Atwood, J.L. and J.S. Bolsinger. 1992. Elevational Distribution of the California Gnatcatchers in the United States. *Journal of Field Ornithology* 63(2):159–168. Waco, TX: Ornithological Societies of North America.

Bennett, A.F. 1990. Habitat Corridors and the Conservation of Small Mammals in the Fragmented Forest Environment. *Landscape Ecology* 4:109–122. New York, NY: International Association for Landscape Ecology.

Bradley, R.D., L.K. Loren, R.J. Baker, L.C. Bradley, J.A. Cook, R.C. Dowler, C. Jones, D.J. Schmidly, F.B. Stangl Jr., R.A. Van Den Bussche, and B. Wursig. 2014. Revised checklist of North American mammals north of Mexico. Occas. Pap. Texas Tech Univ., No. 327. 27 pp.

Brenzel, K.N. (Ed.). 2007. *Sunset Western Garden Book* (Eighth ed.). Menlo Park, CA: Sunset Publishing Corporation.

California Department of Fish and Wildlife (CDFW). 2021a (August 18). *California Natural Communities List*. Natural Communities List Arranged Alphabetically by Life Form (PDF). Sacramento, CA: CDFW Biogeographic Data Branch. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline.

———. 2021b. California Natural Diversity Database. Records of Occurrence for the USGS' Point Dume, Malibu Beach, Triunfo Pass, Newbury Park, Thousand Oaks, and Calabasas 7.5-Minute Quadrangles. Sacramento, CA: CDFW, Natural Heritage Division.

———. 2021c (July). *Special Animals.* Sacramento, CA: CDFW, Natural Heritage Division.

———. 2021d. *Special Vascular Plants, Bryophytes, and Lichens List.* Sacramento, CA: CDFG, Natural Heritage Division.

———. 2018 (March 20). *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. Sacramento, CA: CDFW.

———. 2012. (March 7). *Staff Report on Burrowing Owl Mitigation*. Sacramento, CA: CDFG.

California Native Plant Society (CNPS). 2021. Taxonomic Inventory of Rare and Endangered Vascular Plants of California (online edition, v8-03 0.39. Records of Occurrence for the USGS' Point Dume, Malibu Beach, Triunfo Pass, Newbury Park, Thousand Oaks, and Calabasas 7.5-minute quadrangles Sacramento, CA: CNPS. http://www.rareplants.cnps.org/.

———. 2019. A Manual of California Vegetation, Online Edition. Sacramento, CA: CNPS. http://www.cnps.org/cnps/vegetation/.

Crother, B.I. (Ed.). 2017 (September). Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our

Understanding. *Society for the Study of Amphibians and Reptiles Herpetological Circular* 43:1–102. https://ssarherps.org/wp-content/uploads/2017/10/8th-Ed-2017-Scientific-and-Standard-English-Names.pdf.

Faber-Langendoen, D., L. Master, J. Nichols, K. Snow, A. Tomaino, R. Bittman, G. Hammerson, B. Heidel, L. Ramsay, and B. Young. 2009. *NatureServe Conservation Status Assessments: Methodology for Assigning Ranks*. Arlington, VA: NatureServe. http://www.natureserve.org/publications/ConsStatusAssess_RankMethodology.pdf.

Farhig, L. and G. Merriam. 1985. Habitat Patch Connectivity and Population Survival. *Ecology* 66:1792–1768. Washington, D.C.: The Ecological Society of America.

Glenn Lukos Associates (GLA). 2009 (December). Biological Assessment Malibu Middle and High School Campus Improvement Projects Project, City of Malibu, Los Angeles County, California. Lake Forest, CA: GLA.

Harris, L.D. and P.B. Gallagher. 1989. New Initiatives for Wildlife Conservation: The Need for Movement Corridors. *Preserving Communities and Corridors* (pp. 11–34) (G. Mackintosh, Ed.). Washington, D.C.: Defenders of Wildlife.

Howard, J.L. 1992. Malomsa laurina. In: Fire Effects Information System, [Online]. Golden, CO: U.S., Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. http://www.fs.fed.us/database/feis/.

Jepson Flora Project. 2019. (December 20, Revision 7). Jepson eFlora (Records for common species in the Plant Compendium). Berkeley, CA: The Jepson Herbarium. http://ucjeps.berkeley.edu/eflora/.

Keeley J. and Tomas J. Soderstrom. 1986. Post fire recovery of chaparral along an elevational gradient in southern California. *Southwestern Naturalist.* 31: 177–184. Southwestern Association of Naturalists. University of Texas at Tyler.

MacArthur, R.H. and E.O. Wilson. 1967. *The Theory of Island Biogeography*. Princeton, NY: Princeton University Press.

Minnich, R.A. and R.J. Dezzani. 1998. Historic Decline of Coastal Sage Scrub in the Riverside – Perris Plain, California. *Western Birds.* 29(4): 366–391. San Diego, CA: Western Field Ornithologists.

Noss, R.F. 1983. A Regional Landscape Approach to Maintain Diversity. *BioScience* 33:700–706. Washington, D.C.: American Institute of Biological Sciences.

Orange County Fire Authority (OCFA). 2008 (November 15). *After Action Report: Freeway Complex Fire*. Irvine, CA: OCFA.

PlaceWorks. 2021 (April). Malibu Middle and High School Campus Specific Plan. Los Angeles, CA: PlaceWorks

Psomas. 2021a (May). Draft Conceptual Habitat Restoration Plan for an Environmentally Sensitive Habitat Area in Support of the Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project, Malibu, California. Santa Ana, CA: Psomas.

———. 2021b (September). Draft Jurisdictional Delineation Report for the Malibu Middle and High School Specific Plan and LCP Amendment Project in Malibu, California. Santa Ana, CA: Psomas.

———. 2021c (May). Revised Tree Evaluation Report for the Malibu Middle and High School Specific Plan and Local Coastal Plan Amendment Project, Malibu, California. Santa Ana, CA: Psomas.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation (Second Edition)*. Sacramento, CA: CNPS.

Schoenherr, A.A. 1992. A Natural History of California. Berkeley, CA: University of California Press.

Simberloff, D. and J. Cox. 1987. Consequences and Costs of Conservation Corridors. *Conservation Biology* 1(1): 63–71. Boston, MA: Blackwell Scientific Publications.

Soule, M.E. 1987. *Viable Populations for Conservation*. New York, NY: Cambridge University Press.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2019. Web Soil Survey. Lincoln, NE: USDA NRCS. http://websoilsurvey.nrcs.usda.gov/.

U.S. Fish and Wildlife Service (USFWS). 2003 (April 24). Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Coastal California Gnatcatcher (*Polioptila californica californica*) and Determination of Distinct Vertibrate Population Segment for the California Gnatcatcher (*Polioptila californica*); Proposed Rule. *Federal Register* 68(79): 20227–20312. Washington, D.C.: USFWS. http://policy.fws.gov/library/03-9435.pdf.

Williams, D.F. 1986. *Mammalian Species of Special Concern in California* (Administrative Report 86-1). Sacramento, CA: CDFG.

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, M. White (Eds). 1990. *California's Wildlife Vol. 3: Mammals.* Sacramento, CA: CDFG, The Resources Agency.

APPENDIX A

REPRESENTATIVE SITE PHOTOGRAPHS

Photo 1: Overview of the southeastern portion of the Study Area, facing south. The foreground shows the disturbed coyote brush - California sagebrush scrub vegetation type followed by turf on the background. The structures on the right of the photograph are associated with the Malibu High School campus.

Photo 2: View of the California sagebrush scrub vegetation on the southeastern portion of the Study Area, facing north.

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Representative Site Photographs

Appendix A-1

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

PSOMAS

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Photo 3: View of the coyote brush-California sagebrush scrub/upland mustards vegetation on eastern portion of the Study area, facing south.

Photo 4: View of the disturbed coyote brush-California sagebrush scrub/upland mustards vegetation on eastern portion of the Study area, facing west.

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Representative Site Photographs — Appendix A-2

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

PSOMAS

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Photo 5: View of the upland mustards vegetation on the eastern portion of the Study Area, facing north.

Photo 6: View of the disturbed uplands mustards vegetation on the northern portion of the Study Area, facing north.

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Representative Site Photographs

Appendix A-3

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

PSOMAS

Photo 7: View of the arroyo willow thicket and riparian herb vegetations on the western portion of the Study Area, facing south.

Photo 8: View of the eucaluptus grove on the northern portion of the Study area, facing southwest.

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Representative Site Photographs

Appendix A-4

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

PSOMAS

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Photo 9: View of the California sycamore - coast live oak plantings in the southeastern portion of the Study Area, facing north.

Photo 10: View of the ornamental - native plantings in the northern portion of the Study Area, facing northeast.

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Representative Site Photographs

Appendix A-5

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

PSOMAS

Photo 11: View of turf on the northern portion of the Study Area, facing south.

Photo 12: View of developed/ornamental associated with Malibu High School campus on the southern portion of the Study Area, facing south.

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Representative Site Photographs

Appendix A-6

Malibu Middle and High School Campus Specific Plan and LCP Amendment Project

PSOMAS

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Photo 13: View of a disturbed area in the southeastern portion of the Study Area, facing west.

Photo 14: View of area where a burrowing owl was observed flying around and staying hidden located in the eastern portion of the Study Area, facing northwest.

Photo 15: View of a burrow where a burrowing owl was observed.

Photo 16: View of potential burrowing owl wing feathers found in the vicinity of suitable burrows for burrowing owl.

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APPENDIX B

PLANT AND WILDLIFE COMPENDIA

APPENDIX B-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species		Special Status	Wetland Rank	Cal-IPC Rank
Scientific Name	**Common Name**			
EUDICOTS				
AIZOACEAE – FIG–MARIGOLD FAMILY				
*Carpobrotus edulis**	freeway iceplant			High
ANACARDIACEAE – SUMAC FAMILY				
Malosma laurina	laurel sumac			
*Schinus molle**	pepper tree		FACU	Limited
APIACEAE – CARROT FAMILY				
Apiastrum angustifolium	narrow-leaved apiastrum			
*Foeniculum vulgare**	fennel			High
APOCYNACEAE – DOGBANE FAMILY				
*Nerium oleander**	common oleander			
ASTERACEAE – SUNFLOWER FAMILY				
Artemisia californica	California sagebrush			
Artemisia dracunculus	tarragon			
Baccharis pilularis ssp. *consanguinea*	coyote brush			
Baccharis salicifolia ssp. *salicifolia*	mule fat		FAC	
*Centaurea melitensis**	tocalote			Moderate
*Cotula australis**	Australian cotula		FAC	
*Cynara cardunculus**	artichoke			Moderate
Deinandra fasciculata	fascicled tarplant		FACU	
Encelia californica	California encelia			
Erigeron canadensis	horseweed		FACU	
*Gazania linearis**	parallel-sided treasure flower			Moderate
*Glebionis coronaria**	crown daisy			Moderate
Hazardia squarrosa	saw-toothed goldenbush			
*Hedypnois cretica**	Crete's hedypnois			
*Helminthotheca echioides**	bristly ox-tongue		FAC	Limited
Isocoma menziesii var. *vernonioides*	Vernonia-like coastal goldenbush		FAC	
*Lactuca serriola**	prickly lettuce		FACU	
Malacothrix saxatilis	rocky malacothrix			
Pseudognaphalium biolettii	Bioletti's cudweed			

APPENDIX B-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species		Special Status	Wetland Rank	Cal-IPC Rank
Scientific Name	**Common Name**			
Pseudognaphalium californicum	California cudweed			
*Pseudognaphalium luteoalbum**	white lamb cudweed		FAC	
*Silybum marianum**	milk thistle			Limited
Sonchus asper ssp. *asper**	prickly sow thistle		FAC	
*Sonchus oleraceus**	common sow thistle			
*Taraxacum officinale**	common dandelion		FACU	
Venegasia carpesioides	carpesium-like canyon-sunflower			
BIGNONIACEAE – BIGNONIA FAMILY				
*Jacaranda mimosifolia**	blue jacaranda			
BORAGINACEAE – BORAGE FAMILY				
*Echium candicans**	pride of Madeira			Limited
BRASSICACEAE – MUSTARD FAMILY				
*Brassica nigra**	black mustard			Moderate
*Hirschfeldia incana**	grayish shortpod mustard			Moderate
*Lepidium didymum**	lesser swine grass			
Nasturtium officinale	water cress		OBL	
*Raphanus sativus**	radish			Limited
Sisymbrium sp.	sisymbrium			
CACTACEAE – CACTUS FAMILY				
*Opuntia ficus-indica**	mission prickly-pear			
CHENOPODIACEAE – GOOSEFOOT FAMILY				
*Chenopodium album**	Lamb's quarters		FACU	
*Salsola tragus**	Russian thistle		FACU	
CLEOMACEAE – SPIDERFLOWER FAMILY				
Peritoma arborea	bladderpod			
CONVOLVULACEAE – MORNING–GLORY FAMILY				
Calystegia macrostegia	large-bracted morning-glory			
EUPHORBIACEAE – SPURGE FAMILY				
Euphorbia albomarginata	rattlesnake sandmat			
*Euphorbia peplus**	petty spurge			
*Ricinus communis**	common castor bean		FACU	Limited

APPENDIX B-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species		Special Status	Wetland Rank	Cal-IPC Rank
Scientific Name	**Common Name**			
FABACEAE – LEGUME FAMILY				
Acmispon glaber	deerweed			
Lupinus succulentus	arroyo lupine			
*Medicago polymorpha**	variable burclover		FACU	Limited
*Melilotus albus**	white sweetclover			
*Melilotus indicus**	sourclover		FACU	
FAGACEAE – OAK FAMILY				
Quercus agrifolia	coast live oak			
GERANIACEAE – GERANIUM FAMILY				
*Erodium botrys**	long-beaked filaree		FACU	
*Erodium cicutarium**	redstem filaree			Limited
JUGLANDACEAE – WALNUT FAMILY				
Juglans californica	southern California black walnut	CRPR 4.2	FAC	
LAMIACEAE – MINT FAMILY				
Lavandula sp.*	lavender			
*Marrubium vulgare**	common horehound		FACU	Limited
Salvia apiana	white sage			
Salvia mellifera	black sage			
MALVACEAE – MALLOW FAMILY				
Malacothamnus fasciculatus var. *fasciculatus*	chaparral mallow			
*Malva nicaeensis**	bull mallow			
*Malva parviflora**	cheeseweed			
MYRSINACEAE – MYRSINE FAMILY				
*Lysimachia arvensis**	scarlet pimpernel		FAC	
MYRTACEAE – MYRTLE FAMILY				
Eucalyptus sp.*	gum tree			
NYCTAGINACEAE – FOUR O'CLOCK FAMILY				
Bougainvillea sp.	bougainvillea			
OLEACEAE – OLIVE FAMILY				
*Olea europaea**	European olive			Limited

APPENDIX B-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species		Special Status	Wetland Rank	Cal-IPC Rank
Scientific Name	**Common Name**			
PAPAVERACEAE – POPPY FAMILY				
Eschscholzia californica	California poppy			
Romneya coulteri	Coulter's matilija poppy	CRPR 4.2		
PLATANACEAE – SYCAMORE FAMILY				
Platanus racemosa	western sycamore		FAC	
PLUMBAGINACEAE – LEADWORT FAMILY				
*Plumbago auriculata**	cape leadwort			
POLYGONACEAE – BUCKWHEAT FAMILY				
Eriogonum cinereum	coastal wild buckwheat			
Eriogonum fasciculatum	California buckwheat			
*Rumex crispus**	curly dock		FAC	Limited
RHAMNACEAE – BUCKTHORN FAMILY				
Ceanothus sp.	ceanothus (cultivar)			
ROSACEAE – ROSE FAMILY				
*Prunus persica**	peach			
Rosa californica	California rose		FAC	
Rubus ursinus	California blackberry		FAC	
SALICACEAE – WILLOW FAMILY				
Populus fremontii ssp. *fremontii*	Fremont cottonwood		FAC	
Salix lasiolepis	arroyo willow		FACW	
SCROPHULARIACEAE – FIGWORT FAMILY				
*Myoporum laetum**	myoporum		FACU	Moderate
SOLANACEAE – NIGHTSHADE FAMILY				
Datura wrightii	Wright's jimsonweed			
*Nicotiana glauca**	tree tobacco		FAC	Moderate
Solanum americanum	American nightshade		FACU	
Solanum douglasii	Douglas' nightshade		FAC	
TROPAEOLACEAE – NASTURTIUM FAMILY				
*Tropaeolum majus**	garden nasturtium			
VALERIANACEAE – VALERIAN FAMILY				
*Centranthus ruber**	red valerian			

APPENDIX B-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species		Special Status	Wetland Rank	Cal-IPC Rank
Scientific Name	**Common Name**			
MONOCOTS				
AGAVACEAE – AGAVE FAMILY				
Yucca sp.*	yucca			
ARECACEAE – PALM FAMILY				
Phoenix sp.*	date palm			
*Washingtonia robusta**	Mexican fan palm		FACW	Moderate
CYPERACEAE – SEDGE FAMILY				
Cyperus sp.	flatsedge			
IRIDACEAE – IRIS FAMILY				
Sisyrinchium bellum	western blue-eyed-grass		FACW	
POACEAE – GRASS FAMILY				
*Arundo donax**	giant reed		FACW	High
*Avena barbata**	slender wild oat			Moderate
*Avena fatua**	wild oat			Moderate
*Bromus diandrus**	ripgut grass			Moderate
*Bromus rubens**	red brome			High
*Cortaderia selloana**	pampas grass		FACU	High
*Cynodon dactylon**	Bermuda grass		FACU	Moderate
Elymus triticoides	beardless wild rye		FAC	
*Festuca myuros**	rattail sixweeks grass		FACU	Moderate
*Festuca perennis**	rye grass		FAC	Moderate
*Hordeum murinum**	wall barley		FACU	Moderate
Muhlenbergia rigens	deer grass		FAC	
Paspalum distichum	knot grass		FACW	
*Pennisetum setaceum**	crimson fountain grass			Moderate
Phalaris sp.	canary grass			
*Polypogon monspeliensis**	annual beard grass		FACW	Limited
*Stenotaphrum secundatum**	Saint Augustine grass		FAC	
Stipa miliacea var. *miliacea**	smilo grass			Limited
Subfamily Bambusoideae	bamboo			

APPENDIX B-1
PLANT SPECIES OBSERVED DURING SURVEYS

Species		Special Status	Wetland Rank	Cal-IPC Rank
Scientific Name	**Common Name**			
TYPHACEAE – CATTAIL FAMILY				
*Typha angustifolia**	narrow-leaved cattail		OBL	

CRPR: California Rare Plant Rank; Cal-IPC: California Invasive Plant Council.

* Non-native or invasive species

Species Status:

CRPR

.2 Moderately threatened in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)

Threat Code Extensions

4 Plants of limited distribution – watch list

Cal-IPC Rank:

Limited These species are invasive, but their ecological impacts are minor on a statewide level. They have low to moderate rates of colonization. Although their distribution is generally limited, these species may be locally persistent and problematic.

Moderate These species have substantial and apparent—but generally not severe—ecological impacts on the surrounding habitat. They have moderate to high rates of dispersal. Distribution may range from limited to widespread.

High These species have severe ecological impacts on the surrounding habitat. They have moderate to high rates of dispersal and establishment, and most are widely distributed.

Wetland Designations:

FACU Plants that are not wetland dependent. They are non-wetland plants by habitat preference.

FAC These plants can occur in wetlands or non-wetlands. They can grow in hydric, mesic, or xeric habitats.

FACW Plants dependent on and predominantly occur with hydric soils, standing water, or seasonally high-water tables in wet habitats.

OBL Wetland-dependent plants that require standing water or seasonally saturated soils near the surface.

APPENDIX B-2
WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
LIZARDS	
PHRYNOSOMATIDAE – SPINY LIZARD FAMILY	
Sceloporus occidentalis	western fence lizard
BIRDS	
COLUMBIDAE – PIGEON AND DOVE FAMILY	
Zenaida macroura	mourning dove
TROCHILIDAE – HUMMINGBIRD FAMILY	
Calypte anna	Anna's hummingbird
Selasphorus sasin	Allen's hummingbird
CHARADRIIDAE – PLOVER FAMILY	
Pluvialis squatarola	black-bellied plover
Charadrius vociferus	killdeer
LARIDAE – GULL AND TERN FAMILY	
Larus delawarensis	ring-billed gull
Larus occidentalis	western gull
Larus californicus	California gull
ACCIPITRIDAE – HAWK FAMILY	
Circus cyaneus	northern harrier
Buteo lineatus	red-shouldered hawk
Buteo jamaicensis	red-tailed hawk
STRIGIDAE – TYPICAL OWL FAMILY	
Bubo virginianus	great horned owl
Athene cunicularia	burrowing owl
PICIDAE – WOODPECKER FAMILY	
Picoides nuttallii	Nuttall's woodpecker
FALCONIDAE – FALCON FAMILY	
Falco sparverius	American kestrel
Falco peregrinus	peregrine falcon
PSITTACIDAE – PARROT FAMILY	
Aratinga nenday	nanday parakeet*
TYRANNIDAE – TYRANT FLYCATCHER FAMILY	
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	western kingbird
CORVIDAE – JAY AND CROW FAMILY	
Corvus brachyrhynchos	American crow
Corvus corax	common raven
HIRUNDINIDAE – SWALLOW FAMILY	
Stelgidopteryx serripennis	northern rough-winged swallow
Petrochelidon pyrrhonota	cliff swallow
Hirundo rustica	barn swallow
PARIDAE – TITMOUSE FAMILY	
Baeolophus inornatus	oak titmouse

APPENDIX B-2
WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
AEGITHALIDAE – BUSHTIT FAMILY	
Psaltriparus minimus	bushtit
TROGLODYTIDAE – WREN FAMILY	
Thryomanes bewickii	Bewick's wren
POLIOPTILIDAE – GNATCATCHER FAMILY	
Polioptila caerulea	blue-gray gnatcatcher
REGULIDAE – KINGLET FAMILY	
Regulus calendula	ruby-crowned kinglet
SYLVIIDAE – SILVIID WARBLERS FAMILY	
Chamaea fasciata	wrentit
TURDIDAE – THRUSH FAMILY	
Sialia mexicana	western bluebird
MIMIDAE – MOCKINGBIRD AND THRASHER FAMILY	
Mimus polyglottos	northern mockingbird
STURNIDAE – STARLING FAMILY	
*Sturnus vulgaris**	European starling*
PASSERIDAE – OLD WORLD SPARROW FAMILY	
*Passer domesticus**	house sparrow*
MOTACILLIDAE – PIPIT AND WAGTAIL FAMILY	
Anthus rubescens	American pipit
FRINGILLIDAE – FINCH FAMILY	
Haemorhous mexicanus	house finch
Spinus psaltria	lesser goldfinch
PASSERELLIDAE – NEW WORLD SPARROW FAMILY	
Melozone crissalis	California towhee
Melospiza melodia	song sparrow
Melospiza lincolnii	Lincoln's sparrow
Zonotrichia leucophrys	white-crowned sparrow
Junco hyemalis	dark-eyed junco
ICTERIDAE – BLACKBIRDS AND ORIOLES	
Icterus bullockii	Bullock's oriole
Agelaius phoeniceus	red-winged blackbird
Molothrus ater	brown-headed cowbird
Euphagus cyanocephalus	Brewer's blackbird
PARULIDAE – WOOD-WARBLER FAMILY	
Geothlypis trichas	common yellowthroat
Setophaga coronata	yellow-rumped warbler
Cardellina pusilla	Wilson's warbler
MAMMALS	
SCIURIDAE – SQUIRREL FAMILY	
Sciurus griseus	western gray squirrel
Otospermophilus beecheyi	California ground squirrel
GEOMYIDAE – POCKET GOPHER FAMILY	
Thomomys bottae	Botta's pocket gopher

APPENDIX B-2
WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
Scientific Name	**Common Name**
LEPORIDAE – HARE AND RABBIT FAMILY	
Sylvilagus audubonii	desert cottontail
CANIDAE – CANID FAMILY	
Canis latrans	coyote (scat)
* Non-native or invasive species	

APPENDIX C

DRAFT JURISDICTIONAL DELINEATION REPORT

Jurisdictional Delineation Report

For the Malibu Middle and High School Specific Plan and LCP Amendment Project in Malibu, California

Prepared for

Santa Monica-Malibu Unified School District
Facility Improvement Projects
2828 Fourth Street
Santa Monica, California 90405
Contact: Kevin Klaus, Deputy Bond Program Manager

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September 2021

TABLE OF CONTENTS

Section **Page**

Executive Summary **ES-1**

1.0 Introduction **1**

1.1 Project Location 1

1.2 Project Description 1

1.3 Regulatory Authority 2

1.3.1 U.S. Army Corps of Engineers *2*
1.3.2 Regional Water Quality Control Board *2*
1.3.3 California Department of Fish and Wildlife *2*
1.3.4 California Coastal Commission *3*

2.0 Methods **4**

2.1 Literature Review 4

2.2 Jurisdictional Delineation 5

2.2.1 USACE Waters of the United States *5*
2.2.2 RWQCB Waters of the State *6*
2.2.3 CDFW Waters *6*
2.2.4 CCC Waters *6*

3.0 Results **7**

3.1 Literature Review 7

3.2 Jurisdictional Analysis 8

3.2.1 Waters of the United States Determination *9*
3.2.2 Regional Water Quality Control Board Jurisdiction *12*
3.2.3 California Department of Fish and Wildlife Jurisdiction *12*
3.2.4 California Coastal Commission Jurisdiction *12*

4.0 Regulatory Approval Process **13**

4.1 Regulatory Permit Requirements 13

4.1.1 U.S. Army Corps of Engineers *13*
4.1.2 Regional Water Quality Control Board *13*
4.1.3 California Department of Fish and Wildlife *13*
4.1.4 California Coastal Commission *14*

5.0 Recommendations **15**

6.0 References **16**

TABLES

Table		Page
1	Summary of Jurisdictional Resources in the Study Area	9
2	Summary of Sampling Point Data	11

EXHIBITS

Exhibit		Follows Page
1	Project Location	1
2	USGS 7.5-Minute Digital Quadrangle	1
3	Soil Types	4
4	National Wetland Inventory	4
5	Jurisdictional Resources – Ordinary High Water Mark	7
6	Jurisdictional Resources – Top of Bank/Riparian Canopy	7

ATTACHMENTS

Attachment	
A	Summary of Regulatory Authority
B	Representative Photographs
C	Datasheets
D	Literature Review Details

EXECUTIVE SUMMARY

This report provides baseline data regarding the type and extent of jurisdictional resources in support of the Malibu Middle and High School Specific Plan and Local Coastal Program Amendment Project. Jurisdictional resources considered for this report include wetland and non-wetland waters of the United States (WOTUS) regulated by the U.S. Army Corps of Engineers (USACE); waters of the State regulated by the Regional Water Quality Control Board (RWQCB); waters, including the bed, bank, and channel of all lakes, rivers, and/or streams (and associated wetland and riparian vegetation), as regulated by the California Department of Fish and Wildlife (CDFW); and wetlands and waters in the Coastal Zone, as regulated by the California Coastal Commission (CCC).

The limits of non-wetland WOTUS and waters of the State were identified by the presence of an Ordinary High Water Mark (OHWM). Wetland features were identified based on the USACE's three-parameter approach in which wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and wetland hydrology indicators. The limits of RWQCB waters and wetlands were determined to equal those of the USACE unless isolated conditions were present. The limits of CDFW jurisdictional waters were identified as either the top of bank or the outer drip line of riparian vegetation associated with the feature. The CCC's wetland boundary is based on a "one-parameter" definition determined by at least one of the following: hydrology, hydric soils, and hydrophytic vegetation.

The jurisdictional assessment was performed by Psomas on November 12, 2019. Jurisdictional boundaries were further refined on January 16, 2020 and April 15, 2021. Based on the results of all the field work, it was determined that the total amount of jurisdictional resources in the Study Area are as follows:

- **USACE Jurisdiction:** 0.070 acre (0.007 acre of wetland WOTUS and 0.063 acre of non-wetland WOTUS)
- **RWQCB Jurisdiction:** 0.232 acre (0.007 acre of wetland waters of the State and 0.225 acre of non-wetland waters of the State)
- **CDFW Jurisdiction:** 1.202 acres
- **CCC Jurisdiction:** 1.202 acres (1.012 acre of ESHA)

1.0 INTRODUCTION

This Jurisdictional Delineation Report (report) was prepared for the Santa Monica-Malibu Unified School District (District) to provide baseline data concerning the type and extent of water resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Wildlife (CDFW), and the California Coastal Commission (CCC) in support of the Malibu Middle and High School Specific Plan and Local Coastal Program (LCP) Project.

1.1 PROJECT LOCATION

The Malibu Middle and High School (MMHS) campus is located at 30215 Morning View Drive in the City of Malibu (the City), Los Angeles County, California (Exhibit 1). The Study Area includes the MMHS campus and surrounding open space owned by the Santa Monica-Malibu High School District. The campus is located east of Via Cabrillo, north of Morning View Drive, west of Merritt Drive, and south of Heights Road, approximately 0.25 mile northeast of Pacific Coast Highway (PCH). The Study Area is depicted on the U.S. Geological Survey's (USGS') Point Dume 7.5-minute topographic quadrangle of the San Bernardino Meridian in Township 02S, Range 19W, Section 01 (Exhibit 2). It is within the Santa Monica Bay Watershed (Hydrologic Unit Code 18070104).

1.2 PROJECT DESCRIPTION

As the design concepts in the Campus Plan are set to develop in several phases over a long period of time, the City recommended preparation of a specific plan so that a consistent set of development standards could be adopted. Once adopted, the standards in the specific plan would become the regulations against which later phases of the project would be reviewed by the City. Based on the City's recommendation, the *Malibu Middle and High School Campus Specific Plan* establishes the development standards and plan for the MMHS campus over the next 10 to 15 years (Placeworks 2021). The existing MMHS campus was constructed as Malibu Park Junior High School beginning in 1963, and in 1992 the school was converted for use as a high school. The Project Site is situated on three of nine parcels: Assessor's Parcel Numbers (APN) 4469-017-900 (40.06 acres), 4469-018-900 (9.40 acres), and 4459-018-904 (2.57 acres). The total acreage of the Project Site is 52.03 acres (Placeworks 2021).

Apart from the recently completed Buildings A/B and E, many of the existing buildings no longer meet the District's needs for flexible classrooms with the ability to support multiple learning zones. The Specific Plan would result in the demolition of 18 existing buildings on the combined campuses; with only the existing athletic fields, and the nearly or recently completed Buildings A/B and E on the MMHS campus would remain, and the construction of a new campus with dedicated spaces for Middle and High School. The Specific Plan would result in 32 classrooms and 8 labs and a total of 173,595 square feet of new building space, providing the MMHS campus with a total of 47 classrooms and 12 labs and a total of 222,425 square feet of building space (Placeworks 2021).

While the Specific Plan reflects the anticipated buildout condition of the MMHS campus, only Phase I of the Plan is designed and funded for construction. Construction of subsequent Phases will require additional financial resources before they can proceed. The Specific Plan relies on established City of Malibu land use and zoning regulations and procedures and provides development standards for the MMHS Campus Specific Plan. Both the City of Malibu Municipal Code and LCP contain provisions for discretionary site plan review. The District anticipates that implementation of subsequent phases will be reviewed by the City for approval and compared to the Specific Plan and Environmental Impact Report for consistency.

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Project Location

Exhibit 1

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

850 425 0 850

Feet

PSOMAS

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Source: USGS 7.5 Minute Quadrangle
Point Dume
Township: 02S
Range: 19W
Section: 01

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USGS 7.5-Minute Digital Quadrangle

Exhibit 2

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

2,000 1,000 0 2,000
Feet

PSOMAS

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1.3 REGULATORY AUTHORITY

This section summarizes the regulations of those federal and state agencies that have regulatory authority over activities that occur within their areas of jurisdiction. A detailed explanation of each agency's regulatory authority is provided in Attachment A.

1.3.1 U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into waters of the United States (WOTUS) under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Its authority applies to all WOTUS where the material (1) replaces any portion of a water of the United States with dry land or (2) changes the bottom elevation of any portion of any WOTUS. Activities that result in fill or dredge of WOTUS require a permit from the USACE. Presently, WOTUS are defined to include territorial seas and Traditional Navigable Waters (TNWs)[1]; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters (USACE and USEPA 2010).

1.3.2 Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB), in conjunction with the nine RWQCBs, is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The SWRCB's and RWQCBs' jurisdictions extend to all WOTUS, but also to waters of the State that are outside federal jurisdiction, including wetlands.

On August 28, 2019, the Office of Administrative Law (OAL) approved the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to waters of the State. The procedures went into effect on May 28, 2020. Under these new regulations, the SWRCB and its nine RWQCBs assert jurisdiction over all existing WOTUS, and all waters that would have been considered WOTUS under the 2015 Rule. Thus, the WOTUS that would no longer be under USACE jurisdiction would be under SWRCB jurisdiction.

1.3.3 California Department of Fish and Wildlife

The CDFW regulates activities that may affect rivers, streams, and lakes pursuant to the *California Fish and Game Code* (§§1600–1616). According to Section 1602 of the *California Fish and Game Code,* the CDFW has jurisdictional authority over any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

[1] Traditional Navigable Waters are "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide" (33 *Code of Federal Regulations* § 328.3).

1.3.4 California Coastal Commission

The CCC, in partnership with coastal Cities and Counties, plans and regulates the use of land and water in the Coastal Zone, an area covering a 3-mile-wide band of ocean and extending inland from the mean high tide line to a variable distance based on surrounding land cover. Development in the Coastal Zone requires a Coastal Development Permit (CDP) issued by either the CCC or a local government with a certified LCP.

The City of Malibu has a certified LCP that provides for protection and preservation of environmentally sensitive habitat areas (ESHAs). An ESHA is defined as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem which could be easily disturbed or degraded by human activities and developments". ESHAs include rare or valuable habitat, habitat that contributes to the viability of plant or animal species that are designated or are candidates for listing under State or Federal law, habitat that contributes to the viability of species that are designated as "fully protected" or "species of special concern" under State law, habitat that contributes to the viability of species for which there is other compelling evidence of rarity (e.g., species with a California Rare Plant Rank of 1 or 2), designated Areas of Special Biological Significance or Marine Protected Area, and Streams.

2.0 METHODS

2.1 LITERATURE REVIEW

Prior to conducting the delineation and during the course of report preparation, Psomas reviewed the following documents to identify areas that may fall under agency jurisdiction: The City of Malibu LCP Local Implementation Plan (Malibu 2002); the USGS' Point Dume 7.5-minute quadrangle map; color aerial photography provided by the Hexagon Geosystems (2018); soil data provided by the U.S. Department of Agriculture's Natural Resources Conservation Service (Exhibit 3); the National Hydric Soils List (USDA NRCS 2019); the National Wetlands Inventory's Wetland Mapper (Exhibit 4); the Water Quality Control Plan for the Los Angeles Region (Los Angeles RWQCB 2013), and previous documentation for MMHS campus (Atkins 2011; GLA 2009).

USGS Topographic Quadrangle. USGS quadrangle maps show geological formations and their characteristics and describe the physical settings of an area through topographic contour lines and other major surface features. These features include lakes, streams, rivers, buildings, roadways, landmarks, and other features that may fall under the jurisdiction of one or more regulatory agencies. In addition, the USGS maps provide topographic information that is useful in determining elevations; connectivity of streams, rivers, and other water features; latitude and longitude; and Universal Transverse Mercator Grid coordinates for the Study Area.

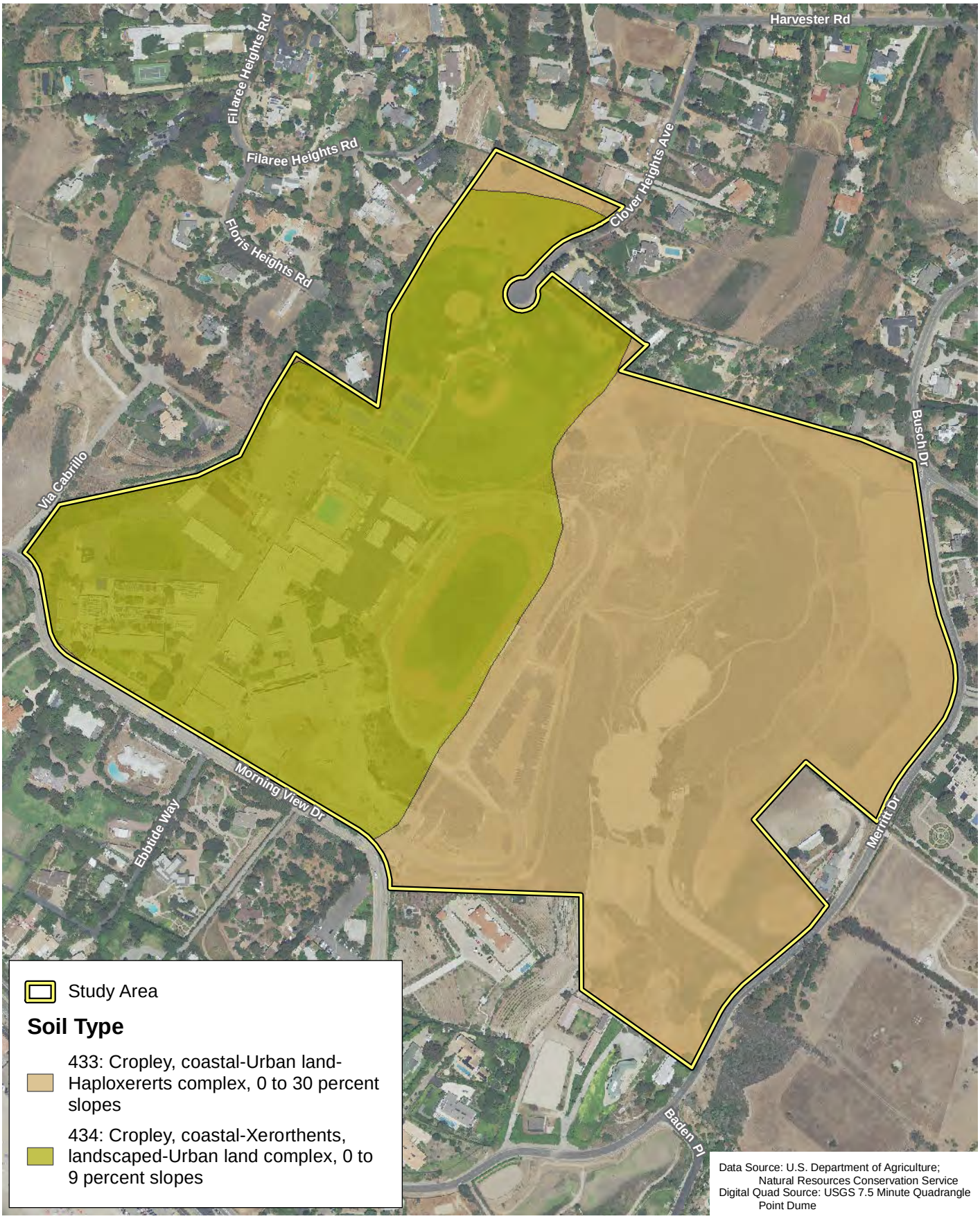
Color Aerial Photography. Color aerial photographs were reviewed prior to conducting the field delineation to identify the extent of any drainages and riparian vegetation occurring in the Study Area.

U.S. Department of Agriculture, Natural Resources Conservation Service. The presence of hydric soils is one of the chief indicators of jurisdictional wetlands. Psomas reviewed U.S. Department of Agriculture (USDA) soil data for the Study Area.

U.S. Fish and Wildlife Service, National Wetlands Inventory: The Wetlands Mapper shows wetland resources available from the Wetlands Spatial Data Layer of the National Spatial Data Infrastructure (USFWS 2019). This resource provides the classification of known wetlands following the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC 2013). This classification system is arranged in a hierarchy of (1) Systems that share the influence of similar hydrologic, geomorphologic, chemical, or biological factors (i.e., Marine, Estuarine, Riverine, Lacustrine, and Palustrine); (2) Subsystems (i.e., Subtidal and Intertidal; Tidal, Lower Perennial, Upper Perennial, and Intermittent; or Littoral and Limnetic); (3) Classes, which are based on substrate material and flooding regime or on vegetative life forms; (4) Subclasses, which recognize finer differences in life forms or substrate material than the Class; and (5) Dominance Types, which are named for the dominant plant or wildlife forms. In addition, modifying terms are applied to Classes or Subclasses.

The mapped water resources are used to provide additional guidance on planning the field surveys. Given that wetland features mapped by the National Wetlands Inventory (NWI) may or may not exist at a site because of changing conditions and development, this resource provides only preliminary data and historic data based on aerial photographic interpretation and, therefore, must be ground-truthed.

Regional Water Quality Control Plans. California has nine RWQCBs. The Study Area is located in RWQCB Region 4, the Los Angeles Region. The Los Angeles RWQCB has adopted a Water Quality Control Plan (or "Basin Plan") for this region. The Basin Plan contains goals and policies, descriptions of conditions, and proposed solutions to surface and groundwater issues. The Basin



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Soil Types

Exhibit 3

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

400 200 0 400 Feet

PSOMAS

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Data Source: U.S. Fish & Wildlife Service; National Wetlands Inventory December 2016
Digital Quad Source: USGS 7.5 Minute Quadrangle Point Dume

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National Wetlands Inventory

Exhibit 4

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

500 250 0 500 Feet

PSOMAS

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Plan also establishes water quality standards for surface and groundwater resources and includes beneficial uses and levels of water quality that must be met and maintained to protect these uses. These water quality standards are implemented through various regulatory permits pursuant to the CWA, specifically Section 401 for Water Quality Certifications and Section 402 for Report of Waste Discharge (ROWD) permits.

Previous Documentation. The *Santa Monica-Malibu Unified School District Malibu Middle and High School Campus Improvement Project Environmental Impact Report* (Atkins 2011) and a biological assessment prepared by Glenn Lukos Associates (GLA 2009) provide historic information on biological and jurisdictional resources in the Study Area.

2.2 JURISDICTIONAL DELINEATION

The analysis contained in this report uses the results of (1) a topographic survey effort mapping CCC ESHA boundaries conducted on May 21 and May 23, 2019 by Psomas Senior Biologist Irena Mendez, and Land Surveyors Juan Jimenez and Philip Berredo; (2) a jurisdictional assessment conducted on November 12, 2019, by Psomas Senior Regulatory Specialist Allison Rudalevige and Psomas Senior Biologist Jonathan Aguayo; (3) a jurisdictional delineation to further refine USACE, RWQCB, CDFW, and CCC extent on January 16, 2020, by Ms. Rudalevige and Ms. Irena Mendez; and (4) a jurisdictional delineation of an expanded Study Area on April 15, 2021, by Ms. Rudalevige and Psomas Biologist Sarah Thomas. The topographic relief of the ESHA was established with a Leica Nova MS60 Multi-station with a Leica Allegro Controller for data collection. The data was processed using Computer Assisted Design (CAD) and a 1 inch equals 20 feet (1″ = 20′) map was generated. Areas under USACE, RWQCB, and CDFW authority were delineated using a 1 inch equals 100 feet (1″ = 100′) scale aerial photograph loaded onto Avenza Maps application on an Apple iPad. Drainage features were delineated as a centerline with corresponding width measurements and waterbodies were delineated as polygons. Soil test pits were dug in areas that exhibited potential hydrophytic vegetation and wetland hydrology. It should be noted that private property was observed from the campus and was not directly accessed; mapping of jurisdictional extent was truncated at the property line. Representative photographs of the Study Area are included in Attachment B.

2.2.1 USACE Waters of the United States

Psomas assessed the presence of WOTUS by determining connectivity or adjacency of on-site features to points of discharge at a TNW. Non-wetland WOTUS are delineated based on the limits of the OHWM, which can be determined by a number of factors, including (1) the presence of a clear, natural line impressed on the bank; (2) shelving along the bank; (3) changes in the character of the soil; (4) destruction of terrestrial vegetation; and (5) the presence of litter and debris. The OHWM limits (i.e., active floodplain) occurring in the Study Area were further verified using methods contained in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*, *A Delineation Manual* (Lichvar and McColley 2008) and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar 2010).

In September 2008, the USACE issued the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). This regional supplement is designed for use with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of wetland WOTUS. Both documents prescribe using a three-parameter approach to identify wetlands. The three parameters needed to assign a site as a wetland include evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. However, problem areas may periodically or permanently

lack certain indicators due to seasonal or annual variability or the nature of the soils or plant species on site. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

2.2.2 RWQCB Waters of the State

Psomas determined the limits of RWQCB jurisdiction in the field following the methods described for USACE jurisdiction, above. The RWQCB shares USACE jurisdiction unless isolated conditions are present. If isolated waters are present, the RWQCB takes jurisdiction using the USACE's definition of the OHWM and/or the three-parameter wetlands method pursuant to the 1987 Wetlands Manual (Environmental Laboratory 1987).

2.2.3 CDFW Waters

CDFW's jurisdiction was determined measuring the distance between the top of the bank to the top of the bank of the water features on site, or if present, to the outer limit of riparian vegetation located within or immediately adjacent to feature.

2.2.4 CCC Waters

The CCC waters boundaries were delineated based on the outer extent of predominantly hydrophytic vegetation, hydric soil, or land that is flooded or saturated at some time during years of normal rainfall. The CCC uses a single-parameter approach to determine the presence of wetlands, so any feature showing evidence of hydrology, hydric soils, or hydrophytic vegetation was classified as a wetland. These areas are also considered to be ESHAs.

3.0 RESULTS

A total of five potential jurisdictional features were mapped in the Study Area: Drainage 1, Drainage 2, Drainage 3, Drainage 4, and Basin (Exhibits 5 and 6). Results of the literature review are provided in Section 3.1 and a detailed analysis of each regulatory agency's jurisdiction is provided in Section 3.2. Attachment C provides datasheets that summarize the overall condition of the individual wetlands, drainages, and indicators of OHWM.

3.1 LITERATURE REVIEW

USGS Topographic Quadrangle. Two unnamed blueline streams are depicted on the USGS Point Dume quadrangle (Exhibit 2). One runs along the western edge of the Study Area and continues off site to PCH. The other runs along the eastern half of the Study Area and continues off site to PCH. The topography in the Study Area gently slopes from the northeast to the southwest. Elevations range from approximately 100 to 200 feet above mean sea level (msl).

Color Aerial Photography. Drainage 1 is clearly shown on aerial imagery. Riparian vegetation is visible along the drainage but appears to have been denser prior to the 2018 Woolsey fire. The upstream end of Drainage 2 is visible on aerial imagery; however, its alignment is obscured as it crosses the field north of the campus baseball field. The concrete-lined portion of the channel is partially visible. Drainage 3 is faintly visible and goes underground just north of the equestrian center. Drainage 4 is obscured by vegetation. The Basin is shown on recent aerial imagery. Historic aerial imagery shows that vegetation in the basin has increased over time; surface water was present in some historic aerials. Prior to creation of the basin, the area it occupies appears to be a graded, undeveloped, upland lot adjacent to the parking lot.

U.S. Department of Agriculture, Natural Resources Conservation Service. The Study Area occurs in the following soil survey area: Santa Monica Mountains National Recreation Area. Within this soil survey area, the USDA NRCS has delineated the boundaries of 'soil map units', which often contain components of multiple soil types that may be classified as hydric or non-hydric. The National Hydric Soils List (USDA NRCS 2019) identifies a soil map unit as "hydric" if it contains either a major or minor component that is at least in part hydric.

The following soil types have been mapped in the Study Area: Cropley, coastal – Urban land – Haploxererts complex, 0 to 30 percent slopes and Cropley, coastal – Xerorthents, landscaped – Urban land complex, 0 to 9 percent slopes (Exhibit 3). These soils are not listed as hydric on the National List for the soil survey area in which they occur (USDA NRCS 2019). A description of the soils mapped in the Study Area is provided in Attachment D of this report.

U.S. Fish and Wildlife Service, National Wetlands Inventory. Drainages 1 and 3 are mapped as wetlands by the NWI (Exhibit 4). Drainage 1 is considered to be a Palustrine wetland with scrub-shrub vegetation that is temporarily flooded (PSSA). Drainage 3 is considered to be a Riverine wetland that is intermittent and temporarily flooded (R4SBA) with the downstream end a Palustrine wetland with scrub-shrub vegetation that is seasonally flooded and diked/impounded (PSSCh). The NWI also maps a Riverine feature crossing Via Cabrillo on the western side of the Study Area (labeled R4SBA on Exhibit 4). The description for NWI mapped wetland resources is provided in Attachment D of this report. Drainage 2 and the Basin were not mapped by the NWI.

The NWI data was used to provide additional guidance on planning the field surveys. Given that wetland features mapped for the NWI may or may not exist at present because of changing conditions and development, this resource provides preliminary data and historic data but must be ground-truthed for each wetland feature.

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 5a

N W E S

50 25 0 50 Feet

PSOMAS

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Study Area

Sampling Points

Ordinary High Water Mark

Non-wetland

Wetland*

* Based on USACE three-parameter approach.

1A

1B

Drainage 1

Drainage 2

Match Line - Exhibit 5c

Match Line - Exhibit 5a

Map Extent

5a

5b

5c

5d

5e

5f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 5b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50

Feet

PSOMAS

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Study Area

Sampling Points

Ordinary High Water Mark

Non-wetland

Wetland*

* Based on USACE three-parameter approach.

Drainage 2

Match Line - Exhibit 5b

Map Extent

5a 5b 5c 5d 5e 5f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 5c

N W E S

50 25 0 50 Feet

PSOMAS

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Study Area

Sampling Points

Ordinary High Water Mark

Non-wetland

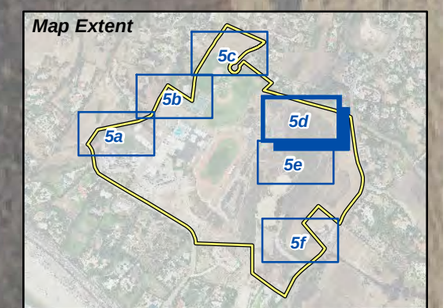
Wetland*

* Based on USACE three-parameter approach.

Drainage 3

Match Line - Exhibit 5e

Map Extent



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 5d

N W E S

50 25 0 50

Feet

PSOMAS

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Study Area

Sampling Points

Ordinary High Water Mark

Non-wetland

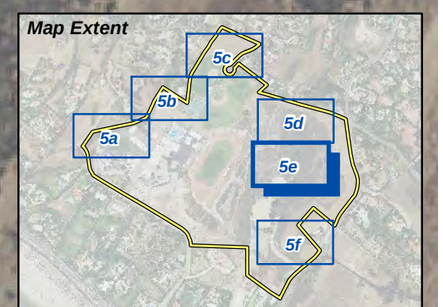
Wetland*

* Based on USACE three-parameter approach.

Match Line - Exhibit 5d

Drainage 3

Map Extent



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 5e

N W E S

50 25 0 50 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 5f

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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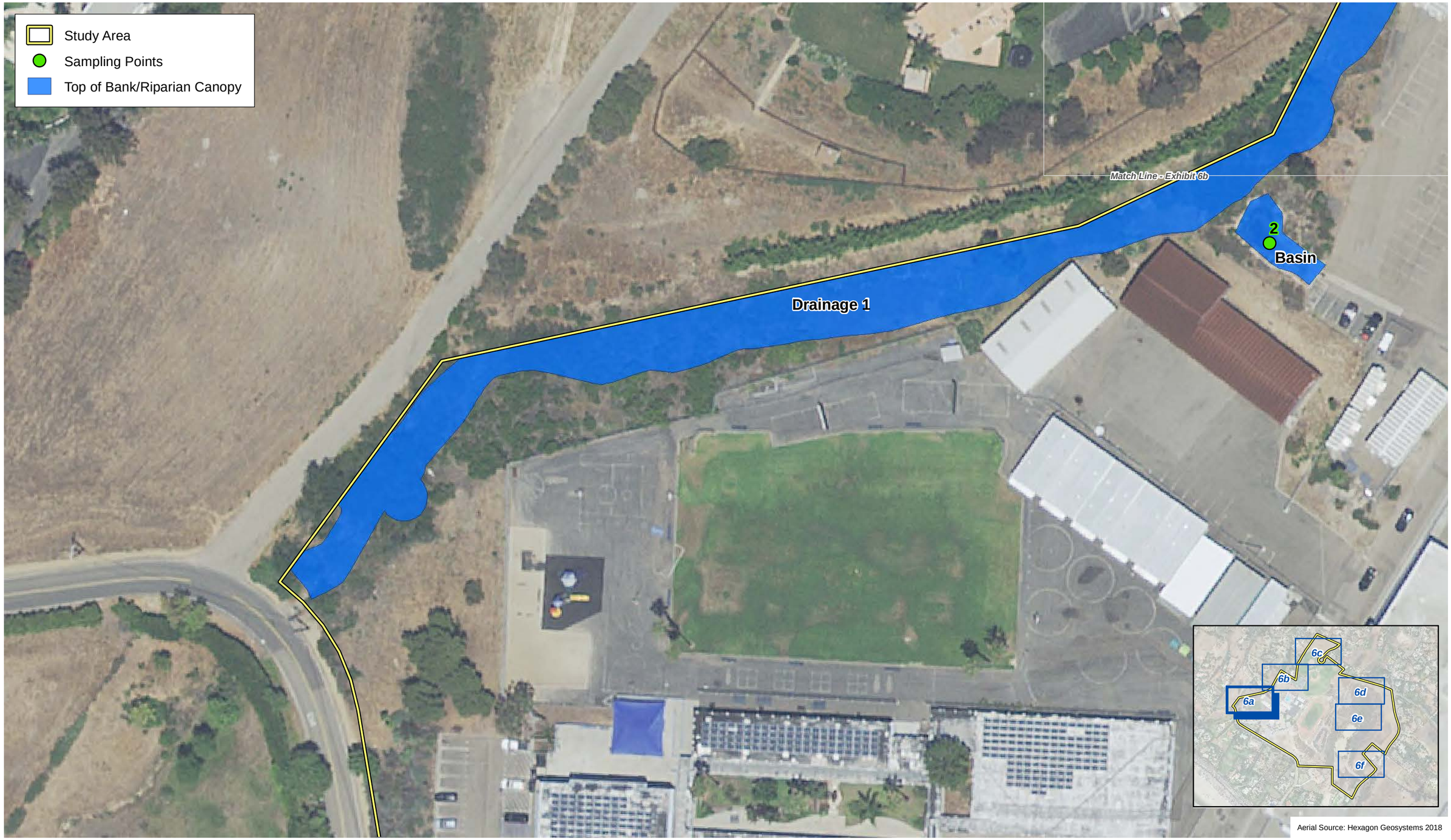

Aerial Source: Hexagon Geosystems 2018

Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6a

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

60 30 0 60

Feet

PSOMAS

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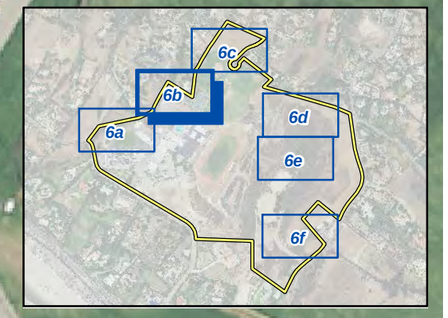
Study Area
Sampling Points
Top of Bank/Riparian Canopy

1A
1B
2
Drainage 1
Drainage 2

Match Line - Exhibit 6a
Match Line - Exhibit 6c



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

60 30 0 60

Feet

PSOMAS

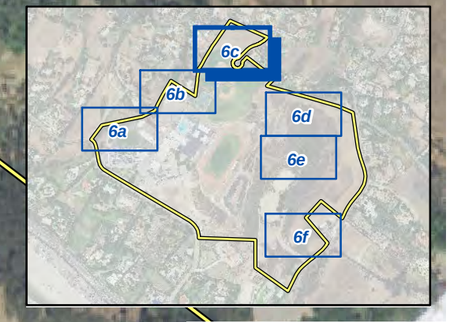
(Rev: 09/01/2021 MMD) R:\Projects\1SAN\082308\Graphics\JD\ex_JD_TOB_.pdf

Study Area

Top of Bank/Riparian Canopy

Drainage 2

Match Line - Exhibit 6b



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6c

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

60 30 0 60

Feet

PSOMAS

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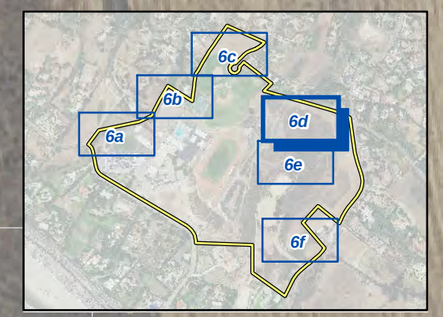
Study Area

Top of Bank/Riparian Canopy

Drainage 3

Match Line - Exhibit 6e



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6d

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

60 30 0 60

Feet

PSOMAS

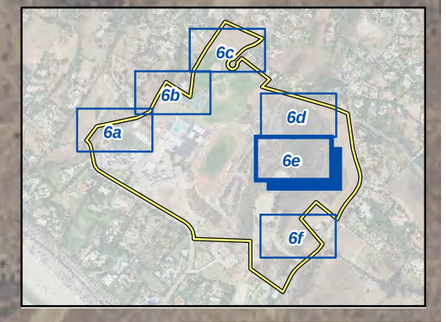
(Rev: 09/01/2021 MMD) R:\Projects\1SAN\082308\Graphics\JD\ex_JD_TOB_.pdf

Study Area

Top of Bank/Riparian Canopy

Match Line - Exhibit 6d

Drainage 3



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6e

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

60 30 0 60

Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6f

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

60 30 0 60 Feet

PSOMAS

(Rev: 09/01/2021 MMD) R:\Projects\1SAN\082308\Graphics\JD\ex_JD_TOB_.pdf

Regional Water Quality Control Plans. The drainages in the Study Area are not named in the Los Angeles Basin Plan; they are located between the Trancas Canyon and Zuma Canyon drainages, shown as miscellaneous streams and coastal features on Figure 2-10 of the Basin Plan (Los Angeles RWQCB 2013). The Basin Plan does not provide water quality objectives for miscellaneous Los Angeles County coastal streams. These areas are often impaired (by high levels of minerals) and there is not sufficient historic data to designate objectives based on natural background conditions.

Beneficial uses are defined in the Porter-Cologne Act as those uses of water that are necessary for tangible and intangible economic, social, and environmental benefits. While beneficial uses are not listed for the drainages in the Study Area, they are expected to be similar to those listed for Trancas and Zuma canyons. These expected and potential beneficial uses include Municipal and Domestic Water Supply (MUN) waters; Warm Fresh Water Habitat (WARM) waters; Cold Freshwater Habitat (COLD) waters; Wildlife Habitat (WILD) waters; Rare, Threatened or Endangered Species (RARE) waters; Spawning, Reproduction and Development (SPWN) waters; Migration Habitat (MIGR) waters; Water Contact Recreation (REC-1) waters; and Non-contact Water Recreation (REC-2) waters. Descriptions of the beneficial uses applicable to waters in the Study Area are provided in Attachment D of this report.

Previous Documentation. The City of Malibu's LCP ESHA Overlay Map 2: Zuma Beach to Escondido Beach depicts a stream adjacent to the MMHS campus that flows from the undeveloped foothills to the north (which are mapped as ESHAs) to PCH. This stream alignment, as depicted on the overlay map, varies slightly from current conditions. The upstream portion in the Study Area corresponds to Drainage 2 while the downstream portion corresponds to Drainage 1. Drainages 3 and 4 are not depicted on the overlay map. It should be noted that this map is not intended to depict fixed boundaries of ESHAs and may not include all areas that are ESHAs.

As part of their biological assessment, Glenn Lukos Associates reviewed the City of Malibu's LCP and ESHA Overlay Map (GLA 2009). They concluded that the actual extent of the ESHA did not encompass the entire stream depicted on the ESHA Overlay Map due to inaccuracies in the USGS quadrangle. Specifically, the stream on the ESHA Overlay Map veers eastward across campus facilities including a parking lot, tennis court, and baseball field. The area GLA mapped as an ESHA corresponds to Drainage 1. No other on-site drainages were mapped as ESHAs by GLA.

3.2 JURISDICTIONAL ANALYSIS

Table 1 summarizes the type and extent of the jurisdictional features in the Study Area. Drainage 1 runs along the western boundary of the Study Area. It is an unlined drainage with bed and bank. It receives flow from an undeveloped lot north of the study area, including road runoff. A culvert at the cul-de-sac of Clover Heights Avenue also carries flow into this drainage. Drainage 2 runs from the northern edge of the Study Area along the baseball fields and discharges into Drainage 1. It is unlined with bed and bank at its upstream end and is lined with concrete where it runs adjacent to the tennis courts and discharges into Drainage 1. Drainage 3 starts near the northern edge of the Study Area east of the main campus and goes underground just north of the equestrian center. It is unlined with bed and bank. Drainage 4 begins at a residential property at Merritt Drive on the eastern edge of the Study Area and goes through a culvert at the access road to the equestrian center. The Basin is an artificial basin created east of Drainage 1. It receives runoff directly from the adjacent parking lot and from fields via a pipe culvert. The feature labeled R4SBA on Exhibit 4 was not observed during the site visits.

TABLE 1
SUMMARY OF JURISDICTIONAL RESOURCES IN THE STUDY AREA

Jurisdictional Features	Existing Resources (Acres)					
	Drainage				Basin	Total
	1	2	3	4		
USACE Waters of the United States						
Wetlands	0.007	n/a	n/a	n/a	n/a	0.007
Non-wetland Waters	0.063	n/a	n/a	n/a	n/a	0.063
Total USACE Waters of the United States	0.070	n/a	n/a	n/a	n/a	0.070
RWCQB Waters of the State						
Wetlands	0.007	n/a	n/a	n/a	n/a	0.007
Non-wetland Waters	0.063	0.076	0.030	0.023	0.033	0.225
Total RWQCB Waters of the State	**0.070**	**0.076**	**0.030**	**0.023**	**0.033**	**0.232**
Total CDFW Jurisdictional Resources	**0.681**	**0.127**	**0.030**	**0.331**	**0.033**	**1.202**
Total CCC Jurisdictional Resources	**0.681**	**0.127**	**0.030**	**0.331**	**0.033**	**1.202**

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife; CCC: California Coastal Commission

3.2.1 Waters of the United States Determination

Proviso: Due to a recent federal district court decision (August 30, 2021), the current definition of WOTUS (as determined by the 2020 Navigable Waters Protection Rule) has been remanded and vacated. The U.S. Environmental Protection Agency (USEPA) and the USACE are currently in the process of providing guidance on WOTUS. The determination of the extent of WOTUS in the Study Area is subject to the new guidance from the USEPA and the USACE. The discussion below is based on the 2020 Navigable Waters Protection Rule.

Connectivity to a Traditional Navigable Water

The linear extent of Drainage 1 was delineated from the northern edge of the Study Area downstream to a corrugated pipe culvert passing under Morning View Drive. Based on aerial imagery and USGS topographic contours, this drainage continues primarily above ground until it is undergrounded at PCH and discharges onto Zuma Beach to the Pacific Ocean, a TNW. Under the current definition of WOTUS, relatively permanent waters connected to a TNW are considered WOTUS, while ephemeral waters are not considered jurisdictional. Surface water and soil saturation were observed at the upstream end of Drainage 1 during the November 12, 2019 and January 16, 2020, site visits. Given that the initial site visit was not preceded by a rainfall event (the only rainfall noted in the region was 0.01 inch on November 2, 2019; CIMIS 2019), the drainage is considered to exhibit surface flow more than just ephemerally (i.e., for extended periods and not only following a rainfall event). Therefore, Drainage 1 is considered to be a relatively permanent water. As such, it is a WOTUS.

Drainage 2 crosses an undeveloped lot north of the campus athletic fields and discharges into Drainage 1. Surface water or soil saturation were not observed during either survey visit and the drainage was unvegetated and so did not support plant species that rely on consistent water. This drainage appears to carry only ephemeral flow. Given the repeal of the 2015 Clean Water Rule, ephemeral waters are not considered jurisdictional. Therefore, Drainage 2 is not considered to be a WOTUS.

Drainage 3 crosses the undeveloped area east of the main campus and is undergrounded north of the equestrian center. Aerial imagery does not show if it resurfaces, but the USGS topographic map shows it continuing to PCH. It is likely that this drainage eventually discharges in the Pacific Ocean. Surface water or soil saturation were not observed during the survey visit and this drainage does not support plant species that rely on consistent water. This drainage appears to carry only ephemeral flow. Therefore, Drainage 3 is not considered to be a WOTUS.

Drainage 4 begins at a residential property at Merritt Drive on the eastern edge of the Study Area and goes under a culvert at the access road to the equestrian center; it appears to dissipate on the other side of the access road. As such, it does not have a connection to a TNW and would be considered an isolated water. Therefore, Drainage 4 is not considered to be a WOTUS.

The Basin drains into Drainage 1 via a pipe culvert. Artificial, constructed settling basins created in dry land are not considered WOTUS. Given that the Basin was artificially created in uplands and receives ephemeral surface flow only following rainfall events, it is not considered to be a WOTUS.

Limits of Waters of the United States

Drainage 1 was determined to be a WOTUS. An Arid West Ephemeral and Intermittent Streams OHWM Datasheet was completed for a representative area showing evidence of an OHWM to determine extent of WOTUS (see Attachment C). Evidence of an OHWM for Drainage 1 consists of a change in sediment texture, a change in vegetation species (from obligate, facultative wetland, or facultative species within the OHWM to upland species on and above the banks; most noticeable at the upstream end of the drainage), a change in vegetation cover (high density within the OHWM; most noticeable at the upstream end of the drainage), and a break in bank slope (most noticeable at the downstream end of the drainage where the banks are steeper).

Approximately 0.007 acre of WOTUS under the regulatory authority of the USACE occurs in the Study Area (Table 1). This is shown on Exhibit 5 as the areas within the OHWM for Drainage 1.

Wetlands Determination

Paired sampling points (i.e., one placed within the OHWM in a vegetated area and one placed adjacent, but outside the OHWM) were assessed at the upstream end of Drainage 1 where hydrophytic vegetation was most abundant. A formal sampling point was not assessed in downstream portions of Drainage 1, but an exploratory test pit was dug under the willow riparian canopy and no indicators of hydric soils were observed there. Therefore, areas lacking herbaceous hydrophytic vegetation were considered non-wetland WOTUS. One sampling point was assessed adjacent to vegetation in the Basin in order to determine whether it would be considered wetland waters of the State, discussed below. Table 2 provides a summary of data collected at each sampling point.

TABLE 2
SUMMARY OF SAMPLING POINT DATA

Sampling Point	Vegetated	Dominance Test Result[a]	Prevalence Index Result	Hydric Soil Indicators	Wetlands Hydrology Indicators	Wetland?
1A	Yes	Pass	N/A	F6	A1, A3	Yes
1B	No	N/A	N/A	F6	A3	No
2	Yes	Pass	N/A	N/A	B3, B10	No

N/A: not applicable

[a] Greater than 50 percent of dominant species are classified as obligate wetland, facultative wetland, or facultative.

Hydric Soil Indicators
F6 Redox Dark Surface

Wetland Hydrology Indicators
A1 Surface Water
A3 Saturation
B3 Drift Deposits
B10 Drainage Patterns

Vegetation

Sampling points 1A and 3 were vegetated and passed the dominance test. Therefore, they met the hydrophytic vegetation criterion for wetlands. Sampling point 1B was on an upland slope above the OHWM that was unvegetated and did not meet the hydrophytic vegetation criterion for wetlands.

Soils

Sampling points 1A and 1B contained indicators of hydric soil. Therefore, these areas met the hydric soil criterion for wetlands.

Hydrology

Sampling points 1A, 1B, and 3 contained indicators of wetland hydrology. Therefore, these areas met the hydrology criterion for wetlands.

Results

Sampling point 1A in Drainage 1 met all three parameters for wetlands. Similar vegetation (specifically areas containing obligate wetland plant species) and hydrology indicators were observed downstream from this sampling point. Areas with these similar conditions were considered wetland WOTUS. The upstream portion of Drainage 1 was, therefore, mapped as wetland WOTUS while the downstream portion was mapped as non-wetland waters. Therefore, of the 0.070 acre of WOTUS mapped in the Study Area, 0.007 acre would be considered wetlands.

3.2.2 Regional Water Quality Control Board Jurisdiction

All features with USACE jurisdiction, i.e., Drainage 1, are also subject to the jurisdiction of the RWQCB. In addition, the Porter-Cologne Act provides the State with authority to regulate waters of the State that are not under USACE jurisdiction. Areas within the OHWM of Drainages 2, 3, and 4 and the Basin would be subject to the jurisdiction of the RWQCB. Therefore, approximately 0.232 acre of waters of the State under the regulatory authority of the RWQCB occurs in the Study Area (Table 1). Of this 0.232 acre, 0.007 acre would be considered wetland waters of the State in Drainage 1. This is shown on Exhibit 5 as the areas within the OHWM for Drainages 1, 2, 3, 4, and the Basin.

3.2.3 California Department of Fish and Wildlife Jurisdiction

Drainages 1, 2, 3, and 4 and the Basin have defined beds and banks; Drainages 1 and 4 also have a riparian canopy. These features would be under the regulatory authority of the CDFW. Approximately 1.202 acres of waters under the regulatory authority of the CDFW occurs in the Study Area (Table 1). This is shown on Exhibit 6 as all areas within the top of bank/riparian canopy boundaries.

3.2.4 California Coastal Commission Jurisdiction

Because the CCC uses a one parameter approach to identify the limits of jurisdictional wetlands, all features found within the Study Area are subject to CCC jurisdiction based on all of them having either wetland hydrology and/or hydrophytic vegetation. Approximately 1.202 acres of wetlands under the regulatory authority of the CCC occurs in the Study Area. (Table 1). This is shown on Exhibit 6 as all areas within the top of bank/riparian canopy boundaries.

Drainage 1 would be considered an ESHA in the City of Malibu's LCP because it encompasses both wetland and riparian habitat. Drainage 4, which also contains riparian habitat, would also be considered an ESHA. While the Basin contains hydrophytic vegetation, it is artificially created and located adjacent to parking areas and buildings. As such, it would not provide the functions of habitat required to meet the definitions of an ESHA. In addition, to function as designed (i.e., to accept storm water runoff from the campus), it must be periodically cleaned out to retain the capacity to prevent flooding. To create an ESHA boundary around the Basin, and its associated buffer, would prevent such maintenance. Drainages 2 and 3 are ephemeral and flow primarily through upland areas dominated by weedy, non-native vegetation. Given the low habitat value of these areas, Drainages 2 and 3 would not be considered ESHAs. Therefore, 1.012 acres of ESHAs (i.e., the area within top of bank/riparian canopy of Drainages 1 and 4) occur within the Study Area.

4.0 REGULATORY APPROVAL PROCESS

4.1 REGULATORY PERMIT REQUIREMENTS

This section summarizes the various permits, agreements, and certifications that may be required prior to initiation of project activities that involve impacts to jurisdictional waters. The final determination of permitting needs would require an analysis of temporary and permanent impacts.

- USACE Section 404 Permit
- RWQCB Section 401 Water Quality Certification or Report of Waste Discharge
- CDFW Section 1602 Lake or Streambed Alteration Agreement
- CCC Coastal Development Permit

It should be noted that all regulatory permit applications can be processed concurrently. The USACE permit would be issued subject to the receipt of the RWQCB's Section 401 Water Quality Certification.

4.1.1 U.S. Army Corps of Engineers

Prior to construction in WOTUS, a Section 404 permit from the USACE is required. Regulatory authorization in the form of a Nationwide Permit (NWP) or regional permit is provided for certain categories of activities. If the NWP conditions cannot be met, an Individual Permit (IP) will be required.

Issuance of the USACE Section 404 permit would be contingent upon the approval of a Section 401 Water Quality Certification from the Los Angeles RWQCB. The RWQCB requires certification of the project's California Environmental Quality Act (CEQA) documentation before it will approve the Section 401 Water Quality Certification or ROWD. The RWQCB, as a responsible agency, will use the project's CEQA document to satisfy its own CEQA compliance requirements.

4.1.2 Regional Water Quality Control Board

The RWQCB has regulatory jurisdiction over WOTUS equal to the jurisdiction of the USACE under the federal CWA and jurisdiction over isolated waters under the Porter-Cologne Act; in these cases, the RWQCB issues a Water Quality Certification under Section 401 of the federal CWA. Prior to construction, a Section 401 Water Quality Certification would be required from the Los Angeles RWQCB for the discharge of dredge or fill materials into waters of the State. If no federal waters are impacted, then RWQCB authorization would be in the form of a ROWD.

The RWQCB requires the Applicant to address urban storm water runoff during and after construction in the form of Best Management Practices (BMPs). These BMPs are intended to address the treatment of pollutants carried by storm water runoff and are required in all complete applications. The notification/application for a CWA Section 401 Water Quality Certification must also address compliance with the Basin Plan. Please note that the application would also require the payment of an application fee, which would be based on project impacts.

4.1.3 California Department of Fish and Wildlife

Prior to construction, a Notification of Lake or Streambed Alteration (LSA) must be submitted to the CDFW that describes any proposed streambed alteration contemplated by a project. If an LSA Agreement is required, the CDFW may want to conduct an on-site inspection.

In addition to the formal application materials and the fee, a copy of the appropriate environmental document (e.g., Environmental Impact Report) should be included in the submittal, consistent with CEQA requirements. The CDFW will not deem the application to be complete until the application fees have been paid and the agency is provided with a certified CEQA document and a signed copy of the receipt of County Clerk filing fees for the Notice of Determination (NOD).

4.1.4 California Coastal Commission

Development within the coastal zone may not commence until a CDP has been issued by the City of Malibu, which has a CCC-certified LCP. After certification of an LCP, CDP authority is delegated to the appropriate local government, but the CCC retains original permit jurisdiction over certain specified lands (e.g., tidelands and public trust lands). The CCC also has appellate authority over development approved by local governments in specified geographic areas and certain other developments.

According to the City of Malibu's LCP, buffer areas (at least 100 feet in width) shall be provided around wetlands to ensure the biological integrity and preservation of the wetland they are designed to protect.

5.0 RECOMMENDATIONS

Based on the conclusions of this Jurisdictional Delineation Report, the following recommendations are identified if jurisdictional waters will be impacted by a project:

1. An on-site meeting should be scheduled with USACE, CDFW, RWQCB, and CCC staff to discuss site conditions; proposed project activities; biological and jurisdictional resources and impacts to these resources resulting from a proposed project; proposed minimization measures and the mitigation program to offset these impacts; and the regulatory permit process.
2. The appropriate permits, agreements, and certifications, as discussed in Section 4, should be prepared and submitted for projects impacting jurisdictional waters.
3. According to the City of Malibu's LCP, buffer areas shall be provided around wetlands to ensure the biological integrity and preservation of the wetland they are designed to protect. While the LCP ESHA overlay zone specifies a buffer to "ensure continued protection of the habitat areas" and for new development specifically references a 100-foot buffer "from the outer edge of the bank of the subject stream as the area within the top of bank and outer riparian canopy boundaries", it was noted that over 85% of the ESHA's 100-foot buffer had been developed in the years prior to the enactment of the California Coastal Act of 1972.

   During the early stages of the specific planning process, among other project objectives, the District recognized that the ESHA offered opportunities to enhance their educational goals of providing for outdoor learning spaces and interpretive opportunities; as well as providing an opportunity to restore the natural environment and improve campus connectivity through the development of the proposed pedestrian pathways. The District recognized that the existing conditions included incompatible development into the edge of the ESHA bank as well as the degraded nature of the ESHA itself. In discussions with the CCC, the District decided that it could restore the degraded drainage comprised of approximately 0.7 acre as well as 1.35 acres of upland areas within the ESHA's 50-foot buffer and still meet the educational and design goals for the campus. In addition, within the remaining 50 feet beyond the 50-foot ESHA buffer, the project would include land uses compatible with the natural habitat that would not incur significant disruption of the natural habitat, including a looping trail, interpretive stations overlooking the ESHA, and largely native landscaping within the campus itself contributing to the high scenic quality of the area.

6.0 REFERENCES

Atkins (formerly PBS&J). 2011 (July). *Santa Monica-Malibu Unified School District Malibu Middle and High School Campus Improvement Project Environmental Impact Report* (SCH No. 2008091059). Los Angeles, CA: Atkins.

California Irrigation Management Information System (CIMIS). 2019. CIMIS Monthly Report for the Santa Monica – Los Angeles Basin – Station 99. Sacramento, CA: California Department of Water Resources, CIMIS. http://www.cimis.water.ca.gov.

Curtis, K.E. and R.W. Lichvar. 2010 (July). *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. Hanover, NH: USACE, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1). Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

Federal Geographic Data Committee (FGDC). 2013. *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC-STD-004-2013, 2nd Ed.). Washington, D.C.: FGDC and U.S. Fish and Wildlife Service. https://www.fgdc.gov/standards/projects/wetlands/index_html.

Glenn Lukos Associates (GLA). 2009 (December). *Biological Assessment Malibu Middle and High School Campus Improvements Project City of Malibu, Los Angeles County, California*. Lake Forest, CA: GLA.

Lichvar, R.W. and S.M. McColley. 2008 (August). *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual*. Hanover, NH: USACE, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

Los Angeles Regional Water Quality Control Board (Los Angeles RWQCB). 2013. *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*. Monterey Park, CA: Los Angeles RWQCB.

Malibu, City of. 2002 (adopted September 13, as amended). City of Malibu Local Coastal Program Land Use Plan. http://www.qcode.us/codes/malibu-coastal/.

PlaceWorks. 2021 (April). *Malibu Middle and High School Campus Specific Plan*. Los Angeles, CA: PlaceWorks.

U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0). (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2019. State Soil Data Access Hydric Soils List. Washington, D.C.: USDA, NRCS. http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/.

U.S. Fish and Wildlife Service (USFWS). 2019. Wetland Mapper [Information for the Study Area]. Washington D.C.: USFWS, National Wetlands Inventory. http://www.fws.gov/wetlands/Data/Mapper.html.

ATTACHMENT A

SUMMARY OF REGULATORY AUTHORITY

REGULATORY AUTHORITY

This attachment summarizes the regulatory authority of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Wildlife (CDFW), and the California Coastal Commission (CCC) over activities that have potential to impact jurisdictional resources.

U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into waters of the United States (WOTUS) under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This permitting authority applies to all WOTUS where the material (1) replaces any portion of WOTUS with dry land or (2) changes the bottom elevation of any portion of any WOTUS. These fill materials would include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in these waters.

Waters of the United States

WOTUS can be divided into three categories: territorial seas, tidal waters, or non-tidal waters. The term WOTUS is defined by the *Code of Federal Regulations*[1] (CFR) and includes:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide.
2. All interstate waters including interstate wetlands.
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    - Which are or could be used by interstate or foreign travelers for recreational purposes; or
    - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - Which are used or could be used for industrial purpose by industries in interstate commerce.
4. All impoundments of waters otherwise defined as WOTUS under the definition.
5. Tributaries of waters identified [above].
6. The territorial seas.
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified [above].

The U.S. Supreme Court has issued three decisions that provide context and guidance in determining the appropriate scope of WOTUS. In *United States v. Riverside Bayview Homes*,[2] the Court upheld the inclusion of adjacent wetlands in the regulatory definition of WOTUS. In *Solid*

[1] Specifically, Title 33, Navigation and Navigable Waters; Part 328, Definition of waters of the United States; §328.3, Definitions.

[2] *United States v. Riverside Bayview Homes, Inc*., 474 U.S. 121 (1985)

Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC),[3] the Court held that the use of "isolated" non-navigable intrastate ponds by migratory birds was not, by itself, sufficient basis for the exercise of federal regulatory authority under the CWA. In *Rapanos v. United States* (Rapanos),[4] a majority of the U.S. Supreme Court overturned two Sixth Circuit Court of Appeals decisions, finding that certain wetlands constituted WOTUS under the CWA. In his plurality opinion, Justice Scalia argued that WOTUS should not include channels through which water flows intermittently or ephemerally or channels that periodically provide drainage for rainfall. He also stated that a wetland may not be considered "adjacent to" remote WOTUS based on a mere hydrologic connection. Justice Kennedy authored a separate concurring opinion concluding that wetlands are WOTUS if they, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as "navigable". Lacking a majority opinion, regulatory jurisdiction under the CWA exists over a water body if either the plurality's or Justice Kennedy's "significant nexus" standard is satisfied.

In 2015, the USACE and the U.S. Environmental Protection Agency (USEPA) published a final rule (2015 Rule) clarifying the scope of WOTUS protected under the CWA. One of the major changes was to make all tributaries and adjacent waters jurisdictional, by rule.

In December 2018, the USEPA and the Department of the Army (DOA) proposed a new definition of WOTUS that clarifies federal authority under the federal CWA consistent with the February 2017 Presidential Executive Order entitled "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule". On September 12, 2019, the USEPA and DOA signed a final "Step One Rule" to repeal the 2015 Rule and re-codify the regulatory text defining WOTUS that existed prior to the 2015 Rule. The new regulations went into effect on December 23, 2019.[5] With this new final rule, the regulations defining the scope of federal CWA jurisdiction are those portions of the CFR as they existed before the amendments promulgated in the 2015 rule.

The Step One Rule was replaced by the Navigable Waters Protection Rule (Step Two Rule). On January 23, 2020, the USEPA and DOA finalized the Step Two Rule defining WOTUS. This rule was published in the *Federal Register* on April 21, 2020, and went into effect 60 days following publication (i.e., on June 22, 2020). The Step Two Rule changed the definition of WOTUS. Under this new definition, WOTUS encompasses territorial seas and TNWs; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters. Under this new definition, the following notable changes were implemented:

- Rivers and streams that contribute perennial or intermittent flow to downstream TNWs are jurisdictional but ephemeral features are not considered jurisdictional.
- The process of determining whether a "significant nexus" exists between a water and a downstream TNW as directed under the agencies' 2008 *Rapanos* guidance or whether a water has a significant nexus to a TNW, interstate water or territorial sea has been eliminated.
- No ditches constructed in upland and no ditches with ephemeral flow would be considered jurisdictional.
- Wetlands must either abut jurisdictional waters or have a direct hydrological surface connection to jurisdictional waters in a typical year to be jurisdictional themselves;

[3] *Solid Waste Agency of Northern Cook Cty. v. Army Corps of Engineers,* 531 U.S. 159 (2001)

[4] Consolidated cases: *Rapanos v. United States* and *Carabell v. United States* (126 S. Ct. 2208 2006) refer to the U.S. Supreme Court's decision concerning USACE jurisdiction over waters of the United States under the CWA.

[5] 40 CFR 230.3(s).

> wetlands physically separated from jurisdictional waters by a berm, dike, or other barrier are not adjacent if they lack a direct hydrologic surface connection to a jurisdictional water in a typical year.

On June 9, 2021, the USEPA and DOA announced their intent to revise the definition of WOTUS to better protect our nation's vital water resources that support public health, environmental protection, agricultural activity, and economic growth. Until a new rule is in effect, WOTUS will be defined by the Navigable Waters Protection Rule.

Ordinary High Water Mark

The landward limit of tidal WOTUS is the high-tide line. In non-tidal waters where adjacent wetlands are absent, the lateral limits of USACE jurisdiction extend to the ordinary high water mark (OHWM).[6] The OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas".[7] When wetlands are present, the lateral limits of USACE jurisdiction extend beyond the OHWM to the limits of the adjacent wetlands.[8]

Wetlands

A wetland is a subset of jurisdictional waters and is defined by the USACE and the USEPA as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions".[9] Wetlands generally include swamps, marshes, bogs, and areas containing similar features.

The definition and methods for identifying wetland resources can be found in the USACE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*,[10] a supplement to the 1987 *Corps of Engineers Wetlands Delineation Manual*.[11] Both the 1987 Wetlands Manual and the 2008 Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of wetland WOTUS. Pursuant to these manuals, a three-parameter approach is used to identify wetlands and requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. In order to be considered a wetland, an area must figure one or more indicators of all three of these parameters. However, problem areas may periodically or permanently lack certain indicators for reasons such as seasonal or annual variability of rainfall, vegetation, and other factors. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

Section 404 Permit

Except as specified in Section 323.4 of the CFR, impacts to WOTUS require a Section 404 Permit. Permit authorization may be in the form of (1) a "general permit" authorizing a category of activities

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6 U.S. Army Corps of Engineers (USACE). 2005 (December 7). Regulatory Guidance Letter. Ordinary High Water Mark Identification. Washington, D.C.: USACE.

7 *Code of Federal Regulations* (CFR), Title 33, §328.3(e)

8 USACE 2005

9 33 CFR §328.3(b)

10 USACE. 2008a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

11 Environmental Laboratory. 1987. Cor*ps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1)*. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

in a specific geographical region or nationwide or (2) an "individual permit" (IP) following a review of an individual application form (to be obtained from the district office having jurisdiction over the waters in which the activity is proposed to be located).

Regulatory authorization in the form of a Nationwide Permit (NWP) is provided for certain categories of activities such as repair, rehabilitation, or replacement of a structure or fill which was previously authorized; utility line placement; or bank stabilization. The current set of NWPs became effective on March 19, 2017, and will expire in on March 18, 2022. On January 13, 2021, the USACE reissued 12 NWPs and published 4 new NWPs; these 16 NWPs went into effect on March 15, 2021 and will expire on March 14, 2026. The 40 existing NWPs that were not reissued or modified by the January 13, 2021, final rule remain in effect. NWPs authorize only those activities with minimal adverse effects on the aquatic environment and are valid only if the conditions applicable to the permits are met or waivers to these conditions are provided in writing from the USACE. Please note that waivers may require consultation with affected federal and State agencies, which can be a lengthy process with no mandated processing time frames. Certain activities do not require submission of an application form, but may require a separate notification. If the NWP conditions cannot be met, an IP will be required. WOTUS temporarily filled, flooded, excavated, or drained but restored to pre-construction contours and elevations after construction are not included in the measurement of loss of WOTUS. The appropriate permit authorization will be based on the amount of impacts to WOTUS, as determined by the USACE. There is no filing fee for the Section 404 Permit.

Approximately three or four months are typically required to process a routine permit application; large or complex activities may take longer to process. When a permit application is received, it will be assigned an identification number and reviewed for completeness by the District Engineer. If an application is incomplete, additional information will be requested within 15 days of receipt of the application. If an application is complete, the District Engineer will issue a public notice within 15 days unless specifically exempted by provisions of the CFR. Public comments will be accepted no more than 30 days but not less than 15 days from the date of public notice; these will become part of the administrative record of the application. Generally, the District Engineer will decide on the application no later than 60 days after receipt of the completed application. Additional permit situations may increase the permit processing time (e.g., projects involving a Section 401 Water Quality Certification, a coastal zone management consistency analysis, historic properties, a federal agency, and/or Endangered species). The Project Applicant will be given time, not to exceed 30 days, to respond to requests of the District Engineer.

On January 31, 2007, the USACE published a memorandum clarifying the Interim Guidance for Amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) implementing regulations.[12] The Interim Guidance applies to all Department of the Army requests for authorization/verification, including Individual Permits (IPs, i.e., standard permits and letters of permission) and all Regional General Permits (RGPs) and Nationwide Permits (NWPs). The State or Tribal Historic Preservation Officer (SHPO/THPO) has 30 days to respond to a determination that a proposed activity, which otherwise qualifies for an NWP or an RGP, has no effect or no adverse effect on a historic property. If the SHPO/THPO does not respond within 30 days of notification, the Los Angeles District may proceed with verification. If the SHPO/THPO disagrees with the District's determination, the District may work with the SHPO/THPO to resolve the disagreement or request an opinion from the ACHP. The USACE will submit the Draft Jurisdictional Delineation Report to the SHPO/THPO for review prior to initiating the actual regulatory process.

[12] USACE. 2007 (January 31). Memorandum: Interim Guidance for Amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) Implementing Regulations. Washington, D.C.: USACE.

Please note that, if the USACE determines that the drainages/waterbodies are jurisdictional and would be impacted by project implementation, the Applicant will be required to obtain a CWA Section 401 Water Quality Certification from the RWQCB before the USACE will issue the Section 404 Permit. If the USACE determines that the impacted drainage/waterbody is not jurisdictional, the Applicant will be required to obtain RWQCB authorization under the provisions of a Report of Waste Discharge (ROWD).

On June 1, 2020, the USEPA finalized the "Clean Water Act Section 401 Certification Rule". The new regulation requires the USACE to play an active role in the 401 Certification Process. This active role includes reviews and approvals by the USACE prior to the RWQCB issuing a 401 Certification. The new regulations also include reviews and approvals by the USEPA prior to the USACE issuing a Section 404 Permit. The new 401 Certification rule went into effect on September 11, 2020.

Under the new 401 Certification Rule, a 401 Certification Request must be filed with the USACE and the RWQCB concurrently. The USACE has 15 days to review the Certification Request for compliance with the nine required components. The USACE then notifies RWQCB and project proponent that the Certification request is complete. The USACE concurrently notifies the RWQCB of the reasonable time period to act on the Certification Request. That time period is not to exceed 1 year.

Once the RWQCB issues the 401 Certification, the USACE has 5 days to notify the USEPA that the 401 Certification has been issued. The USEPA then has 30 days to notify neighboring jurisdictions of the 401 Certification. Neighboring jurisdictions have 60 days to respond. If there are no objections to the 401 Certification, the USACE issues the 404 permit.

On June 2, 2021, the USEPA published a notice of intention to reconsider and revise the Clean Water Act Section 401 Certification Rule. At this time, they are currently accepting public comment. Until a new rule goes into effect, the current 401 Certification Rule stands.

Jurisdictional Determinations

Pursuant to USACE Regulatory Guidance Letter (RGL) 08-02 (dated June 26, 2008), the USACE can issue two types of jurisdictional determinations to implement Section 404 of the CWA: Approved Jurisdictional Determinations and Preliminary Jurisdictional Determinations.[13] An Approved Jurisdictional Determination is an official USACE determination that jurisdictional WOTUS, Navigable WOTUS, or both are either present or absent on a site. An Approved Jurisdictional Determination also identifies the precise limits of jurisdictional waters on a project site.

The USACE will provide an Approved Jurisdictional Determination when (1) an Applicant requests an official jurisdictional determination; (2) an Applicant contests jurisdiction over a particular water body or wetland; or (3) when the USACE determines that jurisdiction does not exist over a particular water body or wetland. The Approved Jurisdictional Determination then becomes the USACE's official determination that can then be relied upon over a five-year period to request regulatory authorization as part of the permit application.

In addition, an Applicant may decline to request an Approved Jurisdictional Determination and instead obtain a USACE IP or General Permit Authorization based on a Preliminary Jurisdictional Determination or, in certain circumstances (e.g., authorizations by non-reporting nationwide general permits), with no Jurisdictional Determination.

[13] USACE. 2008b (June 26). Regulatory Guidance Letter. Jurisdictional Determinations. Washington, D.C.: USACE.

Preliminary Jurisdictional Determinations are non-binding, advisory in nature, and may not be appealed. They indicate that WOTUS may occur on a project site. An Applicant may elect to use a Preliminary Jurisdictional Determination to voluntarily waive or set aside questions regarding CWA jurisdiction over a site, usually in the interest of expediting the permitting process. The USACE will determine what form of Jurisdictional Determination is appropriate for a particular project site.

The USACE Regulatory Branch Offices will coordinate with the USEPA Regional Office and USACE Headquarters (HQ), as outlined in its January 28, 2008, memorandum entitled "Process for Coordinating Jurisdictional Determinations Conducted Pursuant to Section 404 of the CWA in Light of the Rapanos and SWANCC Supreme Court Decisions".[14] The guidance provided in this memorandum is quoted as follows:

1. Effective immediately, unless and until paragraph 5(b) of the June 5, 2007, Rapanos guidance coordination memorandum is modified by a joint memorandum from Army and USEPA, we will follow these procedures:
    a. For jurisdictional determinations involving significant nexus determinations, USACE districts will send copies of draft jurisdictional delineations via e-mail to appropriate EPA regional offices. The USEPA regional office will have 15 calendar days to decide whether to take the draft jurisdictional delineation as a special case under the January 19, 1989, "Memorandum of Agreement Between the Department of the Army and the USEPA Concerning the Determination of the Section 404 Program and the Application of the Exceptions under Section 404(f) of the Clean Water Act". If the USEPA regional office does not respond to the district within 15 days, the district will finalize the jurisdictional determination.
    b. For jurisdictional determinations involving isolated waters determinations, the agencies will continue to follow the procedure in paragraph 5(b) of June 5, 2007, coordination memorandum, until a new coordination memorandum is signed by USACE and USEPA. (In accordance with paragraph 6 of the June 5, 2007, coordination memorandum, this is a 21-day timeline that can only be changed through a joint memorandum between agencies).
2. Approved JDs are not required for non-reporting NWPs, unless the project proponent specifically requests an approved JD. For proposed activities that may qualify for authorization under a State Programmatic General Permit (SPGP) or RGP, an approved JD is not required unless requested by the project proponent.
3. The USACE will continue to work with USEPA to resolve the JDs involving significant nexus and isolated waters determinations that are currently in the elevation process.
4. USACE districts will continue posting completed Approved JD Forms on their web pages.

Regional Water Quality Control Board

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne

[14] USACE. 2008c (January 28). *Memorandum for Commander, Major Subordinate Commands and District Commands. Process for Coordinating Jurisdictional Determinations Conducted Pursuant to Section 404 of the Clean Water Act in Light of the Rapanos and SWANCC Supreme Court Decisions.* Washington, D.C.: USACE.

Water Quality Control Act (Porter-Cologne Act). The RWQCB's jurisdiction extends to all waters of the State and to all WOTUS, including wetlands (isolated and non-isolated).

Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide certification that there is reasonable assurance that an activity which may result in discharge to navigable waters will not violate water quality standards. Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives that can be found in each of the nine RWQCBs' Basin Plans.

The Porter-Cologne Act provides the State with very broad authority to regulate waters of the State (which are defined as any surface water or groundwater, including saline waters). The Porter-Cologne Act has become an important tool in the post-SWANCC (*Solid Waste Agency of Northern Cook Counties vs. United States Army Corps of Engineers*) and Rapanos era with respect to the State's authority over isolated waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file an ROWD when there is no federal nexus, such as under Section 404(b)(1) of the CWA. Although "waste" is partially defined as any waste substance associated with human habitation, the RWQCB interprets this to include fill discharge into water bodies.

On August 28, 2019, the Office of Administrative Law (OAL) approved the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to "waters of the State". The procedures will go into effect on May 28, 2020. Under these new regulations, the SWRCB and its nine RWQCBs will assert jurisdiction over all existing WOTUS, and all waters that would have been considered WOTUS under the 2015 Rule. Thus, the WOTUS that would no longer be under USACE jurisdiction would be under SWRCB jurisdiction.

Wetlands

In 2019, the SWRCB adopted rules to provide a common, statewide definition of what constitutes a wetland and to provide consistency in the way they and the RWQCBs regulate activities to protect wetlands and other waterways. The SWRCB defines an area as wetlands "if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation".[15] The following wetlands are waters of the State:

1. Natural wetlands,
2. Wetlands created by modification of a surface water of the State, and
3. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b. Specifically identified in a water quality control plan as a wetland or other water of the State;

[15] State Water Resources Control Board (SWRCB). 2019 (March 22). State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State.

c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or

d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (e.g., the following artificial wetlands are not waters of the State unless they also satisfy the criteria set forth in 2, 3a, or 3b):

    i. Industrial or municipal wastewater treatment or disposal,

    ii. Settling of sediment,

    iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,

    iv. Treatment of surface waters,

    v. Agricultural crop irrigation or stock watering,

    vi. Fire suppression,

    vii. Industrial processing or cooling,

    viii. Active surface mining – even if the site is managed for interim wetlands functions and values,

    ix. Log storage,

    x. Treatment, storage, or distribution of recycled water, or

    xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or

    xii. Fields flooded for rice growing.

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the State.

Section 401 Water Quality Certification

Issuance of the USACE Section 404 Permit would be contingent upon the approval of a Section 401 Water Quality Certification from the RWQCB. Also, the RWQCB requires certification of the project's California Environmental Quality Act (CEQA) documentation before it will approve the Section 401 Water Quality Certification or ROWD. The RWQCB, as a responsible agency, will use the project's CEQA document to satisfy its own CEQA-compliance requirements.

On June 1, 2020, the USEPA finalized the "Clean Water Act Section 401 Certification Rule" to implement the water quality certification process consistent with the text and structure of the Clean Water Act (CWA). The final rule establishes procedures that promote consistent implementation of CWA section 401 and regulatory certainty in the federal licensing and permitting process. The new regulation includes reviews and approvals by the USACE prior to the RWQCB issuing a 401 Certification and reviews and approvals by the EPA prior to the USACE issuing a 404. The new 401 rule went into effect on September 11, 2020.

The new certification rule defines a discharge subject to 401 Certification as a discharge from a point source into a water of the United States. The new rule also states that States with additional water quality regulations cannot use these to expand the certification request.

The new rule requires all project proponents to request a pre-filing meeting with the RWQCB at least 30 days prior to filing a 401 "Certification Request". The filing procedure has been simplified to require the filing of a "Certification Request", rather than the acceptance of a "complete application". The certification request has nine mandatory components:

1. identify the project proponent(s) and a point of contact;
2. identify the proposed project;
3. identify the applicable federal license or permit;
4. identify the location and nature of any potential discharge that may result from the proposed project and the location of receiving waters;
5. include a description of any methods and means proposed to monitor the discharge and the equipment or measures planned to treat, control, or manage the discharge;
6. include a list of all other federal, interstate, tribal, state, territorial, or local agency authorizations required for the proposed project, including all approvals or denials already received;
7. include documentation that a pre-filing meeting request was submitted to the certifying authority at least 30 days prior to submitting the certification request;
8. contain the following statement: 'The project proponent hereby certifies that all information contained herein is true, accurate, and complete, to the best of my knowledge and belief; and
9. contain the following statement: 'The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.'

There is a mandatory 30 day wait period between a pre-filing meeting request and the filing of a Certification Request. A Certification Request must be filed with the RWQCB and the USACE concurrently. USACE reviews the Certification Request for the nine required components. The USACE has 15 days to review the Certification Request. The USACE then notifies the RWQCB that request is complete. And concurrently notifies the RWQCB of the reasonable time period to act on the Certification Request. The reasonable time period is not to exceed 1 year. Within 15 days of receipt of the Certification Request, the RWQCB must provide the applicant with the following: 1) date of receipt; 2) applicable reasonable period of time to act on the Certification Request; and 3) date upon which waiver will occur if the certifying authority fails or refuses to act on the Certification Request.

Once the RWQCB issues the 401 Certification, the USACE has 5 days to notify the USEPA that the 401 Certification has been issued. The USEPA then has 30 days to notify neighboring jurisdictions of the 401 Certification. Neighboring jurisdictions have 60 days to respond. If there are no objections to the 401 Certification, then the USACE issues the 404 permit.

On June 2, 2021, the USEPA published a notice of intention to reconsider and revise the Clean Water Act Section 401 Certification Rule. At this time, they are currently accepting public comment. Until a new rule goes into effect, the current 401 Certification Rule stands.

The RWQCB is required under the *California Code of Regulations* (CCR) to have a "minimum 21 day public comment period" before any action can be taken on the Section 401 application.[16] This period closes when the RWQCB acts on the application. Since projects often change or are revised during the Section 401 permit process, the comment period can remain open. The public

[16] 23 CCR §3858(a)

comment period starts as soon as an application has been received. Generally, the RWQCB Section 401, USACE Section 404, and CDFW Section 1602 permit applications are submitted at the same time.

The RWQCB requires the Applicant to address urban storm water runoff during and after construction in the form of Best Management Practices (BMPs). These BMPs are intended to address the treatment of pollutants carried by storm water runoff and are required in all complete applications. The notification/application for a CWA Section 401 Water Quality Certification must also address compliance with the Basin Plan. Please note that filing an application would also require the payment of an application fee which would be based on project impacts. The fee schedule calculator is available at http://www.waterboards.ca.gov/santaana/water_issues/programs/401_certification/index.shtml.

California Department of Fish and Wildlife

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to the *California Fish and Game Code*.[17] Activities of any person, State or local governmental agency, or public utility that are project proponents are regulated by the CDFW under Section 1602 of the *California Fish and Game Code.* This section regulates any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. Section 1602 of the *California Fish and Game Code* applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State.

The CDFW jurisdictional limits are not as clearly defined by regulation as those of the USACE. While they closely resemble the limits described by USACE regulations, they include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric and saturated soils conditions. In general, the CDFW takes jurisdiction from the top of a stream bank or to the outer limits of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place within or in the vicinity of a river, stream, lake or within or in the vicinity of tributaries to a river, stream, or lake. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish and other aquatic plant and/or wildlife species. It also includes watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

Section 1602 Lake or Streambed Alteration Agreement

The CDFW enters into a Lake or Streambed Alteration (LSA) Agreement with a project proponent in order to ensure protection of wildlife and habitat values and acreages.

Prior to construction, a Notification of an LSA must be submitted to the CDFW that describes any proposed lake or streambed alteration that would occur with implementation of a project. The Notification of an LSA must address the initial construction and long-term operation and maintenance of any structures (such as a culvert or a desilting basin) included in the project design that are located within any river, stream, or lake and that may require periodic maintenance. In addition to the formal application materials and the fee, a copy of the appropriate environmental document (e.g., a Mitigated Negative Declaration) should be included in the submittal, consistent with CEQA requirements. The complete notification package must be submitted to the CDFW regional office that services the county where the activity will take place.

[17] See §§1600–1616.

This notification will serve as the basis for the CDFW's issuance of a Section 1602 LSA Agreement. Note that notification is not required before beginning emergency work, but the CDFW must be notified in writing within 14 days after beginning the work.

After receiving Notification of an LSA Agreement, the CDFW will determine whether an LSA Agreement will be required for the proposed activity. An LSA Agreement will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an LSA Agreement is required, the CDFW may want to conduct an on-site inspection.

If the CDFW does not respond in writing concerning the completeness of the Notification within 30 days of its submittal, the Notification automatically becomes complete. If the CDFW does not submit a draft LSA Agreement to the Applicant within 60 days of the determination of a completed Notification package, the CDFW will issue a letter that either (1) identifies the final date to transmit a draft LSA Agreement or (2) indicates that an LSA Agreement was not required. The CDFW will also indicate that it was unable to meet this mandated compliance date and that, by law, the Applicant is authorized to complete the project without an LSA Agreement as long as the Applicant constructs the project as proposed and complies with all avoidance, minimization, and mitigation measures described in the submitted Notification package. Please note that, if the project requires revisions to the design or project construction, the CDFW may require submittal of a new Notification/application with an additional 90-day permit process.

If determined to be necessary, the CDFW will prepare a draft LSA Agreement, which will include standard measures to protect fish and wildlife resources during project construction and during ongoing operation and maintenance of any project element that occurs within a CDFW jurisdictional area. The draft Agreement must be transmitted to the Applicant within 60 calendar days of the CDFW's determination that the notification is complete. It should be noted that the 60-day timeframe might not apply to long-range agreements.

Following receipt of a draft LSA Agreement from the CDFW, the Applicant has 30 calendar days to notify the CDFW concerning the acceptability of the proposed terms, conditions, and measures. If the Applicant agrees with these terms, conditions and measures, the Agreement must be signed and returned to the CDFW. The Agreement becomes final once the CDFW executes it and an LSA Agreement is issued. Please note that all application fees must be paid and the final certified CEQA documentation must be provided prior to the CDFW's execution of the Agreement.

California Coastal Commission

The CCC was established by voter initiative in 1972 (Proposition 20) and made permanent by the Legislature through adoption of the California Coastal Act of 1976. This act was established to protect, maintain, enhance, and restore the overall quality of the coastal zone environment; assure utilization and conservation of coastal zone resources; maximize public access to the coast; assure priority for coastal-dependent and coastal-related development over other development on the coast; and encourage state and local initiatives and corporation for mutually beneficial uses in the coastal zone.[18] It plans and regulates the use of land and water in the coastal zone. The "coastal zone" is mapped by the Legislature and covers a three-mile-wide band of ocean, extending inland generally 1,000 yards from the mean high tide line. In significant coastal estuarine, habitat, and recreational areas, it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less. In developed urban areas, the coastal zone generally extends inland less than 1,000 yards.

The California Coastal Act of 1976 includes specific policies that address issues such as shoreline public access and recreation; lower cost visitor accommodations; terrestrial and marine habitat

[18] Public Resources Code, Division 20, §30001.5

protection; visual resources; landform alteration; agricultural lands; commercial fisheries; industrial uses; water quality; offshore oil and gas development; transportation; development design; power plants; ports; and public works. The policies of the Coastal Act constitute the statutory standards applied to planning and regulatory decisions made by the Coastal Commission and by local governments, pursuant to the Coastal Act.

Section 30106 of the Coastal Act defines development as follows:

> "Development" means, on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, and . . . the removal or harvesting of major vegetation other than for agricultural purposes . . .

Section 30600 of the Coastal Act provides, in relevant part, the following permit requirement for development:

> (a) Except as provided in subdivision (e), and in addition to obtaining any other permit required by law from any local government or from any state, regional, or local agency, any person, as defined in Section 21066, wishing to perform or undertake any development in the coastal zone, other than a facility subject to Section 25500, shall obtain a coastal development permit (CDP).

Implementation of Coastal Act policies is accomplished primarily through the preparation of local coastal programs (LCPs) that are required to be completed by each of the 15 counties and 60 cities located in whole or in part in the coastal zone. Completed LCPs must be submitted to the Coastal Commission for review and approval. An LCP includes a land use plan (LUP) which may be the relevant portion of the local general plan, including any maps necessary to administer it, and the zoning ordinances, zoning district maps, and other legal instruments necessary to implement the land use plan. Coastal Act policies are the standards by which the CCC evaluates the adequacy of LCPs. Amendments to certified LUPs and LCPs only become effective after approval by the CCC. To ensure that coastal resources are effectively protected in light of changing circumstances (such as new information and changing development pressures and impacts), the CCC is required to review each certified LCP at least once every five years.

Development within the coastal zone may not commence until a CDP has been issued by either the CCC or a local government that has a Coastal Commission-certified LCP. After certification of an LCP, CDP authority is delegated to the appropriate local government, but the CCC retains original permit jurisdiction over certain specified lands (such as tidelands and public trust lands). The CCC also has appellate authority over development approved by local governments in specified geographic areas as well as certain other developments.

The CCC defines wetlands under Section 30121 of the Coastal Act as follows:

> "Wetland" means lands within the coastal zone which may be covered periodically or permanently with shallow water and includes salt marshes, freshwater marshes, open and closed brackish water marshes, swamps, mudflats, and fens.

The boundaries of a wetland are based on a "one parameter" definition determined by at least one of the following: hydrology, hydric soils, and hydrophytic vegetation. The size and extent of CCC wetland boundaries may also be determined by aerial photographs, national wetland inventory maps, and soil conservation maps.

The Coastal Commission Administrative Regulations (Section 13577b) of Title 14, Division 5.5, Article 18 provides the following criteria for determining jurisdictional boundaries:[19]

> Streams. Measure 100 feet landward from the top of the bank of any stream mapped by USGS on the 7.5-minute quadrangle series, or identified in a local coastal program. The bank of a stream shall be defined as the watershed and relatively permanent elevation or acclivity at the outer line of the stream channel which separates the bed from the adjacent upland, whether valley or hill, and serves to confine the water within the bed and to preserve the course of the stream. In areas where a stream has no discernable bank, the boundary shall be measured from the line closest to the stream where riparian vegetation is permanently established. For purposes of this section, channelized streams not having significant habitat value should not be considered.
>
> Wetlands. Measure 100 feet landward from the upland limit of the wetland. Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. For purposes of this section, the upland limit of a wetland shall be defined as:
>
> 1. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;
> 2. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or
> 3. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.
>
> For the purposes of this section, the term “wetland” shall not include wetland habitat created by the presence of and associated with agricultural ponds and reservoirs where:
>
> 1. the pond or reservoir was in fact constructed by a farmer or rancher for agricultural purposes; and
> 2. there is no evidence (e.g., aerial photographs, historical survey, etc.) showing that wetland habitat pre-dated the existence of the pond or reservoir. Areas with drained hydric soils that are no longer capable of supporting hydrophytes shall not be considered wetlands.
>
> Estuaries. Measure 300 feet landward from the mean high tide line of the estuary. For purposes of this section, an estuary shall be defined as a coastal water body, usually semi-enclosed by land, having open, partially obstructed, or intermittent exchange with the open ocean, and in which ocean water is at least occasionally diluted by freshwater from the land. The salinity level may be periodically increased to above that of the open ocean due to evaporation. The mean high tide line shall

[19] 14 CCR §13577

be defined as the statistical mean of all the high tides over the cyclical period of 18.6 years and shall be determined by reference to the records and elevations of tidal benchmarks established by the National Ocean Survey. In areas where observations covering a period of 18.6 years are not available, a determination may be made based on observations covering a shorter period, provided they are corrected to a mean value by comparison with observations made at some suitably located control tide station.

Tidelands. Tidelands shall be defined as lands which are located between the lines of mean high tide and mean low tide.

Submerged Lands. Submerged lands shall be defined as lands which lie below the line of mean low tide.

Coastal Development Permit

Since the City of Malibu has a certified LCP, the CCC's coastal permitting authority is transferred to the local government, which applies the requirements of the LCP in reviewing proposed developments. The CCC may act on appeals from certain local government coastal permit decisions.

ATTACHMENT B

REPRESENTATIVE PHOTOGRAPHS

Photo 1: Upstream end of Drainage 1. November 12, 2019.

Photo 2: Middle of Drainage 1. November 12, 2019.

D:\Projects\1SAN\082308\GRAPHICS\JD\AttB-1_RepresentativePhotographs.ai

Representative Photographs

Attachment B-1

Malibu Middle and High School Specific Plan and LCP Amendment Project

PSOMAS

(01/22/2020 RMB) R:\Projects\1SAN\082308\Graphics\JD\AttB_Representative_Photographs.pdf

Photo 3: Downstream end of Drainage 1. November 12, 2019.

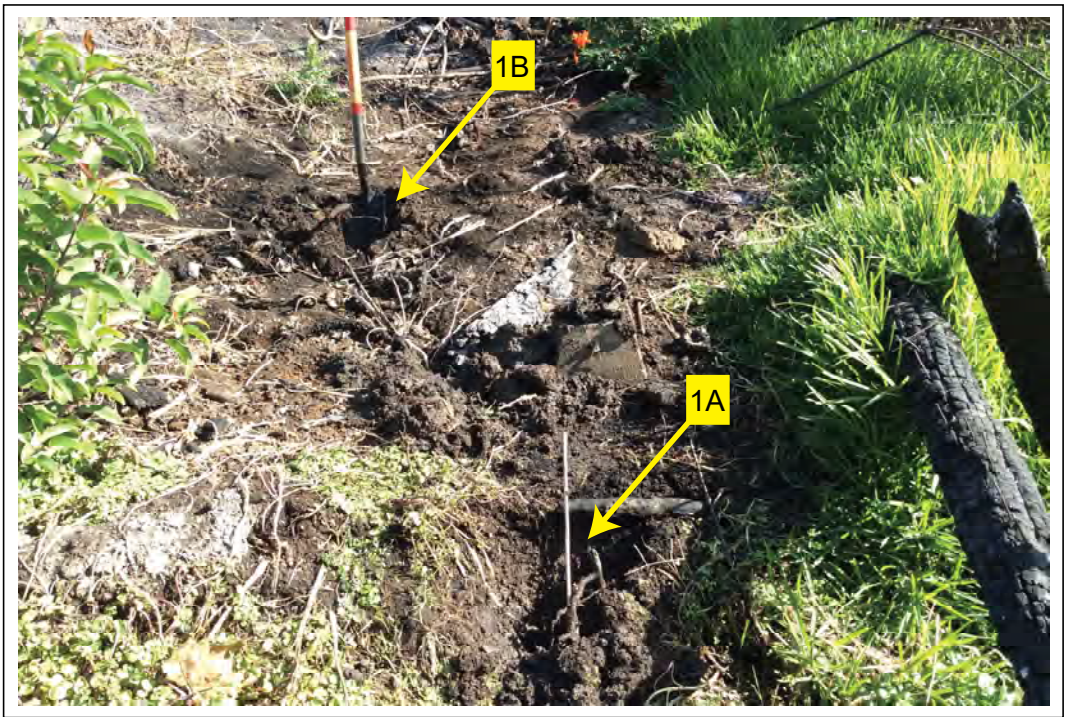

Photo 4: Sampling Points 1A and 1B in Drainage 1. November 12, 2019.

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Representative Photographs

Attachment B-2

Malibu Middle and High School Specific Plan and LCP Amendment Project

PSOMAS

(01/22/2020 RMB) R:\Projects\1SAN\082308\Graphics\JD\AttB_Representative_Photographs.pdf

Photo 7: Upstream end of Drainage 2. November 12, 2019.

Photo 8: Middle of Drainage 2, November 12, 2019.

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Representative Photographs

Attachment B-3

Malibu Middle and High School Specific Plan and LCP Amendment Project

PSOMAS

(01/22/2020 RMB) R:\Projects\1SAN\082308\Graphics\JD\AttB_Representative_Photographs.pdf

Photo 9: Overview of the basin. November 12, 2019.

Photo 10: Sampling Point 2 in the basin. January 16, 2020.

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ATTACHMENT C

DATASHEETS

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Malibu High School Master Plan
Project Number: 1SAN082308
Stream: Drainage 1
Investigator(s): ARudalevige, JAguayo

Date: 11/12/2019 **Time:** 1300
Town: Malibu **State:** CA
Photo begin file#: **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Malibu High School

Projection: **Datum:**
Coordinates:

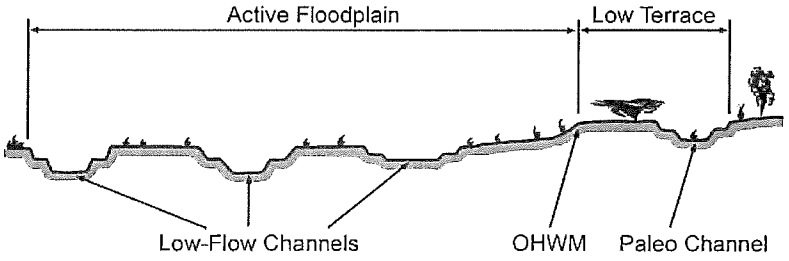
Potential anthropogenic influences on the channel system:
Point-source discharges from adjacent campus

Brief site description:
Drainage travels adjacent to campus, passes through culvert and eventually discharges into Pacific Ocean

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2018
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [X] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

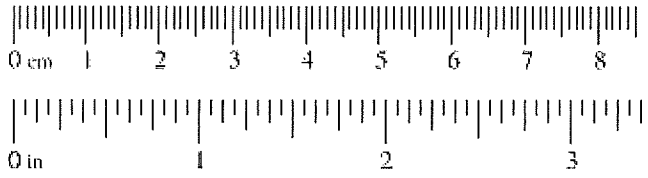


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

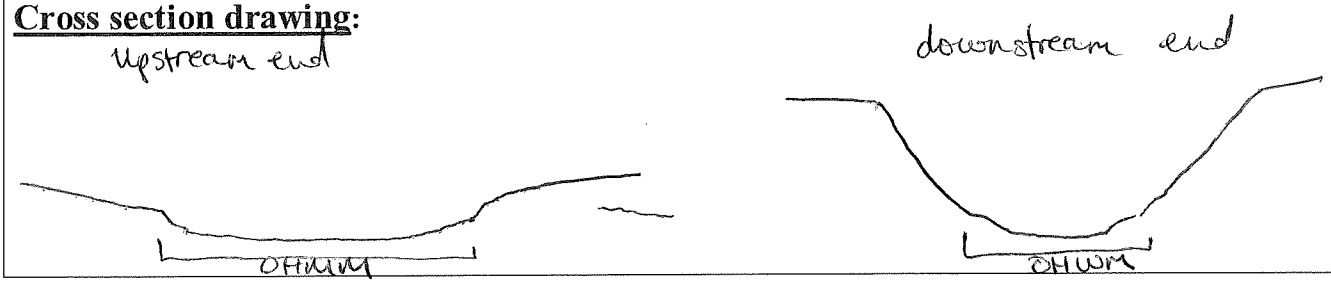
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
		Granule	
0.079	2.00		
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: SAN082308 **Cross section ID:** Drainage 1 **Date:** 11/12/2019 **Time:** 1300

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: clay loam

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage: varies

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings) upstream
- [x] Late (herbaceous, shrubs, mature trees) downstream

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Upstream portion broader w/ dense herbaceous vegetation and soil saturation. Downstream portion more incised w/ sparse herbaceous vegetation and riparian canopy (previously burned).

Project ID: ISAN082308 **Cross section ID:** Drainage1 **Date:** 11/12/2019 **Time:** 1300

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 20 % Tree: 5 % Shrub: 15 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

present in upstream portion.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Not present

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Malibu High School Master Plan
Project Number: ISAN 082308
Stream: Drainage 2
Investigator(s): ARudalevige, JAguayo

Date: 11/12/2019 **Time:** 1230
Town: Malibu **State:** CA
Photo begin file#: **Photo end file#:**

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Malibu High School

Projection: **Datum:**
Coordinates:

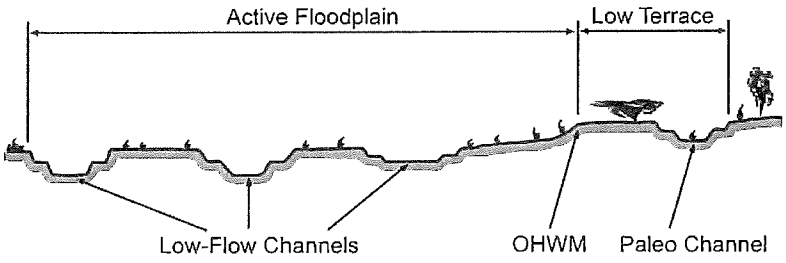
Potential anthropogenic influences on the channel system:
Drainage partially lined. Surrounding field periodically mowed.

Brief site description:
Drainage travels through a ruderal field then adjacent to campus fields and ultimately discharges into Drainage 1.

Checklist of resources (if available):

- ☒ Aerial photography
  Dates: 2018
- ☒ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☒ Existing delineation(s) for site
- ☐ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

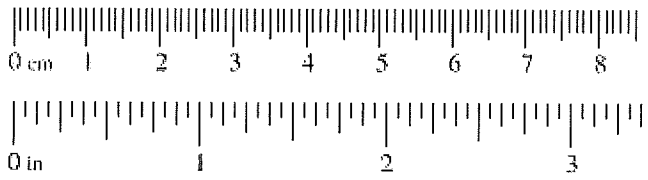


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☒ GPS
   - ☐ Digitized on computer
   - ☐ Other:

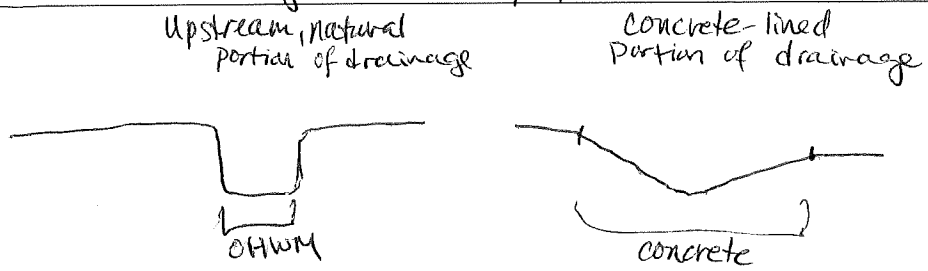
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: ISAN 082308 **Cross section ID:** Drainage 2 **Date:** 11/12/2019 **Time:** 1230

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: loamy clay

Total veg cover: 0 % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Vegetation absent from channel bottom & surrounding upland areas contain ruderal vegetation, turf grass, ornamental vegetation

Project ID: ISAN 082308 **Cross section ID:** Drainage 2 **Date:** 11/12/2019 **Time:** 1230

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No active floodplain present

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments: No low terrace present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 11/12/2019
Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 1A
Investigator(s): ARudalevige, JAguayo Section, Township, Range: 01, T 02S, R 19W
Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): _____
Subregion (LRR): CA Lat: 34.027170 Long: -118.82703 Datum: NAD83
Soil Map Unit Name: Cropley, coastal-Xerorthents, landscaped-Urban land complex NWI classification: PSSA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes Y No _____	**Is the Sampled Area within a Wetland?** Yes Y No _____
Hydric Soil Present?	Yes Y No _____	
Wetland Hydrology Present?	Yes Y No _____	

Remarks:
Paired sampling point; 1A adjacent to low flow channel & 1B upslope ~10 feet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	5	Y	FACW
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1. Malosma laurina	12	Y	UPL
2.			
3.			
4.			
5.			
	12	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Nasturtium officinale	30	Y	OBL
2. Stenotaphrum secundatum	35	Y	FAC
3. Malva parviflora	1	N	UPL
4.			
5.			
6.			
7.			
8.			
	66	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 34 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
Y Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes Y No _____

Remarks: Vegetation resprouting post fire. Dead standing snags not counted in vegetation assessment

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	95	2.5YR 4/8	5	C	M, PL	clay loam	prominent mottles
4-16	10YR 2/2	100	-	-	-	-	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1"

Water Table Present? Yes X No ___ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 4"

Wetland Hydrology Present? Yes Y No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 11/12/19

Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 1B

Investigator(s): ARudalevige, JAguayo Section, Township, Range: 01, T02S, R19W

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): CA Lat: 34.027174 Long: -118.82700 Datum: NAD83

Soil Map Unit Name: Cropley, coastal-Xerorthents, landscaped-Urban land complex NWI classification: PSSA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: Paired sampling point; 1A adjacent to low flow channel and 1B upslope ~10feet

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Sampling pit dug in unvegetated area on slope.

SOIL

Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	80	2.5YR 4/8	20	C	M	clay loam	prominent mottles
4-20	7.5YR 2.5/1	100					clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- Y Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes Y No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- Y Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No Y Depth (inches): ___

Water Table Present? Yes Y No ___ Depth (inches): 20"

Saturation Present? (includes capillary fringe) Yes Y No ___ Depth (inches): 12"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 1/16/2020

Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 2A

Investigator(s): ARudalevige, IMendez Section, Township, Range: 01, T02S, R19W

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): CA Lat: 34.027380 Long: -118.82687 Datum: NAD83

Soil Map Unit Name: Cropley, coastal Urban land-Haploxererts complex NWI classification: PSSA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Paired sampling point; 2A is adjacent to low flow channel and 2B upslope ~10 feet

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	5	Y	FACW
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Nasturtium officinale	60	Y	OBL
2. Pel mirthotheca echioides	30	Y	FAC
3. Stenotaphrum secunda	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- Y Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes Y No ___

Remarks:

Faint hydrogen sulfide odor

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Y Surface Water (A1)
- Y High Water Table (A2)
- Y Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- Y Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes Y No ___ Depth (inches): 1"

Water Table Present? Yes Y No ___ Depth (inches): 0"

Saturation Present? (includes capillary fringe) Yes Y No ___ Depth (inches): 2"

Wetland Hydrology Present? Yes Y No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 1/16/2020

Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 2B

Investigator(s): ARudalevige, IMendez Section, Township, Range: 01, T02S, R19W

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): CA Lat: 34.027402 Long: -118.82689 Datum: NAD83

Soil Map Unit Name: Cropley, Coastal-Urban land-Haploverents complex NWI classification: PSSA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks: Paired sampling point; 2A is adjacent to low flow channel and 2B is upslope ~10 feet

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks: Sampling pit dug in unvegetated area on slope.

SOIL

Sampling Point: 2B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	99	5YR 5/8	<1%	C	M	clay	prominent mottles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 1/16/2020
Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 3
Investigator(s): ARudalevige, IMendez Section, Township, Range: 01, T02S, R19W
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): N/A
Subregion (LRR): CA Lat: 34.026220 Long: -118.82754 Datum: NAD83
Soil Map Unit Name: Cropley, coastal-Xerothents, landscaped-Urban land complex NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes Y No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Artificial basin created in uplands.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1. Nicotiana glauca	5	Y	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Typha	50	Y	OBL
2. Solanum douglasii	5	N	FAC
3. Hirschfeldia incana	2	N	UPL
4. Muhlenbergia rigens	2	N	FAC
5. Ricinus communis	1	N	FACU
6.			
7.			
8.			
	60	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 40 % % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
Y Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes Y No _____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/1	60					loam	
0-4	10YR 3/2	40					loamy clay	
4-10	7.5YR 2.5/1	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: concrete

Depth (inches): 10

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT D

LITERATURE REVIEW DETAILS

This attachment provides detailed results of the literature review.

SOIL SERIES

The below text is the detailed soil information obtained from the Map Unit Description found in the legend of the USDA NRCS website.[21]

433—Cropley, coastal – Urban land – Haploxererts Complex, 0 to 30 percent slopes

Map Unit Setting

- *National map unit symbol:* nmm5
- *Elevation:* 50 to 700 feet
- *Mean annual precipitation:* 14 to 24 inches
- *Mean annual air temperature:* 60 to 64 degrees Fahrenheit (°F)
- *Frost-free period:* 290 to 350 days
- *Farmland classification:* Farmland of statewide importance

Map Unit Composition

- *Cropley, coastal, and similar soils:* 40 percent
- *Urban land:* 25 percent
- *Haploxererts and similar soils:* 20 percent
- *Minor components:* 15 percent

Description of Cropley, Coastal

Setting

- *Landform:* Alluvial fans
- *Landform position (two-dimensional):* Backslope
- *Landform position (three-dimensional):* Tread
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Parent material:* Alluvium derived from shale

Typical profile

- *A - 0 to 2 inches:* clay
- *Bss - 2 to 22 inches:* clay
- *Bk - 22 to 60 inches:* silty clay loam

Properties and qualities

- *Slope:* 2 to 9 percent
- *Depth to restrictive feature:* More than 80 inches
- *Natural drainage class:* Well drained
- *Runoff class:* High
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
- *Depth to water table:* More than 80 inches

[21] U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2019. Web Soil Survey. Records for the Study Area, as Area of Interest. Further information about Soil Map Units. Lincoln, NE: USDA NRCS https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 10 percent
- *Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- *Available water storage in profile:* High (about 10.1 inches)

Interpretive groups

- *Land capability classification (irrigated):* 2e
- *Land capability classification (nonirrigated):* 3e
- *Hydrologic Soil Group:* C
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

Description of Urban Land

Setting

- *Down-slope shape:* Linear
- *Across-slope shape:* Convex

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 8
- *Hydric soil rating:* No

Description of Haploxererts

Setting

- *Landform:* Hills
- *Landform position (two-dimensional):* Backslope
- *Landform position (three-dimensional):* Side slope
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Parent material:* Colluvium and/or residuum derived from sandstone and shale

Typical profile

- *A - 0 to 30 inches:* clay
- *Bss - 30 to 50 inches:* clay
- *Cr - 50 to 60 inches:* weathered bedrock

Properties and qualities

- *Slope:* 9 to 30 percent
- *Depth to restrictive feature:* 40 to 60 inches to paralithic bedrock
- *Natural drainage class:* Well drained
- *Runoff class:* Very high
- *Capacity of the most limiting layer to transmit water (Ksat):* Very low to low (0.00 to 0.01 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 5 percent

- *Available water storage in profile:* Moderate (about 7.5 inches)

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 7e
- *Hydrologic Soil Group:* C
- *Hydric soil rating:* No

Minor Components

Gazos, coastal

- *Percent of map unit:* 10 percent
- *Landform:* Hills
- *Landform position (two-dimensional):* Backslope
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Ecological site:* Coastal Bluff 14-16" p.z. (R020XD053CA)
- *Hydric soil rating:* No

Danville, coastal

- *Percent of map unit:* 5 percent
- *Landform:* Fluvial terraces, alluvial fans
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

434—Cropley, coastal – Xerorthents, landscaped – Urban Land Complex, 0 to 9 percent slopes

Map Unit Setting

- *National map unit symbol:* nmm6
- *Elevation:* 50 to 700 feet
- *Mean annual precipitation:* 14 to 18 inches
- *Mean annual air temperature:* 60 to 64 degrees F
- *Frost-free period:* 290 to 350 days
- *Farmland classification:* Not prime farmland

Map Unit Composition

- *Cropley, coastal, and similar soils:* 35 percent
- *Xerorthents, landscaped, and similar soils:* 35 percent
- *Urban land:* 25 percent
- *Minor components:* 5 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Cropley, Coastal

Setting

- *Landform:* Alluvial fans
- *Landform position (two-dimensional):* Backslope
- *Landform position (three-dimensional):* Tread

- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Parent material:* Alluvium derived from shale

Typical profile

- *A - 0 to 2 inches:* clay
- *Bss - 2 to 22 inches:* clay
- *Bk - 22 to 60 inches:* silty clay loam

Properties and qualities

- *Slope:* 2 to 9 percent
- *Depth to restrictive feature:* More than 80 inches
- *Natural drainage class:* Well drained
- *Runoff class:* High
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 10 percent
- *Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- *Available water storage in profile:* High (about 10.1 inches)

Interpretive groups

- *Land capability classification (irrigated):* 2e
- *Land capability classification (nonirrigated):* 3e
- *Hydrologic Soil Group:* C
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

Description of Xerorthents, Landscaped

Setting

- *Down-slope shape:* Linear
- *Across-slope shape:* Linear
- *Parent material:* Colluvium and residuum derived from sedimentary rock and other mixed sources

Typical profile

- *A - 0 to 4 inches:* loam
- *C - 4 to 52 inches:* loam
- *Cr - 52 to 62 inches:* weathered bedrock

Properties and qualities

- *Slope:* 0 to 2 percent
- *Depth to restrictive feature:* 10 to 60 inches to paralithic bedrock
- *Natural drainage class:* Well drained
- *Runoff class:* Low
- *Capacity of the most limiting layer to transmit water (Ksat):* Very low to low (0.00 to 0.01 in/hr)
- *Depth to water table:* More than 80 inches

- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 3 percent
- *Available water storage in profile:* Moderate (about 8.3 inches)

Interpretive groups

- *Land capability classification (irrigated):* 2e
- *Land capability classification (nonirrigated):* 2e
- *Hydrologic Soil Group:* C
- *Hydric soil rating:* No

Description of Urban Land

Setting

- *Down-slope shape:* Linear
- *Across-slope shape:* Convex

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 8
- *Hydric soil rating:* No

Minor Components

Cropley, coastal

- *Percent of map unit:* 2 percent
- *Landform:* Fans
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

Gazos, coastal

- *Percent of map unit:* 2 percent
- *Landform:* Hills
- *Landform position (two-dimensional):* Backslope
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Ecological site:* Coastal Bluff 14-16" p.z. (R020XD053CA)
- *Hydric soil rating:* No

Badland, cliffs

- *Percent of map unit:* 1 percent
- *Landform:* Cliffs
- *Hydric soil rating:* No

NATIONAL WETLANDS INVENTORY

One wetland resource was mapped by the National Wetlands Inventory in the Study Area (see Exhibit 4). The description for mapped resource is provided below.

- **R: System RIVERINE.** The Riverine System includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts of 0.5 ppt or greater. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.
    - **4: Subsystem INTERMITTENT.** This Subsystem includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.
        - **SB: Class STREAMBED.** Includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide.
            - **A: Water Regime TEMPORARY FLOODED.** Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for the most of the season.
- **P: System PALUSTRINE.** The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 part per trillion (ppt). It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 hectares (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of the basin less than 2.5 meters (8.2 feet) at low water; and (4) salinity due to ocean-derived salts less than 0.5 ppt.
    - **SS: Class SCRUB-SHRUB.** Includes areas dominated by woody vegetation less than 6 meters (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.
        - **A: Water Regime TEMPORARY FLOODED.** Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for the most of the season.
        - **C: Water Regime SEASONALLY FLOODED.** Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.
            - **h: Special Modifier DIKED/IMPOUNDED.** These wetlands have been created or modified by a man-made barrier or dam that obstructs the inflow or outflow of water.

BASIN PLAN BENEFICIAL USES

Beneficial uses are defined in the Porter-Cologne Act as those uses of water that are necessary for tangible and intangible economic, social, and environmental benefits. The *Water Quality Control Plan: Los Angeles Region (4)* (Basin Plan) identifies a number of potential and existing beneficial uses for miscellaneous streams and coastal features on Figure 2-10 of the Basin Plan (Los Angeles RWQCB 2013): Municipal and Domestic Water Supply (MUN) waters; Warm Fresh Water Habitat (WARM) waters; Cold Freshwater Habitat (COLD) waters; Wildlife Habitat (WILD) waters; Rare, Threatened or Endangered Species (RARE) waters; Spawning, Reproduction and Development (SPWN) waters; Migration Habitat (MIGR) waters; Water Contact Recreation (REC-1) waters; and Non-contact Water Recreation (REC-2) waters.

- MUN waters support community, military, or individual water supply systems including, but not limited to, drinking water supply.
- WARM waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife (including invertebrates).
- COLD waters support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation fish, or wildlife (including invertebrates).
- WILD waters support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- RARE waters support the habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or federal law as Rare, Threatened, or Endangered.
- SPWN waters support high quality aquatic habitats suitable for reproduction and early development of fish.
- MIGR waters support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.
- REC-1 waters are used for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs..
- REC-2 waters are used for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting sightseeing, or aesthetic enjoyment in conjunction with the above activities.

APPENDIX D

TREE REPORT

May 18, 2021

Noemi Avila-Zamudio
Consultant | Deputy Bond Program Manager
Santa Monica—Malibu Unified School District
2828 Fourth Street
Santa Monica, California 90405

VIA EMAIL
navila-zamudio@smmusd.org

Subject: Revised Tree Evaluation Report for the Malibu Middle and High School Specific Plan and Local Coastal Plan Amendment Project, Malibu, California

Dear Ms. Avila-Zamudio:

Psomas is pleased to provide the following revised tree evaluation for the Malibu Middle and High School Specific Plan and Local Coastal Plan (LCP) Amendment Project (proposed project). This evaluation incorporates an expanded area specified by the Santa Monica-Malibu Unified School District (District) as the Specific Plan area. Psomas Certified Arborist Trevor Bristle (International Society of Arboriculture Certificate No. WE-10233A) performed an evaluation on February 1st, 2nd, and April 19th, 2021 to document the type, quantity, and condition of trees present within the Specific Plan area. Each tree was assigned a numeric identifier and the trunk, branches, and foliage were carefully examined. During the evaluation, the following data were recorded: tree species, number of trunks, trunk diameter at breast height (dbh), tree height, and canopy diameter. Each tree was also given a qualitative assessment rating on health and aesthetic.

PROJECT LOCATION

The proposed project is located at 30215 and 30237 Morning View Drive in the City of Malibu, Los Angeles County and also includes an equestrian area at 6225 Merritt Drive to the east (**Exhibit 1,** Project Location). The site is located approximately 0.25 miles northeast of Pacific Coast Highway and lies between Harvester Road to the north, Merritt Drive to the east, Via Cabrillo Street to the west, and Morning View Drive to the south (**Exhibit 1**). The Specific Plan area is owned by the District and comprises the former Juan Cabrillo Elementary School on the western portion of the property, the Malibu Middle and High School facilities in the south central portion of the property, with athletic fields to the north, and an equestrian center on the east. The site is set among rolling hills and its facilities are terraced into a hillside setting.

PROJECT DESCRIPTION

The District is lead agency under the California Environmental Quality Act (CEQA) for the proposed project which consists of the redevelopment of the former Juan Cabrillo Elementary School and Malibu Middle and High School sites to create a middle school and high school campus that will provide separate education spaces for middle and high school students with shared facilities. With implementation of the proposed project, the District seeks to improve vehicle and pedestrian circulation, and secure campus access while respecting the natural

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environment of West Malibu. The proposed project would reorganize the campus into three defined areas: Middle School core, High School core, and shared amenities. The proposed project would not result in an increase in student enrollment or capacity and would require demolishing 18 existing buildings, leaving only the existing athletic fields, Malibu Equestrian Park, and the three recently completed buildings (Buildings A, B, and E) remaining.

REGULATORY FRAMEWORK

Trees within the Specific Plan area are regulated by the City of Malibu (City) Native Tree Protection Ordinance (Chapter 5 of the City of Malibu LCP Local Implementation Plan). The LCP defines trees as plants reaching 15 feet tall with at least one well-defined stem or trunk. Native protected trees are specified as oak (*Quercus* sp.), California walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), alder (*Alnus rhombifolia*), or toyon (*Heteromeles arbutifolia*) with at least one trunk measuring 6 inches or more in diameter at breast height (dbh), or a combination of any two trunks measuring a total of 8 inches dbh or more.

Additional trees not protected by the City were recorded at the request of the District. All trees with one trunk measuring 3 inches dbh or more, or a combination of any two trunks measuring 1.5 inches dbh or more in diameter were documented.

DISCUSSION

The trees within the Specific Plan area are generally in good health with no conspicuous signs of decay (e.g., trunk cavities, bleeding sap, broken limbs, or fungi) (**Exhibit 2** Tree Locations). Trees have been maintained and pruned in a manner consistent with a landscaped campus environment. Some trees near the equestrian area appear to have either been partially burned or affected by heat from the 2018 Woolsey Fire. Evaluation of these trees was based on a visual assessment from the ground.

Trees protected pursuant to City ordinance on the site include eight western sycamores, one Southern California black walnut, and one coast live oak. Their locations are provided on **Exhibit 2** as LCP Protected individuals. Generally, these trees are located on slopes or in drainages over 30 feet from existing structures. The walnut is located next to a residence on the southeast corner of the site.

Other tree species onsite that are not protected pursuant to City ordinance are located mainly within landscaped areas between school structures, within drainage areas, and on slopes near parking lots and athletic fields. Of particular note is a dragon tree (*Dracaena draco*) and Monterey cypress (*Hesperocyparis macrocarpa*) located within the current Cabrillo Elementary School grounds. These are mature specimens with good health and very few defects. As these specimens have taken considerable time to reach their current size, consideration should be given for their protection and/or relocation during construction.

Many of the trees on the proposed project site are planted near pavement, structures, or within basins that likely provide limited root development. Minor damage and disturbance to the subject structures are expected to occur as the roots continue to grow; while the trees themselves will be subject to stress in the form of reflected heat from nearby structures and pavement. Snags located throughout the site are depicted on **Exhibit 2**; these are dead trees that have a potential to fail unexpectedly. Removal of snags located near structures and/or in areas where students would be present should be considered a priority.

RECOMMENDATIONS

Psomas recommends implementing the following measures for tree protection during construction of the proposed project. These measures are specified in Chapter 5.4 E Project Construction Measures of the Local Implementation Plan (City of Malibu, 2002):

1. Protective fencing shall be used around the outermost limits of the tree protected zones (TPZ) of trees to be preserved within or adjacent to the construction area that may be disturbed during construction or grading activities. Before the commencement of any clearing, grading, or other construction activities, protective fencing shall be placed around each applicable tree. Fencing shall be maintained in place for the duration of all construction. No construction, grading, staging, or materials storage shall be allowed within the fenced exclusion areas, or within the protected zones of any on site native trees. Post the fence with a minimum 8.5" x 11" laminated sign stating: "Tree Protection Zone – This Fence Shall Not Be Removed".
2. Any approved development, including grading or excavation, that encroaches into the protected zone of a native tree shall be constructed using only hand-held tools.
3. Unless otherwise stated, mulch the entire area of the TPZ in an effort to improve the growing environment for the roots. During the construction phase maintain a four to six-inch layer of chip mulch over the soil surface to reduce compaction, improve aeration, enhance moisture retention, and reduce temperature extremes. Mulch generally consists of shredded leaves or bark, pine straw, peat moss, untreated and unpainted wood chips, or composted green waste. Mulch shall be removed by the contractor after project completion.
4. During trenching, utility access can be accomplished by careful incremental machine excavation supplemented by hand digging when necessary to preserve significant roots. If necessary, strong water/air pressure can be used to "tunnel" beneath the roots. Several utilities can sometimes use the same pathways to eliminate needless soil disruption. Exact placement of utilities must be marked and coordinated with individual contractors to determine the best routes.

   Should trenching be required within the TPZ, all trenches shall be hand-dug or non-impacting methods shall be used (i.e., air spade, soil boring). No roots larger than two inches (2") in diameter shall be cut unless no alternative is feasible. If roots exceeding two inches in diameter are required to be cut, the contractor shall call the Districts' Consulting Arborist before proceeding.

   Roots small than two inches in diameter that require pruning shall be cut cleanly and flush with the side of the trench at a 90-degree angle to expose the least amount of surface area possible. If at any time twenty-five percent (25%) of the area within the TPZ is being separated from the tree by a trench, then the line shall be either relocated or installed by boring.
5. Removal of hardscape and/or excavation within the TPZ shall be coordinated with the District's Consulting Arborist. Equipment may be used to break up hardscape, but once it is removed only foot traffic is permitted under the TPZ. This process is typically accomplished by placing the equipment on the hardscape and backing up as the hardscape is removed.
6. The minimum distance between an open trench and any tree shall be between six inches (6") to one foot (1') for every inch of trunk diameter, measured at four and one-half feet (4.5') above existing grade, depending on the species of tree. The minimum clearance clearance shall be ten feet (10') from the trunk of the tree.
7. In the event root pruning is required to accommodate grade changes or the installation of hardscape feature, the root pruning procedures shall be directed by the District's Consulting Arborist.

8. At no time shall any equipment, materials, supplies, or fill soil be allowed in the TPZ unless necessary and approved by the District's Consulting Arborist.
9. Prune and fertilize the trees after the completion of all exterior work on the building and at the beginning of the landscape phase as directed by the District's Consulting Arborist. Any tree(s) with impacts to their TPZ's shall be evaluated on a case-by-case basis by the District's Consulting Arborist prior to this activity.
10. The applicants shall retain the services of a qualified independent biological consultant or arborist, approved by the Planning Director to monitor native trees that are within or adjacent to the construction area. Public agencies may utilize their own staff who have the appropriate classification. If any breach in the protective fencing occurs, all work shall be suspended until the fence is repaired or replaced.
11. The permit shall include these requirements as conditions of approval.

The following measures are recommended for tree establishment and maintenance at the proposed project site:

1. The largest possible planting basin that the site can accommodate should be provided for new trees. Larger planting basins are correlated with longer-lived trees, greater tree stability, and less sidewalk damage.
2. Once the new planting basins are constructed, soil samples should be collected from all planting locations and sent to a qualified soil laboratory for analysis. From each sampling location, one sample should be collected that represents the top 12 inches of the soil, along with a second sample that represents the soil from 12 to 24 inches deep. Any recommended soil amendments or treatments from the laboratory report should be implemented.
3. Newly planted trees should be allowed to develop as long as possible without pruning any of the branches (at least two years). Young trees need the energy provided by the leaves to help establish a healthy root system for successful establishment.
4. Once planted, a one- to two-inch layer of mulch should be placed within the planting basin of each new tree. Mulch should not be allowed to be placed in contact with the trunk of the tree as this can lead to rot.

Psomas appreciates the opportunity to assist with this tree evaluation. If you have any questions, please contact Irena Mendez, PhD at 310.488.5645 or Irena.Mendez@Psomas.com.

Sincerely,

PSOMAS

Ann M. Johnston
Vice President/Principal

Irena Mendez, PhD
Senior Biologist

Enclosures: Exhibits 1 and 2
Attachment A – Tree Data Summary

REFERENCES

City of Malibu. 2002 (September). *Local Coastal Program Local Implementation Plan* (Chapter 5: Native Tree Protection Guidance). Malibu, CA.

EXHIBIT 1

PROJECT LOCATION

D:\Projects\1SAN\082310\MXD\Tree\ex_Project_Location_20210511.mxd

Project Location

Exhibit 1

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

850 425 0 850

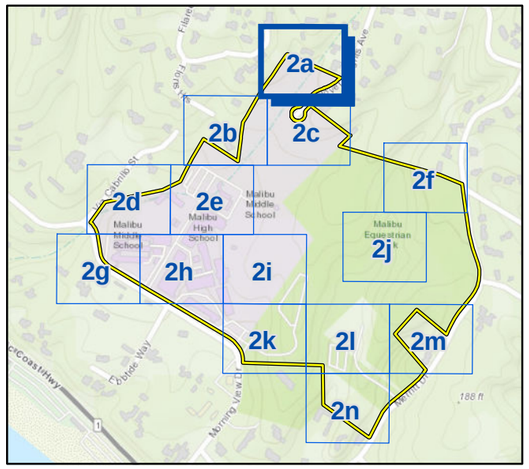
Feet

PSOMAS

(Rev: 5-12-2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_ProjectLocation.pdf

EXHIBIT 2

TREE LOCATIONS



Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

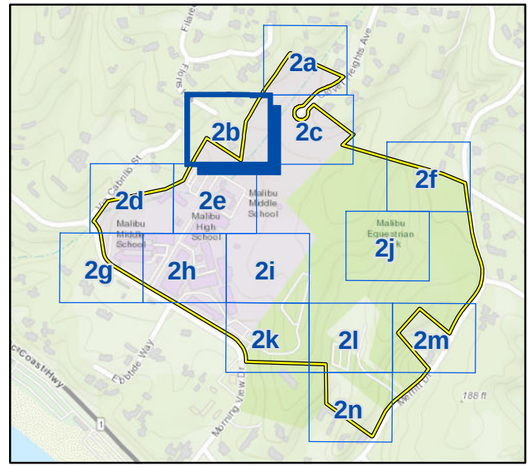
Tree Locations — Exhibit 2a

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

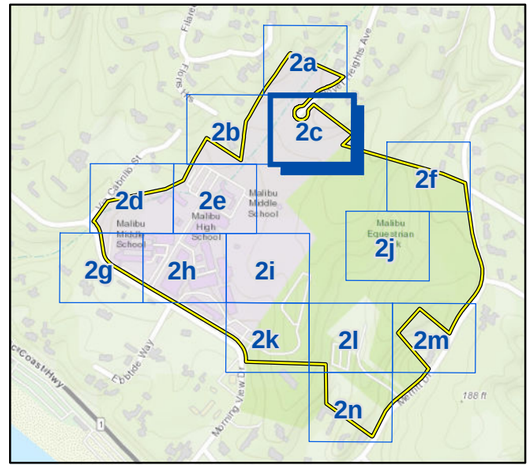
Tree Locations — Exhibit 2b

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2c

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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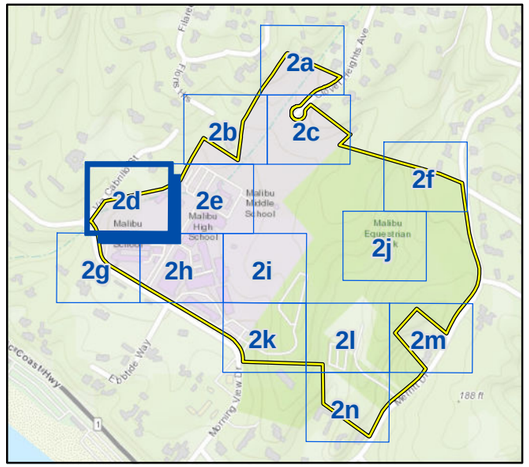

Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2d

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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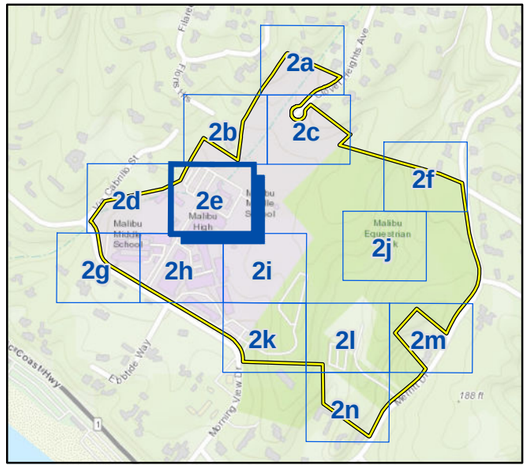

Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2e

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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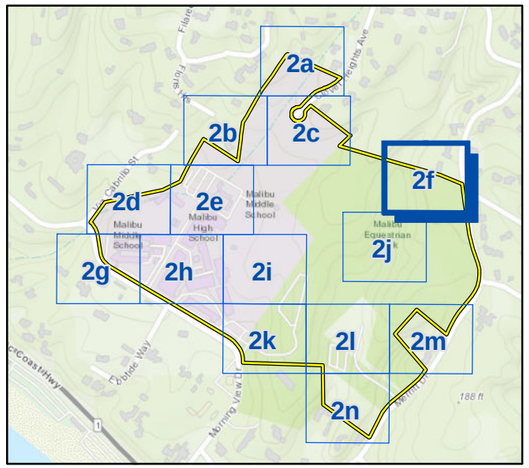

Project Boundary

Tree Types

- Tree
- LCP Protected Trees

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2f

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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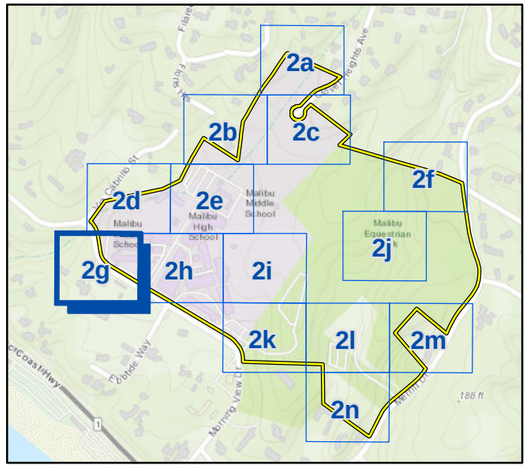

Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2g

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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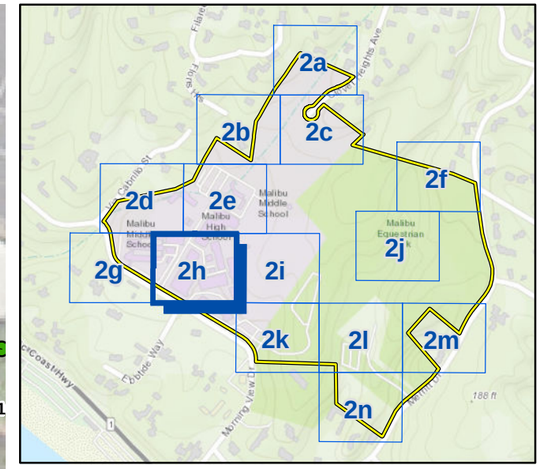


Project Boundary

Tree Types

- Tree
- LCP Protected Trees

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

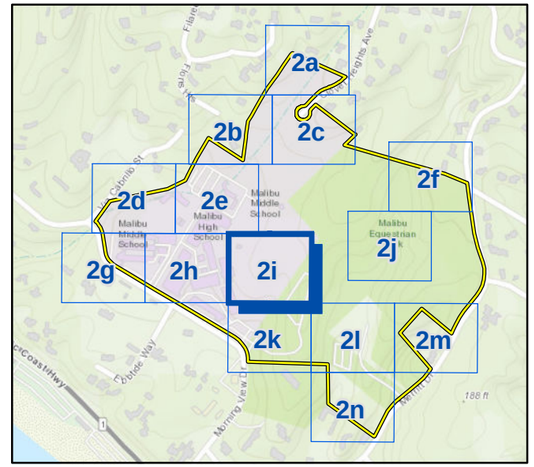
Tree Locations — Exhibit 2h

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310MXD\Treelex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations

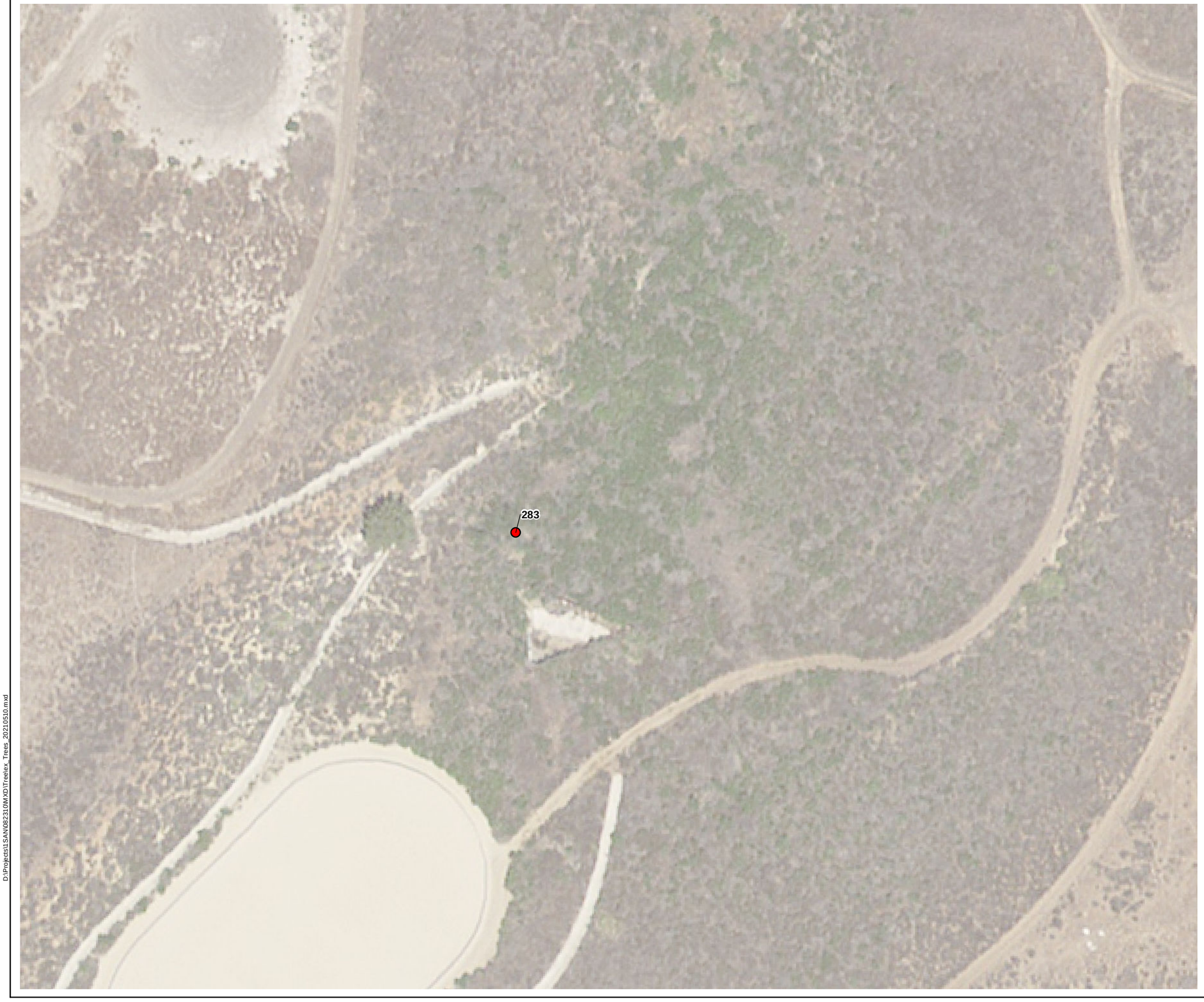
Exhibit 2i

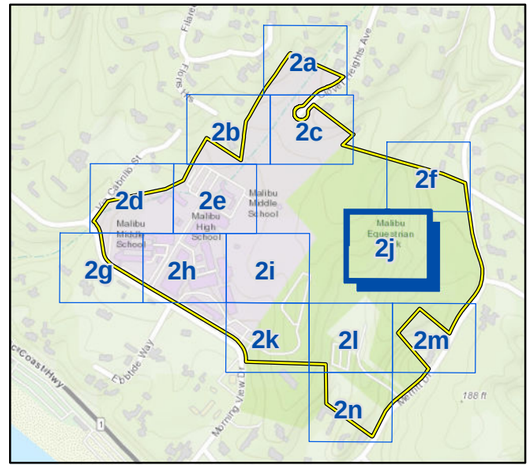
Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd





Project Boundary

Snag

N

W E

S

50 25 0 50

Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations

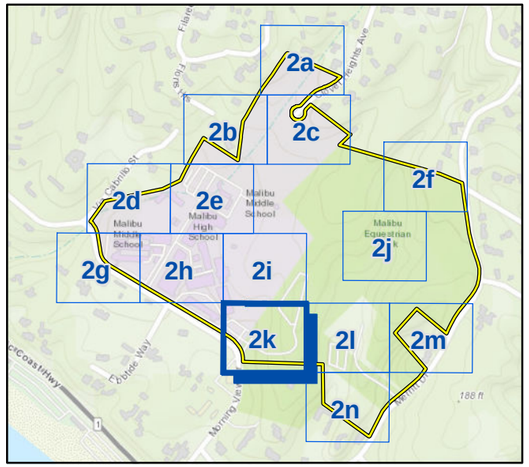
Exhibit 2j

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- Snag
- Indian laurel fig

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

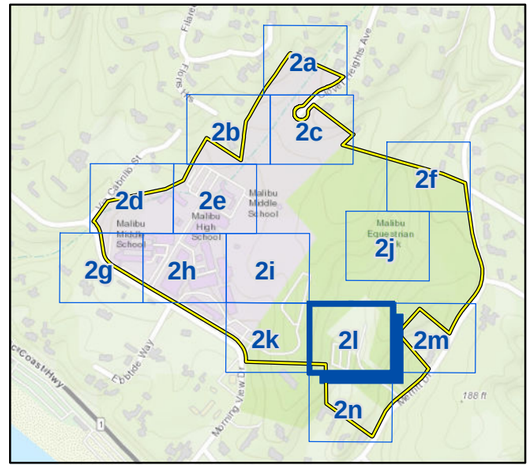
Tree Locations — Exhibit 2k

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations

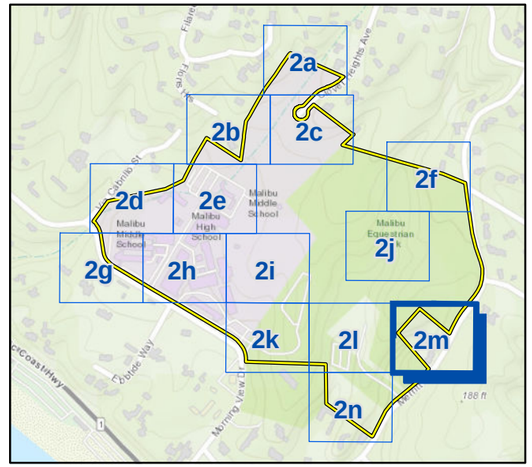
Exhibit 2l

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

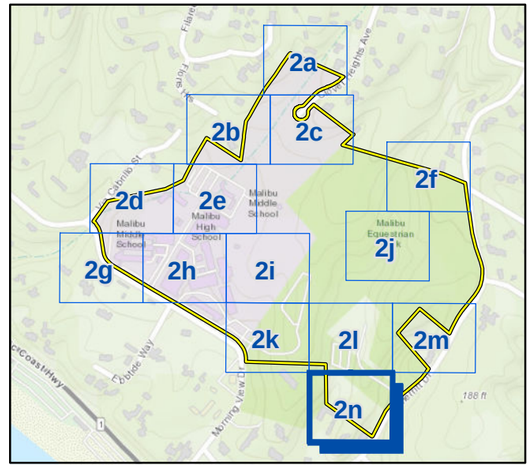
Tree Locations — Exhibit 2m

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2n

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd

ATTACHMENT A

TREE DATA SUMMARY

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
1	Canary Island pine	*Pinus canariensis*	1	16.5		30	25	4	4	n
2	Canary Island pine	*Pinus canariensis*	1	25.5		30	25	4	4	n
3	Canary Island pine	*Pinus canariensis*	1	8.5		15	12	4	4	n
4	rusty-leaf fig	*Ficus rubiginosa*	1	63.4		40	35	4	4	n
5	rusty-leaf fig	*Ficus rubiginosa*	1	50.2		40	40	4	4	n
6	New Zealand christmas tree	*Metrosideros excelsa*	6	9.5	9.4	15	15	4	4	n
7	New Zealand christmas tree	*Metrosideros excelsa*	2	9.1	6.9	12	12	4	4	n
8	New Zealand christmas tree	*Metrosideros excelsa*	4	8.2	5.3	12	12	4	4	n
9	New Zealand christmas tree	*Metrosideros excelsa*	1	9.0		12	12	4	4	n
10	New Zealand christmas tree	*Metrosideros excelsa*	2	8.4	7.8	12	12	4	4	n
11	New Zealand christmas tree	*Metrosideros excelsa*	1	14.3		12	15	4	4	n
12	New Zealand christmas tree	*Metrosideros excelsa*	2	13.1	12.2	15	25	4	4	n
13	purple-leaf cherry plum	*Prunus cerasifera*	1	4.0		10	8	4	4	n
14	Mexican fan palm	*Washingtonia robusta*	1	18.3		50	8	3	4	n
15	Mexican fan palm	*Washingtonia robusta*	1	16.6		45	8	3	4	n
16	Mexican fan palm	*Washingtonia robusta*	1	15.4		45	8	3	4	n
17	Mexican fan palm	*Washingtonia robusta*	1	18.5		45	8	3	4	n
18	Mexican fan palm	*Washingtonia robusta*	1	18.0		45	8	3	4	n
19	Peruvian peppertree	*Schinus molle*	1	5.1		10	10	3	3	n
20	Mexican fan palm	*Washingtonia robusta*	1	18.3		50	8	3	4	n
21	Afghan pine	*Pinus eldarica*	2	34.4	15.7	40	45	4	4	n
22	Mexican fan palm	*Washingtonia robusta*	1	17.9		45	8	4	4	n
23	China doll tree	*Radermachera sinica*	1	10.6		15	10	4	3	n
24	China doll tree	*Radermachera sinica*	2	5.5	5.4	12	10	4	3	n
25	lollypop tree	*Myoporum laetum*	8	2.8	2.3	8	15	4	4	n
26	arroyo willow	*Salix lasiolepis*	2	3.5	2.5	12	8	4	4	n
27	arroyo willow	*Salix lasiolepis*	1	7.5		15	5	1	1	n
28	snag		x	4-10		x	x	x	x	n
29	Chinese juniper	*Juniperus chinensis*	1	12.8		15	12	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
30	black poui	*Jacaranda mimosifolia*	1	13.4		25	25	4	4	n
31	yellow bells	*Tecoma stans*	3	10.6	6.9	25	25	4	4	n
32	Mexican fan palm	*Washingtonia robusta*	1	18.1		45	8	4	4	n
33	loquat	*Eriobotrya japonica*	1	3.9		10	8	4	3	n
34	Chinese juniper	*Juniperus chinensis*	1	10.8		25	4	4	4	n
35	black poui	*Jacaranda mimosifolia*	2	7.2	5.8	25	25	4	4	n
36	Hankow willow	*Salix matsudana*	3	6.8	6.2	12	12	3	3	n
37	loquat	*Eriobotrya japonica*	1	5.8		8	3	4	3	n
38	white sapote	*Casimiroa edulis*	1	5.9		15	12	4	4	n
39	bronze loquat	*Eriobotrya deflexa*	1	8.1		12	20	4	4	n
40	pink melaleuca	*Melaleuca neophila*	3	10.3		12	20	4	4	n
41	bronze loquat	*Eriobotrya deflexa*	1	9.2		15	20	4	4	n
42	Mexican fan palm	*Washingtonia robusta*	1	17.1		45	10	4	4	n
43	dragon tree	*Dracaena draco*	1	19.9		10	15	4	4	n
44	silver dollar tree	*Eucalyptus cinerea*	2	4.6	4.0	15	10	4	3	n
45	blue potatobush	*Lycianthes rantonnetii*	2	2.1	1.0	10	10	4	4	n
46	Mexican fan palm	*Washingtonia robusta*	1	14.6		35	8	4	4	n
47	Mexican fan palm	*Washingtonia robusta*	1	15.0		35	8	4	4	n
48	weeping bottlebrush	*Callistemon viminalis*	4	5.5	4.3	15	15	4	4	n
49	purple-leaf cherry plum	*Prunus cerasifera*	1	6.0		7	10	4	4	n
50	Mexican fan palm	*Washingtonia robusta*	1	15.2		45	8	3	3	n
51	Mexican fan palm	*Washingtonia robusta*	1	17.0		45	8	3	3	n
52	Norfolk Island pine	*Araucaria heterophylla*	3	17.8	16.9	30	20	4	4	n
53	Mexican fan palm	*Washingtonia robusta*	1	16.8		45	10	4	4	n
54	Canary Island date palm	*Phoenix canariensis*	1	23.0		15	25	4	4	n
55	snag		x	15.0		x	x	x	x	n
56	mulberry	*Morus* sp.	1	9.3		25	20	4	4	n
57	purple-leaf cherry plum	*Prunus cerasifera*	1	5.6		15	8	4	4	n
58	Mexican fan palm	*Washingtonia robusta*	1	15.2		40	10	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
59	purple-leaf cherry plum	*Prunus cerasifera*	1	4.5		10	6	4	4	n
60	coral tree	*Erythrina* sp.	1	3.8		8	8	4	4	n
61	date palm	*Phoenix* sp.	1	15.1		20	18	4	4	n
62	Mexican fan palm	*Washingtonia robusta*	1	16.8		45	10	4	4	n
63	purple-leaf cherry plum	*Prunus cerasifera*	1	4.5		10	6	4	4	n
64	Monterey cypress	*Hesperocyparis macrocarpa*	1	24.8		35	30	4	4	n
65	Mexican fan palm	*Washingtonia robusta*	1	15.1		35	8	4	3	n
66	Mexican fan palm	*Washingtonia robusta*	1	18.4		45	8	4	3	n
67	Mexican fan palm	*Washingtonia robusta*	1	14.7		40	6	4	4	n
68	Mexican fan palm	*Washingtonia robusta*	1	19.7		40	8	3	4	n
69	Fremont's cottonwood	*Populus fremontii*	1	10.2		35	20	4	3	n
70	black poui	*Jacaranda mimosifolia*	1	10.7		12	15	3	3	n
71	Mexican fan palm	*Washingtonia robusta*	1	13.6		20	10	4	3	n
72	Afghan pine	*Pinus eldarica*	1	8.7		12	20	4	4	n
73	lollypop tree	*Myoporum laetum*	3	7.5	7.0	25	15	2	2	n
74	lollypop tree	*Myoporum laetum*	1	9.2		25	25	4	4	n
75	eucalyptus	*Eucalyptus* sp.	6	2.5	2.5	25	15	2	2	n
76	arroyo willow	*Salix lasiolepis*	6	2.5	2.0	20	15	4	4	n
77	arroyo willow	*Salix lasiolepis*	3	2.0	2.0	15	10	3	3	n
78	arroyo willow	*Salix lasiolepis*	5	2.0	2.0	20	15	3	3	n
79	arroyo willow	*Salix lasiolepis*	6	2.0	1.5	20	12	4	4	n
80	arroyo willow	*Salix lasiolepis*	3	2.0	1.5	20	15	3	3	n
81	western sycamore	*Platanus racemosa*	1	7.7		35	15	3	3	y
82	arroyo willow	*Salix lasiolepis*	8	2.0	2.0	20	20	4	4	n
83	western sycamore	*Platanus racemosa*	1	9.5		35	20	3	3	y
84	snag (polygon of 4 snags)		x	6-10		x	x	x	x	n
85	sugar gum	*Eucalyptus cladocalyx*	1	16.5		50	25	2	2	n
86	Bailey acacia	*Acacia baileyana*	3	3.5	2.5	15	10	4	3	n
87	arroyo willow	*Salix lasiolepis*	7	2.3	2.0	20	15	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
88	arroyo willow	*Salix lasiolepis*	6	2.5	2.0	20	12	4	4	n
89	snag		x	12.0		x	x	x	x	n
90	arroyo willow	*Salix lasiolepis*	9	2.0	2.0	15	12	4	4	n
91	arroyo willow	*Salix lasiolepis*	9	2.0	2.0	15	20	4	4	n
92	Shamel ash	*Fraxinus uhdei*	7	1.5	1.5	10	8	4	3	n
93	sugar gum	*Eucalyptus cladocalyx*	12	3.0	3.0	15	20	4	3	n
94	blue elderberry	*Sambucus nigra*	15	5.5	5.2	20	30	3	3	n
95	cherry	*Prunus* sp.	1	6.0		20	10	3	3	n
96	California bay laurel	*Umbellularia californica*	3	6.5	5.5	12	15	2	2	n
97	coast live oak	*Quercus agrifolia*	1	9.5		12	20	4	4	y
98	olive	*Olea europaea*	3	3.5	2.5	8	15	3	3	n
99	loquat	*Eriobotrya japonica*	5	2.5	2.0	10	15	4	4	n
100	snag		x	22.0		x	x	x	x	n
101	snag		x	40.0		x	x	x	x	n
102	sugar gum	*Eucalyptus cladocalyx*	1	22.0		35	15	2	2	n
103	Peruvian peppertree	*Schinus molle*	1	4.5		12	8	4	3	n
104	Catalina cherry	*Prunus ilicifolia* ssp. *Lyonii*	1	8.5		20	20	4	3	n
105	snag		x	8.0		x	x	x	x	n
106	eucalyptus	*Eucalyptus* sp.	1	4.0		10	4	2	2	n
107	snag		x	12.0		x	x	x	x	n
108	sugar gum	*Eucalyptus cladocalyx*	1	12.0		25	15	4	2	n
109	snag		x	15.0		x	x	x	x	n
110	red ironbark	*Eucalyptus sideroxylon*	2	28.0	11.0	35	35	4	3	n
111	red ironbark	*Eucalyptus sideroxylon*	1	15.0		45	40	4	4	n
112	red ironbark	*Eucalyptus sideroxylon*	1	12.0		35	35	4	4	n
113	red ironbark	*Eucalyptus sideroxylon*	1	17.0		45	40	4	4	n
114	African fern pine	*Afrocarpus falcatus*	3	9.5	8.5	25	20	4	3	n
115	African fern pine	*Afrocarpus falcatus*	2	9.5	8.5	25	20	4	3	n
116	Afghan pine	*Pinus eldarica*	1	18.7		15	30	4	3	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
117	Peruvian peppertree	*Schinus molle*	1	27.5		20	35	4	3	n
118	Shamel ash	*Fraxinus uhdei*	2	17.0	8.5	25	25	4	4	n
119	Shamel ash	*Fraxinus uhdei*	1	4.1		20	12	4	4	n
120	Shamel ash	*Fraxinus uhdei*	2	9.5	9.0	20	15	1	1	n
121	snag		x	35.0		x	x	x	x	n
122	Peruvian peppertree	*Schinus molle*	5	2.0	2.0	8	15	4	3	n
123	red ironbark	*Eucalyptus sideroxylon*	2	5.0	4.0	12	12	4	3	n
124	Canary Island date palm	*Phoenix canariensis*	1	32.0		12	25	4	4	n
125	lollypop tree	*Myoporum laetum*	3	6.5	5.0	10	20	2	2	n
126	sugar gum	*Eucalyptus cladocalyx*	1	35.9		50	40	4	3	n
127	silver dollar gum	*Eucalyptus polyanthemos*	1	23.5		45	35	4	3	n
128	silver dollar gum	*Eucalyptus polyanthemos*	1	24.3		40	35	3	2	n
129	silver dollar gum	*Eucalyptus polyanthemos*	1	31.5		50	40	4	4	n
130	Peruvian peppertree	*Schinus molle*	3	18.0	14.5	35	35	4	4	n
131	snag		x	15.0		x	x	x	x	n
132	Canary Island date palm	*Phoenix canariensis*	3	8.5	7.8	12	10	4	4	n
133	queen palm	*Syagrus romanzoffiana*	1	10.0		15	12	4	4	n
134	queen palm	*Syagrus romanzoffiana*	3	11.1	9.6	12	12	4	4	n
135	queen palm	*Syagrus romanzoffiana*	3	8.5	8.2	12	12	4	4	n
136	queen palm	*Syagrus romanzoffiana*	1	10.6		12	10	4	4	n
137	queen palm	*Syagrus romanzoffiana*	2	10.6	9.6	20	15	4	4	n
138	black poui	*Jacaranda mimosifolia*	3	4.5	1.5	15	15	3	3	n
139	Mexican fan palm	*Washingtonia robusta*	1	11.0		15	8	4	4	n
140	black poui	*Jacaranda mimosifolia*	4	4.5	3.5	15	20	4	4	n
141	black poui	*Jacaranda mimosifolia*	3	6.1	3.8	20	25	4	4	n
142	black poui	*Jacaranda mimosifolia*	3	3.6	3.4	20	12	4	4	n
143	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
144	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
145	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	8	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
146	Mexican fan palm	*Washingtonia robusta*	1	11.0		25	8	4	4	n
147	Mexican fan palm	*Washingtonia robusta*	1	11.0		25	8	4	4	n
148	Mexican fan palm	*Washingtonia robusta*	1	11.0		25	8	4	4	n
149	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
150	Mexican fan palm	*Washingtonia robusta*	1	14.0		25	10	4	4	n
151	black poui	*Jacaranda mimosifolia*	2	9.8	9.3	25	25	4	4	n
152	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	8	4	4	n
153	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	8	4	4	n
154	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
155	black poui	*Jacaranda mimosifolia*	2	2.2	2.2	20	15	4	4	n
156	black poui	*Jacaranda mimosifolia*	3	4.7	39.0	20	15	4	4	n
157	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
158	southern magnolia	*Magnolia grandiflora*	1	10.9		25	25	4	4	n
159	western sycamore	*Platanus racemosa*	1	14.4		30	25	4	3	y
160	western sycamore	*Platanus racemosa*	1	15.7		30	25	4	4	y
161	queen palm	*Syagrus romanzoffiana*	1	13.6		30	20	4	4	n
162	Mexican fan palm	*Washingtonia robusta*	1	16.0		45	8	4	4	n
163	majestic beauty Indian hawthorne	*Rhaphiolepis* x 'Montic'	1	7.2		12	12	4	4	n
164	Peruvian peppertree	*Schinus molle*	1	15.8		35	30	4	4	n
165	western sycamore	*Platanus racemosa*	1	8.8		25	25	4	4	y
166	western sycamore	*Platanus racemosa*	1	15.7		35	30	4	4	y
167	black poui	*Jacaranda mimosifolia*	2	7.1	3.1	15	15	4	4	n
168	Mexican fan palm	*Washingtonia robusta*	1	17.0		20	12	4	4	n
169	Mexican fan palm	*Washingtonia robusta*	1	19.0		35	10	4	4	n
170	Mexican fan palm	*Washingtonia robusta*	1	13.0		15	12	4	4	n
171	black poui	*Jacaranda mimosifolia*	2	3.8	3.6	20	25	4	4	n
172	Mexican fan palm	*Washingtonia robusta*	1	9.0		10	15	4	4	n
173	Mexican fan palm	*Washingtonia robusta*	1	10.0		10	10	4	4	n
174	Mexican fan palm	*Washingtonia robusta*	1	15.0		25	10	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
175	southern magnolia	*Magnolia grandiflora*	1	4.4		15	15	4	4	n
176	Mexican fan palm	*Washingtonia robusta*	2	15.0	14.0	30	20	4	4	n
177	Mexican fan palm	*Washingtonia robusta*	1	15.0		20	12	4	4	n
178	Mexican fan palm	*Washingtonia robusta*	1	13.0		15	12	4	4	n
179	Peruvian peppertree	*Schinus molle*	3	8.3	6.5	15	20	4	4	n
180	Peruvian peppertree	*Schinus molle*	1	16.4		25	30	4	4	n
181	Peruvian peppertree	*Schinus molle*	2	11.0	2.6	25	25	4	4	n
182	Mexican fan palm	*Washingtonia robusta*	1	14.0		20	10	4	4	n
183	Mexican fan palm	*Washingtonia robusta*	1	12.0		10	12	4	4	n
184	Mexican fan palm	*Washingtonia robusta*	1	16.0		30	12	4	4	n
185	Mexican fan palm	*Washingtonia robusta*	1	10.0		10	10	4	4	n
186	Mexican fan palm	*Washingtonia robusta*	1	14.0		15	8	4	4	n
187	Peruvian peppertree	*Schinus molle*	1	7.5		10	15	4	4	n
188	Mexican fan palm	*Washingtonia robusta*	1	7.0		8	8	4	4	n
189	Peruvian peppertree	*Schinus molle*	2	8.8	7.3	25	25	4	4	n
190	Peruvian peppertree	*Schinus molle*	1	8.4		20	20	4	4	n
191	Peruvian peppertree	*Schinus molle*	1	7.2		20	20	4	4	n
192	Peruvian peppertree	*Schinus molle*	2	10.0	9.8	25	30	4	4	n
193	snag		x	4.0		x	x	x	x	n
194	Peruvian peppertree	*Schinus molle*	2	4.4	3.6	8	10	4	4	n
195	Peruvian peppertree	*Schinus molle*	4	6.8	5.5	15	30	4	4	n
196	Peruvian peppertree	*Schinus molle*	4	5.8	3.4	12	20	4	4	n
197	Peruvian peppertree	*Schinus molle*	1	7.5		10	15	4	4	n
198	Peruvian peppertree	*Schinus molle*	1	7.0		10	10	4	4	n
199	Peruvian peppertree	*Schinus molle*	2	4.2	4.1	8	10	4	4	n
200	Afghan pine	*Pinus eldarica*	1	19.2		15	25	4	4	n
201	olive	*Olea europaea*	3	4.1	3.2	15	10	4	4	n
202	Mexican fan palm	*Washingtonia robusta*	1	17.0		25	10	4	4	n
203	Mexican fan palm	*Washingtonia robusta*	1	16.0		25	8	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
204	snag		x	10.0		x	x	x	x	n
205	arroyo willow	*Salix lasiolepis*	8	5.3	5.2	20	25	3	2	n
206	lollypop tree	*Myoporum laetum*	4	4.1	3.9	12	12	3	3	n
207	lollypop tree	*Myoporum laetum*	1	5.2		8	8	2	2	n
208	Mexican fan palm	*Washingtonia robusta*	1	8.0		8	8	4	4	n
209	olive	*Olea europaea*	7	7.5	7.0	20	25	4	4	n
210	Mexican fan palm	*Washingtonia robusta*	1	8.0		8	8	4	4	n
211	Italian cypress	*Cupressus sempervirens*	1	6.5		20	4	4	4	n
212	Italian cypress	*Cupressus sempervirens*	1	7.3		20	4	4	4	n
213	western redbud	*Cercis occidentalis*	2	4.9	3.0	20	10	3	3	n
214	Italian cypress	*Cupressus sempervirens*	1	8.4		20	4	4	4	n
215	Afghan pine	*Pinus eldarica*	1	15.2		20	25	4	3	n
216	Afghan pine	*Pinus eldarica*	2	7.9	7.3	25	25	4	4	n
217	golden wattle	*Acacia longifolia*	3	6.5	6.0	8	20	2	2	n
218	Mexican fan palm	*Washingtonia robusta*	1	16.8		30	8	4	3	n
219	New Zealand christmas tree	*Metrosideros excelsa*	9	5.5	4.1	20	25	4	4	n
220	coast live oak	*Quercus agrifolia*	1	3.0		10	10	2	2	n
221	snag		x	4.0		x	x	x	x	n
222	western sycamore	*Platanus racemosa*	1	3.1		20	8	4	4	n
223	western sycamore	*Platanus racemosa*	1	4.8		20	12	4	4	n
224	western sycamore	*Platanus racemosa*	1	3.3		25	12	4	4	n
225	Indian laurel fig (polygon of 6 trees)	*Ficus microcarpa*	1	3-4		10-15	5	4	4	n
226	coast live oak	*Quercus agrifolia*	1	3.3		12	15	3	3	n
227	black poui	*Jacaranda mimosifolia*	1	13.4		30	35	4	4	n
228	black poui	*Jacaranda mimosifolia*	1	5.8		15	12	3	3	n
229	black poui	*Jacaranda mimosifolia*	1	4.3		10	8	3	3	n
230	flaxleaf paperbark	*Melaleuca linariifolia*	1	6.4		15	12	4	4	n
231	peppermint tree	*Agonis flexuosa*	2	15.0	8.7	25	25	4	4	n
232	peppermint tree	*Agonis flexuosa*	2	15.4	14.4	25	30	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
233	peppermint tree	*Agonis flexuosa*	1	7.3		20	20	4	4	n
234	peppermint tree	*Agonis flexuosa*	1	11.8		20	15	4	4	n
235	queen palm	*Syagrus romanzoffiana*	1	11.3		25	20	4	4	n
236	queen palm	*Syagrus romanzoffiana*	1	11.3		20	20	4	4	n
237	peppermint tree	*Agonis flexuosa*	3	12.2	9.4	25	25	4	4	n
238	peppermint tree	*Agonis flexuosa*	3	12.2	4.8	25	20	4	4	n
239	queen palm	*Syagrus romanzoffiana*	1	11.8		20	15	4	4	n
240	queen palm	*Syagrus romanzoffiana*	1	12.3		25	20	4	4	n
241	queen palm	*Syagrus romanzoffiana*	1	11.1		25	15	4	4	n
242	New Zealand christmas tree	*Metrosideros excelsa*	3	6.1	4.7	25	20	4	4	n
243	queen palm	*Syagrus romanzoffiana*	1	9.6		30	20	4	4	n
244	queen palm	*Syagrus romanzoffiana*	1	11.0		25	15	4	4	n
245	queen palm	*Syagrus romanzoffiana*	1	13.5		25	20	4	4	n
246	peppermint tree	*Agonis flexuosa*	1	15.9		20	20	4	4	n
247	peppermint tree	*Agonis flexuosa*	3	10.6	6.8	25	20	4	4	n
248	queen palm	*Syagrus romanzoffiana*	1	6.8		10	3	4	4	n
249	queen palm	*Syagrus romanzoffiana*	1	12.4		25	25	4	4	n
250	peppermint tree	*Agonis flexuosa*	2	11.1	10.4	25	25	4	4	n
251	Chinese juniper	*Juniperus chinensis*	9	12.6	6.5	20	15	4	4	n
252	Chinese juniper	*Juniperus chinensis*	4	8.9	8.5	20	20	4	4	n
253	South African coral tree	*Erythrina caffra*	1	58.0		30	25	4	3	n
254	flaxleaf paperbark	*Melaleuca linariifolia*	1	7.0		15	10	4	4	n
255	Peruvian peppertree	*Schinus molle*	1	21.0		25	35	4	4	n
256	Peruvian peppertree	*Schinus molle*	2	10.6	7.8	20	20	4	4	n
257	western sycamore	*Platanus racemosa*	1	12.1		30	30	4	4	y
258	Peruvian peppertree	*Schinus molle*	3	4.7	4.7	12	12	4	4	n
259	Peruvian peppertree	*Schinus molle*	3	2.7	2.6	12	10	4	4	n
260	Peruvian peppertree	*Schinus molle*	2	4.6	3.3	12	15	4	4	n
261	Peruvian peppertree	*Schinus molle*	2	30.6	16.6	25	35	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
262	sugar gum	*Eucalyptus cladocalyx*	1	11.0		45	25	4	3	n
263	sugar gum	*Eucalyptus cladocalyx*	3	16.7	9.2	40	30	4	4	n
264	sugar gum	*Eucalyptus cladocalyx*	1	10.3		20	15	4	3	n
265	sugar gum	*Eucalyptus cladocalyx*	1	10.8		30	20	3	3	n
266	sugar gum	*Eucalyptus cladocalyx*	1	5.1		12	8	4	3	n
267	sugar gum	*Eucalyptus cladocalyx*	1	6.2		25	10	3	3	n
268	sugar gum	*Eucalyptus cladocalyx*	1	19.3		45	35	4	4	n
269	sugar gum	*Eucalyptus cladocalyx*	1	33.8		55	40	4	4	n
270	sugar gum	*Eucalyptus cladocalyx*	1	18.6		50	25	4	4	n
271	sugar gum	*Eucalyptus cladocalyx*	1	8.0		25	20	3	3	n
272	sugar gum	*Eucalyptus cladocalyx*	1	3.2		15	8	3	3	n
273	sugar gum	*Eucalyptus cladocalyx*	2	26.8	7.9	55	40	4	4	n
274	sugar gum	*Eucalyptus cladocalyx*	1	3.4		12	8	3	3	n
275	sugar gum	*Eucalyptus cladocalyx*	1	3.8		15	6	3	3	n
276	sugar gum	*Eucalyptus cladocalyx*	1	3.1		12	4	3	3	n
277	sugar gum	*Eucalyptus cladocalyx*	1	6.6		15	8	3	3	n
278	sugar gum	*Eucalyptus cladocalyx*	1	30.0		65	35	4	4	n
279	sugar gum	*Eucalyptus cladocalyx*	1	10.6		40	25	3	3	n
280	sugar gum	*Eucalyptus cladocalyx*	1	28.2		55	35	3	3	n
281	snag		x	3.0		x	x	x	x	n
282	sugar gum	*Eucalyptus cladocalyx*	1	19.5		55	25	3	3	n
283	snag		x	15.0		x	x	x	x	n
284	western sycamore	*Platanus racemosa*	1	12.5		30	20	4	4	y
285	Peruvian peppertree	*Schinus molle*	4	8.0	6.5	12	15	3	2	n
286	Mexican fan palm	*Washingtonia robusta*	1	8.0		10	5	4	4	n
287	Canary Island date palm	*Phoenix canariensis*	1	18.0		12	15	4	4	n
288	Canary Island date palm	*Phoenix canariensis*	1	19.0		12	15	4	4	n
289	Canary Island date palm	*Phoenix canariensis*	1	24.0		15	20	4	4	n
290	Peruvian peppertree	*Schinus molle*	5	6.0	2.0	10	12	4	2	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
291	Peruvian peppertree	*Schinus molle*	4	9.5	9.5	20	20	4	3	n
292	Canary Island pine	*Pinus canariensis*	1	15.6		25	20	4	4	n
293	snag		x	9.0		x	x	x	x	n
294	blue elderberry	*Sambucus nigra*	16	5.0	4.0	15	12	4	3	n
295	Brisbane box	*Lophostemon confertus*	1	27.0		20	25	3	2	n
296	blue elderberry	*Sambucus nigra*	14	6.0	4.0	12	20	4	2	n
297	blue elderberry	*Sambucus nigra*	16	6.0	3.0	15	15	3	2	n
298	blue elderberry	*Sambucus nigra*	3	8.5	4.0	15	25	4	3	n
299	lollypop tree	*Myoporum laetum*	1	5.4		20	15	4	3	n
300	red willow	*Salix laevigata*	1	12.0		20	20	4	3	n
301	red willow	*Salix laevigata*	1	10.0		25	20	4	3	n
302	blue elderberry	*Sambucus nigra*	6	9.5	8.5	20	25	4	3	n
303	snag		x	20.0		x	x	x	x	n
304	snag		x	12.0		x	x	x	x	n
305	blue elderberry	*Sambucus nigra*	5	3.0	2.0	12	15	4	4	n
306	blue elderberry	*Sambucus nigra*	1	8.0		15	12	4	3	n
307	red willow	*Salix laevigata*	1	8.5		15	12	3	3	n
308	blue elderberry	*Sambucus nigra*	9	5.0	3.0	15	15	4	3	n
309	snag		x	8.0		x	x	x	x	n
310	lollypop tree	*Myoporum laetum*	4	4.0	4.0	10	20	4	4	n
311	lollypop tree	*Myoporum laetum*	1	5.6		10	10	4	3	n
312	blue elderberry	*Sambucus nigra*	4	8.0	7.0	15	25	3	2	n
313	snag		x	15.0		x	x	x	x	n
314	blue elderberry	*Sambucus nigra*	19	7.0	5.0	10	10	2	2	n
315	blue elderberry	*Sambucus nigra*	15	4.5	1.0	10	20	4	3	n
316	blue elderberry	*Sambucus nigra*	7	4.0	3.0	12	20	3	2	n
317	blue elderberry	*Sambucus nigra*	12	5.0	1.0	10	15	4	2	n
318	lollypop tree	*Myoporum laetum*	1	9.0		12	20	3	3	n
319	lollypop tree	*Myoporum laetum*	1	4.0		12	5	3	3	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
320	snag		x	20.0		x	x	x	x	n
321	snag		x	14.0		x	x	x	x	n
322	Southern California black walnut	*Juglans californica*	1	32.0		30	40	4	3	y
323	lollypop tree	*Myoporum laetum*	2	10.5		15	20	3	2	n
324	lollypop tree	*Myoporum laetum*	3	14.0		15	15	4	3	n
DBH: Diameter at Breast Height; Aesthetics/Health Rating: 1=Very Poor, 2=Poor, 3=Fair, 4=Good, and 5=Excellent										

Jurisdictional Delineation Report

For the Malibu Middle and High School Specific Plan and LCP Amendment Project in Malibu, California

Prepared for

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TABLE OF CONTENTS

Section **Page**

Executive Summary **ES-1**

1.0 Introduction **1**

1.1 Project Location 1

1.2 Project Description 1

1.3 Regulatory Authority 2

1.3.1 U.S. Army Corps of Engineers *2*
1.3.2 Regional Water Quality Control Board *2*
1.3.3 California Department of Fish and Wildlife *2*
1.3.4 California Coastal Commission *3*

2.0 Methods **4**

2.1 Literature Review 4

2.2 Jurisdictional Delineation 5

2.2.1 USACE Waters of the United States *5*
2.2.2 RWQCB Waters of the State *6*
2.2.3 CDFW Waters *6*
2.2.4 CCC Waters *6*

3.0 Results **7**

3.1 Literature Review 7

3.2 Jurisdictional Analysis 8

3.2.1 Waters of the United States Determination *9*
3.2.2 Regional Water Quality Control Board Jurisdiction *12*
3.2.3 California Department of Fish and Wildlife Jurisdiction *12*
3.2.4 California Coastal Commission Jurisdiction *12*

4.0 Regulatory Approval Process **13**

4.1 Regulatory Permit Requirements 13

4.1.1 U.S. Army Corps of Engineers *13*
4.1.2 Regional Water Quality Control Board *13*
4.1.3 California Department of Fish and Wildlife *13*
4.1.4 California Coastal Commission *14*

5.0 Recommendations **15**

6.0 References **16**

TABLES

Table		Page
1	Summary of Jurisdictional Resources in the Study Area	9
2	Summary of Sampling Point Data	11

EXHIBITS

Exhibit		Follows Page
1	Project Location	1
2	USGS 7.5-Minute Digital Quadrangle	1
3	Soil Types	4
4	National Wetland Inventory	4
5	Jurisdictional Resources – Ordinary High Water Mark	7
6	Jurisdictional Resources – Top of Bank/Riparian Canopy	7

ATTACHMENTS

Attachment	
A	Summary of Regulatory Authority
B	Representative Photographs
C	Datasheets
D	Literature Review Details

EXECUTIVE SUMMARY

This report provides baseline data regarding the type and extent of jurisdictional resources in support of the Malibu Middle and High School Specific Plan and Local Coastal Program Amendment Project. Jurisdictional resources considered for this report include wetland and non-wetland waters of the United States (WOTUS) regulated by the U.S. Army Corps of Engineers (USACE); waters of the State regulated by the Regional Water Quality Control Board (RWQCB); waters, including the bed, bank, and channel of all lakes, rivers, and/or streams (and associated wetland and riparian vegetation), as regulated by the California Department of Fish and Wildlife (CDFW); and wetlands and waters in the Coastal Zone, as regulated by the California Coastal Commission (CCC).

The limits of non-wetland WOTUS and waters of the State were identified by the presence of an Ordinary High Water Mark (OHWM). Wetland features were identified based on the USACE's three-parameter approach in which wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and wetland hydrology indicators. The limits of RWQCB waters and wetlands were determined to equal those of the USACE unless isolated conditions were present. The limits of CDFW jurisdictional waters were identified as either the top of bank or the outer drip line of riparian vegetation associated with the feature. The CCC's wetland boundary is based on a "one-parameter" definition determined by at least one of the following: hydrology, hydric soils, and hydrophytic vegetation.

The jurisdictional assessment was performed by Psomas on November 12, 2019. Jurisdictional boundaries were further refined on January 16, 2020 and April 15, 2021. Based on the results of all the field work, it was determined that the total amount of jurisdictional resources in the Study Area are as follows:

- **USACE Jurisdiction:** 0.070 acre (0.007 acre of wetland WOTUS and 0.063 acre of non-wetland WOTUS)
- **RWQCB Jurisdiction:** 0.232 acre (0.007 acre of wetland waters of the State and 0.225 acre of non-wetland waters of the State)
- **CDFW Jurisdiction:** 1.202 acres
- **CCC Jurisdiction:** 1.202 acres (1.012 acre of ESHA)

1.0 INTRODUCTION

This Jurisdictional Delineation Report (report) was prepared for the Santa Monica-Malibu Unified School District (District) to provide baseline data concerning the type and extent of water resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Wildlife (CDFW), and the California Coastal Commission (CCC) in support of the Malibu Middle and High School Specific Plan and Local Coastal Program (LCP) Project.

1.1 PROJECT LOCATION

The Malibu Middle and High School (MMHS) campus is located at 30215 Morning View Drive in the City of Malibu (the City), Los Angeles County, California (Exhibit 1). The Study Area includes the MMHS campus and surrounding open space owned by the Santa Monica-Malibu High School District. The campus is located east of Via Cabrillo, north of Morning View Drive, west of Merritt Drive, and south of Heights Road, approximately 0.25 mile northeast of Pacific Coast Highway (PCH). The Study Area is depicted on the U.S. Geological Survey's (USGS') Point Dume 7.5-minute topographic quadrangle of the San Bernardino Meridian in Township 02S, Range 19W, Section 01 (Exhibit 2). It is within the Santa Monica Bay Watershed (Hydrologic Unit Code 18070104).

1.2 PROJECT DESCRIPTION

As the design concepts in the Campus Plan are set to develop in several phases over a long period of time, the City recommended preparation of a specific plan so that a consistent set of development standards could be adopted. Once adopted, the standards in the specific plan would become the regulations against which later phases of the project would be reviewed by the City. Based on the City's recommendation, the *Malibu Middle and High School Campus Specific Plan* establishes the development standards and plan for the MMHS campus over the next 10 to 15 years (Placeworks 2021). The existing MMHS campus was constructed as Malibu Park Junior High School beginning in 1963, and in 1992 the school was converted for use as a high school. The Project Site is situated on three of nine parcels: Assessor's Parcel Numbers (APN) 4469-017-900 (40.06 acres), 4469-018-900 (9.40 acres), and 4459-018-904 (2.57 acres). The total acreage of the Project Site is 52.03 acres (Placeworks 2021).

Apart from the recently completed Buildings A/B and E, many of the existing buildings no longer meet the District's needs for flexible classrooms with the ability to support multiple learning zones. The Specific Plan would result in the demolition of 18 existing buildings on the combined campuses; with only the existing athletic fields, and the nearly or recently completed Buildings A/B and E on the MMHS campus would remain, and the construction of a new campus with dedicated spaces for Middle and High School. The Specific Plan would result in 32 classrooms and 8 labs and a total of 190,967 square feet of new building space, providing the MMHS campus with a total of 47 classrooms and 12 labs and a total of 222,425 square feet of building space (Placeworks 2021).

While the Specific Plan reflects the anticipated buildout condition of the MMHS campus, only Phase I of the Plan is designed and funded for construction. Construction of subsequent Phases will require additional financial resources before they can proceed. The Specific Plan relies on established City of Malibu land use and zoning regulations and procedures and provides development standards for the MMHS Campus Specific Plan. Both the City of Malibu Municipal Code and LCP contain provisions for discretionary site plan review. The District anticipates that implementation of subsequent phases will be reviewed by the City for approval and compared to the Specific Plan and Environmental Impact Report for consistency.

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Project Location

Exhibit 1

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

850 425 0 850

Feet

PSOMAS

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Source: USGS 7.5 Minute Quadrangle
Point Dume
Township: 02S
Range: 19W
Section: 01

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USGS 7.5-Minute Digital Quadrangle

Exhibit 2

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

2,000 1,000 0 2,000
Feet

PSOMAS

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1.3 REGULATORY AUTHORITY

This section summarizes the regulations of those federal and state agencies that have regulatory authority over activities that occur within their areas of jurisdiction. A detailed explanation of each agency's regulatory authority is provided in Attachment A.

1.3.1 U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into waters of the United States (WOTUS) under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Its authority applies to all WOTUS where the material (1) replaces any portion of a water of the United States with dry land or (2) changes the bottom elevation of any portion of any WOTUS. Activities that result in fill or dredge of WOTUS require a permit from the USACE. Presently, WOTUS are defined to include territorial seas and Traditional Navigable Waters (TNWs)[1]; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters (USACE and USEPA 2010).

1.3.2 Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB), in conjunction with the nine RWQCBs, is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The SWRCB's and RWQCBs' jurisdictions extend to all WOTUS, but also to waters of the State that are outside federal jurisdiction, including wetlands.

On August 28, 2019, the Office of Administrative Law (OAL) approved the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to waters of the State. The procedures went into effect on May 28, 2020. Under these new regulations, the SWRCB and its nine RWQCBs assert jurisdiction over all existing WOTUS, and all waters that would have been considered WOTUS under the 2015 Rule. Thus, the WOTUS that would no longer be under USACE jurisdiction would be under SWRCB jurisdiction.

1.3.3 California Department of Fish and Wildlife

The CDFW regulates activities that may affect rivers, streams, and lakes pursuant to the *California Fish and Game Code* (§§1600–1616). According to Section 1602 of the *California Fish and Game Code,* the CDFW has jurisdictional authority over any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

[1] Traditional Navigable Waters are "all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide" (33 *Code of Federal Regulations* § 328.3).

1.3.4 California Coastal Commission

The CCC, in partnership with coastal Cities and Counties, plans and regulates the use of land and water in the Coastal Zone, an area covering a 3-mile-wide band of ocean and extending inland from the mean high tide line to a variable distance based on surrounding land cover. Development in the Coastal Zone requires a Coastal Development Permit (CDP) issued by either the CCC or a local government with a certified LCP.

The City of Malibu has a certified LCP that provides for protection and preservation of environmentally sensitive habitat areas (ESHAs). An ESHA is defined as “any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem which could be easily disturbed or degraded by human activities and developments”. ESHAs include rare or valuable habitat, habitat that contributes to the viability of plant or animal species that are designated or are candidates for listing under State or Federal law, habitat that contributes to the viability of species that are designated as “fully protected” or “species of special concern” under State law, habitat that contributes to the viability of species for which there is other compelling evidence of rarity (e.g., species with a California Rare Plant Rank of 1 or 2), designated Areas of Special Biological Significance or Marine Protected Area, and Streams.

2.0 METHODS

2.1 LITERATURE REVIEW

Prior to conducting the delineation and during the course of report preparation, Psomas reviewed the following documents to identify areas that may fall under agency jurisdiction: The City of Malibu LCP Local Implementation Plan (Malibu 2002); the USGS' Point Dume 7.5-minute quadrangle map; color aerial photography provided by the Hexagon Geosystems (2018); soil data provided by the U.S. Department of Agriculture's Natural Resources Conservation Service (Exhibit 3); the National Hydric Soils List (USDA NRCS 2019); the National Wetlands Inventory's Wetland Mapper (Exhibit 4); the Water Quality Control Plan for the Los Angeles Region (Los Angeles RWQCB 2013), and previous documentation for MMHS campus (Atkins 2011; GLA 2009).

USGS Topographic Quadrangle. USGS quadrangle maps show geological formations and their characteristics and describe the physical settings of an area through topographic contour lines and other major surface features. These features include lakes, streams, rivers, buildings, roadways, landmarks, and other features that may fall under the jurisdiction of one or more regulatory agencies. In addition, the USGS maps provide topographic information that is useful in determining elevations; connectivity of streams, rivers, and other water features; latitude and longitude; and Universal Transverse Mercator Grid coordinates for the Study Area.

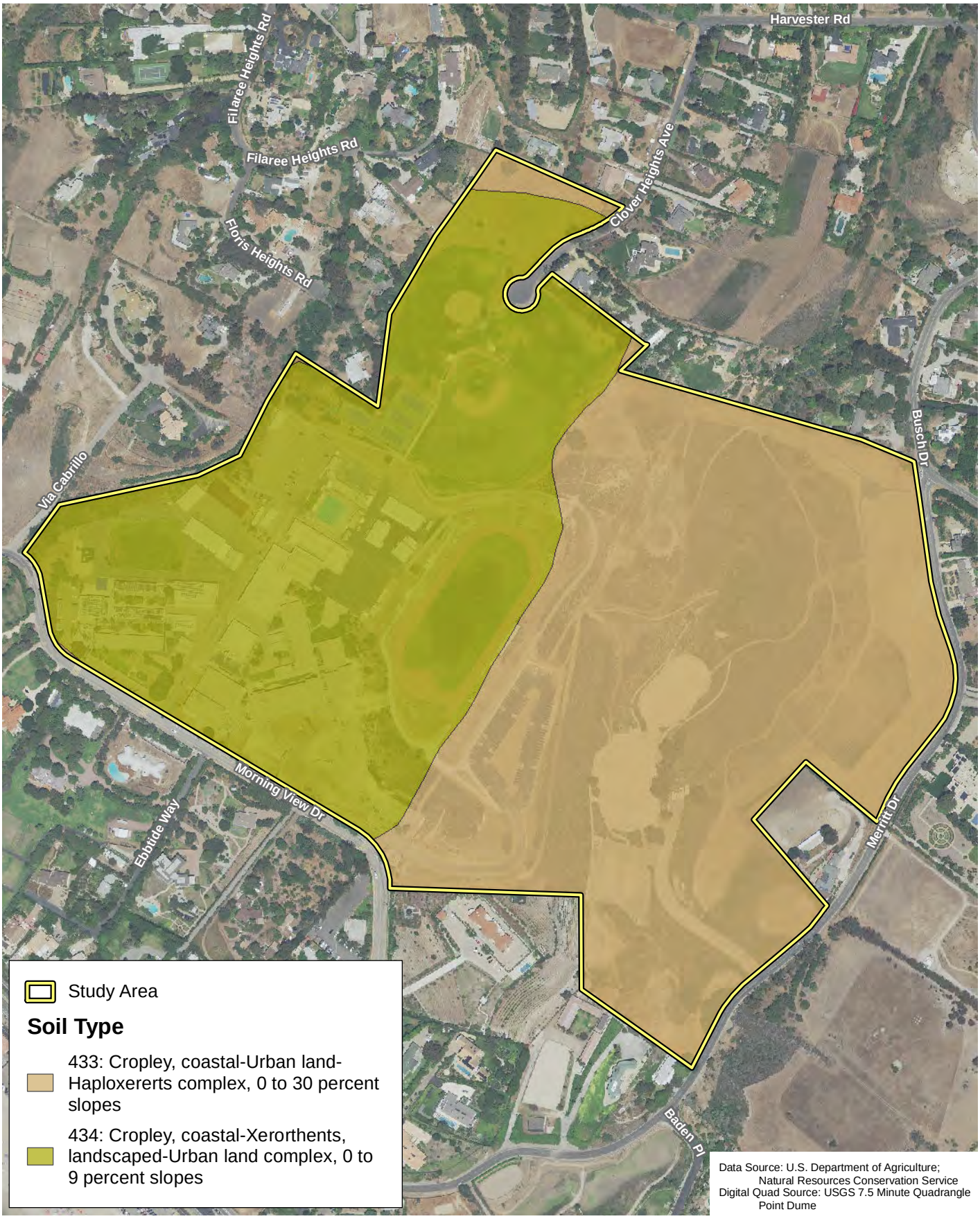
Color Aerial Photography. Color aerial photographs were reviewed prior to conducting the field delineation to identify the extent of any drainages and riparian vegetation occurring in the Study Area.

U.S. Department of Agriculture, Natural Resources Conservation Service. The presence of hydric soils is one of the chief indicators of jurisdictional wetlands. Psomas reviewed U.S. Department of Agriculture (USDA) soil data for the Study Area.

U.S. Fish and Wildlife Service, National Wetlands Inventory: The Wetlands Mapper shows wetland resources available from the Wetlands Spatial Data Layer of the National Spatial Data Infrastructure (USFWS 2019). This resource provides the classification of known wetlands following the *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC 2013). This classification system is arranged in a hierarchy of (1) Systems that share the influence of similar hydrologic, geomorphologic, chemical, or biological factors (i.e., Marine, Estuarine, Riverine, Lacustrine, and Palustrine); (2) Subsystems (i.e., Subtidal and Intertidal; Tidal, Lower Perennial, Upper Perennial, and Intermittent; or Littoral and Limnetic); (3) Classes, which are based on substrate material and flooding regime or on vegetative life forms; (4) Subclasses, which recognize finer differences in life forms or substrate material than the Class; and (5) Dominance Types, which are named for the dominant plant or wildlife forms. In addition, modifying terms are applied to Classes or Subclasses.

The mapped water resources are used to provide additional guidance on planning the field surveys. Given that wetland features mapped by the National Wetlands Inventory (NWI) may or may not exist at a site because of changing conditions and development, this resource provides only preliminary data and historic data based on aerial photographic interpretation and, therefore, must be ground-truthed.

Regional Water Quality Control Plans. California has nine RWQCBs. The Study Area is located in RWQCB Region 4, the Los Angeles Region. The Los Angeles RWQCB has adopted a Water Quality Control Plan (or "Basin Plan") for this region. The Basin Plan contains goals and policies, descriptions of conditions, and proposed solutions to surface and groundwater issues. The Basin



Data Source: U.S. Department of Agriculture; Natural Resources Conservation Service
Digital Quad Source: USGS 7.5 Minute Quadrangle Point Dume

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Soil Types

Exhibit 3

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

400 200 0 400 Feet

PSOMAS

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Data Source: U.S. Fish & Wildlife Service; National Wetlands Inventory December 2016
Digital Quad Source: USGS 7.5 Minute Quadrangle Point Dume

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National Wetlands Inventory

Exhibit 4

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

500 250 0 500 Feet

PSOMAS

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Plan also establishes water quality standards for surface and groundwater resources and includes beneficial uses and levels of water quality that must be met and maintained to protect these uses. These water quality standards are implemented through various regulatory permits pursuant to the CWA, specifically Section 401 for Water Quality Certifications and Section 402 for Report of Waste Discharge (ROWD) permits.

Previous Documentation. The *Santa Monica-Malibu Unified School District Malibu Middle and High School Campus Improvement Project Environmental Impact Report* (Atkins 2011) and a biological assessment prepared by Glenn Lukos Associates (GLA 2009) provide historic information on biological and jurisdictional resources in the Study Area.

2.2 JURISDICTIONAL DELINEATION

The analysis contained in this report uses the results of (1) a topographic survey effort mapping CCC ESHA boundaries conducted on May 21 and May 23, 2019 by Psomas Senior Biologist Irena Mendez, and Land Surveyors Juan Jimenez and Philip Berredo; (2) a jurisdictional assessment conducted on November 12, 2019, by Psomas Senior Regulatory Specialist Allison Rudalevige and Psomas Senior Biologist Jonathan Aguayo; (3) a jurisdictional delineation to further refine USACE, RWQCB, CDFW, and CCC extent on January 16, 2020, by Ms. Rudalevige and Ms. Irena Mendez; and (4) a jurisdictional delineation of an expanded Study Area on April 15, 2021, by Ms. Rudalevige and Psomas Biologist Sarah Thomas. The topographic relief of the ESHA was established with a Leica Nova MS60 Multi-station with a Leica Allegro Controller for data collection. The data was processed using Computer Assisted Design (CAD) and a 1 inch equals 20 feet (1″ = 20′) map was generated. Areas under USACE, RWQCB, and CDFW authority were delineated using a 1 inch equals 100 feet (1″ = 100′) scale aerial photograph loaded onto Avenza Maps application on an Apple iPad. Drainage features were delineated as a centerline with corresponding width measurements and waterbodies were delineated as polygons. Soil test pits were dug in areas that exhibited potential hydrophytic vegetation and wetland hydrology. It should be noted that private property was observed from the campus and was not directly accessed; mapping of jurisdictional extent was truncated at the property line. Representative photographs of the Study Area are included in Attachment B.

2.2.1 USACE Waters of the United States

Psomas assessed the presence of WOTUS by determining connectivity or adjacency of on-site features to points of discharge at a TNW. Non-wetland WOTUS are delineated based on the limits of the OHWM, which can be determined by a number of factors, including (1) the presence of a clear, natural line impressed on the bank; (2) shelving along the bank; (3) changes in the character of the soil; (4) destruction of terrestrial vegetation; and (5) the presence of litter and debris. The OHWM limits (i.e., active floodplain) occurring in the Study Area were further verified using methods contained in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*, *A Delineation Manual* (Lichvar and McColley 2008) and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Curtis and Lichvar 2010).

In September 2008, the USACE issued the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). This regional supplement is designed for use with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of wetland WOTUS. Both documents prescribe using a three-parameter approach to identify wetlands. The three parameters needed to assign a site as a wetland include evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. However, problem areas may periodically or permanently

lack certain indicators due to seasonal or annual variability or the nature of the soils or plant species on site. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

2.2.2 RWQCB Waters of the State

Psomas determined the limits of RWQCB jurisdiction in the field following the methods described for USACE jurisdiction, above. The RWQCB shares USACE jurisdiction unless isolated conditions are present. If isolated waters are present, the RWQCB takes jurisdiction using the USACE's definition of the OHWM and/or the three-parameter wetlands method pursuant to the 1987 Wetlands Manual (Environmental Laboratory 1987).

2.2.3 CDFW Waters

CDFW's jurisdiction was determined measuring the distance between the top of the bank to the top of the bank of the water features on site, or if present, to the outer limit of riparian vegetation located within or immediately adjacent to feature.

2.2.4 CCC Waters

The CCC waters boundaries were delineated based on the outer extent of predominantly hydrophytic vegetation, hydric soil, or land that is flooded or saturated at some time during years of normal rainfall. The CCC uses a single-parameter approach to determine the presence of wetlands, so any feature showing evidence of hydrology, hydric soils, or hydrophytic vegetation was classified as a wetland. These areas are also considered to be ESHAs.

3.0 RESULTS

A total of five potential jurisdictional features were mapped in the Study Area: Drainage 1, Drainage 2, Drainage 3, Drainage 4, and Basin (Exhibits 5 and 6). Results of the literature review are provided in Section 3.1 and a detailed analysis of each regulatory agency's jurisdiction is provided in Section 3.2. Attachment C provides datasheets that summarize the overall condition of the individual wetlands, drainages, and indicators of OHWM.

3.1 LITERATURE REVIEW

USGS Topographic Quadrangle. Two unnamed blueline streams are depicted on the USGS Point Dume quadrangle (Exhibit 2). One runs along the western edge of the Study Area and continues off site to PCH. The other runs along the eastern half of the Study Area and continues off site to PCH. The topography in the Study Area gently slopes from the northeast to the southwest. Elevations range from approximately 100 to 200 feet above mean sea level (msl).

Color Aerial Photography. Drainage 1 is clearly shown on aerial imagery. Riparian vegetation is visible along the drainage but appears to have been denser prior to the 2018 Woolsey fire. The upstream end of Drainage 2 is visible on aerial imagery; however, its alignment is obscured as it crosses the field north of the campus baseball field. The concrete-lined portion of the channel is partially visible. Drainage 3 is faintly visible and goes underground just north of the equestrian center. Drainage 4 is obscured by vegetation. The Basin is shown on recent aerial imagery. Historic aerial imagery shows that vegetation in the basin has increased over time; surface water was present in some historic aerials. Prior to creation of the basin, the area it occupies appears to be a graded, undeveloped, upland lot adjacent to the parking lot.

U.S. Department of Agriculture, Natural Resources Conservation Service. The Study Area occurs in the following soil survey area: Santa Monica Mountains National Recreation Area. Within this soil survey area, the USDA NRCS has delineated the boundaries of 'soil map units', which often contain components of multiple soil types that may be classified as hydric or non-hydric. The National Hydric Soils List (USDA NRCS 2019) identifies a soil map unit as "hydric" if it contains either a major or minor component that is at least in part hydric.

The following soil types have been mapped in the Study Area: Cropley, coastal – Urban land – Haploxererts complex, 0 to 30 percent slopes and Cropley, coastal – Xerorthents, landscaped – Urban land complex, 0 to 9 percent slopes (Exhibit 3). These soils are not listed as hydric on the National List for the soil survey area in which they occur (USDA NRCS 2019). A description of the soils mapped in the Study Area is provided in Attachment D of this report.

U.S. Fish and Wildlife Service, National Wetlands Inventory. Drainages 1 and 3 are mapped as wetlands by the NWI (Exhibit 4). Drainage 1 is considered to be a Palustrine wetland with scrub-shrub vegetation that is temporarily flooded (PSSA). Drainage 3 is considered to be a Riverine wetland that is intermittent and temporarily flooded (R4SBA) with the downstream end a Palustrine wetland with scrub-shrub vegetation that is seasonally flooded and diked/impounded (PSSCh). The NWI also maps a Riverine feature crossing Via Cabrillo on the western side of the Study Area (labeled R4SBA on Exhibit 4). The description for NWI mapped wetland resources is provided in Attachment D of this report. Drainage 2 and the Basin were not mapped by the NWI.

The NWI data was used to provide additional guidance on planning the field surveys. Given that wetland features mapped for the NWI may or may not exist at present because of changing conditions and development, this resource provides preliminary data and historic data but must be ground-truthed for each wetland feature.

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 5a

N W E S

50 25 0 50 Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 5b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

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Study Area

Sampling Points

Ordinary High Water Mark

Non-wetland

Wetland*

* Based on USACE three-parameter approach.

Drainage 2

Match Line - Exhibit 5b

Map Extent

5a

5b

5c

5d

5e

5f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 5c

N W E S

50 25 0 50 Feet

PSOMAS

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Study Area

Sampling Points

Ordinary High Water Mark

Non-wetland

Wetland*

* Based on USACE three-parameter approach.

Drainage 3

Match Line - Exhibit 5e

Map Extent

5a

5b

5c

5d

5e

5f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 5d

N W E S

50 25 0 50

Feet

PSOMAS

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Study Area

Sampling Points

Ordinary High Water Mark

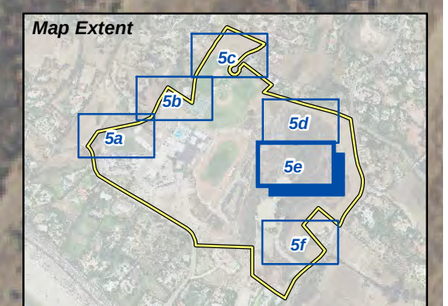
Non-wetland

Wetland*

* Based on USACE three-parameter approach.

Match Line - Exhibit 5d

Drainage 3



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 5e

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50

Feet

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Study Area

Sampling Points

Ordinary High Water Mark

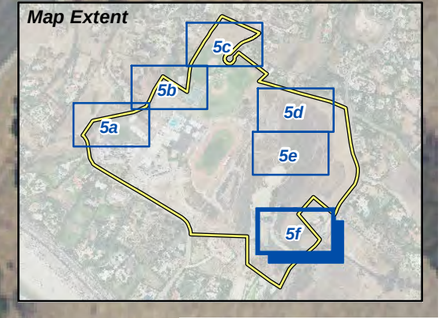
Non-wetland

Wetland*

* Based on USACE three-parameter approach.

Drainage 4

Map Extent



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Ordinary High Water Mark

Exhibit 5f

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

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Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 6a

N W E S

60 30 0 60 Feet

PSOMAS

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Study Area
Sampling Points
Top of Bank/Riparian Canopy

1A
1B
2
Drainage 1
Drainage 2

Match Line - Exhibit 6c
Match Line - Exhibit 6a

6a
6b
6c
6d
6e
6f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6b

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

60 30 0 60
Feet

PSOMAS

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Study Area

Top of Bank/Riparian Canopy

Drainage 2

Match Line - Exhibit 6b

6a 6b 6c 6d 6e 6f

Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources - Top of Bank/Riparian Canopy

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 6c

N W E S

60 30 0 60 Feet

PSOMAS

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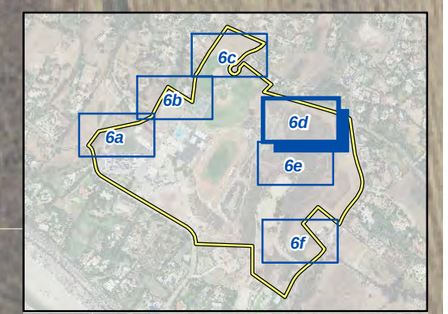
Study Area

Top of Bank/Riparian Canopy

Drainage 3

Match Line - Exhibit 6e



Aerial Source: Hexagon Geosystems 2018

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Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6d

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

60 30 0 60

Feet

PSOMAS

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Aerial Source: Hexagon Geosystems 2018

Jurisdictional Resources - Top of Bank/Riparian Canopy

Exhibit 6e

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

60 30 0 60

Feet

PSOMAS

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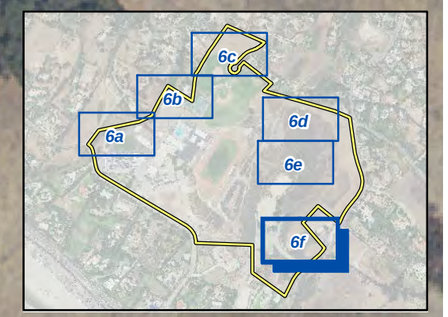
Study Area

Top of Bank/Riparian Canopy

Drainage 4



Aerial Source: Hexagon Geosystems 2018

Jurisdictional Resources – Top of Bank/Riparian Canopy

Exhibit 6f

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

60 30 0 60

Feet

PSOMAS

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Regional Water Quality Control Plans. The drainages in the Study Area are not named in the Los Angeles Basin Plan; they are located between the Trancas Canyon and Zuma Canyon drainages, shown as miscellaneous streams and coastal features on Figure 2-10 of the Basin Plan (Los Angeles RWQCB 2013). The Basin Plan does not provide water quality objectives for miscellaneous Los Angeles County coastal streams. These areas are often impaired (by high levels of minerals) and there is not sufficient historic data to designate objectives based on natural background conditions.

Beneficial uses are defined in the Porter-Cologne Act as those uses of water that are necessary for tangible and intangible economic, social, and environmental benefits. While beneficial uses are not listed for the drainages in the Study Area, they are expected to be similar to those listed for Trancas and Zuma canyons. These expected and potential beneficial uses include Municipal and Domestic Water Supply (MUN) waters; Warm Fresh Water Habitat (WARM) waters; Cold Freshwater Habitat (COLD) waters; Wildlife Habitat (WILD) waters; Rare, Threatened or Endangered Species (RARE) waters; Spawning, Reproduction and Development (SPWN) waters; Migration Habitat (MIGR) waters; Water Contact Recreation (REC-1) waters; and Non-contact Water Recreation (REC-2) waters. Descriptions of the beneficial uses applicable to waters in the Study Area are provided in Attachment D of this report.

Previous Documentation. The City of Malibu's LCP ESHA Overlay Map 2: Zuma Beach to Escondido Beach depicts a stream adjacent to the MMHS campus that flows from the undeveloped foothills to the north (which are mapped as ESHAs) to PCH. This stream alignment, as depicted on the overlay map, varies slightly from current conditions. The upstream portion in the Study Area corresponds to Drainage 2 while the downstream portion corresponds to Drainage 1. Drainages 3 and 4 are not depicted on the overlay map. It should be noted that this map is not intended to depict fixed boundaries of ESHAs and may not include all areas that are ESHAs.

As part of their biological assessment, Glenn Lukos Associates reviewed the City of Malibu's LCP and ESHA Overlay Map (GLA 2009). They concluded that the actual extent of the ESHA did not encompass the entire stream depicted on the ESHA Overlay Map due to inaccuracies in the USGS quadrangle. Specifically, the stream on the ESHA Overlay Map veers eastward across campus facilities including a parking lot, tennis court, and baseball field. The area GLA mapped as an ESHA corresponds to Drainage 1. No other on-site drainages were mapped as ESHAs by GLA.

3.2 JURISDICTIONAL ANALYSIS

Table 1 summarizes the type and extent of the jurisdictional features in the Study Area. Drainage 1 runs along the western boundary of the Study Area. It is an unlined drainage with bed and bank. It receives flow from an undeveloped lot north of the study area, including road runoff. A culvert at the cul-de-sac of Clover Heights Avenue also carries flow into this drainage. Drainage 2 runs from the northern edge of the Study Area along the baseball fields and discharges into Drainage 1. It is unlined with bed and bank at its upstream end and is lined with concrete where it runs adjacent to the tennis courts and discharges into Drainage 1. Drainage 3 starts near the northern edge of the Study Area east of the main campus and goes underground just north of the equestrian center. It is unlined with bed and bank. Drainage 4 begins at a residential property at Merritt Drive on the eastern edge of the Study Area and goes through a culvert at the access road to the equestrian center. The Basin is an artificial basin created east of Drainage 1. It receives runoff directly from the adjacent parking lot and from fields via a pipe culvert. The feature labeled R4SBA on Exhibit 4 was not observed during the site visits.

TABLE 1
SUMMARY OF JURISDICTIONAL RESOURCES IN THE STUDY AREA

Jurisdictional Features	Existing Resources (Acres)					
	Drainage				Basin	Total
	1	2	3	4		
USACE Waters of the United States						
Wetlands	0.007	n/a	n/a	n/a	n/a	0.007
Non-wetland Waters	0.063	n/a	n/a	n/a	n/a	0.063
Total USACE Waters of the United States	0.070	n/a	n/a	n/a	n/a	0.070
RWCQB Waters of the State						
Wetlands	0.007	n/a	n/a	n/a	n/a	0.007
Non-wetland Waters	0.063	0.076	0.030	0.023	0.033	0.225
Total RWQCB Waters of the State	**0.070**	**0.076**	**0.030**	**0.023**	**0.033**	**0.232**
Total CDFW Jurisdictional Resources	**0.681**	**0.127**	**0.030**	**0.331**	**0.033**	**1.202**
Total CCC Jurisdictional Resources	**0.681**	**0.127**	**0.030**	**0.331**	**0.033**	**1.202**

USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife; CCC: California Coastal Commission

3.2.1 Waters of the United States Determination

Proviso: Due to a recent federal district court decision (August 30, 2021), the current definition of WOTUS (as determined by the 2020 Navigable Waters Protection Rule) has been remanded and vacated. The U.S. Environmental Protection Agency (USEPA) and the USACE are currently in the process of providing guidance on WOTUS. The determination of the extent of WOTUS in the Study Area is subject to the new guidance from the USEPA and the USACE. The discussion below is based on the 2020 Navigable Waters Protection Rule.

Connectivity to a Traditional Navigable Water

The linear extent of Drainage 1 was delineated from the northern edge of the Study Area downstream to a corrugated pipe culvert passing under Morning View Drive. Based on aerial imagery and USGS topographic contours, this drainage continues primarily above ground until it is undergrounded at PCH and discharges onto Zuma Beach to the Pacific Ocean, a TNW. Under the current definition of WOTUS, relatively permanent waters connected to a TNW are considered WOTUS, while ephemeral waters are not considered jurisdictional. Surface water and soil saturation were observed at the upstream end of Drainage 1 during the November 12, 2019 and January 16, 2020, site visits. Given that the initial site visit was not preceded by a rainfall event (the only rainfall noted in the region was 0.01 inch on November 2, 2019; CIMIS 2019), the drainage is considered to exhibit surface flow more than just ephemerally (i.e., for extended periods and not only following a rainfall event). Therefore, Drainage 1 is considered to be a relatively permanent water. As such, it is a WOTUS.

Drainage 2 crosses an undeveloped lot north of the campus athletic fields and discharges into Drainage 1. Surface water or soil saturation were not observed during either survey visit and the drainage was unvegetated and so did not support plant species that rely on consistent water. This drainage appears to carry only ephemeral flow. Given the repeal of the 2015 Clean Water Rule, ephemeral waters are not considered jurisdictional. Therefore, Drainage 2 is not considered to be a WOTUS.

Drainage 3 crosses the undeveloped area east of the main campus and is undergrounded north of the equestrian center. Aerial imagery does not show if it resurfaces, but the USGS topographic map shows it continuing to PCH. It is likely that this drainage eventually discharges in the Pacific Ocean. Surface water or soil saturation were not observed during the survey visit and this drainage does not support plant species that rely on consistent water. This drainage appears to carry only ephemeral flow. Therefore, Drainage 3 is not considered to be a WOTUS.

Drainage 4 begins at a residential property at Merritt Drive on the eastern edge of the Study Area and goes under a culvert at the access road to the equestrian center; it appears to dissipate on the other side of the access road. As such, it does not have a connection to a TNW and would be considered an isolated water. Therefore, Drainage 4 is not considered to be a WOTUS.

The Basin drains into Drainage 1 via a pipe culvert. Artificial, constructed settling basins created in dry land are not considered WOTUS. Given that the Basin was artificially created in uplands and receives ephemeral surface flow only following rainfall events, it is not considered to be a WOTUS.

Limits of Waters of the United States

Drainage 1 was determined to be a WOTUS. An Arid West Ephemeral and Intermittent Streams OHWM Datasheet was completed for a representative area showing evidence of an OHWM to determine extent of WOTUS (see Attachment C). Evidence of an OHWM for Drainage 1 consists of a change in sediment texture, a change in vegetation species (from obligate, facultative wetland, or facultative species within the OHWM to upland species on and above the banks; most noticeable at the upstream end of the drainage), a change in vegetation cover (high density within the OHWM; most noticeable at the upstream end of the drainage), and a break in bank slope (most noticeable at the downstream end of the drainage where the banks are steeper).

Approximately 0.007 acre of WOTUS under the regulatory authority of the USACE occurs in the Study Area (Table 1). This is shown on Exhibit 5 as the areas within the OHWM for Drainage 1.

Wetlands Determination

Paired sampling points (i.e., one placed within the OHWM in a vegetated area and one placed adjacent, but outside the OHWM) were assessed at the upstream end of Drainage 1 where hydrophytic vegetation was most abundant. A formal sampling point was not assessed in downstream portions of Drainage 1, but an exploratory test pit was dug under the willow riparian canopy and no indicators of hydric soils were observed there. Therefore, areas lacking herbaceous hydrophytic vegetation were considered non-wetland WOTUS. One sampling point was assessed adjacent to vegetation in the Basin in order to determine whether it would be considered wetland waters of the State, discussed below. Table 2 provides a summary of data collected at each sampling point.

TABLE 2
SUMMARY OF SAMPLING POINT DATA

Sampling Point	Vegetated	Dominance Test Result[a]	Prevalence Index Result	Hydric Soil Indicators	Wetlands Hydrology Indicators	Wetland?
1A	Yes	Pass	N/A	F6	A1, A3	Yes
1B	No	N/A	N/A	F6	A3	No
2	Yes	Pass	N/A	N/A	B3, B10	No

N/A: not applicable

[a] Greater than 50 percent of dominant species are classified as obligate wetland, facultative wetland, or facultative.

Hydric Soil Indicators
F6 Redox Dark Surface

Wetland Hydrology Indicators
A1 Surface Water
A3 Saturation
B3 Drift Deposits
B10 Drainage Patterns

Vegetation

Sampling points 1A and 3 were vegetated and passed the dominance test. Therefore, they met the hydrophytic vegetation criterion for wetlands. Sampling point 1B was on an upland slope above the OHWM that was unvegetated and did not meet the hydrophytic vegetation criterion for wetlands.

Soils

Sampling points 1A and 1B contained indicators of hydric soil. Therefore, these areas met the hydric soil criterion for wetlands.

Hydrology

Sampling points 1A, 1B, and 3 contained indicators of wetland hydrology. Therefore, these areas met the hydrology criterion for wetlands.

Results

Sampling point 1A in Drainage 1 met all three parameters for wetlands. Similar vegetation (specifically areas containing obligate wetland plant species) and hydrology indicators were observed downstream from this sampling point. Areas with these similar conditions were considered wetland WOTUS. The upstream portion of Drainage 1 was, therefore, mapped as wetland WOTUS while the downstream portion was mapped as non-wetland waters. Therefore, of the 0.070 acre of WOTUS mapped in the Study Area, 0.007 acre would be considered wetlands.

3.2.2 Regional Water Quality Control Board Jurisdiction

All features with USACE jurisdiction, i.e., Drainage 1, are also subject to the jurisdiction of the RWQCB. In addition, the Porter-Cologne Act provides the State with authority to regulate waters of the State that are not under USACE jurisdiction. Areas within the OHWM of Drainages 2, 3, and 4 and the Basin would be subject to the jurisdiction of the RWQCB. Therefore, approximately 0.232 acre of waters of the State under the regulatory authority of the RWQCB occurs in the Study Area (Table 1). Of this 0.232 acre, 0.007 acre would be considered wetland waters of the State in Drainage 1. This is shown on Exhibit 5 as the areas within the OHWM for Drainages 1, 2, 3, 4, and the Basin.

3.2.3 California Department of Fish and Wildlife Jurisdiction

Drainages 1, 2, 3, and 4 and the Basin have defined beds and banks; Drainages 1 and 4 also have a riparian canopy. These features would be under the regulatory authority of the CDFW. Approximately 1.202 acres of waters under the regulatory authority of the CDFW occurs in the Study Area (Table 1). This is shown on Exhibit 6 as all areas within the top of bank/riparian canopy boundaries.

3.2.4 California Coastal Commission Jurisdiction

Because the CCC uses a one parameter approach to identify the limits of jurisdictional wetlands, all features found within the Study Area are subject to CCC jurisdiction based on all of them having either wetland hydrology and/or hydrophytic vegetation. Approximately 1.202 acres of wetlands under the regulatory authority of the CCC occurs in the Study Area. (Table 1). This is shown on Exhibit 6 as all areas within the top of bank/riparian canopy boundaries.

Drainage 1 would be considered an ESHA in the City of Malibu's LCP because it encompasses both wetland and riparian habitat. Drainage 4, which also contains riparian habitat, would also be considered an ESHA. While the Basin contains hydrophytic vegetation, it is artificially created and located adjacent to parking areas and buildings. As such, it would not provide the functions of habitat required to meet the definitions of an ESHA. In addition, to function as designed (i.e., to accept storm water runoff from the campus), it must be periodically cleaned out to retain the capacity to prevent flooding. To create an ESHA boundary around the Basin, and its associated buffer, would prevent such maintenance. Drainages 2 and 3 are ephemeral and flow primarily through upland areas dominated by weedy, non-native vegetation. Given the low habitat value of these areas, Drainages 2 and 3 would not be considered ESHAs. Therefore, 1.012 acres of ESHAs (i.e., the area within top of bank/riparian canopy of Drainages 1 and 4) occur within the Study Area.

4.0 REGULATORY APPROVAL PROCESS

4.1 REGULATORY PERMIT REQUIREMENTS

This section summarizes the various permits, agreements, and certifications that may be required prior to initiation of project activities that involve impacts to jurisdictional waters. The final determination of permitting needs would require an analysis of temporary and permanent impacts.

- USACE Section 404 Permit
- RWQCB Section 401 Water Quality Certification or Report of Waste Discharge
- CDFW Section 1602 Lake or Streambed Alteration Agreement
- CCC Coastal Development Permit

It should be noted that all regulatory permit applications can be processed concurrently. The USACE permit would be issued subject to the receipt of the RWQCB's Section 401 Water Quality Certification.

4.1.1 U.S. Army Corps of Engineers

Prior to construction in WOTUS, a Section 404 permit from the USACE is required. Regulatory authorization in the form of a Nationwide Permit (NWP) or regional permit is provided for certain categories of activities. If the NWP conditions cannot be met, an Individual Permit (IP) will be required.

Issuance of the USACE Section 404 permit would be contingent upon the approval of a Section 401 Water Quality Certification from the Los Angeles RWQCB. The RWQCB requires certification of the project's California Environmental Quality Act (CEQA) documentation before it will approve the Section 401 Water Quality Certification or ROWD. The RWQCB, as a responsible agency, will use the project's CEQA document to satisfy its own CEQA compliance requirements.

4.1.2 Regional Water Quality Control Board

The RWQCB has regulatory jurisdiction over WOTUS equal to the jurisdiction of the USACE under the federal CWA and jurisdiction over isolated waters under the Porter-Cologne Act; in these cases, the RWQCB issues a Water Quality Certification under Section 401 of the federal CWA. Prior to construction, a Section 401 Water Quality Certification would be required from the Los Angeles RWQCB for the discharge of dredge or fill materials into waters of the State. If no federal waters are impacted, then RWQCB authorization would be in the form of a ROWD.

The RWQCB requires the Applicant to address urban storm water runoff during and after construction in the form of Best Management Practices (BMPs). These BMPs are intended to address the treatment of pollutants carried by storm water runoff and are required in all complete applications. The notification/application for a CWA Section 401 Water Quality Certification must also address compliance with the Basin Plan. Please note that the application would also require the payment of an application fee, which would be based on project impacts.

4.1.3 California Department of Fish and Wildlife

Prior to construction, a Notification of Lake or Streambed Alteration (LSA) must be submitted to the CDFW that describes any proposed streambed alteration contemplated by a project. If an LSA Agreement is required, the CDFW may want to conduct an on-site inspection.

In addition to the formal application materials and the fee, a copy of the appropriate environmental document (e.g., Environmental Impact Report) should be included in the submittal, consistent with CEQA requirements. The CDFW will not deem the application to be complete until the application fees have been paid and the agency is provided with a certified CEQA document and a signed copy of the receipt of County Clerk filing fees for the Notice of Determination (NOD).

4.1.4 California Coastal Commission

Development within the coastal zone may not commence until a CDP has been issued by the City of Malibu, which has a CCC-certified LCP. After certification of an LCP, CDP authority is delegated to the appropriate local government, but the CCC retains original permit jurisdiction over certain specified lands (e.g., tidelands and public trust lands). The CCC also has appellate authority over development approved by local governments in specified geographic areas and certain other developments.

According to the City of Malibu's LCP, buffer areas (at least 100 feet in width) shall be provided around wetlands to ensure the biological integrity and preservation of the wetland they are designed to protect.

5.0 RECOMMENDATIONS

Based on the conclusions of this Jurisdictional Delineation Report, the following recommendations are identified if jurisdictional waters will be impacted by a project:

1. An on-site meeting should be scheduled with USACE, CDFW, RWQCB, and CCC staff to discuss site conditions; proposed project activities; biological and jurisdictional resources and impacts to these resources resulting from a proposed project; proposed minimization measures and the mitigation program to offset these impacts; and the regulatory permit process.
2. The appropriate permits, agreements, and certifications, as discussed in Section 4, should be prepared and submitted for projects impacting jurisdictional waters.
3. According to the City of Malibu's LCP, buffer areas shall be provided around wetlands to ensure the biological integrity and preservation of the wetland they are designed to protect. While the LCP ESHA overlay zone specifies a buffer to "ensure continued protection of the habitat areas" and for new development specifically references a 100-foot buffer "from the outer edge of the bank of the subject stream as the area within the top of bank and outer riparian canopy boundaries", it was noted that over 85% of the ESHA's 100-foot buffer had been developed in the years prior to the enactment of the California Coastal Act of 1972.

   During the early stages of the specific planning process, among other project objectives, the District recognized that the ESHA offered opportunities to enhance their educational goals of providing for outdoor learning spaces and interpretive opportunities; as well as providing an opportunity to restore the natural environment and improve campus connectivity through the development of the proposed pedestrian pathways. The District recognized that the existing conditions included incompatible development into the edge of the ESHA bank as well as the degraded nature of the ESHA itself. In discussions with the CCC, the District decided that it could restore the degraded drainage comprised of approximately 0.7 acre as well as 1.35 acres of upland areas within the ESHA's 50-foot buffer and still meet the educational and design goals for the campus. In addition, within the remaining 50 feet beyond the 50-foot ESHA buffer, the project would include land uses compatible with the natural habitat that would not incur significant disruption of the natural habitat, including a looping trail, interpretive stations overlooking the ESHA, and largely native landscaping within the campus itself contributing to the high scenic quality of the area.

6.0 REFERENCES

Atkins (formerly PBS&J). 2011 (July). *Santa Monica-Malibu Unified School District Malibu Middle and High School Campus Improvement Project Environmental Impact Report* (SCH No. 2008091059). Los Angeles, CA: Atkins.

California Irrigation Management Information System (CIMIS). 2019. CIMIS Monthly Report for the Santa Monica – Los Angeles Basin – Station 99. Sacramento, CA: California Department of Water Resources, CIMIS. http://www.cimis.water.ca.gov.

Curtis, K.E. and R.W. Lichvar. 2010 (July). *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. Hanover, NH: USACE, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual* (Technical Report Y-87-1). Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

Federal Geographic Data Committee (FGDC). 2013. *Classification of Wetlands and Deepwater Habitats of the United States* (FGDC-STD-004-2013, 2nd Ed.). Washington, D.C.: FGDC and U.S. Fish and Wildlife Service. https://www.fgdc.gov/standards/projects/wetlands/index_html.

Glenn Lukos Associates (GLA). 2009 (December). *Biological Assessment Malibu Middle and High School Campus Improvements Project City of Malibu, Los Angeles County, California*. Lake Forest, CA: GLA.

Lichvar, R.W. and S.M. McColley. 2008 (August). *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual*. Hanover, NH: USACE, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

Los Angeles Regional Water Quality Control Board (Los Angeles RWQCB). 2013. *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*. Monterey Park, CA: Los Angeles RWQCB.

Malibu, City of. 2002 (adopted September 13, as amended). City of Malibu Local Coastal Program Land Use Plan. http://www.qcode.us/codes/malibu-coastal/.

PlaceWorks. 2021 (April). *Malibu Middle and High School Campus Specific Plan*. Los Angeles, CA: PlaceWorks.

U.S. Army Corps of Engineers (USACE). 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0). (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2019. State Soil Data Access Hydric Soils List. Washington, D.C.: USDA, NRCS. http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/.

U.S. Fish and Wildlife Service (USFWS). 2019. Wetland Mapper [Information for the Study Area]. Washington D.C.: USFWS, National Wetlands Inventory. http://www.fws.gov/wetlands/Data/Mapper.html.

ATTACHMENT A

SUMMARY OF REGULATORY AUTHORITY

REGULATORY AUTHORITY

This attachment summarizes the regulatory authority of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), the California Department of Fish and Wildlife (CDFW), and the California Coastal Commission (CCC) over activities that have potential to impact jurisdictional resources.

U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into waters of the United States (WOTUS) under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This permitting authority applies to all WOTUS where the material (1) replaces any portion of WOTUS with dry land or (2) changes the bottom elevation of any portion of any WOTUS. These fill materials would include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in these waters.

Waters of the United States

WOTUS can be divided into three categories: territorial seas, tidal waters, or non-tidal waters. The term WOTUS is defined by the *Code of Federal Regulations*[1] (CFR) and includes:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide.
2. All interstate waters including interstate wetlands.
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    - Which are or could be used by interstate or foreign travelers for recreational purposes; or
    - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - Which are used or could be used for industrial purpose by industries in interstate commerce.
4. All impoundments of waters otherwise defined as WOTUS under the definition.
5. Tributaries of waters identified [above].
6. The territorial seas.
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified [above].

The U.S. Supreme Court has issued three decisions that provide context and guidance in determining the appropriate scope of WOTUS. In *United States v. Riverside Bayview Homes*,[2] the Court upheld the inclusion of adjacent wetlands in the regulatory definition of WOTUS. In *Solid*

[1] Specifically, Title 33, Navigation and Navigable Waters; Part 328, Definition of waters of the United States; §328.3, Definitions.

[2] *United States v. Riverside Bayview Homes, Inc.*, 474 U.S. 121 (1985)

Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC),[3] the Court held that the use of "isolated" non-navigable intrastate ponds by migratory birds was not, by itself, sufficient basis for the exercise of federal regulatory authority under the CWA. In *Rapanos v. United States* (Rapanos),[4] a majority of the U.S. Supreme Court overturned two Sixth Circuit Court of Appeals decisions, finding that certain wetlands constituted WOTUS under the CWA. In his plurality opinion, Justice Scalia argued that WOTUS should not include channels through which water flows intermittently or ephemerally or channels that periodically provide drainage for rainfall. He also stated that a wetland may not be considered "adjacent to" remote WOTUS based on a mere hydrologic connection. Justice Kennedy authored a separate concurring opinion concluding that wetlands are WOTUS if they, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as "navigable". Lacking a majority opinion, regulatory jurisdiction under the CWA exists over a water body if either the plurality's or Justice Kennedy's "significant nexus" standard is satisfied.

In 2015, the USACE and the U.S. Environmental Protection Agency (USEPA) published a final rule (2015 Rule) clarifying the scope of WOTUS protected under the CWA. One of the major changes was to make all tributaries and adjacent waters jurisdictional, by rule.

In December 2018, the USEPA and the Department of the Army (DOA) proposed a new definition of WOTUS that clarifies federal authority under the federal CWA consistent with the February 2017 Presidential Executive Order entitled "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule". On September 12, 2019, the USEPA and DOA signed a final "Step One Rule" to repeal the 2015 Rule and re-codify the regulatory text defining WOTUS that existed prior to the 2015 Rule. The new regulations went into effect on December 23, 2019.[5] With this new final rule, the regulations defining the scope of federal CWA jurisdiction are those portions of the CFR as they existed before the amendments promulgated in the 2015 rule.

The Step One Rule was replaced by the Navigable Waters Protection Rule (Step Two Rule). On January 23, 2020, the USEPA and DOA finalized the Step Two Rule defining WOTUS. This rule was published in the *Federal Register* on April 21, 2020, and went into effect 60 days following publication (i.e., on June 22, 2020). The Step Two Rule changed the definition of WOTUS. Under this new definition, WOTUS encompasses territorial seas and TNWs; perennial and intermittent tributaries that contribute surface water flow to such waters; certain lakes, ponds, and impoundments of jurisdictional waters; and wetlands adjacent to other jurisdictional waters. Under this new definition, the following notable changes were implemented:

- Rivers and streams that contribute perennial or intermittent flow to downstream TNWs are jurisdictional but ephemeral features are not considered jurisdictional.
- The process of determining whether a "significant nexus" exists between a water and a downstream TNW as directed under the agencies' 2008 *Rapanos* guidance or whether a water has a significant nexus to a TNW, interstate water or territorial sea has been eliminated.
- No ditches constructed in upland and no ditches with ephemeral flow would be considered jurisdictional.
- Wetlands must either abut jurisdictional waters or have a direct hydrological surface connection to jurisdictional waters in a typical year to be jurisdictional themselves;

[3] *Solid Waste Agency of Northern Cook Cty. v. Army Corps of Engineers,* 531 U.S. 159 (2001)

[4] Consolidated cases: *Rapanos v. United States* and *Carabell v. United States* (126 S. Ct. 2208 2006) refer to the U.S. Supreme Court's decision concerning USACE jurisdiction over waters of the United States under the CWA.

[5] 40 CFR 230.3(s).

> wetlands physically separated from jurisdictional waters by a berm, dike, or other barrier are not adjacent if they lack a direct hydrologic surface connection to a jurisdictional water in a typical year.

On June 9, 2021, the USEPA and DOA announced their intent to revise the definition of WOTUS to better protect our nation's vital water resources that support public health, environmental protection, agricultural activity, and economic growth. Until a new rule is in effect, WOTUS will be defined by the Navigable Waters Protection Rule.

Ordinary High Water Mark

The landward limit of tidal WOTUS is the high-tide line. In non-tidal waters where adjacent wetlands are absent, the lateral limits of USACE jurisdiction extend to the ordinary high water mark (OHWM).[6] The OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas".[7] When wetlands are present, the lateral limits of USACE jurisdiction extend beyond the OHWM to the limits of the adjacent wetlands.[8]

Wetlands

A wetland is a subset of jurisdictional waters and is defined by the USACE and the USEPA as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions".[9] Wetlands generally include swamps, marshes, bogs, and areas containing similar features.

The definition and methods for identifying wetland resources can be found in the USACE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*,[10] a supplement to the 1987 *Corps of Engineers Wetlands Delineation Manual*.[11] Both the 1987 Wetlands Manual and the 2008 Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of wetland WOTUS. Pursuant to these manuals, a three-parameter approach is used to identify wetlands and requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. In order to be considered a wetland, an area must figure one or more indicators of all three of these parameters. However, problem areas may periodically or permanently lack certain indicators for reasons such as seasonal or annual variability of rainfall, vegetation, and other factors. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

Section 404 Permit

Except as specified in Section 323.4 of the CFR, impacts to WOTUS require a Section 404 Permit. Permit authorization may be in the form of (1) a "general permit" authorizing a category of activities

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6 U.S. Army Corps of Engineers (USACE). 2005 (December 7). Regulatory Guidance Letter. Ordinary High Water Mark Identification. Washington, D.C.: USACE.

7 *Code of Federal Regulations* (CFR), Title 33, §328.3(e)

8 USACE 2005

9 33 CFR §328.3(b)

10 USACE. 2008a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

11 Environmental Laboratory. 1987. Cor*ps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1)*. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

in a specific geographical region or nationwide or (2) an "individual permit" (IP) following a review of an individual application form (to be obtained from the district office having jurisdiction over the waters in which the activity is proposed to be located).

Regulatory authorization in the form of a Nationwide Permit (NWP) is provided for certain categories of activities such as repair, rehabilitation, or replacement of a structure or fill which was previously authorized; utility line placement; or bank stabilization. The current set of NWPs became effective on March 19, 2017, and will expire in on March 18, 2022. On January 13, 2021, the USACE reissued 12 NWPs and published 4 new NWPs; these 16 NWPs went into effect on March 15, 2021 and will expire on March 14, 2026. The 40 existing NWPs that were not reissued or modified by the January 13, 2021, final rule remain in effect. NWPs authorize only those activities with minimal adverse effects on the aquatic environment and are valid only if the conditions applicable to the permits are met or waivers to these conditions are provided in writing from the USACE. Please note that waivers may require consultation with affected federal and State agencies, which can be a lengthy process with no mandated processing time frames. Certain activities do not require submission of an application form, but may require a separate notification. If the NWP conditions cannot be met, an IP will be required. WOTUS temporarily filled, flooded, excavated, or drained but restored to pre-construction contours and elevations after construction are not included in the measurement of loss of WOTUS. The appropriate permit authorization will be based on the amount of impacts to WOTUS, as determined by the USACE. There is no filing fee for the Section 404 Permit.

Approximately three or four months are typically required to process a routine permit application; large or complex activities may take longer to process. When a permit application is received, it will be assigned an identification number and reviewed for completeness by the District Engineer. If an application is incomplete, additional information will be requested within 15 days of receipt of the application. If an application is complete, the District Engineer will issue a public notice within 15 days unless specifically exempted by provisions of the CFR. Public comments will be accepted no more than 30 days but not less than 15 days from the date of public notice; these will become part of the administrative record of the application. Generally, the District Engineer will decide on the application no later than 60 days after receipt of the completed application. Additional permit situations may increase the permit processing time (e.g., projects involving a Section 401 Water Quality Certification, a coastal zone management consistency analysis, historic properties, a federal agency, and/or Endangered species). The Project Applicant will be given time, not to exceed 30 days, to respond to requests of the District Engineer.

On January 31, 2007, the USACE published a memorandum clarifying the Interim Guidance for Amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) implementing regulations.[12] The Interim Guidance applies to all Department of the Army requests for authorization/verification, including Individual Permits (IPs, i.e., standard permits and letters of permission) and all Regional General Permits (RGPs) and Nationwide Permits (NWPs). The State or Tribal Historic Preservation Officer (SHPO/THPO) has 30 days to respond to a determination that a proposed activity, which otherwise qualifies for an NWP or an RGP, has no effect or no adverse effect on a historic property. If the SHPO/THPO does not respond within 30 days of notification, the Los Angeles District may proceed with verification. If the SHPO/THPO disagrees with the District's determination, the District may work with the SHPO/THPO to resolve the disagreement or request an opinion from the ACHP. The USACE will submit the Draft Jurisdictional Delineation Report to the SHPO/THPO for review prior to initiating the actual regulatory process.

[12] USACE. 2007 (January 31). Memorandum: Interim Guidance for Amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) Implementing Regulations. Washington, D.C.: USACE.

Please note that, if the USACE determines that the drainages/waterbodies are jurisdictional and would be impacted by project implementation, the Applicant will be required to obtain a CWA Section 401 Water Quality Certification from the RWQCB before the USACE will issue the Section 404 Permit. If the USACE determines that the impacted drainage/waterbody is not jurisdictional, the Applicant will be required to obtain RWQCB authorization under the provisions of a Report of Waste Discharge (ROWD).

On June 1, 2020, the USEPA finalized the "Clean Water Act Section 401 Certification Rule". The new regulation requires the USACE to play an active role in the 401 Certification Process. This active role includes reviews and approvals by the USACE prior to the RWQCB issuing a 401 Certification. The new regulations also include reviews and approvals by the USEPA prior to the USACE issuing a Section 404 Permit. The new 401 Certification rule went into effect on September 11, 2020.

Under the new 401 Certification Rule, a 401 Certification Request must be filed with the USACE and the RWQCB concurrently. The USACE has 15 days to review the Certification Request for compliance with the nine required components. The USACE then notifies RWQCB and project proponent that the Certification request is complete. The USACE concurrently notifies the RWQCB of the reasonable time period to act on the Certification Request. That time period is not to exceed 1 year.

Once the RWQCB issues the 401 Certification, the USACE has 5 days to notify the USEPA that the 401 Certification has been issued. The USEPA then has 30 days to notify neighboring jurisdictions of the 401 Certification. Neighboring jurisdictions have 60 days to respond. If there are no objections to the 401 Certification, the USACE issues the 404 permit.

On June 2, 2021, the USEPA published a notice of intention to reconsider and revise the Clean Water Act Section 401 Certification Rule. At this time, they are currently accepting public comment. Until a new rule goes into effect, the current 401 Certification Rule stands.

Jurisdictional Determinations

Pursuant to USACE Regulatory Guidance Letter (RGL) 08-02 (dated June 26, 2008), the USACE can issue two types of jurisdictional determinations to implement Section 404 of the CWA: Approved Jurisdictional Determinations and Preliminary Jurisdictional Determinations.[13] An Approved Jurisdictional Determination is an official USACE determination that jurisdictional WOTUS, Navigable WOTUS, or both are either present or absent on a site. An Approved Jurisdictional Determination also identifies the precise limits of jurisdictional waters on a project site.

The USACE will provide an Approved Jurisdictional Determination when (1) an Applicant requests an official jurisdictional determination; (2) an Applicant contests jurisdiction over a particular water body or wetland; or (3) when the USACE determines that jurisdiction does not exist over a particular water body or wetland. The Approved Jurisdictional Determination then becomes the USACE's official determination that can then be relied upon over a five-year period to request regulatory authorization as part of the permit application.

In addition, an Applicant may decline to request an Approved Jurisdictional Determination and instead obtain a USACE IP or General Permit Authorization based on a Preliminary Jurisdictional Determination or, in certain circumstances (e.g., authorizations by non-reporting nationwide general permits), with no Jurisdictional Determination.

[13] USACE. 2008b (June 26). Regulatory Guidance Letter. Jurisdictional Determinations. Washington, D.C.: USACE.

Preliminary Jurisdictional Determinations are non-binding, advisory in nature, and may not be appealed. They indicate that WOTUS may occur on a project site. An Applicant may elect to use a Preliminary Jurisdictional Determination to voluntarily waive or set aside questions regarding CWA jurisdiction over a site, usually in the interest of expediting the permitting process. The USACE will determine what form of Jurisdictional Determination is appropriate for a particular project site.

The USACE Regulatory Branch Offices will coordinate with the USEPA Regional Office and USACE Headquarters (HQ), as outlined in its January 28, 2008, memorandum entitled "Process for Coordinating Jurisdictional Determinations Conducted Pursuant to Section 404 of the CWA in Light of the Rapanos and SWANCC Supreme Court Decisions".[14] The guidance provided in this memorandum is quoted as follows:

1. Effective immediately, unless and until paragraph 5(b) of the June 5, 2007, Rapanos guidance coordination memorandum is modified by a joint memorandum from Army and USEPA, we will follow these procedures:
    a. For jurisdictional determinations involving significant nexus determinations, USACE districts will send copies of draft jurisdictional delineations via e-mail to appropriate EPA regional offices. The USEPA regional office will have 15 calendar days to decide whether to take the draft jurisdictional delineation as a special case under the January 19, 1989, "Memorandum of Agreement Between the Department of the Army and the USEPA Concerning the Determination of the Section 404 Program and the Application of the Exceptions under Section 404(f) of the Clean Water Act". If the USEPA regional office does not respond to the district within 15 days, the district will finalize the jurisdictional determination.
    b. For jurisdictional determinations involving isolated waters determinations, the agencies will continue to follow the procedure in paragraph 5(b) of June 5, 2007, coordination memorandum, until a new coordination memorandum is signed by USACE and USEPA. (In accordance with paragraph 6 of the June 5, 2007, coordination memorandum, this is a 21-day timeline that can only be changed through a joint memorandum between agencies).
2. Approved JDs are not required for non-reporting NWPs, unless the project proponent specifically requests an approved JD. For proposed activities that may qualify for authorization under a State Programmatic General Permit (SPGP) or RGP, an approved JD is not required unless requested by the project proponent.
3. The USACE will continue to work with USEPA to resolve the JDs involving significant nexus and isolated waters determinations that are currently in the elevation process.
4. USACE districts will continue posting completed Approved JD Forms on their web pages.

Regional Water Quality Control Board

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne

[14] USACE. 2008c (January 28). *Memorandum for Commander, Major Subordinate Commands and District Commands. Process for Coordinating Jurisdictional Determinations Conducted Pursuant to Section 404 of the Clean Water Act in Light of the Rapanos and SWANCC Supreme Court Decisions.* Washington, D.C.: USACE.

Water Quality Control Act (Porter-Cologne Act). The RWQCB's jurisdiction extends to all waters of the State and to all WOTUS, including wetlands (isolated and non-isolated).

Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide certification that there is reasonable assurance that an activity which may result in discharge to navigable waters will not violate water quality standards. Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives that can be found in each of the nine RWQCBs' Basin Plans.

The Porter-Cologne Act provides the State with very broad authority to regulate waters of the State (which are defined as any surface water or groundwater, including saline waters). The Porter-Cologne Act has become an important tool in the post-SWANCC (*Solid Waste Agency of Northern Cook Counties vs. United States Army Corps of Engineers*) and Rapanos era with respect to the State's authority over isolated waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file an ROWD when there is no federal nexus, such as under Section 404(b)(1) of the CWA. Although "waste" is partially defined as any waste substance associated with human habitation, the RWQCB interprets this to include fill discharge into water bodies.

On August 28, 2019, the Office of Administrative Law (OAL) approved the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to "waters of the State". The procedures will go into effect on May 28, 2020. Under these new regulations, the SWRCB and its nine RWQCBs will assert jurisdiction over all existing WOTUS, and all waters that would have been considered WOTUS under the 2015 Rule. Thus, the WOTUS that would no longer be under USACE jurisdiction would be under SWRCB jurisdiction.

Wetlands

In 2019, the SWRCB adopted rules to provide a common, statewide definition of what constitutes a wetland and to provide consistency in the way they and the RWQCBs regulate activities to protect wetlands and other waterways. The SWRCB defines an area as wetlands "if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation".[15] The following wetlands are waters of the State:

1. Natural wetlands,
2. Wetlands created by modification of a surface water of the State, and
3. Artificial wetlands that meet any of the following criteria:
    a. Approved by an agency as compensatory mitigation for impacts to other waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b. Specifically identified in a water quality control plan as a wetland or other water of the State;

[15] State Water Resources Control Board (SWRCB). 2019 (March 22). State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State.

c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or

d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (e.g., the following artificial wetlands are not waters of the State unless they also satisfy the criteria set forth in 2, 3a, or 3b):

    i. Industrial or municipal wastewater treatment or disposal,

    ii. Settling of sediment,

    iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,

    iv. Treatment of surface waters,

    v. Agricultural crop irrigation or stock watering,

    vi. Fire suppression,

    vii. Industrial processing or cooling,

    viii. Active surface mining – even if the site is managed for interim wetlands functions and values,

    ix. Log storage,

    x. Treatment, storage, or distribution of recycled water, or

    xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or

    xii. Fields flooded for rice growing.

All artificial wetlands that are less than an acre in size and do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c are not waters of the State.

Section 401 Water Quality Certification

Issuance of the USACE Section 404 Permit would be contingent upon the approval of a Section 401 Water Quality Certification from the RWQCB. Also, the RWQCB requires certification of the project's California Environmental Quality Act (CEQA) documentation before it will approve the Section 401 Water Quality Certification or ROWD. The RWQCB, as a responsible agency, will use the project's CEQA document to satisfy its own CEQA-compliance requirements.

On June 1, 2020, the USEPA finalized the "Clean Water Act Section 401 Certification Rule" to implement the water quality certification process consistent with the text and structure of the Clean Water Act (CWA). The final rule establishes procedures that promote consistent implementation of CWA section 401 and regulatory certainty in the federal licensing and permitting process. The new regulation includes reviews and approvals by the USACE prior to the RWQCB issuing a 401 Certification and reviews and approvals by the EPA prior to the USACE issuing a 404. The new 401 rule went into effect on September 11, 2020.

The new certification rule defines a discharge subject to 401 Certification as a discharge from a point source into a water of the United States. The new rule also states that States with additional water quality regulations cannot use these to expand the certification request.

The new rule requires all project proponents to request a pre-filing meeting with the RWQCB at least 30 days prior to filing a 401 "Certification Request". The filing procedure has been simplified to require the filing of a "Certification Request", rather than the acceptance of a "complete application". The certification request has nine mandatory components:

1. identify the project proponent(s) and a point of contact;
2. identify the proposed project;
3. identify the applicable federal license or permit;
4. identify the location and nature of any potential discharge that may result from the proposed project and the location of receiving waters;
5. include a description of any methods and means proposed to monitor the discharge and the equipment or measures planned to treat, control, or manage the discharge;
6. include a list of all other federal, interstate, tribal, state, territorial, or local agency authorizations required for the proposed project, including all approvals or denials already received;
7. include documentation that a pre-filing meeting request was submitted to the certifying authority at least 30 days prior to submitting the certification request;
8. contain the following statement: 'The project proponent hereby certifies that all information contained herein is true, accurate, and complete, to the best of my knowledge and belief; and
9. contain the following statement: 'The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.'

There is a mandatory 30 day wait period between a pre-filing meeting request and the filing of a Certification Request. A Certification Request must be filed with the RWQCB and the USACE concurrently. USACE reviews the Certification Request for the nine required components. The USACE has 15 days to review the Certification Request. The USACE then notifies the RWQCB that request is complete. And concurrently notifies the RWQCB of the reasonable time period to act on the Certification Request. The reasonable time period is not to exceed 1 year. Within 15 days of receipt of the Certification Request, the RWQCB must provide the applicant with the following: 1) date of receipt; 2) applicable reasonable period of time to act on the Certification Request; and 3) date upon which waiver will occur if the certifying authority fails or refuses to act on the Certification Request.

Once the RWQCB issues the 401 Certification, the USACE has 5 days to notify the USEPA that the 401 Certification has been issued. The USEPA then has 30 days to notify neighboring jurisdictions of the 401 Certification. Neighboring jurisdictions have 60 days to respond. If there are no objections to the 401 Certification, then the USACE issues the 404 permit.

On June 2, 2021, the USEPA published a notice of intention to reconsider and revise the Clean Water Act Section 401 Certification Rule. At this time, they are currently accepting public comment. Until a new rule goes into effect, the current 401 Certification Rule stands.

The RWQCB is required under the *California Code of Regulations* (CCR) to have a "minimum 21 day public comment period" before any action can be taken on the Section 401 application.[16] This period closes when the RWQCB acts on the application. Since projects often change or are revised during the Section 401 permit process, the comment period can remain open. The public

[16] 23 CCR §3858(a)

comment period starts as soon as an application has been received. Generally, the RWQCB Section 401, USACE Section 404, and CDFW Section 1602 permit applications are submitted at the same time.

The RWQCB requires the Applicant to address urban storm water runoff during and after construction in the form of Best Management Practices (BMPs). These BMPs are intended to address the treatment of pollutants carried by storm water runoff and are required in all complete applications. The notification/application for a CWA Section 401 Water Quality Certification must also address compliance with the Basin Plan. Please note that filing an application would also require the payment of an application fee which would be based on project impacts. The fee schedule calculator is available at http://www.waterboards.ca.gov/santaana/water_issues/programs/401_certification/index.shtml.

California Department of Fish and Wildlife

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to the *California Fish and Game Code*.[17] Activities of any person, State or local governmental agency, or public utility that are project proponents are regulated by the CDFW under Section 1602 of the *California Fish and Game Code.* This section regulates any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. Section 1602 of the *California Fish and Game Code* applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State.

The CDFW jurisdictional limits are not as clearly defined by regulation as those of the USACE. While they closely resemble the limits described by USACE regulations, they include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric and saturated soils conditions. In general, the CDFW takes jurisdiction from the top of a stream bank or to the outer limits of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place within or in the vicinity of a river, stream, lake or within or in the vicinity of tributaries to a river, stream, or lake. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish and other aquatic plant and/or wildlife species. It also includes watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

Section 1602 Lake or Streambed Alteration Agreement

The CDFW enters into a Lake or Streambed Alteration (LSA) Agreement with a project proponent in order to ensure protection of wildlife and habitat values and acreages.

Prior to construction, a Notification of an LSA must be submitted to the CDFW that describes any proposed lake or streambed alteration that would occur with implementation of a project. The Notification of an LSA must address the initial construction and long-term operation and maintenance of any structures (such as a culvert or a desilting basin) included in the project design that are located within any river, stream, or lake and that may require periodic maintenance. In addition to the formal application materials and the fee, a copy of the appropriate environmental document (e.g., a Mitigated Negative Declaration) should be included in the submittal, consistent with CEQA requirements. The complete notification package must be submitted to the CDFW regional office that services the county where the activity will take place.

[17] See §§1600–1616.

This notification will serve as the basis for the CDFW's issuance of a Section 1602 LSA Agreement. Note that notification is not required before beginning emergency work, but the CDFW must be notified in writing within 14 days after beginning the work.

After receiving Notification of an LSA Agreement, the CDFW will determine whether an LSA Agreement will be required for the proposed activity. An LSA Agreement will be required if the activity could substantially adversely affect an existing fish and wildlife resource. If an LSA Agreement is required, the CDFW may want to conduct an on-site inspection.

If the CDFW does not respond in writing concerning the completeness of the Notification within 30 days of its submittal, the Notification automatically becomes complete. If the CDFW does not submit a draft LSA Agreement to the Applicant within 60 days of the determination of a completed Notification package, the CDFW will issue a letter that either (1) identifies the final date to transmit a draft LSA Agreement or (2) indicates that an LSA Agreement was not required. The CDFW will also indicate that it was unable to meet this mandated compliance date and that, by law, the Applicant is authorized to complete the project without an LSA Agreement as long as the Applicant constructs the project as proposed and complies with all avoidance, minimization, and mitigation measures described in the submitted Notification package. Please note that, if the project requires revisions to the design or project construction, the CDFW may require submittal of a new Notification/application with an additional 90-day permit process.

If determined to be necessary, the CDFW will prepare a draft LSA Agreement, which will include standard measures to protect fish and wildlife resources during project construction and during ongoing operation and maintenance of any project element that occurs within a CDFW jurisdictional area. The draft Agreement must be transmitted to the Applicant within 60 calendar days of the CDFW's determination that the notification is complete. It should be noted that the 60-day timeframe might not apply to long-range agreements.

Following receipt of a draft LSA Agreement from the CDFW, the Applicant has 30 calendar days to notify the CDFW concerning the acceptability of the proposed terms, conditions, and measures. If the Applicant agrees with these terms, conditions and measures, the Agreement must be signed and returned to the CDFW. The Agreement becomes final once the CDFW executes it and an LSA Agreement is issued. Please note that all application fees must be paid and the final certified CEQA documentation must be provided prior to the CDFW's execution of the Agreement.

California Coastal Commission

The CCC was established by voter initiative in 1972 (Proposition 20) and made permanent by the Legislature through adoption of the California Coastal Act of 1976. This act was established to protect, maintain, enhance, and restore the overall quality of the coastal zone environment; assure utilization and conservation of coastal zone resources; maximize public access to the coast; assure priority for coastal-dependent and coastal-related development over other development on the coast; and encourage state and local initiatives and corporation for mutually beneficial uses in the coastal zone.[18] It plans and regulates the use of land and water in the coastal zone. The "coastal zone" is mapped by the Legislature and covers a three-mile-wide band of ocean, extending inland generally 1,000 yards from the mean high tide line. In significant coastal estuarine, habitat, and recreational areas, it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less. In developed urban areas, the coastal zone generally extends inland less than 1,000 yards.

The California Coastal Act of 1976 includes specific policies that address issues such as shoreline public access and recreation; lower cost visitor accommodations; terrestrial and marine habitat

[18] Public Resources Code, Division 20, §30001.5

protection; visual resources; landform alteration; agricultural lands; commercial fisheries; industrial uses; water quality; offshore oil and gas development; transportation; development design; power plants; ports; and public works. The policies of the Coastal Act constitute the statutory standards applied to planning and regulatory decisions made by the Coastal Commission and by local governments, pursuant to the Coastal Act.

Section 30106 of the Coastal Act defines development as follows:

> "Development" means, on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, and . . . the removal or harvesting of major vegetation other than for agricultural purposes . . .

Section 30600 of the Coastal Act provides, in relevant part, the following permit requirement for development:

> (a) Except as provided in subdivision (e), and in addition to obtaining any other permit required by law from any local government or from any state, regional, or local agency, any person, as defined in Section 21066, wishing to perform or undertake any development in the coastal zone, other than a facility subject to Section 25500, shall obtain a coastal development permit (CDP).

Implementation of Coastal Act policies is accomplished primarily through the preparation of local coastal programs (LCPs) that are required to be completed by each of the 15 counties and 60 cities located in whole or in part in the coastal zone. Completed LCPs must be submitted to the Coastal Commission for review and approval. An LCP includes a land use plan (LUP) which may be the relevant portion of the local general plan, including any maps necessary to administer it, and the zoning ordinances, zoning district maps, and other legal instruments necessary to implement the land use plan. Coastal Act policies are the standards by which the CCC evaluates the adequacy of LCPs. Amendments to certified LUPs and LCPs only become effective after approval by the CCC. To ensure that coastal resources are effectively protected in light of changing circumstances (such as new information and changing development pressures and impacts), the CCC is required to review each certified LCP at least once every five years.

Development within the coastal zone may not commence until a CDP has been issued by either the CCC or a local government that has a Coastal Commission-certified LCP. After certification of an LCP, CDP authority is delegated to the appropriate local government, but the CCC retains original permit jurisdiction over certain specified lands (such as tidelands and public trust lands). The CCC also has appellate authority over development approved by local governments in specified geographic areas as well as certain other developments.

The CCC defines wetlands under Section 30121 of the Coastal Act as follows:

> "Wetland" means lands within the coastal zone which may be covered periodically or permanently with shallow water and includes salt marshes, freshwater marshes, open and closed brackish water marshes, swamps, mudflats, and fens.

The boundaries of a wetland are based on a "one parameter" definition determined by at least one of the following: hydrology, hydric soils, and hydrophytic vegetation. The size and extent of CCC wetland boundaries may also be determined by aerial photographs, national wetland inventory maps, and soil conservation maps.

The Coastal Commission Administrative Regulations (Section 13577b) of Title 14, Division 5.5, Article 18 provides the following criteria for determining jurisdictional boundaries:[19]

> Streams. Measure 100 feet landward from the top of the bank of any stream mapped by USGS on the 7.5-minute quadrangle series, or identified in a local coastal program. The bank of a stream shall be defined as the watershed and relatively permanent elevation or acclivity at the outer line of the stream channel which separates the bed from the adjacent upland, whether valley or hill, and serves to confine the water within the bed and to preserve the course of the stream. In areas where a stream has no discernable bank, the boundary shall be measured from the line closest to the stream where riparian vegetation is permanently established. For purposes of this section, channelized streams not having significant habitat value should not be considered.
>
> Wetlands. Measure 100 feet landward from the upland limit of the wetland. Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. For purposes of this section, the upland limit of a wetland shall be defined as:
>
> 1. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;
> 2. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or
> 3. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.
>
> For the purposes of this section, the term “wetland” shall not include wetland habitat created by the presence of and associated with agricultural ponds and reservoirs where:
>
> 1. the pond or reservoir was in fact constructed by a farmer or rancher for agricultural purposes; and
> 2. there is no evidence (e.g., aerial photographs, historical survey, etc.) showing that wetland habitat pre-dated the existence of the pond or reservoir. Areas with drained hydric soils that are no longer capable of supporting hydrophytes shall not be considered wetlands.
>
> Estuaries. Measure 300 feet landward from the mean high tide line of the estuary. For purposes of this section, an estuary shall be defined as a coastal water body, usually semi-enclosed by land, having open, partially obstructed, or intermittent exchange with the open ocean, and in which ocean water is at least occasionally diluted by freshwater from the land. The salinity level may be periodically increased to above that of the open ocean due to evaporation. The mean high tide line shall

[19] 14 CCR §13577

be defined as the statistical mean of all the high tides over the cyclical period of 18.6 years and shall be determined by reference to the records and elevations of tidal benchmarks established by the National Ocean Survey. In areas where observations covering a period of 18.6 years are not available, a determination may be made based on observations covering a shorter period, provided they are corrected to a mean value by comparison with observations made at some suitably located control tide station.

Tidelands. Tidelands shall be defined as lands which are located between the lines of mean high tide and mean low tide.

Submerged Lands. Submerged lands shall be defined as lands which lie below the line of mean low tide.

Coastal Development Permit

Since the City of Malibu has a certified LCP, the CCC's coastal permitting authority is transferred to the local government, which applies the requirements of the LCP in reviewing proposed developments. The CCC may act on appeals from certain local government coastal permit decisions.

ATTACHMENT B

REPRESENTATIVE PHOTOGRAPHS

Photo 1: Upstream end of Drainage 1. November 12, 2019.

Photo 2: Middle of Drainage 1. November 12, 2019.

D:\Projects\1SAN\082308\GRAPHICS\JD\AttB-1_RepresentativePhotographs.ai

Representative Photographs

Attachment B-1

Malibu Middle and High School Specific Plan and LCP Amendment Project

PSOMAS

(01/22/2020 RMB) R:\Projects\1SAN\082308\Graphics\JD\AttB_Representative_Photographs.pdf

Photo 3: Downstream end of Drainage 1. November 12, 2019.

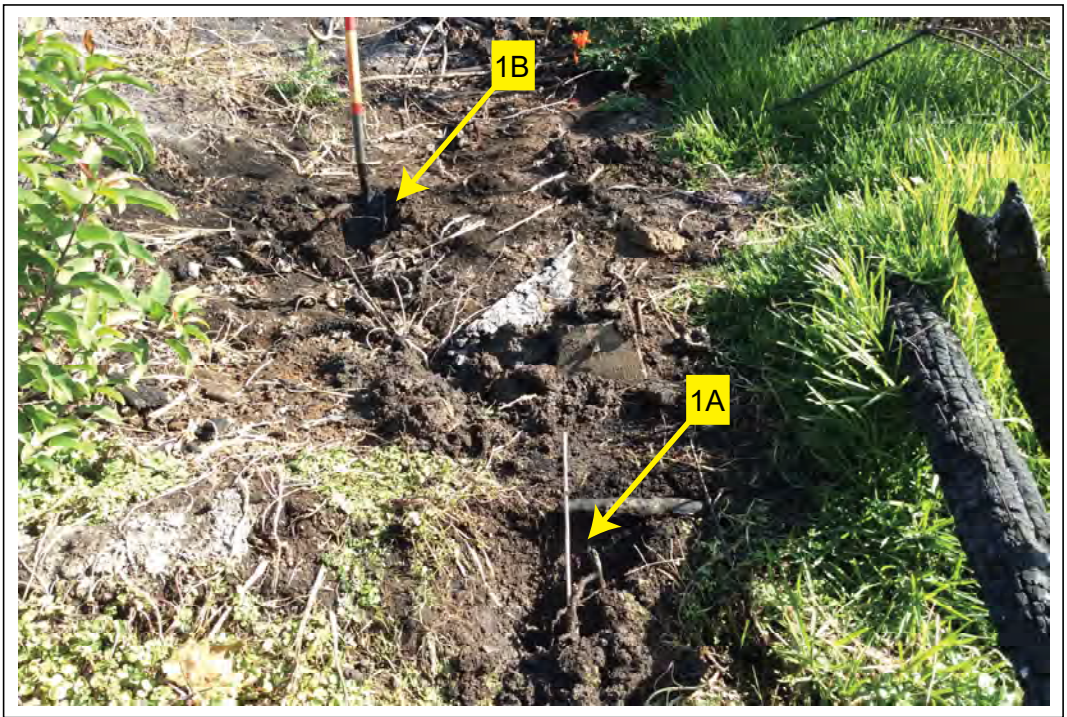

Photo 4: Sampling Points 1A and 1B in Drainage 1. November 12, 2019.

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Representative Photographs

Attachment B-2

Malibu Middle and High School Specific Plan and LCP Amendment Project

PSOMAS

(01/22/2020 RMB) R:\Projects\1SAN\082308\Graphics\JD\AttB_Representative_Photographs.pdf

Photo 7: Upstream end of Drainage 2. November 12, 2019.

Photo 8: Middle of Drainage 2, November 12, 2019.

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Representative Photographs

Attachment B-3

Malibu Middle and High School Specific Plan and LCP Amendment Project

PSOMAS

(01/22/2020 RMB) R:\Projects\1SAN\082308\Graphics\JD\AttB_Representative_Photographs.pdf

Photo 9: Overview of the basin. November 12, 2019.

Photo 10: Sampling Point 2 in the basin. January 16, 2020.

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ATTACHMENT C

DATASHEETS

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Malibu High School Master Plan
Project Number: 1SAN082308
Stream: Drainage 1
Investigator(s): ARudalevige, JAguayo

Date: 11/12/2019 **Time:** 1300
Town: Malibu **State:** CA
Photo begin file#: **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Malibu High School

Projection: **Datum:**
Coordinates:

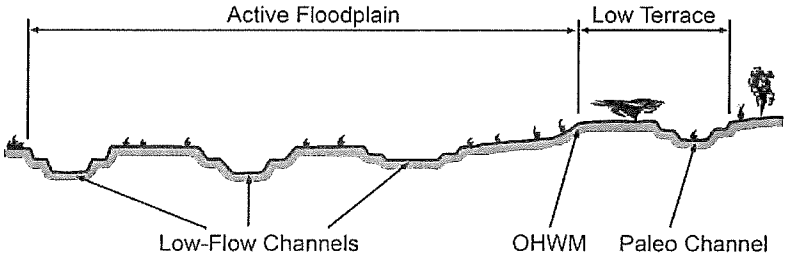
Potential anthropogenic influences on the channel system:
Point-source discharges from adjacent campus

Brief site description:
Drainage travels adjacent to campus, passes through culvert and eventually discharges into Pacific Ocean

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2018
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [X] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
- [ ] History of recent effective discharges
- [ ] Results of flood frequency analysis
- [ ] Most recent shift-adjusted rating
- [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

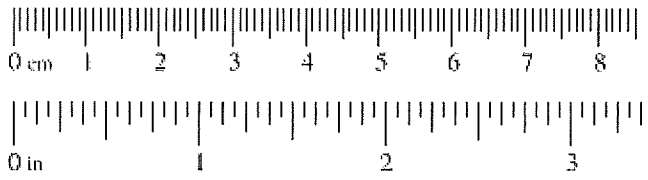


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

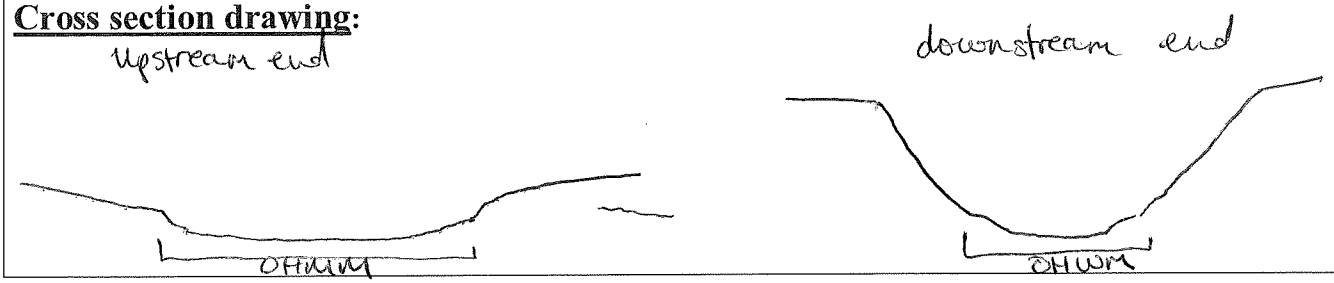
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
		Granule	
0.079	2.00		
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



Project ID: ISAN082308 **Cross section ID:** Drainage 1 **Date:** 11/12/2019 **Time:** 1300

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [x] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [ ] Other: _____
- [ ] Other: _____

Comments:

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: clay loam

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage: varies

- [ ] NA
- [ ] Early (herbaceous & seedlings)
- [x] Mid (herbaceous, shrubs, saplings) upstream
- [x] Late (herbaceous, shrubs, mature trees) downstream

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Upstream portion broader w/ dense herbaceous vegetation and soil saturation. Downstream portion more incised w/ sparse herbaceous vegetation and riparian canopy (previously burned).

Project ID: ISAN082308 **Cross section ID:** Drainage1 **Date:** 11/12/2019 **Time:** 1300

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: 20 % Tree: 5 % Shrub: 15 % Herb: 5 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

present in upstream portion.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Not present

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Malibu High School Master Plan
Project Number: ISAN 082308
Stream: Drainage 2
Investigator(s): ARudalevige, JAguayo

Date: 11/12/2019 **Time:** 1230
Town: Malibu **State:** CA
Photo begin file#: **Photo end file#:**

Y [X] / N [ ] Do normal circumstances exist on the site?

Y [ ] / N [X] Is the site significantly disturbed?

Location Details: Malibu High School

Projection: **Datum:**
Coordinates:

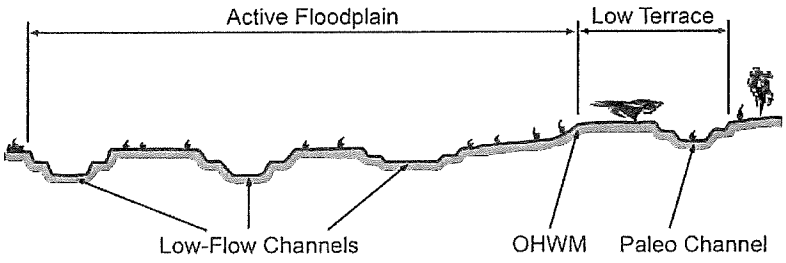
Potential anthropogenic influences on the channel system:
Drainage partially lined. Surrounding field periodically mowed.

Brief site description:
Drainage travels through a ruderal field then adjacent to campus fields and ultimately discharges into Drainage 1.

Checklist of resources (if available):

- [X] Aerial photography
  Dates: 2018
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [X] Soils maps
- [ ] Rainfall/precipitation maps
- [X] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies
- [ ] Stream gage data
  Gage number:
  Period of record:
  - [ ] History of recent effective discharges
  - [ ] Results of flood frequency analysis
  - [ ] Most recent shift-adjusted rating
  - [ ] Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

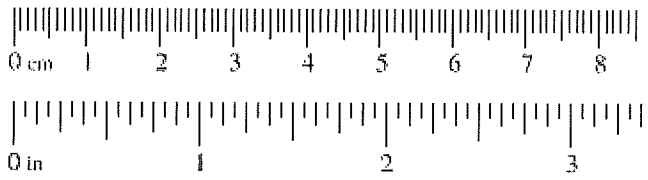


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [ ] Mapping on aerial photograph
   - [X] GPS
   - [ ] Digitized on computer
   - [ ] Other:

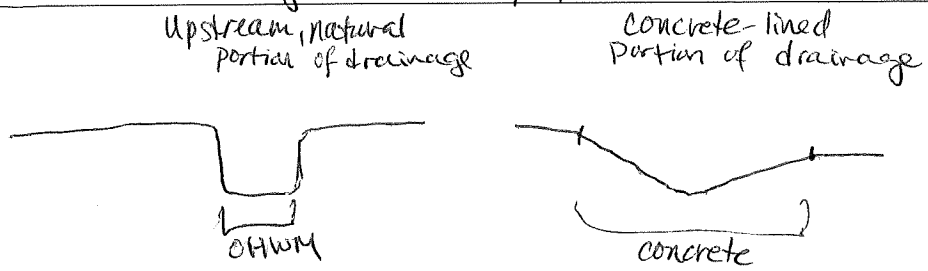
Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class	
10.08	256	Boulder	Gravel
2.56	64	Cobble	Gravel
0.157	4	Pebble	Gravel
		Granule	Gravel
0.079	2.00		
0.039	1.00	Very coarse sand	Sand
0.020	0.50	Coarse sand	Sand
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	Sand
1/8 0.0025	0.0625	Very fine sand	Sand
1/16 0.0012	0.031	Coarse silt	Silt
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	Silt
1/128 0.00015	0.0039	Very fine silt	Silt
		Clay	Mud



Project ID: ISAN 082308 **Cross section ID:** Drainage 2 **Date:** 11/12/2019 **Time:** 1230

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- ☐ Change in average sediment texture
- ☐ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: _____
- ☐ Other: _____

Comments:

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: loamy clay

Total veg cover: 0 % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

- ☒ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

Vegetation absent from channel bottom & surrounding upland areas contain ruderal vegetation, turf grass, ornamental vegetation

Project ID: ISAN 082308 **Cross section ID:** Drainage 2 **Date:** 11/12/2019 **Time:** 1230

Floodplain unit: ☐ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments:

No active floodplain present

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☑ Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____% Tree: _____% Shrub: _____% Herb: _____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

Comments: No low terrace present

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 11/12/2019
Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 1A
Investigator(s): ARudalevige, JAguayo Section, Township, Range: 01, T 02S, R 19W
Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): _____
Subregion (LRR): CA Lat: 34.027170 Long: -118.82703 Datum: NAD83
Soil Map Unit Name: Cropley, coastal-Xerorthents, landscaped-Urban land complex NWI classification: PSSA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes Y No _____	**Is the Sampled Area within a Wetland?** Yes Y No _____
Hydric Soil Present?	Yes Y No _____	
Wetland Hydrology Present?	Yes Y No _____	

Remarks:
Paired sampling point; 1A adjacent to low flow channel & 1B upslope ~10 feet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	5	Y	FACW
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1. Malosma laurina	12	Y	UPL
2.			
3.			
4.			
5.			
	12	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Nasturtium officinale	30	Y	OBL
2. Stenotaphrum secundatum	35	Y	FAC
3. Malva parviflora	1	N	UPL
4.			
5.			
6.			
7.			
8.			
	66	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 34 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Vegetation resprouting post fire. Dead standing snags not counted in vegetation assessment

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	95	2.5YR 4/8	5	C	M, PL	clay loam	prominent mottles
4-16	10YR 2/2	100	-	-	-	-	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1"

Water Table Present? Yes X No ___ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 4"

Wetland Hydrology Present? Yes Y No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 11/12/19

Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 1B

Investigator(s): ARudalevige, JAguayo Section, Township, Range: 01, T02S, R19W

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): CA Lat: 34.027174 Long: -118.82700 Datum: NAD83

Soil Map Unit Name: Cropley, coastal-Xerorthents, landscaped-Urban land complex NWI classification: PSSA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: Paired sampling point; 1A adjacent to low flow channel and 1B upslope ~10feet

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Sampling pit dug in unvegetated area on slope.

SOIL

Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	80	2.5YR 4/8	20	C	M	clay loam	prominent mottles
4-20	7.5YR 2.5/1	100					clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- Y Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes Y No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- Y Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No Y Depth (inches): ___

Water Table Present? Yes Y No ___ Depth (inches): 20"

Saturation Present? (includes capillary fringe) Yes Y No ___ Depth (inches): 12"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 1/16/2020

Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 2A

Investigator(s): ARudalevige, IMendez Section, Township, Range: 01, T02S, R19W

Landform (hillslope, terrace, etc.): drainage Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): CA Lat: 34.027380 Long: -118.82687 Datum: NAD83

Soil Map Unit Name: Cropley, coastal Urban land-Haploxererts complex NWI classification: PSSA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: Paired sampling point; 2A is adjacent to low flow channel and 2B upslope ~10 feet

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lasiolepis	5	Y	FACW
2.			
3.			
4.			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Nasturtium officinale	60	Y	OBL
2. Pel mirthotheca echioides	30	Y	FAC
3. Stenotaphrum secundatum	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: 2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- Y Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes Y No ___

Remarks:

Faint hydrogen sulfide odor

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Y Surface Water (A1)
- Y High Water Table (A2)
- Y Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- Y Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes Y No ___ Depth (inches): 1"

Water Table Present? Yes Y No ___ Depth (inches): 0"

Saturation Present? (includes capillary fringe) Yes Y No ___ Depth (inches): 2"

Wetland Hydrology Present? Yes Y No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 1/16/2020

Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 2B

Investigator(s): ARudalevige, IMendez Section, Township, Range: 01, T02S, R19W

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): CA Lat: 34.027402 Long: -118.82689 Datum: NAD83

Soil Map Unit Name: Cropley, Coastal-Urban land-Haploverents complex NWI classification: PSSA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks: Paired sampling point; 2A is adjacent to low flow channel and 2B is upslope ~10 feet

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks: Sampling pit dug in unvegetated area on slope.

SOIL

Sampling Point: 2B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	99	5YR 5/8	<1%	C	M	clay	prominent mottles

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Malibu High School Campus Master Plan City/County: Malibu / Los Angeles Sampling Date: 1/16/2020
Applicant/Owner: Santa Monica-Malibu Unified School District State: CA Sampling Point: 3
Investigator(s): ARudalevige, IMendez Section, Township, Range: 01, T02S, R19W
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): N/A
Subregion (LRR): CA Lat: 34.026220 Long: -118.82754 Datum: NAD83
Soil Map Unit Name: Cropley, coastal-Xerothents, landscaped-Urban land complex NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes Y No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Artificial basin created in uplands.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5')			
1. Nicotiana glauca	5	Y	FAC
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Typha	50	Y	OBL
2. Solanum douglasii	5	N	FAC
3. Hirschfeldia incana	2	N	UPL
4. Muhlenbergia rigens	2	N	FAC
5. Ricinus communis	1	N	FACU
6.			
7.			
8.			
	60	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 40 % % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
Y Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes Y No _____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/1	60					loam	
0-4	10YR 3/2	40					loamy clay	
4-10	7.5YR 2.5/1	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: concrete

Depth (inches): 10

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ATTACHMENT D

LITERATURE REVIEW DETAILS

This attachment provides detailed results of the literature review.

SOIL SERIES

The below text is the detailed soil information obtained from the Map Unit Description found in the legend of the USDA NRCS website.[21]

433—Cropley, coastal – Urban land – Haploxererts Complex, 0 to 30 percent slopes

Map Unit Setting

- *National map unit symbol:* nmm5
- *Elevation:* 50 to 700 feet
- *Mean annual precipitation:* 14 to 24 inches
- *Mean annual air temperature:* 60 to 64 degrees Fahrenheit (°F)
- *Frost-free period:* 290 to 350 days
- *Farmland classification:* Farmland of statewide importance

Map Unit Composition

- *Cropley, coastal, and similar soils:* 40 percent
- *Urban land:* 25 percent
- *Haploxererts and similar soils:* 20 percent
- *Minor components:* 15 percent

Description of Cropley, Coastal

Setting

- *Landform:* Alluvial fans
- *Landform position (two-dimensional):* Backslope
- *Landform position (three-dimensional):* Tread
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Parent material:* Alluvium derived from shale

Typical profile

- *A - 0 to 2 inches:* clay
- *Bss - 2 to 22 inches:* clay
- *Bk - 22 to 60 inches:* silty clay loam

Properties and qualities

- *Slope:* 2 to 9 percent
- *Depth to restrictive feature:* More than 80 inches
- *Natural drainage class:* Well drained
- *Runoff class:* High
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
- *Depth to water table:* More than 80 inches

[21] U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2019. Web Soil Survey. Records for the Study Area, as Area of Interest. Further information about Soil Map Units. Lincoln, NE: USDA NRCS https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 10 percent
- *Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- *Available water storage in profile:* High (about 10.1 inches)

Interpretive groups

- *Land capability classification (irrigated):* 2e
- *Land capability classification (nonirrigated):* 3e
- *Hydrologic Soil Group:* C
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

Description of Urban Land

Setting

- *Down-slope shape:* Linear
- *Across-slope shape:* Convex

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 8
- *Hydric soil rating:* No

Description of Haploxererts

Setting

- *Landform:* Hills
- *Landform position (two-dimensional):* Backslope
- *Landform position (three-dimensional):* Side slope
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Parent material:* Colluvium and/or residuum derived from sandstone and shale

Typical profile

- *A - 0 to 30 inches:* clay
- *Bss - 30 to 50 inches:* clay
- *Cr - 50 to 60 inches:* weathered bedrock

Properties and qualities

- *Slope:* 9 to 30 percent
- *Depth to restrictive feature:* 40 to 60 inches to paralithic bedrock
- *Natural drainage class:* Well drained
- *Runoff class:* Very high
- *Capacity of the most limiting layer to transmit water (Ksat):* Very low to low (0.00 to 0.01 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 5 percent

- *Available water storage in profile:* Moderate (about 7.5 inches)

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 7e
- *Hydrologic Soil Group:* C
- *Hydric soil rating:* No

Minor Components

Gazos, coastal

- *Percent of map unit:* 10 percent
- *Landform:* Hills
- *Landform position (two-dimensional):* Backslope
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Ecological site:* Coastal Bluff 14-16" p.z. (R020XD053CA)
- *Hydric soil rating:* No

Danville, coastal

- *Percent of map unit:* 5 percent
- *Landform:* Fluvial terraces, alluvial fans
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

434—Cropley, coastal – Xerorthents, landscaped – Urban Land Complex, 0 to 9 percent slopes

Map Unit Setting

- *National map unit symbol:* nmm6
- *Elevation:* 50 to 700 feet
- *Mean annual precipitation:* 14 to 18 inches
- *Mean annual air temperature:* 60 to 64 degrees F
- *Frost-free period:* 290 to 350 days
- *Farmland classification:* Not prime farmland

Map Unit Composition

- *Cropley, coastal, and similar soils:* 35 percent
- *Xerorthents, landscaped, and similar soils:* 35 percent
- *Urban land:* 25 percent
- *Minor components:* 5 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Cropley, Coastal

Setting

- *Landform:* Alluvial fans
- *Landform position (two-dimensional):* Backslope
- *Landform position (three-dimensional):* Tread

- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Parent material:* Alluvium derived from shale

Typical profile

- *A - 0 to 2 inches:* clay
- *Bss - 2 to 22 inches:* clay
- *Bk - 22 to 60 inches:* silty clay loam

Properties and qualities

- *Slope:* 2 to 9 percent
- *Depth to restrictive feature:* More than 80 inches
- *Natural drainage class:* Well drained
- *Runoff class:* High
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 10 percent
- *Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- *Available water storage in profile:* High (about 10.1 inches)

Interpretive groups

- *Land capability classification (irrigated):* 2e
- *Land capability classification (nonirrigated):* 3e
- *Hydrologic Soil Group:* C
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

Description of Xerorthents, Landscaped

Setting

- *Down-slope shape:* Linear
- *Across-slope shape:* Linear
- *Parent material:* Colluvium and residuum derived from sedimentary rock and other mixed sources

Typical profile

- *A - 0 to 4 inches:* loam
- *C - 4 to 52 inches:* loam
- *Cr - 52 to 62 inches:* weathered bedrock

Properties and qualities

- *Slope:* 0 to 2 percent
- *Depth to restrictive feature:* 10 to 60 inches to paralithic bedrock
- *Natural drainage class:* Well drained
- *Runoff class:* Low
- *Capacity of the most limiting layer to transmit water (Ksat):* Very low to low (0.00 to 0.01 in/hr)
- *Depth to water table:* More than 80 inches

- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 3 percent
- *Available water storage in profile:* Moderate (about 8.3 inches)

Interpretive groups

- *Land capability classification (irrigated):* 2e
- *Land capability classification (nonirrigated):* 2e
- *Hydrologic Soil Group:* C
- *Hydric soil rating:* No

Description of Urban Land

Setting

- *Down-slope shape:* Linear
- *Across-slope shape:* Convex

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 8
- *Hydric soil rating:* No

Minor Components

Cropley, coastal

- *Percent of map unit:* 2 percent
- *Landform:* Fans
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Ecological site:* Coastal Terrace 14-16" p.z. (R020XD047CA)
- *Hydric soil rating:* No

Gazos, coastal

- *Percent of map unit:* 2 percent
- *Landform:* Hills
- *Landform position (two-dimensional):* Backslope
- *Down-slope shape:* Convex
- *Across-slope shape:* Convex
- *Ecological site:* Coastal Bluff 14-16" p.z. (R020XD053CA)
- *Hydric soil rating:* No

Badland, cliffs

- *Percent of map unit:* 1 percent
- *Landform:* Cliffs
- *Hydric soil rating:* No

NATIONAL WETLANDS INVENTORY

One wetland resource was mapped by the National Wetlands Inventory in the Study Area (see Exhibit 4). The description for mapped resource is provided below.

- **R: System RIVERINE.** The Riverine System includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts of 0.5 ppt or greater. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.
    - **4: Subsystem INTERMITTENT.** This Subsystem includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.
        - **SB: Class STREAMBED.** Includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide.
            - **A: Water Regime TEMPORARY FLOODED.** Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for the most of the season.
- **P: System PALUSTRINE.** The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergents, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 part per trillion (ppt). It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 hectares (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of the basin less than 2.5 meters (8.2 feet) at low water; and (4) salinity due to ocean-derived salts less than 0.5 ppt.
    - **SS: Class SCRUB-SHRUB.** Includes areas dominated by woody vegetation less than 6 meters (20 feet) tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.
        - **A: Water Regime TEMPORARY FLOODED.** Surface water is present for brief periods (from a few days to a few weeks) during the growing season, but the water table usually lies well below the ground surface for the most of the season.
        - **C: Water Regime SEASONALLY FLOODED.** Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.
            - **h: Special Modifier DIKED/IMPOUNDED.** These wetlands have been created or modified by a man-made barrier or dam that obstructs the inflow or outflow of water.

BASIN PLAN BENEFICIAL USES

Beneficial uses are defined in the Porter-Cologne Act as those uses of water that are necessary for tangible and intangible economic, social, and environmental benefits. The *Water Quality Control Plan: Los Angeles Region (4)* (Basin Plan) identifies a number of potential and existing beneficial uses for miscellaneous streams and coastal features on Figure 2-10 of the Basin Plan (Los Angeles RWQCB 2013): Municipal and Domestic Water Supply (MUN) waters; Warm Fresh Water Habitat (WARM) waters; Cold Freshwater Habitat (COLD) waters; Wildlife Habitat (WILD) waters; Rare, Threatened or Endangered Species (RARE) waters; Spawning, Reproduction and Development (SPWN) waters; Migration Habitat (MIGR) waters; Water Contact Recreation (REC-1) waters; and Non-contact Water Recreation (REC-2) waters.

- MUN waters support community, military, or individual water supply systems including, but not limited to, drinking water supply.
- WARM waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife (including invertebrates).
- COLD waters support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation fish, or wildlife (including invertebrates).
- WILD waters support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- RARE waters support the habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under State or federal law as Rare, Threatened, or Endangered.
- SPWN waters support high quality aquatic habitats suitable for reproduction and early development of fish.
- MIGR waters support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.
- REC-1 waters are used for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs..
- REC-2 waters are used for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting sightseeing, or aesthetic enjoyment in conjunction with the above activities.

PSOMAS

Balancing the Natural and Built Environment

May 18, 2021

Noemi Avila-Zamudio
Consultant | Deputy Bond Program Manager
Santa Monica—Malibu Unified School District
2828 Fourth Street
Santa Monica, California 90405

VIA EMAIL
navila-zamudio@smmusd.org

Subject: Revised Tree Evaluation Report for the Malibu Middle and High School Specific Plan and Local Coastal Plan Amendment Project, Malibu, California

Dear Ms. Avila-Zamudio:

Psomas is pleased to provide the following revised tree evaluation for the Malibu Middle and High School Specific Plan and Local Coastal Plan (LCP) Amendment Project (proposed project). This evaluation incorporates an expanded area specified by the Santa Monica-Malibu Unified School District (District) as the Specific Plan area. Psomas Certified Arborist Trevor Bristle (International Society of Arboriculture Certificate No. WE-10233A) performed an evaluation on February 1st, 2nd, and April 19th, 2021 to document the type, quantity, and condition of trees present within the Specific Plan area. Each tree was assigned a numeric identifier and the trunk, branches, and foliage were carefully examined. During the evaluation, the following data were recorded: tree species, number of trunks, trunk diameter at breast height (dbh), tree height, and canopy diameter. Each tree was also given a qualitative assessment rating on health and aesthetic.

PROJECT LOCATION

The proposed project is located at 30215 and 30237 Morning View Drive in the City of Malibu, Los Angeles County and also includes an equestrian area at 6225 Merritt Drive to the east (**Exhibit 1,** Project Location). The site is located approximately 0.25 miles northeast of Pacific Coast Highway and lies between Harvester Road to the north, Merritt Drive to the east, Via Cabrillo Street to the west, and Morning View Drive to the south (**Exhibit 1**). The Specific Plan area is owned by the District and comprises the former Juan Cabrillo Elementary School on the western portion of the property, the Malibu Middle and High School facilities in the south central portion of the property, with athletic fields to the north, and an equestrian center on the east. The site is set among rolling hills and its facilities are terraced into a hillside setting.

PROJECT DESCRIPTION

The District is lead agency under the California Environmental Quality Act (CEQA) for the proposed project which consists of the redevelopment of the former Juan Cabrillo Elementary School and Malibu Middle and High School sites to create a middle school and high school campus that will provide separate education spaces for middle and high school students with shared facilities. With implementation of the proposed project, the District seeks to improve vehicle and pedestrian circulation, and secure campus access while respecting the natural

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environment of West Malibu. The proposed project would reorganize the campus into three defined areas: Middle School core, High School core, and shared amenities. The proposed project would not result in an increase in student enrollment or capacity and would require demolishing 18 existing buildings, leaving only the existing athletic fields, Malibu Equestrian Park, and the three recently completed buildings (Buildings A, B, and E) remaining.

REGULATORY FRAMEWORK

Trees within the Specific Plan area are regulated by the City of Malibu (City) Native Tree Protection Ordinance (Chapter 5 of the City of Malibu LCP Local Implementation Plan). The LCP defines trees as plants reaching 15 feet tall with at least one well-defined stem or trunk. Native protected trees are specified as oak (*Quercus* sp.), California walnut (*Juglans californica*), western sycamore (*Platanus racemosa*), alder (*Alnus rhombifolia*), or toyon (*Heteromeles arbutifolia*) with at least one trunk measuring 6 inches or more in diameter at breast height (dbh), or a combination of any two trunks measuring a total of 8 inches dbh or more.

Additional trees not protected by the City were recorded at the request of the District. All trees with one trunk measuring 3 inches dbh or more, or a combination of any two trunks measuring 1.5 inches dbh or more in diameter were documented.

DISCUSSION

The trees within the Specific Plan area are generally in good health with no conspicuous signs of decay (e.g., trunk cavities, bleeding sap, broken limbs, or fungi) (**Exhibit 2** Tree Locations). Trees have been maintained and pruned in a manner consistent with a landscaped campus environment. Some trees near the equestrian area appear to have either been partially burned or affected by heat from the 2018 Woolsey Fire. Evaluation of these trees was based on a visual assessment from the ground.

Trees protected pursuant to City ordinance on the site include eight western sycamores, one Southern California black walnut, and one coast live oak. Their locations are provided on **Exhibit 2** as LCP Protected individuals. Generally, these trees are located on slopes or in drainages over 30 feet from existing structures. The walnut is located next to a residence on the southeast corner of the site.

Other tree species onsite that are not protected pursuant to City ordinance are located mainly within landscaped areas between school structures, within drainage areas, and on slopes near parking lots and athletic fields. Of particular note is a dragon tree (*Dracaena draco*) and Monterey cypress (*Hesperocyparis macrocarpa*) located within the current Cabrillo Elementary School grounds. These are mature specimens with good health and very few defects. As these specimens have taken considerable time to reach their current size, consideration should be given for their protection and/or relocation during construction.

Many of the trees on the proposed project site are planted near pavement, structures, or within basins that likely provide limited root development. Minor damage and disturbance to the subject structures are expected to occur as the roots continue to grow; while the trees themselves will be subject to stress in the form of reflected heat from nearby structures and pavement. Snags located throughout the site are depicted on **Exhibit 2**; these are dead trees that have a potential to fail unexpectedly. Removal of snags located near structures and/or in areas where students would be present should be considered a priority.

RECOMMENDATIONS

Psomas recommends implementing the following measures for tree protection during construction of the proposed project. These measures are specified in Chapter 5.4 E Project Construction Measures of the Local Implementation Plan (City of Malibu, 2002):

1. Protective fencing shall be used around the outermost limits of the tree protected zones (TPZ) of trees to be preserved within or adjacent to the construction area that may be disturbed during construction or grading activities. Before the commencement of any clearing, grading, or other construction activities, protective fencing shall be placed around each applicable tree. Fencing shall be maintained in place for the duration of all construction. No construction, grading, staging, or materials storage shall be allowed within the fenced exclusion areas, or within the protected zones of any on site native trees. Post the fence with a minimum 8.5" x 11" laminated sign stating: "Tree Protection Zone – This Fence Shall Not Be Removed".
2. Any approved development, including grading or excavation, that encroaches into the protected zone of a native tree shall be constructed using only hand-held tools.
3. Unless otherwise stated, mulch the entire area of the TPZ in an effort to improve the growing environment for the roots. During the construction phase maintain a four to six-inch layer of chip mulch over the soil surface to reduce compaction, improve aeration, enhance moisture retention, and reduce temperature extremes. Mulch generally consists of shredded leaves or bark, pine straw, peat moss, untreated and unpainted wood chips, or composted green waste. Mulch shall be removed by the contractor after project completion.
4. During trenching, utility access can be accomplished by careful incremental machine excavation supplemented by hand digging when necessary to preserve significant roots. If necessary, strong water/air pressure can be used to "tunnel" beneath the roots. Several utilities can sometimes use the same pathways to eliminate needless soil disruption. Exact placement of utilities must be marked and coordinated with individual contractors to determine the best routes.

   Should trenching be required within the TPZ, all trenches shall be hand-dug or non-impacting methods shall be used (i.e., air spade, soil boring). No roots larger than two inches (2") in diameter shall be cut unless no alternative is feasible. If roots exceeding two inches in diameter are required to be cut, the contractor shall call the Districts' Consulting Arborist before proceeding.

   Roots small than two inches in diameter that require pruning shall be cut cleanly and flush with the side of the trench at a 90-degree angle to expose the least amount of surface area possible. If at any time twenty-five percent (25%) of the area within the TPZ is being separated from the tree by a trench, then the line shall be either relocated or installed by boring.
5. Removal of hardscape and/or excavation within the TPZ shall be coordinated with the District's Consulting Arborist. Equipment may be used to break up hardscape, but once it is removed only foot traffic is permitted under the TPZ. This process is typically accomplished by placing the equipment on the hardscape and backing up as the hardscape is removed.
6. The minimum distance between an open trench and any tree shall be between six inches (6") to one foot (1') for every inch of trunk diameter, measured at four and one-half feet (4.5') above existing grade, depending on the species of tree. The minimum clearance clearance shall be ten feet (10') from the trunk of the tree.
7. In the event root pruning is required to accommodate grade changes or the installation of hardscape feature, the root pruning procedures shall be directed by the District's Consulting Arborist.

8. At no time shall any equipment, materials, supplies, or fill soil be allowed in the TPZ unless necessary and approved by the District's Consulting Arborist.
9. Prune and fertilize the trees after the completion of all exterior work on the building and at the beginning of the landscape phase as directed by the District's Consulting Arborist. Any tree(s) with impacts to their TPZ's shall be evaluated on a case-by-case basis by the District's Consulting Arborist prior to this activity.
10. The applicants shall retain the services of a qualified independent biological consultant or arborist, approved by the Planning Director to monitor native trees that are within or adjacent to the construction area. Public agencies may utilize their own staff who have the appropriate classification. If any breach in the protective fencing occurs, all work shall be suspended until the fence is repaired or replaced.
11. The permit shall include these requirements as conditions of approval.

The following measures are recommended for tree establishment and maintenance at the proposed project site:

1. The largest possible planting basin that the site can accommodate should be provided for new trees. Larger planting basins are correlated with longer-lived trees, greater tree stability, and less sidewalk damage.
2. Once the new planting basins are constructed, soil samples should be collected from all planting locations and sent to a qualified soil laboratory for analysis. From each sampling location, one sample should be collected that represents the top 12 inches of the soil, along with a second sample that represents the soil from 12 to 24 inches deep. Any recommended soil amendments or treatments from the laboratory report should be implemented.
3. Newly planted trees should be allowed to develop as long as possible without pruning any of the branches (at least two years). Young trees need the energy provided by the leaves to help establish a healthy root system for successful establishment.
4. Once planted, a one- to two-inch layer of mulch should be placed within the planting basin of each new tree. Mulch should not be allowed to be placed in contact with the trunk of the tree as this can lead to rot.

Psomas appreciates the opportunity to assist with this tree evaluation. If you have any questions, please contact Irena Mendez, PhD at 310.488.5645 or Irena.Mendez@Psomas.com.

Sincerely,

PSOMAS

Ann M. Johnston
Vice President/Principal

Irena Mendez, PhD
Senior Biologist

Enclosures: Exhibits 1 and 2
Attachment A – Tree Data Summary

REFERENCES

City of Malibu. 2002 (September). *Local Coastal Program Local Implementation Plan* (Chapter 5: Native Tree Protection Guidance). Malibu, CA.

EXHIBIT 1

PROJECT LOCATION

D:\Projects\1SAN\082310\MXD\Tree\ex_Project_Location_20210511.mxd

Project Location

Exhibit 1

Malibu Middle and High School Specific Plan and LCP Amendment Project

N
W E
S

850 425 0 850

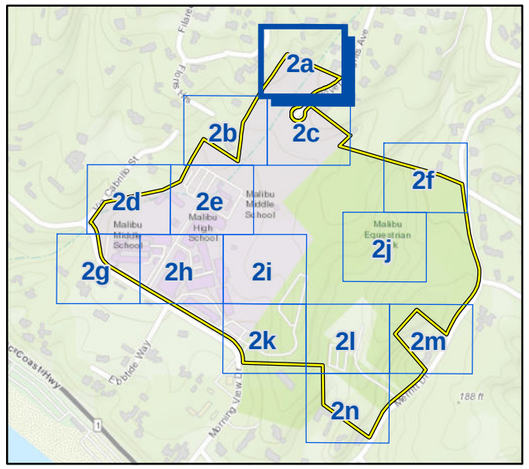
Feet

PSOMAS

(Rev: 5-12-2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_ProjectLocation.pdf

EXHIBIT 2

TREE LOCATIONS



Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2a

Malibu Middle and High School
Specific Plan and LCP Amendment Project

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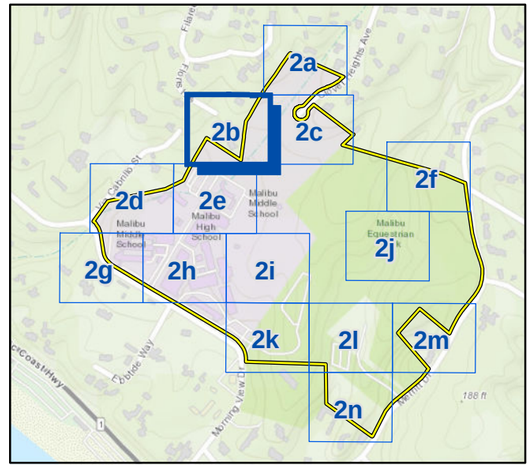
(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

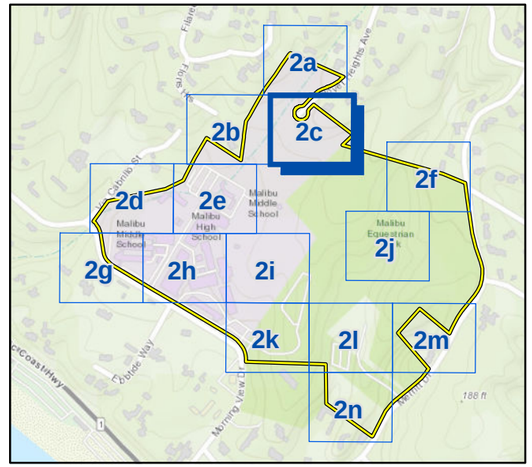
Tree Locations — Exhibit 2b

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2c

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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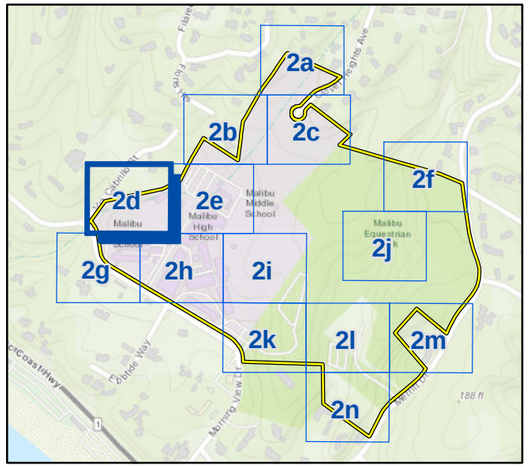

Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2d

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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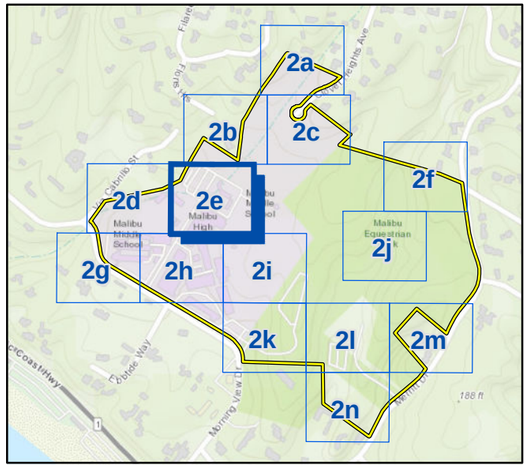

Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2e

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

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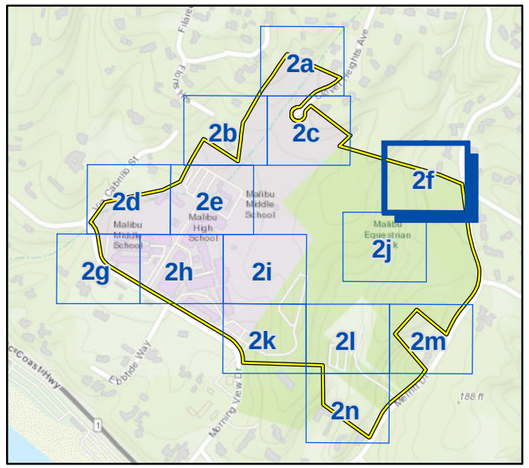


Project Boundary

Tree Types

- Tree
- LCP Protected Trees

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

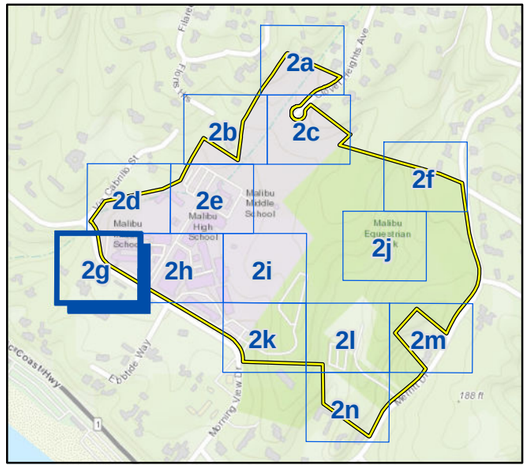
Tree Locations — Exhibit 2f

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

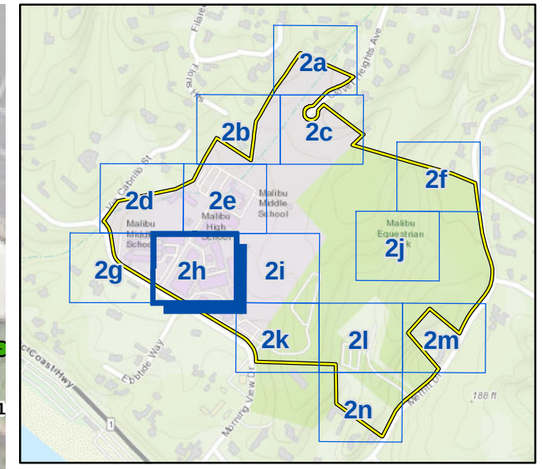
Tree Locations — Exhibit 2g

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

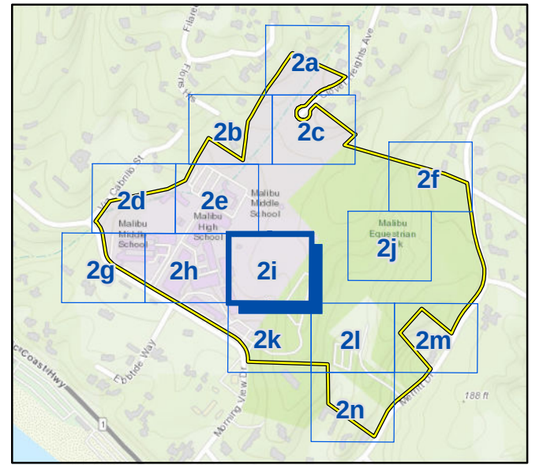
Tree Locations — Exhibit 2h

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310MXD\Treelex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations

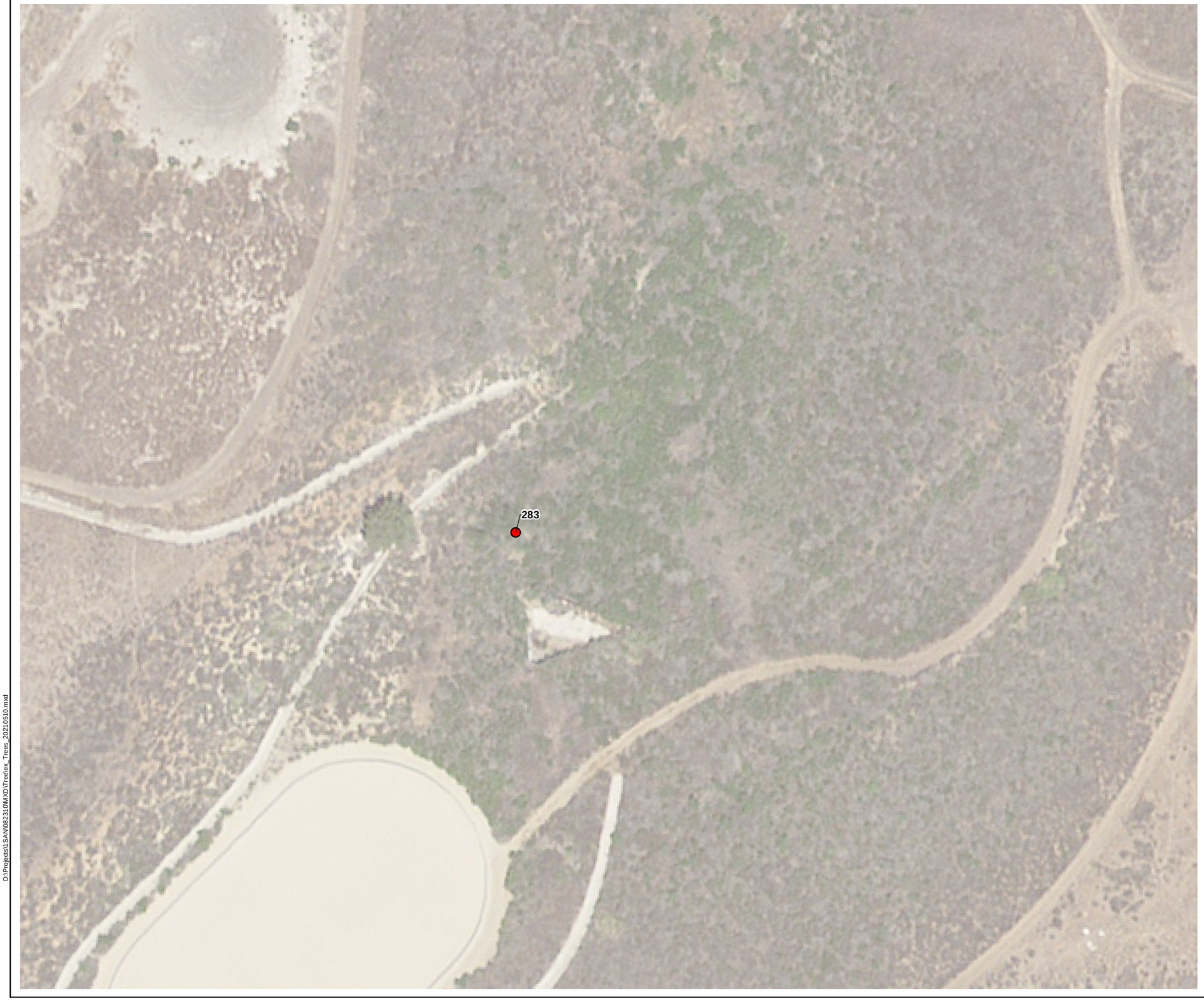
Exhibit 2i

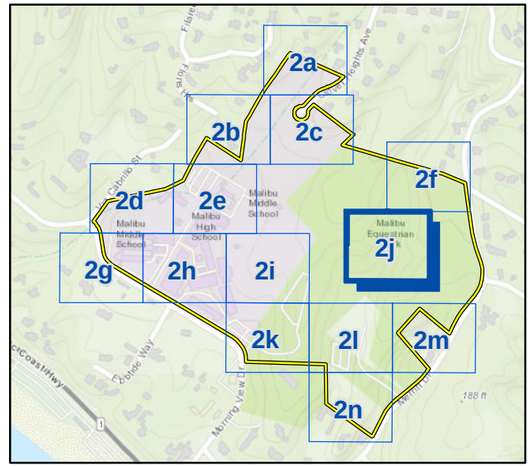
Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd





Project Boundary

Snag

N

W E

S

50 25 0 50

Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations

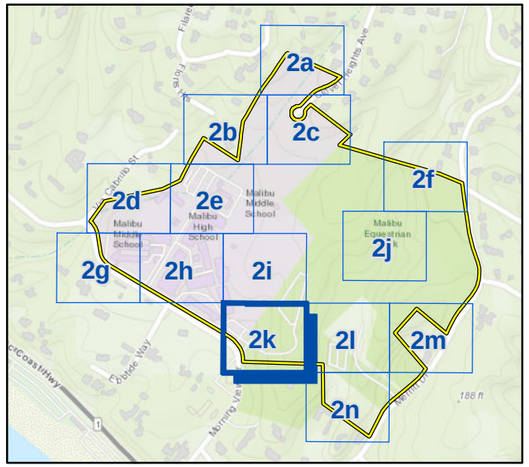
Exhibit 2j

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- Snag
- Indian laurel fig

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

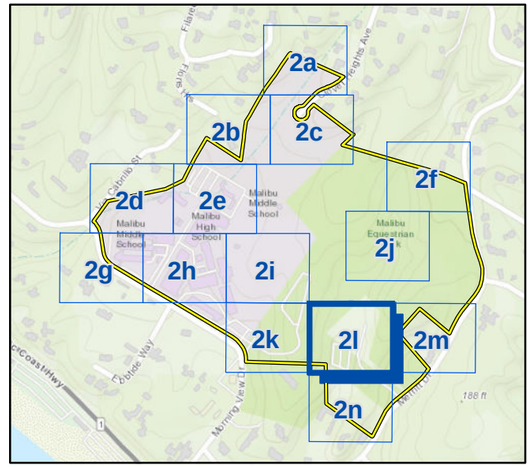
Tree Locations — Exhibit 2k

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations

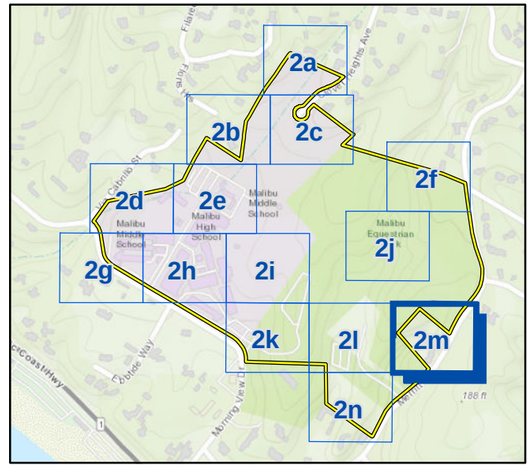
Exhibit 2l

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- Snag

N
W E
S

50 25 0 50 Feet

Aerial Source: Hexagon Geosystems, 2018

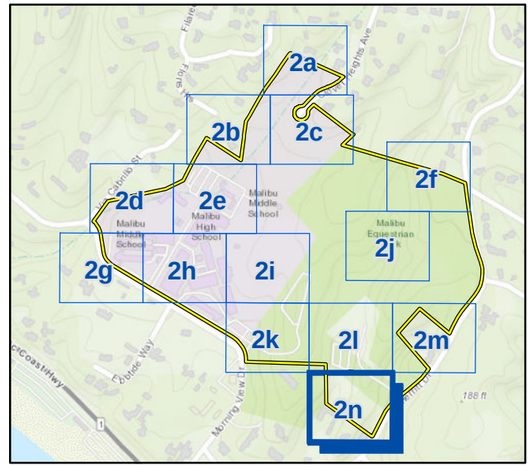
Tree Locations — Exhibit 2m

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd



Project Boundary

Tree Types

- Tree
- LCP Protected Trees
- Snag

N
W E
S

50 25 0 50
Feet

Aerial Source: Hexagon Geosystems, 2018

Tree Locations — Exhibit 2n

Malibu Middle and High School
Specific Plan and LCP Amendment Project

PSOMAS

(Rev: 05/12/2021 MMD) R:\Projects\1SAN\082310\Graphics\Tree\ex_Trees.pdf

D:\Projects\1SAN\082310\MXD\Tree\ex_Trees_20210510.mxd

ATTACHMENT A

TREE DATA SUMMARY

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
1	Canary Island pine	*Pinus canariensis*	1	16.5		30	25	4	4	n
2	Canary Island pine	*Pinus canariensis*	1	25.5		30	25	4	4	n
3	Canary Island pine	*Pinus canariensis*	1	8.5		15	12	4	4	n
4	rusty-leaf fig	*Ficus rubiginosa*	1	63.4		40	35	4	4	n
5	rusty-leaf fig	*Ficus rubiginosa*	1	50.2		40	40	4	4	n
6	New Zealand christmas tree	*Metrosideros excelsa*	6	9.5	9.4	15	15	4	4	n
7	New Zealand christmas tree	*Metrosideros excelsa*	2	9.1	6.9	12	12	4	4	n
8	New Zealand christmas tree	*Metrosideros excelsa*	4	8.2	5.3	12	12	4	4	n
9	New Zealand christmas tree	*Metrosideros excelsa*	1	9.0		12	12	4	4	n
10	New Zealand christmas tree	*Metrosideros excelsa*	2	8.4	7.8	12	12	4	4	n
11	New Zealand christmas tree	*Metrosideros excelsa*	1	14.3		12	15	4	4	n
12	New Zealand christmas tree	*Metrosideros excelsa*	2	13.1	12.2	15	25	4	4	n
13	purple-leaf cherry plum	*Prunus cerasifera*	1	4.0		10	8	4	4	n
14	Mexican fan palm	*Washingtonia robusta*	1	18.3		50	8	3	4	n
15	Mexican fan palm	*Washingtonia robusta*	1	16.6		45	8	3	4	n
16	Mexican fan palm	*Washingtonia robusta*	1	15.4		45	8	3	4	n
17	Mexican fan palm	*Washingtonia robusta*	1	18.5		45	8	3	4	n
18	Mexican fan palm	*Washingtonia robusta*	1	18.0		45	8	3	4	n
19	Peruvian peppertree	*Schinus molle*	1	5.1		10	10	3	3	n
20	Mexican fan palm	*Washingtonia robusta*	1	18.3		50	8	3	4	n
21	Afghan pine	*Pinus eldarica*	2	34.4	15.7	40	45	4	4	n
22	Mexican fan palm	*Washingtonia robusta*	1	17.9		45	8	4	4	n
23	China doll tree	*Radermachera sinica*	1	10.6		15	10	4	3	n
24	China doll tree	*Radermachera sinica*	2	5.5	5.4	12	10	4	3	n
25	lollypop tree	*Myoporum laetum*	8	2.8	2.3	8	15	4	4	n
26	arroyo willow	*Salix lasiolepis*	2	3.5	2.5	12	8	4	4	n
27	arroyo willow	*Salix lasiolepis*	1	7.5		15	5	1	1	n
28	snag		x	4-10		x	x	x	x	n
29	Chinese juniper	*Juniperus chinensis*	1	12.8		15	12	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
30	black poui	*Jacaranda mimosifolia*	1	13.4		25	25	4	4	n
31	yellow bells	*Tecoma stans*	3	10.6	6.9	25	25	4	4	n
32	Mexican fan palm	*Washingtonia robusta*	1	18.1		45	8	4	4	n
33	loquat	*Eriobotrya japonica*	1	3.9		10	8	4	3	n
34	Chinese juniper	*Juniperus chinensis*	1	10.8		25	4	4	4	n
35	black poui	*Jacaranda mimosifolia*	2	7.2	5.8	25	25	4	4	n
36	Hankow willow	*Salix matsudana*	3	6.8	6.2	12	12	3	3	n
37	loquat	*Eriobotrya japonica*	1	5.8		8	3	4	3	n
38	white sapote	*Casimiroa edulis*	1	5.9		15	12	4	4	n
39	bronze loquat	*Eriobotrya deflexa*	1	8.1		12	20	4	4	n
40	pink melaleuca	*Melaleuca neophila*	3	10.3		12	20	4	4	n
41	bronze loquat	*Eriobotrya deflexa*	1	9.2		15	20	4	4	n
42	Mexican fan palm	*Washingtonia robusta*	1	17.1		45	10	4	4	n
43	dragon tree	*Dracaena draco*	1	19.9		10	15	4	4	n
44	silver dollar tree	*Eucalyptus cinerea*	2	4.6	4.0	15	10	4	3	n
45	blue potatobush	*Lycianthes rantonnetii*	2	2.1	1.0	10	10	4	4	n
46	Mexican fan palm	*Washingtonia robusta*	1	14.6		35	8	4	4	n
47	Mexican fan palm	*Washingtonia robusta*	1	15.0		35	8	4	4	n
48	weeping bottlebrush	*Callistemon viminalis*	4	5.5	4.3	15	15	4	4	n
49	purple-leaf cherry plum	*Prunus cerasifera*	1	6.0		7	10	4	4	n
50	Mexican fan palm	*Washingtonia robusta*	1	15.2		45	8	3	3	n
51	Mexican fan palm	*Washingtonia robusta*	1	17.0		45	8	3	3	n
52	Norfolk Island pine	*Araucaria heterophylla*	3	17.8	16.9	30	20	4	4	n
53	Mexican fan palm	*Washingtonia robusta*	1	16.8		45	10	4	4	n
54	Canary Island date palm	*Phoenix canariensis*	1	23.0		15	25	4	4	n
55	snag		x	15.0		x	x	x	x	n
56	mulberry	*Morus* sp.	1	9.3		25	20	4	4	n
57	purple-leaf cherry plum	*Prunus cerasifera*	1	5.6		15	8	4	4	n
58	Mexican fan palm	*Washingtonia robusta*	1	15.2		40	10	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
59	purple-leaf cherry plum	*Prunus cerasifera*	1	4.5		10	6	4	4	n
60	coral tree	*Erythrina* sp.	1	3.8		8	8	4	4	n
61	date palm	*Phoenix* sp.	1	15.1		20	18	4	4	n
62	Mexican fan palm	*Washingtonia robusta*	1	16.8		45	10	4	4	n
63	purple-leaf cherry plum	*Prunus cerasifera*	1	4.5		10	6	4	4	n
64	Monterey cypress	*Hesperocyparis macrocarpa*	1	24.8		35	30	4	4	n
65	Mexican fan palm	*Washingtonia robusta*	1	15.1		35	8	4	3	n
66	Mexican fan palm	*Washingtonia robusta*	1	18.4		45	8	4	3	n
67	Mexican fan palm	*Washingtonia robusta*	1	14.7		40	6	4	4	n
68	Mexican fan palm	*Washingtonia robusta*	1	19.7		40	8	3	4	n
69	Fremont's cottonwood	*Populus fremontii*	1	10.2		35	20	4	3	n
70	black poui	*Jacaranda mimosifolia*	1	10.7		12	15	3	3	n
71	Mexican fan palm	*Washingtonia robusta*	1	13.6		20	10	4	3	n
72	Afghan pine	*Pinus eldarica*	1	8.7		12	20	4	4	n
73	lollypop tree	*Myoporum laetum*	3	7.5	7.0	25	15	2	2	n
74	lollypop tree	*Myoporum laetum*	1	9.2		25	25	4	4	n
75	eucalyptus	*Eucalyptus* sp.	6	2.5	2.5	25	15	2	2	n
76	arroyo willow	*Salix lasiolepis*	6	2.5	2.0	20	15	4	4	n
77	arroyo willow	*Salix lasiolepis*	3	2.0	2.0	15	10	3	3	n
78	arroyo willow	*Salix lasiolepis*	5	2.0	2.0	20	15	3	3	n
79	arroyo willow	*Salix lasiolepis*	6	2.0	1.5	20	12	4	4	n
80	arroyo willow	*Salix lasiolepis*	3	2.0	1.5	20	15	3	3	n
81	western sycamore	*Platanus racemosa*	1	7.7		35	15	3	3	y
82	arroyo willow	*Salix lasiolepis*	8	2.0	2.0	20	20	4	4	n
83	western sycamore	*Platanus racemosa*	1	9.5		35	20	3	3	y
84	snag (polygon of 4 snags)		x	6-10		x	x	x	x	n
85	sugar gum	*Eucalyptus cladocalyx*	1	16.5		50	25	2	2	n
86	Bailey acacia	*Acacia baileyana*	3	3.5	2.5	15	10	4	3	n
87	arroyo willow	*Salix lasiolepis*	7	2.3	2.0	20	15	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
88	arroyo willow	*Salix lasiolepis*	6	2.5	2.0	20	12	4	4	n
89	snag		x	12.0		x	x	x	x	n
90	arroyo willow	*Salix lasiolepis*	9	2.0	2.0	15	12	4	4	n
91	arroyo willow	*Salix lasiolepis*	9	2.0	2.0	15	20	4	4	n
92	Shamel ash	*Fraxinus uhdei*	7	1.5	1.5	10	8	4	3	n
93	sugar gum	*Eucalyptus cladocalyx*	12	3.0	3.0	15	20	4	3	n
94	blue elderberry	*Sambucus nigra*	15	5.5	5.2	20	30	3	3	n
95	cherry	*Prunus* sp.	1	6.0		20	10	3	3	n
96	California bay laurel	*Umbellularia californica*	3	6.5	5.5	12	15	2	2	n
97	coast live oak	*Quercus agrifolia*	1	9.5		12	20	4	4	y
98	olive	*Olea europaea*	3	3.5	2.5	8	15	3	3	n
99	loquat	*Eriobotrya japonica*	5	2.5	2.0	10	15	4	4	n
100	snag		x	22.0		x	x	x	x	n
101	snag		x	40.0		x	x	x	x	n
102	sugar gum	*Eucalyptus cladocalyx*	1	22.0		35	15	2	2	n
103	Peruvian peppertree	*Schinus molle*	1	4.5		12	8	4	3	n
104	Catalina cherry	*Prunus ilicifolia* ssp. *Lyonii*	1	8.5		20	20	4	3	n
105	snag		x	8.0		x	x	x	x	n
106	eucalyptus	*Eucalyptus* sp.	1	4.0		10	4	2	2	n
107	snag		x	12.0		x	x	x	x	n
108	sugar gum	*Eucalyptus cladocalyx*	1	12.0		25	15	4	2	n
109	snag		x	15.0		x	x	x	x	n
110	red ironbark	*Eucalyptus sideroxylon*	2	28.0	11.0	35	35	4	3	n
111	red ironbark	*Eucalyptus sideroxylon*	1	15.0		45	40	4	4	n
112	red ironbark	*Eucalyptus sideroxylon*	1	12.0		35	35	4	4	n
113	red ironbark	*Eucalyptus sideroxylon*	1	17.0		45	40	4	4	n
114	African fern pine	*Afrocarpus falcatus*	3	9.5	8.5	25	20	4	3	n
115	African fern pine	*Afrocarpus falcatus*	2	9.5	8.5	25	20	4	3	n
116	Afghan pine	*Pinus eldarica*	1	18.7		15	30	4	3	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
117	Peruvian peppertree	*Schinus molle*	1	27.5		20	35	4	3	n
118	Shamel ash	*Fraxinus uhdei*	2	17.0	8.5	25	25	4	4	n
119	Shamel ash	*Fraxinus uhdei*	1	4.1		20	12	4	4	n
120	Shamel ash	*Fraxinus uhdei*	2	9.5	9.0	20	15	1	1	n
121	snag		x	35.0		x	x	x	x	n
122	Peruvian peppertree	*Schinus molle*	5	2.0	2.0	8	15	4	3	n
123	red ironbark	*Eucalyptus sideroxylon*	2	5.0	4.0	12	12	4	3	n
124	Canary Island date palm	*Phoenix canariensis*	1	32.0		12	25	4	4	n
125	lollypop tree	*Myoporum laetum*	3	6.5	5.0	10	20	2	2	n
126	sugar gum	*Eucalyptus cladocalyx*	1	35.9		50	40	4	3	n
127	silver dollar gum	*Eucalyptus polyanthemos*	1	23.5		45	35	4	3	n
128	silver dollar gum	*Eucalyptus polyanthemos*	1	24.3		40	35	3	2	n
129	silver dollar gum	*Eucalyptus polyanthemos*	1	31.5		50	40	4	4	n
130	Peruvian peppertree	*Schinus molle*	3	18.0	14.5	35	35	4	4	n
131	snag		x	15.0		x	x	x	x	n
132	Canary Island date palm	*Phoenix canariensis*	3	8.5	7.8	12	10	4	4	n
133	queen palm	*Syagrus romanzoffiana*	1	10.0		15	12	4	4	n
134	queen palm	*Syagrus romanzoffiana*	3	11.1	9.6	12	12	4	4	n
135	queen palm	*Syagrus romanzoffiana*	3	8.5	8.2	12	12	4	4	n
136	queen palm	*Syagrus romanzoffiana*	1	10.6		12	10	4	4	n
137	queen palm	*Syagrus romanzoffiana*	2	10.6	9.6	20	15	4	4	n
138	black poui	*Jacaranda mimosifolia*	3	4.5	1.5	15	15	3	3	n
139	Mexican fan palm	*Washingtonia robusta*	1	11.0		15	8	4	4	n
140	black poui	*Jacaranda mimosifolia*	4	4.5	3.5	15	20	4	4	n
141	black poui	*Jacaranda mimosifolia*	3	6.1	3.8	20	25	4	4	n
142	black poui	*Jacaranda mimosifolia*	3	3.6	3.4	20	12	4	4	n
143	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
144	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
145	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	8	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
146	Mexican fan palm	*Washingtonia robusta*	1	11.0		25	8	4	4	n
147	Mexican fan palm	*Washingtonia robusta*	1	11.0		25	8	4	4	n
148	Mexican fan palm	*Washingtonia robusta*	1	11.0		25	8	4	4	n
149	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
150	Mexican fan palm	*Washingtonia robusta*	1	14.0		25	10	4	4	n
151	black poui	*Jacaranda mimosifolia*	2	9.8	9.3	25	25	4	4	n
152	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	8	4	4	n
153	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	8	4	4	n
154	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
155	black poui	*Jacaranda mimosifolia*	2	2.2	2.2	20	15	4	4	n
156	black poui	*Jacaranda mimosifolia*	3	4.7	39.0	20	15	4	4	n
157	Mexican fan palm	*Washingtonia robusta*	1	12.0		25	10	4	4	n
158	southern magnolia	*Magnolia grandiflora*	1	10.9		25	25	4	4	n
159	western sycamore	*Platanus racemosa*	1	14.4		30	25	4	3	y
160	western sycamore	*Platanus racemosa*	1	15.7		30	25	4	4	y
161	queen palm	*Syagrus romanzoffiana*	1	13.6		30	20	4	4	n
162	Mexican fan palm	*Washingtonia robusta*	1	16.0		45	8	4	4	n
163	majestic beauty Indian hawthorne	*Rhaphiolepis* x 'Montic'	1	7.2		12	12	4	4	n
164	Peruvian peppertree	*Schinus molle*	1	15.8		35	30	4	4	n
165	western sycamore	*Platanus racemosa*	1	8.8		25	25	4	4	y
166	western sycamore	*Platanus racemosa*	1	15.7		35	30	4	4	y
167	black poui	*Jacaranda mimosifolia*	2	7.1	3.1	15	15	4	4	n
168	Mexican fan palm	*Washingtonia robusta*	1	17.0		20	12	4	4	n
169	Mexican fan palm	*Washingtonia robusta*	1	19.0		35	10	4	4	n
170	Mexican fan palm	*Washingtonia robusta*	1	13.0		15	12	4	4	n
171	black poui	*Jacaranda mimosifolia*	2	3.8	3.6	20	25	4	4	n
172	Mexican fan palm	*Washingtonia robusta*	1	9.0		10	15	4	4	n
173	Mexican fan palm	*Washingtonia robusta*	1	10.0		10	10	4	4	n
174	Mexican fan palm	*Washingtonia robusta*	1	15.0		25	10	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
175	southern magnolia	*Magnolia grandiflora*	1	4.4		15	15	4	4	n
176	Mexican fan palm	*Washingtonia robusta*	2	15.0	14.0	30	20	4	4	n
177	Mexican fan palm	*Washingtonia robusta*	1	15.0		20	12	4	4	n
178	Mexican fan palm	*Washingtonia robusta*	1	13.0		15	12	4	4	n
179	Peruvian peppertree	*Schinus molle*	3	8.3	6.5	15	20	4	4	n
180	Peruvian peppertree	*Schinus molle*	1	16.4		25	30	4	4	n
181	Peruvian peppertree	*Schinus molle*	2	11.0	2.6	25	25	4	4	n
182	Mexican fan palm	*Washingtonia robusta*	1	14.0		20	10	4	4	n
183	Mexican fan palm	*Washingtonia robusta*	1	12.0		10	12	4	4	n
184	Mexican fan palm	*Washingtonia robusta*	1	16.0		30	12	4	4	n
185	Mexican fan palm	*Washingtonia robusta*	1	10.0		10	10	4	4	n
186	Mexican fan palm	*Washingtonia robusta*	1	14.0		15	8	4	4	n
187	Peruvian peppertree	*Schinus molle*	1	7.5		10	15	4	4	n
188	Mexican fan palm	*Washingtonia robusta*	1	7.0		8	8	4	4	n
189	Peruvian peppertree	*Schinus molle*	2	8.8	7.3	25	25	4	4	n
190	Peruvian peppertree	*Schinus molle*	1	8.4		20	20	4	4	n
191	Peruvian peppertree	*Schinus molle*	1	7.2		20	20	4	4	n
192	Peruvian peppertree	*Schinus molle*	2	10.0	9.8	25	30	4	4	n
193	snag		x	4.0		x	x	x	x	n
194	Peruvian peppertree	*Schinus molle*	2	4.4	3.6	8	10	4	4	n
195	Peruvian peppertree	*Schinus molle*	4	6.8	5.5	15	30	4	4	n
196	Peruvian peppertree	*Schinus molle*	4	5.8	3.4	12	20	4	4	n
197	Peruvian peppertree	*Schinus molle*	1	7.5		10	15	4	4	n
198	Peruvian peppertree	*Schinus molle*	1	7.0		10	10	4	4	n
199	Peruvian peppertree	*Schinus molle*	2	4.2	4.1	8	10	4	4	n
200	Afghan pine	*Pinus eldarica*	1	19.2		15	25	4	4	n
201	olive	*Olea europaea*	3	4.1	3.2	15	10	4	4	n
202	Mexican fan palm	*Washingtonia robusta*	1	17.0		25	10	4	4	n
203	Mexican fan palm	*Washingtonia robusta*	1	16.0		25	8	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
204	snag		x	10.0		x	x	x	x	n
205	arroyo willow	*Salix lasiolepis*	8	5.3	5.2	20	25	3	2	n
206	lollypop tree	*Myoporum laetum*	4	4.1	3.9	12	12	3	3	n
207	lollypop tree	*Myoporum laetum*	1	5.2		8	8	2	2	n
208	Mexican fan palm	*Washingtonia robusta*	1	8.0		8	8	4	4	n
209	olive	*Olea europaea*	7	7.5	7.0	20	25	4	4	n
210	Mexican fan palm	*Washingtonia robusta*	1	8.0		8	8	4	4	n
211	Italian cypress	*Cupressus sempervirens*	1	6.5		20	4	4	4	n
212	Italian cypress	*Cupressus sempervirens*	1	7.3		20	4	4	4	n
213	western redbud	*Cercis occidentalis*	2	4.9	3.0	20	10	3	3	n
214	Italian cypress	*Cupressus sempervirens*	1	8.4		20	4	4	4	n
215	Afghan pine	*Pinus eldarica*	1	15.2		20	25	4	3	n
216	Afghan pine	*Pinus eldarica*	2	7.9	7.3	25	25	4	4	n
217	golden wattle	*Acacia longifolia*	3	6.5	6.0	8	20	2	2	n
218	Mexican fan palm	*Washingtonia robusta*	1	16.8		30	8	4	3	n
219	New Zealand christmas tree	*Metrosideros excelsa*	9	5.5	4.1	20	25	4	4	n
220	coast live oak	*Quercus agrifolia*	1	3.0		10	10	2	2	n
221	snag		x	4.0		x	x	x	x	n
222	western sycamore	*Platanus racemosa*	1	3.1		20	8	4	4	n
223	western sycamore	*Platanus racemosa*	1	4.8		20	12	4	4	n
224	western sycamore	*Platanus racemosa*	1	3.3		25	12	4	4	n
225	Indian laurel fig (polygon of 6 trees)	*Ficus microcarpa*	1	3-4		10-15	5	4	4	n
226	coast live oak	*Quercus agrifolia*	1	3.3		12	15	3	3	n
227	black poui	*Jacaranda mimosifolia*	1	13.4		30	35	4	4	n
228	black poui	*Jacaranda mimosifolia*	1	5.8		15	12	3	3	n
229	black poui	*Jacaranda mimosifolia*	1	4.3		10	8	3	3	n
230	flaxleaf paperbark	*Melaleuca linariifolia*	1	6.4		15	12	4	4	n
231	peppermint tree	*Agonis flexuosa*	2	15.0	8.7	25	25	4	4	n
232	peppermint tree	*Agonis flexuosa*	2	15.4	14.4	25	30	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
233	peppermint tree	*Agonis flexuosa*	1	7.3		20	20	4	4	n
234	peppermint tree	*Agonis flexuosa*	1	11.8		20	15	4	4	n
235	queen palm	*Syagrus romanzoffiana*	1	11.3		25	20	4	4	n
236	queen palm	*Syagrus romanzoffiana*	1	11.3		20	20	4	4	n
237	peppermint tree	*Agonis flexuosa*	3	12.2	9.4	25	25	4	4	n
238	peppermint tree	*Agonis flexuosa*	3	12.2	4.8	25	20	4	4	n
239	queen palm	*Syagrus romanzoffiana*	1	11.8		20	15	4	4	n
240	queen palm	*Syagrus romanzoffiana*	1	12.3		25	20	4	4	n
241	queen palm	*Syagrus romanzoffiana*	1	11.1		25	15	4	4	n
242	New Zealand christmas tree	*Metrosideros excelsa*	3	6.1	4.7	25	20	4	4	n
243	queen palm	*Syagrus romanzoffiana*	1	9.6		30	20	4	4	n
244	queen palm	*Syagrus romanzoffiana*	1	11.0		25	15	4	4	n
245	queen palm	*Syagrus romanzoffiana*	1	13.5		25	20	4	4	n
246	peppermint tree	*Agonis flexuosa*	1	15.9		20	20	4	4	n
247	peppermint tree	*Agonis flexuosa*	3	10.6	6.8	25	20	4	4	n
248	queen palm	*Syagrus romanzoffiana*	1	6.8		10	3	4	4	n
249	queen palm	*Syagrus romanzoffiana*	1	12.4		25	25	4	4	n
250	peppermint tree	*Agonis flexuosa*	2	11.1	10.4	25	25	4	4	n
251	Chinese juniper	*Juniperus chinensis*	9	12.6	6.5	20	15	4	4	n
252	Chinese juniper	*Juniperus chinensis*	4	8.9	8.5	20	20	4	4	n
253	South African coral tree	*Erythrina caffra*	1	58.0		30	25	4	3	n
254	flaxleaf paperbark	*Melaleuca linariifolia*	1	7.0		15	10	4	4	n
255	Peruvian peppertree	*Schinus molle*	1	21.0		25	35	4	4	n
256	Peruvian peppertree	*Schinus molle*	2	10.6	7.8	20	20	4	4	n
257	western sycamore	*Platanus racemosa*	1	12.1		30	30	4	4	y
258	Peruvian peppertree	*Schinus molle*	3	4.7	4.7	12	12	4	4	n
259	Peruvian peppertree	*Schinus molle*	3	2.7	2.6	12	10	4	4	n
260	Peruvian peppertree	*Schinus molle*	2	4.6	3.3	12	15	4	4	n
261	Peruvian peppertree	*Schinus molle*	2	30.6	16.6	25	35	4	4	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
262	sugar gum	*Eucalyptus cladocalyx*	1	11.0		45	25	4	3	n
263	sugar gum	*Eucalyptus cladocalyx*	3	16.7	9.2	40	30	4	4	n
264	sugar gum	*Eucalyptus cladocalyx*	1	10.3		20	15	4	3	n
265	sugar gum	*Eucalyptus cladocalyx*	1	10.8		30	20	3	3	n
266	sugar gum	*Eucalyptus cladocalyx*	1	5.1		12	8	4	3	n
267	sugar gum	*Eucalyptus cladocalyx*	1	6.2		25	10	3	3	n
268	sugar gum	*Eucalyptus cladocalyx*	1	19.3		45	35	4	4	n
269	sugar gum	*Eucalyptus cladocalyx*	1	33.8		55	40	4	4	n
270	sugar gum	*Eucalyptus cladocalyx*	1	18.6		50	25	4	4	n
271	sugar gum	*Eucalyptus cladocalyx*	1	8.0		25	20	3	3	n
272	sugar gum	*Eucalyptus cladocalyx*	1	3.2		15	8	3	3	n
273	sugar gum	*Eucalyptus cladocalyx*	2	26.8	7.9	55	40	4	4	n
274	sugar gum	*Eucalyptus cladocalyx*	1	3.4		12	8	3	3	n
275	sugar gum	*Eucalyptus cladocalyx*	1	3.8		15	6	3	3	n
276	sugar gum	*Eucalyptus cladocalyx*	1	3.1		12	4	3	3	n
277	sugar gum	*Eucalyptus cladocalyx*	1	6.6		15	8	3	3	n
278	sugar gum	*Eucalyptus cladocalyx*	1	30.0		65	35	4	4	n
279	sugar gum	*Eucalyptus cladocalyx*	1	10.6		40	25	3	3	n
280	sugar gum	*Eucalyptus cladocalyx*	1	28.2		55	35	3	3	n
281	snag		x	3.0		x	x	x	x	n
282	sugar gum	*Eucalyptus cladocalyx*	1	19.5		55	25	3	3	n
283	snag		x	15.0		x	x	x	x	n
284	western sycamore	*Platanus racemosa*	1	12.5		30	20	4	4	y
285	Peruvian peppertree	*Schinus molle*	4	8.0	6.5	12	15	3	2	n
286	Mexican fan palm	*Washingtonia robusta*	1	8.0		10	5	4	4	n
287	Canary Island date palm	*Phoenix canariensis*	1	18.0		12	15	4	4	n
288	Canary Island date palm	*Phoenix canariensis*	1	19.0		12	15	4	4	n
289	Canary Island date palm	*Phoenix canariensis*	1	24.0		15	20	4	4	n
290	Peruvian peppertree	*Schinus molle*	5	6.0	2.0	10	12	4	2	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
291	Peruvian peppertree	*Schinus molle*	4	9.5	9.5	20	20	4	3	n
292	Canary Island pine	*Pinus canariensis*	1	15.6		25	20	4	4	n
293	snag		x	9.0		x	x	x	x	n
294	blue elderberry	*Sambucus nigra*	16	5.0	4.0	15	12	4	3	n
295	Brisbane box	*Lophostemon confertus*	1	27.0		20	25	3	2	n
296	blue elderberry	*Sambucus nigra*	14	6.0	4.0	12	20	4	2	n
297	blue elderberry	*Sambucus nigra*	16	6.0	3.0	15	15	3	2	n
298	blue elderberry	*Sambucus nigra*	3	8.5	4.0	15	25	4	3	n
299	lollypop tree	*Myoporum laetum*	1	5.4		20	15	4	3	n
300	red willow	*Salix laevigata*	1	12.0		20	20	4	3	n
301	red willow	*Salix laevigata*	1	10.0		25	20	4	3	n
302	blue elderberry	*Sambucus nigra*	6	9.5	8.5	20	25	4	3	n
303	snag		x	20.0		x	x	x	x	n
304	snag		x	12.0		x	x	x	x	n
305	blue elderberry	*Sambucus nigra*	5	3.0	2.0	12	15	4	4	n
306	blue elderberry	*Sambucus nigra*	1	8.0		15	12	4	3	n
307	red willow	*Salix laevigata*	1	8.5		15	12	3	3	n
308	blue elderberry	*Sambucus nigra*	9	5.0	3.0	15	15	4	3	n
309	snag		x	8.0		x	x	x	x	n
310	lollypop tree	*Myoporum laetum*	4	4.0	4.0	10	20	4	4	n
311	lollypop tree	*Myoporum laetum*	1	5.6		10	10	4	3	n
312	blue elderberry	*Sambucus nigra*	4	8.0	7.0	15	25	3	2	n
313	snag		x	15.0		x	x	x	x	n
314	blue elderberry	*Sambucus nigra*	19	7.0	5.0	10	10	2	2	n
315	blue elderberry	*Sambucus nigra*	15	4.5	1.0	10	20	4	3	n
316	blue elderberry	*Sambucus nigra*	7	4.0	3.0	12	20	3	2	n
317	blue elderberry	*Sambucus nigra*	12	5.0	1.0	10	15	4	2	n
318	lollypop tree	*Myoporum laetum*	1	9.0		12	20	3	3	n
319	lollypop tree	*Myoporum laetum*	1	4.0		12	5	3	3	n

TREE DATA SUMMARY

Tree Tag #	Common Name	Species	# Main Trunks	1st Trunk DBH (in)	2nd Trunk DBH (in)	Height (ft)	Canopy Diameter (ft)	Health Rating	Aesthetic Rating	LCP Protected (Y/N)
320	snag		x	20.0		x	x	x	x	n
321	snag		x	14.0		x	x	x	x	n
322	Southern California black walnut	*Juglans californica*	1	32.0		30	40	4	3	y
323	lollypop tree	*Myoporum laetum*	2	10.5		15	20	3	2	n
324	lollypop tree	*Myoporum laetum*	3	14.0		15	15	4	3	n
DBH: Diameter at Breast Height; Aesthetics/Health Rating: 1=Very Poor, 2=Poor, 3=Fair, 4=Good, and 5=Excellent										

Appendix G Cultural Resources Report

Appendices

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Cultural Resources Inventory and Architectural Evaluation

Santa Monica-Malibu Unified School District Malibu Middle and High School Campus Master Plan Project

Los Angeles County, California

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MANAGEMENT SUMMARY

ECORP Consulting, Inc. was retained to conduct a cultural resources investigation for the Santa Monica-Malibu Unified School District (SMMUSD) Malibu Middle and High School Campus Plan. The campus is located at 30215 Morning View Drive in Malibu, Los Angeles County, California.

This study was conducted in accordance with the California Environmental Quality Act (CEQA) and included an archaeological inventory study and the evaluation of built-environment resources located within the Project Area.

In January 2020, a cultural resources records search was conducted at the South Central Coastal Information Center (SCCIC) at California State University, Fullerton, and a search of the Sacred Lands File was requested from the Native American Heritage Commission. The records search results indicated that no archaeological resources have been previously recorded within the Project Area, although multiple pre-contact (prehistoric) sites have been recorded in the near vicinity of the Project Area. The records search indicated that the Project Area has been previously surveyed for cultural resources and that the Malibu Middle and High School and the Juan Cabrillo Elementary School Campus buildings have not been noted in previous archaeological survey reports on file with the SCCIC and have not been previously recorded on Department of Parks and Recreation 523 records or evaluated using California Register of Historical Resources (CRHR) evaluation criteria. The schools are not located within an existing historic district. Despite not being noted during the records search, ECORP was provided an evaluation report for the Malibu Middle and High School (PBS&J 2010) that found the campus does not qualify as a Historical Resource under CEQA.

As a result of the field visit, ECORP recorded two historic-period resources within the Project Area: the Malibu Middle and High School campus and the Juan Cabrillo Elementary School campus. The campuses themselves and all the individual buildings were found not eligible for inclusion in the CRHR. In addition, the school was not identified in a qualified historic resources survey and was not listed on a qualified local historical register. Therefore, the Malibu Middle and High School and the Juan Cabrillo Elementary School are not a Historical Resource as defined by CEQA. No pre-contact or historic-period archaeological sites were identified within the Project Area as a result of the study. Thus, the proposed Project will not result in impacts to known Historical Resources as defined by CEQA.

Based on the number and proximity of previously recorded pre-contact archaeological sites in the vicinity of the Project Area, the archaeological sensitivity of the Project Area is believed to be high. Monitoring by an archaeologist is recommended during ground-disturbing activities in native soils.

CONTENTS

MANAGEMENT SUMMARY i
1.0 INTRODUCTION 1
1.1 Project Location 1
1.2 Project Description 1
1.3 Project Area 1
1.4 Regulatory Context 4
1.5 Report Organization 5
2.0 ENVIRONMENTAL CONTEXT 5
3.0 CULTURAL CONTEXT 6
3.1 Prehistory and Ethnohistory 6
3.2 History Context 7
3.2.1 Local History 7
3.2.2 Campus Histories 9
3.2.3 Architectural Context 10
4.0 METHODS 12
4.1 Personnel Qualifications 12
4.2 Records Search Methods 13
4.3 Archival Research Methods 14
4.4 Field Methods 15
4.5 Sacred Lands File Coordination Methods 15
4.6 Evaluation Criteria 16
4.6.1 State Evaluation Criteria 16
5.0 RESULTS 17
5.1 Records Search 17
5.2 Sacred Lands File Results 21
5.3 Archaeological Field Visit Results 21
5.3.1 Archaeological Buried Site Sensitivity 22
5.4 Built Environment Cultural Resources 22
5.4.1 Malibu Middle and High School 22
5.4.2 Juan Cabrillo Elementary School 30
6.0 CONCLUSION AND RECOMMENDATIONS 37
6.1 Summary and Recommendations for Post-Review Discovery 38
7.0 REFERENCES CITED 40

LIST OF TABLES

Table 1. Previous Cultural Studies Within the Project Area 17
Table 2. Previously Recorded Cultural Resources In or Within 1 Mile of the Project Area 18
Table 3: Malibu Middle and High School Individual Buildings 23
Table 4: Juan Cabrillo Elementary School Individual Buildings 30

LIST OF FIGURES

Figure 1. Project Vicinity 2
Figure 2. Location Map 3
Figure 3. Building D: southern-facing façade (view northwest), taken March 25, 2020. 24
Figure 4. Building F: southern-facing façade (view north), taken March 25, 2020. 25
Figure 5. Building G: western-facing façade (view east), taken March 25, 2020. 25
Figure 6. Building H: southern-facing façade (view northwest), taken March 25, 2020. 26
Figure 7. 500 Building: eastern-facing façade (view south), taken March 25, 2020. 27
Figure 8. Old Gymnasium Building: southern-facing façade (view north), taken March 25, 2020. 27
Figure 9. Main Office Building: southern-facing façade (view northeast), taken March 25, 2020. 31
Figure 10. Front Building: northern-facing façade (view southeast), taken March 25, 2020. 32
Figure 11. Library Building: northeastern-facing façade (view southwest), taken March 25, 2020. 32
Figure 12. Building: southern-facing façade (view northwest), taken March 25, 2020. 33
Figure 13. 100 Building: northern-facing façade (view southwest), taken March 25, 2020. 34
Figure 14. 150 Building: northern-facing façade (view southeast), taken March 25, 2020. 34
Figure 15. Garage Building: southern-facing façade (view north), taken March 25, 2020. 35

LIST OF ATTACHMENTS

Attachment A – Sacred Lands File Coordination
Attachment B – Project Area and Building Photographs

LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
amsl	Above mean sea level
BP	Before present
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
CRHR	California Register of Historical Resources
DPR	Department of Parks and Recreation
MLD	Most Likely Descendant
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation's
PRC	Public Resources Code
Project	SMMUSD Malibu Middle and High School Project
RPA	Registered Professional Archaeologist
SCCIC	South Central Coastal Information Center
SMMUSD	Santa Monica-Malibu Unified School District
USC	U.S. Code
USGS	U. S. Geological Survey

1.0 INTRODUCTION

ECORP Consulting, Inc. conducted a cultural resources study for the Malibu Middle and High School Campus Master Plan located at 30215 and 30237 Morning View Drive, in the City of Malibu. The schools are located within the Santa Monica-Malibu Unified School District (SMMUSD). The purpose of this study is to evaluate the buildings and structures located on the campuses for eligibility for the California Register of Historical Resources (CRHR), to assess whether the buildings and structures are Historical Resources as defined by the California Environmental Quality Act (CEQA), and to assess the archaeological sensitivity of the Project Area and address the potential for subsurface archaeological resources to exist in the Project Area. The study consisted of a cultural resources records search, Native American Heritage Commission (NAHC) Sacred Lands File search, archival research, soils and geomorphology review, a field visit to thoroughly document the school buildings and structures, an archaeological field survey of unpaved portions of the Project Area, and an evaluation of eligibility for inclusion in the CRHR.

1.1 Project Location

The Project Area surveyed for this study is a 56.9-acre hillside property that includes the Malibu Middle and High School campus, and the SMMUSD-owned Juan Cabrillo Elementary School campus. The Juan Cabrillo Elementary School site no longer operates as an elementary school. The high school is located at 30215 Morning View Drive in the City of Malibu (Figure 1). The closed elementary school is located at 30237 Morning View Drive. The Project Area is located approximately 0.29 mile (466 meters) northeast of the Pacific Coast at Zuma Beach within unsectioned portions of the Topanga Malibu Sequit Land Grant of Township 1 North, Range 19 West, San Bernardino Base and Meridian, as depicted on the 1995 Point Dume, California U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 2).

1.2 Project Description

The Project consists of redeveloping the Juan Cabrillo Elementary School site and the Malibu Middle and High School campuses, with the exception of the existing athletics fields; the newly constructed Buildings A, B, and E; and parking lot E (to be renamed A). The proposed project also includes limited development of a relocated Bus Barn in the District-owned. The Project would separate Malibu Middle and High School into two distinct campuses with some shared facilities and upgrade existing campus structures, facilities, utility infrastructure parking, and outdoor areas.

1.3 Project Area

The Project Area consists of the horizontal and vertical limits of the Project and includes the area within which significant impacts to Historical Resources could occur as a result of the Project. The Project Area is defined for projects subject to CEQA.

Location: N:\2020\2020-001 SMMUSD Malibu HS and Middle School\MAPS\Location_Vicinity\SMMUSD_Vicinity_20200724.mxd (JDS)-JSwager 7/24/2020

Map Date: 7/24/2020

Sources: ESRI

Figure 1. Regional Project Location

2020-001 SMMUSD Malibu HS/Middle School Campus

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Location: N:\2020\2020-001 SMMUSD Malibu HS and Middle School\MAPS\Location_Vicinity\SMMUSD_Location_20200724_Quad.mxd *(JDS)-trotellini 7/16/2021*

Map Date: 7/16/2021
USGS Topographic Quadrangle: Point Dume, CA (1995, NAD27)

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Figure 2. Project Location

2020-011 SMMUSD Malibu HS/Middle School Campus

The horizontal Project Area consists of all areas where activities associated with the Project are proposed and in the case of the current Project, equals the Project Area subject to environmental review under CEQA. The greater SMMUSD property includes the Malibu Middle and High School campus, the Juan Cabrillo Elementary School campus, and the Malibu Equestrian Park. However, the proposed Project will not include any alteration or construction to or within the Malibu Equestrian Park or its associated facilities. Thus, for the purposes of this study, the Project Area includes the two school campuses and does not include the Malibu Equestrian Park (see Figure 2). The Project Area is approximately 56.9 acres in size.

The vertical Project Area is described as the maximum depth below the surface to which excavations for Project foundations and facilities will extend. Therefore, the vertical Project Area includes all subsurface areas where archaeological deposits could be affected. The subsurface vertical Project Area varies across the Project depending on the depth of the grading or excavation for removal of the old facilities and grading, excavation, replacement facility, and utility installation. It could extend as deep as 25 feet below the current surface, and therefore, review of geologic and soils maps was necessary to determine the potential for buried archaeological sites that cannot be seen on the surface.

The vertical Project Area also is described as the maximum height of structures that could impact the physical integrity and integrity of setting of cultural resources, including districts and traditional cultural properties. For the current Project, the above-surface vertical Project Area is anticipated to be at least 80 feet, or the potential height of the new buildings.

1.4 Regulatory Context

To meet the regulatory requirements of this Project, this cultural resources investigation was conducted pursuant to the provisions for the treatment of cultural resources contained in CEQA (Public Resources Code [PRC] § 21000 et seq.) The goal of CEQA is to develop and maintain a high-quality environment that serves to identify the significant environmental effects of the actions of a proposed project and to either avoid or mitigate those significant effects where feasible. CEQA pertains to all proposed projects that require State or local government agency approval, including the enactment of zoning ordinances, the issuance of conditional use permits, and the approval of development project maps.

CEQA (Title 14, California Code of Regulations [CCR], Article 5, § 15064.5) applies to cultural resources of the historical and prehistoric (pre-contact) periods. Any project with an effect that may cause a substantial adverse change in the significance of a cultural resource, either directly or indirectly, is a project that may have a significant effect on the environment. As a result, such a project would require avoidance or mitigation of impacts to those affected resources. Significant cultural resources must meet at least one of four criteria that define eligibility for listing on the CRHR (PRC § 5024.1, Title 14 CCR, § 4852). Resources listed on or eligible for inclusion in the CRHR are considered Historical Resources under CEQA.

Tribal Cultural Resources are defined in Section 21074 of the California PRC as sites, features, places, cultural landscapes (geographically defined in terms of the size and scope), sacred places, and objects with cultural value to a California Native American tribe that are either included in or determined to be eligible for inclusion in the CRHR, or are included in a local register of historical resources as defined in subdivision (k) of Section 5020.1, or are 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

Section 5024.1. Section 1(b)(4) of Assembly Bill (AB) 52 established that only California Native American tribes, as defined in Section 21073 of the California PRC, are experts in the identification of Tribal Cultural Resources and impacts thereto. Because ECORP does not meet the definition of a California Native American tribe, this report only addresses information for which ECORP is qualified to identify and evaluate, and that which is needed to inform the cultural resources section of CEQA documents. This report, therefore, does not identify or evaluate Tribal Cultural Resources. Should California Native American tribes ascribe additional importance to or interpretation of archaeological resources described herein, or provide information about non-archeological Tribal Cultural Resources, that information is documented separately in the AB 52 tribal consultation record between the tribe(s) and Lead Agency and summarized in the Tribal Cultural Resources section of the CEQA document, if applicable.

1.5 Report Organization

The following report documents the study and its findings and was prepared in conformance with the California Office of Historic Preservation's (OHP) *Archaeological Resource Management Reports: Recommended Contents and Format*. Attachment A contains documentation of a search of the Sacred Lands File with the NAHC. Attachment B presents photographs of the buildings and property.

Sections 6253, 6254, and 6254.10 of the California Code authorize state agencies to exclude archaeological site information from public disclosure under the Public Records Act. In addition, the California Public Records Act (Government Code § 6250 et seq.) and California's open meeting laws (The Brown Act, Government Code § 54950 et seq.) protect the confidentiality of Native American cultural place information. Under Exemption 3 of the federal Freedom of Information Act (5 U.S. Code 5 [USC]), because the disclosure of cultural resources location information is prohibited by the Archaeological Resources Protection Act of 1979 (16 USC 470hh) and Section 307103 of the National Historic Preservation Act (NHPA), it is also exempted from disclosure under the Freedom of Information Act. Likewise, the Information Centers of the California Historical Resources Information System maintained by the OHP prohibit public dissemination of records search information.

2.0 ENVIRONMENTAL CONTEXT

The Project Area is located within rolling hills that abut the ocean. The elevation of the Project Area ranges from 103 feet above mean sea level (amsl) to 220 feet amsl. The Project Area is mainly developed and contains school buildings, parking lots, athletic fields, and landscaped areas. A small portion of the eastern Project Area contains undeveloped hillsides with heavy vegetation and a series of equestrian trails crisscrossing through the area. The area surrounding the Project Area contains a mix of of medium-density residential developments, undeveloped hillsides, and beaches.

According to the U.S. Department of Agriculture's (USDA) Web Soil Survey website (USDA 2020), there are two soil types present in the Project Area: the Cropley, coastal-Urban land-Haploxererts complex (433), 0 to 30 percent slopes, and Cropley, coastal-Xerorthents, landscaped-Urban land complex (434), 0 to 9 percent slopes. Sediments in the area primarily consists of the Holocene and Pleistocene beach sand, gravel, and alluvial sand, gravel, and clay from floodplains, old dune sand and older alluvium on terraces. Sediments also include older Miocene Monterey Formation siliceous shale (Dibblee and Ehrenspeck 1993).

Vegetation within the Project Area consists primarily of landscaped nonnative grasses and ornamental plants.

3.0 CULTURAL CONTEXT

3.1 Prehistory and Ethnohistory

The Project Area is located within the territory known to have been used by the Chumash at the time of contact with Europeans, around 1769.

The Project Area is in the region occupied by the Chumash before and at the time of European contact. King (1990) has divided the prehistory of the Chumash region into three periods: Early (8,000 to 3,350 years before present [BP]), Middle (3,350 to 800 years BP), and Late (800 to 150 years BP or approximately A.D. 1150 to 1800). The Early Period has been divided into three phases: X, Y, and Z. The X Phase is characterized by the use of large flake and core tools, millingstones, and handstones. Based on limited archaeological data, it appears that Phase X sites along the Santa Barbara Channel were located on crests of hills away from the ocean, but some Phase Y sites were located on knolls adjacent to sloughs. During Phase Z, sites were located on higher ground (King 1990).

During the Middle Period (3,350 to 800 years BP) increasing sedentism and increasing emphasis on marine subsistence along the Santa Barbara Channel is reflected by the appearance of coastal villages occupied during a large part of the year. The plank canoe, which made ocean fishing and travel to the Channel Islands safer and more efficient, came into use about 1,500 years BP. Use of the plank canoe also promoted trade and exchange between the mainland and the Channel Islands (Arnold 1987).

The full development of the Chumash, one of the most socially and economically complex hunting and gathering groups in North America, occurred during the Late Period (800 to 150 years BP or approximately A.D. 1150 to 1800) (Arnold 1987). At this time, there was a series of permanent and semi-permanent villages with populations of 200 to 600 or more individuals along the Santa Barbara Channel and on the Channel Islands. The principal economic pursuits of the people of these villages were marine fishing and trading (Grant 1978).

At the time of Spanish contact the Chumash occupied what is now Ventura County, the northwestern corner of Los Angeles County, and the Santa Monica Mountains area of Los Angeles County, Santa Barbara County, the northern Channel Islands, and the southern part of San Luis Obispo County. The Chumash spoke several languages belonging to the Chumashan language family that is not part of, or related to, any other North American language family. Artifactual and skeletal evidence indicate that the Chumash have continuously occupied the Ventura and Santa Barbara County areas from prior to 10,000 years BP to historic times. Linguistic evidence suggests that the Chumash expanded during the first millennium A.D. into territory previously occupied by Hokan speakers (Salinan) in southern San Luis Obispo County and on to the northern Channel Islands where an unknown, now extinct, language was spoken (Golla 2007:80).

The Chumash were one of the most socially and economically complex hunting and gathering groups in North America (Arnold 1987:4). Along the Santa Barbara Channel and on the northern Channel Islands

there were a series of permanent or semi-permanent villages with populations of 200 to 600 or more individuals (Grant 1978). Chumash Channel-area villages contained circular houses made of willow poles and thatch. A hearth was located in the center of each house. In addition to houses, each village contained a sweat house, a sacred council chamber, a dance floor, and a cemetery (Rogers 1929).

Status differentiation had developed to the point where village chiefs inherited their rank and probably controlled trade and redistribution. Only certain higher-ranking lineages built and operated plank canoes for trade with the islands. Trade and redistribution of products from different environmental zones was facilitated by the use of shell bead "money," made almost exclusively on the northern Channel Islands. Making microdrills (used to make beads) from island chert sources was a specialized industry (Arnold 1987:247).

When the Spanish arrived in AD 1769 the Chumash occupied the coast from Malibu Canyon to San Luis Obispo and inland as far as the western edge of the San Joaquin Valley. By 1804, most villages were abandoned as the Chumash were forced to move to the missions. Exposure to diseases introduced by Europeans soon began to decimate their population (Grant 1978). A typical example is the census kept for La Purisima Mission, where the Chumash declined in number from approximately 1,520 in 1804 to 400 in 1832 (Greenwood 1978).

When Spanish authority was removed in 1821, many Chumash left the coastal area and settled in the interior. Those who remained were usually mistreated by Mexican, and later Anglo settlers. European-borne diseases continued to reduce the Chumash population. That, as well as intermarriage with the Spanish, Mexicans, and Anglos, resulted in near extinction of the full-blooded Chumash by 1900 (Grant 1978). In 1855, a reservation of 120 acres was given to the Chumash near the Santa Ynez Mission. This small parcel was eventually reduced to 75 acres, the smallest Native American reservation in California. By the 1970s, only about 40 Chumash of mixed blood remained there. Other Chumash with no formal tribal affiliation live outside the reservation (Grant 1978).

3.2 History Context

The following historical context provides information relevant to the buildings on campus in order to adequately evaluate the buildings for their historical significance. The context includes a local history of Malibu and Los Angeles County to identify important historical themes for the city. It also includes architectural context in order to assist in the evaluation of the importance of the buildings relative to their architectural style as well as the local, state, and national trends of that style.

3.2.1 Local History

The first European to visit Alta California (the area north of Baja California) was Spanish maritime explorer Juan Rodriguez Cabrillo, in 1542. Sent north by the Viceroy of New Spain (Mexico) to look for the Northwest Passage, Cabrillo visited San Diego Bay, Catalina Island, San Pedro Bay, and the northern Channel Islands. In 1579, the English adventurer Francis Drake visited the Miwok Native American group at Drake's Bay or Bodega Bay. Sebastian Vizcaíno explored the coast as far north as Monterey in 1602. He reported that Monterey was an excellent location for a port (Castillo 1978). Vizcaíno also named San

Diego Bay to commemorate Saint Didacus. The name began to appear on European maps of the New World by 1624 (Gudde 1998).

Colonization of Alta California began with a land expedition led by Spanish army captain Gaspar de Portolá. In 1769, Portolá and Father Junipero Serra, a Franciscan missionary, explored the California coast from San Diego to the Monterrey Bay area. As a result of this expedition, Spanish missions to convert the native population to Catholicism, presidios (forts), and pueblos (towns) were established. The Franciscan missionary friars built 21 missions in Alta California, beginning with Mission San Diego in 1769 and ending with the missions in San Rafael and Sonoma, founded in 1823. Missions San Buenaventura (Ventura) (1782), Santa Barbara (1786), La Purisima Concepcion (1787), San Luis Obispo (1772), and Santa Ynez (1804) were established to convert the Native Americans that lived in the area, known as the Chumash. (Castillo 1978). The Spanish also constructed presidios, or forts, at San Diego and Santa Barbara, and a pueblo, or town, was established at Los Angeles.

The Spanish period, which had begun in 1769 with the Portolá expedition, ended in 1821 with Mexican independence. After Mexico became independent from Spain, what is now California became the Mexican province of Alta California. The Mexican government secularized the missions in the 1830s and former mission lands were granted to retired soldiers and other Mexican citizens for use as cattle ranches. Much of the land along the coast and in the interior valleys became part of Mexican land grants, or ranchos (Robinson 1948). Rancho owners sometimes lived in one of the towns, such as San Diego (near the presidio), or Los Angeles, but often resided in an adobe house on their own land.

The Mexican Period, which began with independence from Spain in 1821, continued until the Mexican-American War of 1846-1848. The American period began when the Treaty of Guadalupe Hidalgo was signed between Mexico and the U.S. in 1848. As a result of the treaty, Alta California became part of the U.S. as the Territory of California. Rapid population increase occasioned by the Gold Rush of 1849 led to statehood in 1850. Most Mexican land grants were confirmed to the grantees by U.S. courts, but usually with more restricted boundaries that were surveyed by the U.S. Surveyor General's office. Floods and drought in the 1860s greatly reduced the cattle herds on the ranchos, making it difficult for their owners to pay the new American taxes on their thousands of acres. Many Mexican-American cattle ranchers borrowed money at usurious rates from newly arrived Anglo-Americans. Foreclosures and land sales eventually resulted in the transfer of most of the land grants into the hands of Anglo-Americans (Cleland 1941).

In 1802. Jose Bartolome Tapia, a retired Spanish soldier, was granted a concession for the Rancho Topanga Malibu Sequit. He died in 1824, leaving the Rancho to his wife. After independence from Spain, the Mexican government never confirmed Tapia's concession, leaving the title in doubt. In 1847, Leon Prudhomme, a French immigrant to California, married Tapia's granddaughter and purchased the Rancho from Tapia's widow. After the U.S. government took control of California in 1848, Prudhomme filed a claim for Rancho Topanga Malibu Sequit with the U.S. Land Commission. Since no title could be proven, and despite the testimony of friends and neighbors confirming the Tapia family had ranched the property for decades, the U.S. Land Commission denied Prudhomme's claim in 1854. In 1857, after years of financial troubles, Prudhomme sold a quit claim deed to the Rancho Topanga Malibu Sequit to an Irish immigrant named Matthew Keller. Keller challenged the finding of the U.S. Land Commission and in 1864

his claim for the Rancho was confirmed. Keller died in 1881 leaving the Rancho to his son Henry Keller, who sold the Rancho in 1882 to Frederick Hastings Rindge (Doyle et al. 2018; Malibu Coastal Vision, Civic Center Group 2014).

Frederick Hastings Rindge was a vice president of Union Oil and director of the Los Angeles Edison Electric Company. After purchasing the Rancho in 1882, he built a ranch house in Malibu Canyon and began operating Malibu Ranch as a cattle and grain raising ranch. To stave off an attempt by the Southern Pacific Railroad to have a portion of the Malibu Ranch condemned for a railroad right-of-way, Frederick Rindge began construction of a 15-mile strip of private railway. He died in 1905, leaving operation of the Malibu Ranch and completion of the railway to his wife, May K. Rindge. Having successfully resisted the incursion of the Southern Pacific Railroad into Malibu Ranch, May K. Rindge would soon face a succession of challenges to open the ranch. May K. Rindge ultimately lost her legal challenges. A county road was opened across the Malibu Ranch in 1921, followed by the Roosevelt Highway (now the Pacific Coast Highway) in 1929. The years of litigation drained Rindge family's finances, and with the coming of the Great Depression, May K. Rindge began leasing and eventually selling portions of the property (Doyle et al. 2018; Malibu Coastal Vision, Civic Center Group 2014).

The Point Dume area of Malibu, a sacred site for the Chumash people, was given the name Point Dume by English Explorer George Culver in 1793 (Guldimann 2013; California State Parks 2020). The area remained largely unoccupied during most of the history of the Malibu Ranch, until the onset of World War II in the early 1940s. During World War II, the Army and Coast Guard used Point Dume as a lookout and artillery training center to defend against a Japanese invasion. In the post-war late 1940s through the 1960s, Point Dume and the surrounding area began to experience rapid development (Doyle et al. 2018; Malibu Coastal Vision, Civic Center Group 2014; Guldimann 2013). In the 1970s through the 1980s, residents of Malibu, wanting to maintain the rural setting of the area, began to push for a halt to growth and development in the region. The City of Malibu was incorporated in 1991. A 34-acre State Park was established in 1979, and in 1992 it was upgraded to the Point Dume State Beach and Preserve (Guldimann 2013).

3.2.2 Campus Histories

The following historical context provides information relevant to school district development within Los Angeles County, which includes Malibu Middle and High School and the Juan Cabrillo Elementary School in order to adequately evaluate the buildings for their historical significance.

The SMMUSD, originally the Santa Monica Unified School District, was established in 1875. The first school session in the district was opened in March 1876 in a Presbyterian church in Santa Monica. The first school building was built on land donated by Santa Monica's town founders, Senator John P. Jones and Colonel Robert S. Baker (PBS&J 2010). The SMMUSD experienced a school building boom beginning in 1897. The SMMUSD constructed eight new schools in 18 years. The residential building boom in the 1920s caused the SMMUSD to build more school facilities. Malibu joined the SMMUSD in the 1953 and became the Santa-Monica-Malibu Unified School District (Guldimann 2011). Prior to Malibu joining the SMMUSD, students attended school at a schoolhouse in Decker Canyon beginning in 1911. The Decker School was a

one-room schoolhouse for K-8 students (Guldimann 2011). The Decker School closed in 1955 after modern school facilities were constructed in Malibu.

The first modern school in Malibu was the John L. Webster School, commonly known as the Webster Elementary School or the Malibu School, located approximately eight miles east of the Project Area. The John L. Webster School opened in 1949 on Malibu Canyon Road (Bailey 1999). The Webster Elementary School is an example of Streamline Modern style of architecture. Crowding at the Webster Elementary School resulted in the need for a second Malibu elementary school. The second school was the Juan Cabrillo Elementary School, which opened in 1955 on Morning View Drive. The Juan Cabrillo Elementary School is an example of the Minimalist Modern style of architecture. The Juan Cabrillo Elementary School was divided in 1963 for the Malibu Park Junior High. The junior high was constructed on land adjacent to the existing elementary school. The junior high was built to relieve overcrowding at the Lincoln Junior High School in Santa Monica. The junior high school campus was later converted for use as a high school in 1992, which allowed high school age students to attend school in Malibu versus making the daily trip to Santa Monica High School. The Juan Cabrillo Elementary School closed in 2019.

The Malibu Park Junior High was completed in 1968. The 1960s campus was designed by the architectural firm Orr, Strange, Inslee, and Senefeld and represents the Modern Style of architecture. The architectural firm of Orr, Strange, Inslee, and Senefeld were Southern California architects who designed churches, hospitals, fire stations, and schools from the late 1940s to the 1960s (PCR Services 2015). The firm designed at least 12 schools including the Malibu Park Junior High School that was constructed in the 1960s. The firm was also involved in the 1964 additions to the Juan Cabrillo Elementary School (PCR Services 2015). Of the 16 schools in the SMMUSD, 12 of those school campuses are Modern style buildings. After World War II, the International Style was favored for schools and by the 1950s the one-story, open-plan school construction was used when designing the Santa Monica and Malibu schools.

3.2.3 Architectural Context

Juan Cabrillo Elementary and Malibu Middle and High School are most closely associated with the Moderne style of architecture, which contains elements of the Art Deco style of Moderne architecture. Modern architecture has its roots in the earlier International style, which emerged from Europe in the 1920s, and emphasized "rationality, logic and a break from the past" (Historic Resources Group 2007). Architects such as Le Corbusier, Walter Gropius, and Ludwig Mies van der Rohe built minimalist structures that stressed functionalism in their form, and introduced new materials like steel, glass, and concrete. This International style helped establish a new architectural style that would usher in the Modern era (Historic Resources Group 2007). After World War II, the Modern civil architecture that emerged was a total break from Classic styles, emphasizing clean lines, flat surfaces, and simple geometric shapes (Rifkind 1998).

However, in the late 1950s and early 1960s architects experimented with new architectural styles such as Mid-Century Modern and New Formalism, partially in response to criticism that Modern buildings were too sterile. Mid-Century Modern architecture introduced different shapes, material, and color by using projecting rooflines and stacked brick or stones as exterior material. New Formalism reintroduced Classic elements into Modern buildings (Historic Resources Group 2007; Grimes and Chiang 2009; Rifkind 1998).

Moderne architecture first gained national attention in the U.S. in 1922, when Finnish architect Eliel Saarinen submitted an Art Deco design to an international competition to determine the new design of the Chicago Tribune headquarters building. Though Saarinen's design finished in second place, its highly ornamented design and use of vertical projections and towers had a tremendous influence on American architecture over the next 20 years. The style earned its name from the 1925 Paris Exhibition, the Exposition Internationale des Arts Décoratifs et Industriels Modernes (McAlester 2013).

In contrast to the verticality of the Art Deco style, the Art/Streamline Moderne style emphasized its horizontal proportions. Emerging in the early 1930s and continuing through the 1940s in the midst of the Great Depression and World War II, Art/Streamline Moderne architecture represented a more modest style as compared to the lavishness of the Art Deco style (MacDonald 2008). Influenced by technological advances and the streamline industrial design that was beginning to surface in automobile, aircraft, and ship design; Art/Streamline Moderne architecture focused on smooth, streamlined surfaces to give the appearance of motion (McAlester 2013). Art/Streamline Moderne architecture was widely used in commercial design during the 1930s and 1940s, and was extensively used in the federally funded projects of the WPA (MacDonald 2008). Eventually, by the late 1940s and end of World War II, Art/Streamline Moderne architecture waned from popularity.

Art Deco grew in popularity in the U.S. after the 1925 Paris Exhibition and resulted in the Art Deco skyscraper Chrysler Building and the Radio City Music Hall in New York City, and the Grauman's Egyptian Theater and Bullocks Wilshire Building in Los Angeles. Art Deco architecture was widely used in public buildings, institutional buildings, commercial designs, and apartment buildings during the 1920s to 1940s (Cooper et al. 2005). Character-defining features of the Art Deco style include smooth wall surfaces (smooth stucco or concrete clad surfaces) with a series of setbacks, sharp edges and linear appearance, emphasis on vertical massing, often featuring towers projecting from the roofline, steel-frame casement and fixed windows, decorative applied exterior elements, and strips of windows with decorative spandrels, and symmetrical façades (Sapphos Environmental, Inc. 2014).

Associated with the architecture of school buildings, the State of California passed the Field Act one month after the 1933 Long Beach earthquake to mandate State-approved standards for California school buildings. The Act directed the State Division of Architecture to develop, review, and approve all future public school plans due to the amount of buildings destroyed in the 1933 earthquake. The main goal was to enforce regulations to ensure earthquake-resistant structures. The Act also approved rehabilitation of damaged school buildings where economically feasible. In 1914, Los Angeles citizens had voted to replace wood-frame constructed school buildings with masonry structures due to fire hazards (Science Applications International Corporation 2002). Until the 1920s, all new schools were built of masonry construction; the Field Act banned the construction of unreinforced masonry buildings in 1933.

Much of the post-earthquake reconstruction was funded through the Public Works Administration (PWA) and the reconstructed buildings exhibit a mix of classicism, Art Deco styles, and a style called PWA Moderne. As of 1974, all pre-Field Act schools in the Los Angeles area have been retrofitted. PWA funding of the school construction and reconstruction in Southern California totaled over 13 million dollars (Sapphos Environmental, Inc. 2014). Following the 1933 Long Beach earthquake, the buildings were seismically retrofitted in 1935 and renovated with a unifying PWA Moderne style (Los Angeles

Conservancy [LAC] 2019). The Juan Cabrillo Elementary School site and the Malibu Middle and High School campuses were constructed in the 1950s and 1960s and were built after the trend of PWA Moderne buildings and represent the Moderne style of architecture that were built independently from PWA.

Many public buildings in the U.S., such as courthouses, libraries, post offices, and schools, are designed in the PWA or Moderne style. In Los Angeles County, Whittier High School was originally established in 1900 but was later rebuilt using New Deal funds after the 1933 Long Beach earthquake. It was designed in the PWA Moderne style by William H. Harrison in the 1940s. Whittier High School served as Hill Valley High School in the film *Back to the Future*. The PWA Moderne style of Whittier High School is best expressed by the notable auditorium with lettering high on each corner and an undulating façade. Lincoln High School in Whitter was also designed by William H. Harrison in the 1930s. Lincoln High School is a good representation of PWA Moderne due to its classically monumental style.

Character-defining features of the Art/Streamline Moderne style include smooth stucco wall surfaces with base colors, flat roofs, curved or rounded corners, emphasis on horizontal features such as grooves or lines in walls and ornamentation, use of glass blocks, and asymmetrical facades.

4.0 METHODS

4.1 Personnel Qualifications

The architectural history evaluation and analysis was conducted by Principal Investigator and Architectural Historian Jeremy Adams, who meets the Secretary of the Interior's Professional Qualifications Standards for architectural history and history. Staff Archaeologist Megan Webb conducted extensive archival and historical research and helped prepare the report. Wendy Blumel, Registered Professional Archaeologist (RPA), served as Principal Investigator for the archaeological assessment. Fieldwork was conducted by John O'Connor, Ph.D., RPA, Robert Cunningham, Steve Wintergerst, and Nick Bizzell. This report was prepared by Robert Cunningham, Megan Webb, and Wendy Blumel. Dr. O'Connor provided Quality Control review.

Jeremy Adams meets the Secretary of the Interior's Professional Qualifications Standards by holding an M.A. in History (Public History) and a B.A. in History, with 10 years of experience specializing in historic resources of the built environment. He is skilled in carrying out historical research at repositories such as city, state, and private archives, libraries, California Historical Resource Information System (CHRIS) information centers, and historical societies. He has experience conducting field reconnaissance and intensive surveys. Mr. Adams has conducted evaluations of cultural resources of all types for eligibility to the CRHR and National Register of Historic Places (NRHP), as well as local eligibility criteria for numerous cities.

Wendy Blumel has 12 years of experience in cultural resources and meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeologist. She is experienced in the organization and execution of field projects in compliance with Section 106 of the NHPA and CEQA. Ms. Blumel has contributed to and authored numerous cultural resources technical reports, research designs,

and cultural resource management plans, and has contributed to a variety of environmental compliance documents.

Robert Cunningham is a Staff Archaeologist for ECORP and has 13 years of experience in cultural resources management, primarily in Southern California. He holds a B.A. in Anthropology and has participated in and supervised numerous survey, testing, and data recovery excavations for both prehistoric and historical sites, and has cataloged, identified, and curated thousands of artifacts. Mr. Cunningham has conducted evaluations of cultural resources for eligibility for the NRHP and CRHR.

Steven Wintergerst has 11 years of experience in cultural resource management. He has participated in all aspects of the archaeological field and laboratory process. Although he has worked throughout western Arizona and California, the majority of his experience is in Riverside, San Bernardino, San Diego, Kern, Inyo, and Los Angeles counties of southern California. Mr. Wintergerst's experience has involved working as an archaeological crew chief, archaeological technician, archaeological monitor, paleontological monitor, and paleontological preparator. He is experienced in the organization and execution of field projects in compliance with Section 106 of the NHPA and CEQA.

Megan Webb is a Staff Archaeologist for ECORP and has more than four years of experience in cultural resources management, primarily in California. She holds a B.A. in Anthropology and has participated in all aspects of cultural resources, including survey, test excavation, and data recovery. Ms. Webb also conducted numerous archival research activities and building evaluations.

Nicholas Bizzell is an Associate Archaeologist with ECORP and has over 10 years of experience in cultural resources management. He holds a B.A. in Anthropology. Mr. Bizzell has participated in numerous archaeological projects throughout the state of California, experience that includes working with clients in both public and private sectors. Mr. Bizzell has substantial archaeological experience with cultural resources monitoring, inventory surveys, excavation and subsurface testing, and laboratory analysis for projects in northern and southern California. Additionally, Mr. Bizzell is cross trained as a paleontological monitor for projects requiring both archaeological and paleontological monitoring.

John O'Connor, Ph.D., is an RPA with over 12 years of archaeological experience in North America and the Pacific Islands, experience that includes cultural resources management, academic research, museum collections management, and university teaching. Dr. O'Connor meets the Secretary of the Interior's Professional Qualifications Standards for prehistoric and historic archaeology. He is well versed in the evaluation of impacts to cultural resources for CEQA and NHPA projects, and he has written or otherwise contributed to numerous environmental compliance documents. Dr. O'Connor serves as the Southern California Cultural Resources Manager for ECORP.

4.2 Records Search Methods

A cultural resources records search for the Project Area and a one-mile records search radius was conducted by ECORP archaeologist Robert Cunningham on January 30, 2020 at the CHRIS South Central Coastal Information Center (SCCIC), located on the California State University, Fullerton campus. The SCCIC is the official repository of cultural resources reports and site records for several counties in

California, including Los Angeles. The purpose of the records search was to determine the extent and location of previous surveys, previously identified prehistoric or historic archaeological site locations, architectural resources, historic properties, cultural landscapes, or ethnic resources within a one-mile radius of the Project Area. Materials reviewed included survey and evaluation reports, archaeological site records, historic maps, and the Historic Property Data File for Los Angeles County, which includes resources listed in or eligible for the NRHP, CRHR, California Points of Historical Interest, California Historical Landmarks, and National Historic Landmarks. Historic-period aerial photographs were also reviewed as a part of this study and were found online (Nationwide Environmental Title Research, LLC [NETROnline] 2020).

Historic maps reviewed include:

- 1929 USGS Dume Point, California topographic quadrangle map (1:24,000 scale)
- 1932 USGS Dume Point, California topographic quadrangle map (1:24,000 scale)
- 1950 USGS Point Dume, California topographic quadrangle map (1:24,000 scale)
- 1967 USGS Point Dume, California topographic quadrangle map (1:24,000 scale)
- 1981 USGS Point Dume, California topographic quadrangle map (1:24,000 scale)
- 1991 USGS Point Dume, California topographic quadrangle map (1:24,000 scale)
- 1905 USGS Point Dume, California topographic quadrangle map (1:24,000 scale)

Historic aerial photos taken in 1947, 1952, 1959, 1967, 1980, 1990, 1994, 2002, 2003, 2005, 2009, 2010, 2012, 2014, and 2016 were also reviewed for any indications of property usage and built environment. (NETROnline 2020).

4.3 Archival Research Methods

Focused archival research on the Malibu Middle and High School campus and the Juan Cabrillo Elementary School campus was carried out by Staff Archaeologist Megan Webb. Archival research was conducted to gather and review adequate community and civic context for the building evaluation. The limited available information was compiled in the historic context.

ECORP also conducted research utilizing newspaper articles, historical maps, and secondary resources where available. Very few records were found containing specific information about the current buildings at the schools. Online research was undertaken for other documents relating specifically to the city of Malibu and the context of the community including commercial development and architectural context. ECORP also reviewed the Pepperdine University Libraries Digital Collection for early photographs of the school buildings. In addition, ECORP reviewed the records of the LAC.

The archival research, online research, and review of building files provided by the school resulted in sufficient information for ECORP to prepare an evaluation of the building.

4.4 Field Methods

On March 25, 2020, ECORP conducted an intensive site visit utilizing the OHP's guidelines for recording historical resources (OHP 1995) to document the existing buildings within the Project Area on appropriate DPR 523 forms. The entire exterior and interior of each building was walked and photographed. Access to the interior of the gymnasiums was provided by the school; access to the interior of the classrooms and other buildings on campus was not required for the evaluation. During the field visit, architectural details and integrity considerations were noted for the features of each building, including their setting relative to each other and the rest of the property.

On March 31, 2020 ECORP subjected undeveloped portions of the Project Area to an intensive archaeological pedestrian survey under the guidance of the *Secretary of the Interior's Standards for the Identification of Historic Properties* (National Park Service [NPS] 1983) using transects spaced 15 meters apart. At that time, the ground surface was examined for indications of surface or subsurface cultural resources. The general morphological characteristics of the ground surface were inspected for indications of subsurface deposits that may be manifested on the surface, such as circular depressions or ditches. Whenever possible, the locations of subsurface exposures caused by such factors as rodent activity, water or soil erosion, or vegetation disturbances were examined for artifacts or for indications of buried deposits. No subsurface investigations or artifact collections were undertaken during the pedestrian survey. An additional 1.6-acre portion of the Project Area associated with a proposed bus depot was surveyed on July 15, 2021, following the same guidance and protocol as described above.

Newly discovered cultural resources were assigned a unique temporary number based on the project name and the order in which they were found (i.e., MH-001). As appropriate, the site boundary, features, and artifacts were mapped using Collector for ArcGIS, a cloud-based geospatial software with two- to five-meter accuracy, with data later post-processed for submeter accuracy. Digital photographs were taken of the Project Area showing the general environment and the presence, if any, of human or naturally occurring impacts. Following fieldwork, DPR 523 records were prepared for any resources identified, and location and sketch maps would be created using data collected with the Collector for ArcGIS application used in the field.

4.5 Sacred Lands File Coordination Methods

In addition to the record search, ECORP contacted the NAHC on February 6, 2020 to request a search of the Sacred Lands File for the Project Area. (Attachment A). This search will determine whether or not Sacred Lands have been recorded by California Native American tribes within the Project Area. The Sacred Lands File is populated by members of the Native American community who have knowledge about the locations of tribal resources. In requesting a search of the Sacred Lands File, ECORP solicited information from the Native American community regarding tribal cultural resources, but the responsibility to formally consult with the Native American community lies exclusively with the federal and local agencies under applicable State and federal law. ECORP was not delegated authority by the lead agencies to conduct tribal consultation.

4.6 Evaluation Criteria

4.6.1 State Evaluation Criteria

Under State law (CEQA), cultural resources are evaluated using CRHR eligibility criteria in order to determine whether any of the sites are Historical Resources, as defined by CEQA. CEQA requires that impacts to Historical Resources be identified and, if the impacts would be significant, that BMPs if applicable, to reduce the impacts be applied.

An Historical Resource is a resource that:

1. is listed in or has been determined eligible for listing in the CRHR by the State Historical Resources Commission;

2. is included in a local register of historical resources, as defined in PRC 5020.1(k);

3. has been identified as significant in an historical resources survey, as defined in PRC 5024.1(g); or

4. is determined to be historically significant by the CEQA lead agency CCR Title 14, § 15064.5(a)]. In making this determination, the CEQA lead agency usually applies the CRHR eligibility criteria.

The eligibility criteria for the CRHR (CCR Title 14, § 4852(b)) state that a resource is eligible if:

1. it is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the U.S.;

2. it is associated with the lives of persons important to local, California, or national history.

3. it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or

4. it has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In addition, the resource must retain integrity. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (CCR Title 14, § 4852(c)).

Historical buildings, structures, and objects are usually eligible under Criteria 1, 2, and 3 based on historical research and architectural or engineering characteristics. Archaeological sites are usually eligible under Criterion 4, the potential to yield information important in prehistory or history. The CEQA lead agency makes the determination of eligibility. Cultural resources determined eligible for the NRHP by a federal agency are automatically eligible for the CRHR.

Impacts to an Historical Resource (as defined by CEQA) are significant if the resource is demolished or destroyed or if the characteristics that made the resource eligible are materially impaired (CCR Title 14, § 15064.5(a)).

5.0 RESULTS

5.1 Records Search

Previous Research

Within one mile of the Project Area, 239 previous cultural resource investigations have been conducted, covering approximately 80 percent of the land surrounding the Project Area within the record search radius. The results of the records search indicate that five of these 239 cultural resource investigations were located within the Project Area (Table 1). However, these studies were conducted in smaller segments, at different times, by different consultants, as many as 39 years ago under obsolete standards. Therefore, an updated pedestrian survey of the Project Area was conducted for the current Project.

Table 1. Previous Cultural Studies Within the Project Area

Report Number	Author(s)	Report Title	Year	Includes Portion of the Project Area?
LA-01091	Dillon, Brian D.	An Archaeological Resource Survey and Impact Assessment of Tentative Minor Land Division, Map #14294, on Morning View Dr., Malibu, Los Angeles County, California	1981	Yes
LA-01103	Singer, Clay A.	Archaeological Reconnaissance of Proposed Malibu Little League Baseball Fields Site (n.a.r.c.) Project No. Vs-585	1981	Yes
LA-01859	Singer, Clay A. and John E. Atwood	Cultural Resources Survey and Impact Assessment for 5.4 Acres Next to Morning View Drive in Malibu (tpm 21393) Los Angeles County, California	1989	Yes
LA-04622	Wlodarski, Robert J.	A Phase I Archaeological Study for the Proposed Improvements to Malibu High School City of Malibu, County of Los Angeles, California	1999	Yes
LA-11508	Jurich, Denise, Martinez, Jesse, and Sanka, Jennifer	Final Draft, Archaeological Phase I Inventory Report for the Malibu Middle and High School Campus Improvements Project	2009	Yes

The records search also determined that 27 previously recorded pre-contact and historic-era cultural resources are located within one mile of the Project Area (Table 2). Of these, 26 are believed to be associated with Native American occupation of the region, and one is a historic-era site associated with early settlers in the area. One of these resources (CA-LAN-1121/P-19-1121), a pre-contact lithic scatter, is located within the greater SMMUSD property but is not located within the Project Area. No cultural resources were identified within the Project Area as a result of the SCCIC records search. The records search also revealed that the buildings associated with the two school campuses are not located within a known historic district.

The records search determined that the historic-period school campuses had not been formally recorded on DPR forms and submitted to the SCCIC. Although not formally recorded, the Malibu Middle and High School Campus has been previously evaluated by PBS&J in 2010. ECORP obtained a copy of the 2010

report prepared for the SMMUSD and reviewed the information in order to adequate evaluate the campuses.

Table 2. Previously Recorded Cultural Resources In or Within 1 Mile of the Project Area

Site Number CA-LAN-	Primary Number P-19-	Recorder and Year	Age/ Period	Site Description	Within Project Area?
CA-LAN-40	P-19-000040	Mohr 1947; Beck 1948; S. L. Peck 1953; Jay Ruby 1961	Pre-contact	Occupational Site	No
CA-LAN-196	P-19-000196	S. L. Peck 1953 (1948)	Pre-contact	Fire Affected Rock	No
CA-LAN-197	P-19-000197	John M. Beaton 1968	Pre-contact	Middle Period Cemetery; Habitation Site, midden (destroyed by development)	No
CA-LAN-198	P-19-000198	Hal Eberhart 1953	Pre-contact	Scatter of Artifacts	No
CA-LAN-199	P-19-000199	C. W. Meighan & H. Eberhart 1952	Pre-contact	Shell Midden & Fire Affected Rock	No
CA-LAN-200	P-19-000200	Hal Eberhart 1953	Pre-contact	Manos (destroyed)	No
CA-LAN-201	P-19-000201	S. L. Peck 1951 & Hal Eberhart 1952	Pre-contact	Burials, Midden, Habitation Site (destroyed)	No
CA-LAN-292	P-19-000292	N. Nelson Leonard 1963; Robert J. Wlodarski & Dan A. Larson 1998	Pre-contact	Seasonal Camp & Burials (Intact below surface)	No
CA-LAN-335	P-19-000335	C. Singer 1965	Pre-contact	Lithics, Ground Stone & Fire Affected Rock	No
CA-LAN-451	P-19-000451	Bell, Evans, Coleman Jones, Leonard 1972	Pre-contact	Habitation Site	No
CA-LAN-513	P-19-000513	Decker 1972 & Singer 1982	Pre-contact	Lithics & Ground Stone	No
CA-LAN-1012	P-19-001012	Clay A. Singer 1979	Pre-contact	Lithic Scatter (destroyed)	No
CA-LAN-1065	P-19-001065	Rosen, Hector, Dillion & Beroza 1980	Pre-contact	Lithics, Ground Stone & Fire Affected Rock	No
CA-LAN-1121	P-19-001121	C. C. Martinez & C. A. Singer	Pre-contact	Lithics & Ground Stone	No
CA-LAN-2143	P-19-002143	Chester King 1993	Pre-contact	Lithics & Ground Stone	No
CA-LAN-2153H	P-19-002153	Chester King 1993	Historic-era	Water system with dam	No
CA-LAN-2162	P-19-002162	Dana E. Bleitz & Brad Yocum 1991; Chester King 1993	Pre-contact	Chumash Trail, Shell Midden & Lithic Scatter	No
CA-LAN-2164	P-19-002164	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	Lithics, Ground Stone, Milling & Fire Affected Rock Rings	No
CA-LAN-2381	P-19-002381	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	Lithic Scatter	No
CA-LAN-2382	P-19-002382	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	Lithic Quarry	No
CA-LAN-2383	P-19-002383	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	Lithics & Ground Stone	No

Table 2. Previously Recorded Cultural Resources In or Within 1 Mile of the Project Area

Site Number CA-LAN-	Primary Number P-19-	Recorder and Year	Age/ Period	Site Description	Within Project Area?
CA-LAN-2384	P-19-002384	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	Lithics & Ground Stone	No
CA-L-IF-40	P-19-100040	Chester King 1993	Unknown	Isolate – Mussel Shell	No
Isolate	P-19-100108	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	One Quartzite Scraper	No
Isolate	P-19-100109	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	Chert Core	No
Isolate	P-19-100110	Dana E. Bleitz & Brad Yocum 1991	Pre-contact	Core & Flake	No
Isolate	P-100118	Bonnie MacDougall 1996	Pre-contact	Mano	No

Records

The OHP's *Directory of Properties, Historic Property Data File* (dated April 5, 2012) did not include any resources within 0.5 mile of the Project Area (OHP 2012).

The National Register Information System (NPS 2020) failed to reveal any eligible or listed properties within the Project Area. The Adamson House at Malibu Lagoon State Beach is the closest listed property in Malibu.

Resources listed as *California Historical Landmarks* (OHP 1996) and by the OHP (OHP 2020) were reviewed on 24 March 2020. There are listed landmarks in Malibu: No. #965: Point Dume (plaque located two miles southeast of the Project Area) and No. #966 Adamson House at Malibu Lagoon State Beach (plaque located 8.5 miles west of the Project Area).

In addition, ECORP reviewed the records of the LAC. The LAC is a nonprofit organization whose goal is to provide "education and advocacy to recognize, preserve, and revitalize the historic architectural and cultural resources of Los Angeles County." As such, the organization maintains a database of historic places of Los Angeles that are identified by LAC as "historic gems" within Los Angeles County. A review of the LAC website and map of "historic gems" revealed that no resources listed on the LAC website were identified within the Project Area (LAC 2020). The LAC list does identify buildings that represent the Art Deco style and PWA Moderne style of architecture within Los Angeles County; however, the Malibu Middle and High School is not listed. The nearest listed property is Pepperdine University in Malibu. Pepperdine University represents the Late Modern style of architectural and was constructed in 1973 in Malibu by William L. Pereira and Associates.

The largest regional historical registry is the Los Angeles Historic Resources Inventory (LAHRI). The LAHRI is maintained by the Department of City Planning's Office of Historic Resources (OHR). The objective of the OHR is to "create a comprehensive, state-of-the-art, and balanced historic preservation program for the City of Los Angeles." The LAHRI was developed by OHR's multi-year project called SurveyLA that was designed to "identify significant historic sites" throughout the city of Los Angeles. SurveyLA only identifies

significant historic sites within the city of Los Angeles, so it does not include the city of Malibu, but the inventory does call out a handful of buildings that represent the Art Deco style and PWA Moderne style of architecture in greater Los Angeles (LAHRI 2020).

Map Review and Aerial Photographs

The review of historical aerial photographs and maps of the Project Area provide information on the past land uses of the property. Based on this information, the property was initially undeveloped prior to the construction of Juan Cabrillo Elementary School beginning in the mid-1950s and the Malibu Park Junior High beginning in the early 1960s. Following is a summary of the review of historical maps and photographs.

The 1900 1:62,000-scale Trifuno Pass, CA map shows the Project Area as undeveloped with a couple of unpaved road and only two structures in the vicinity. The conditions remain the same on the 1921:62,000-scale Trifuno Pass, CA map. The 1932 7.5-minute Dume Point map shows one unpaved road traversing east-west through the undeveloped Project Area. The vicinity remains relatively undeveloped, although now a State Highway, today's Pacific Coast Highway, runs along the coast southwest of the Project Area and several pockets of development, including Rindge Ranch and Malibu Trading Station are labeled. The 1950 7.5-minute Point Dume, CA quadrangle map shows multiple roads near the Project Area including Morning View Drive and North Bush Road. The area shows a small increase in development with scattered structures present throughout the area. The 1968 photorevised version of the 1950 7.5-minute Point Dume, CA quadrangle map shows the first buildings of Malibu High school along with an unnamed road/drive running along the west side of the campus and an unnamed unpaved road running through the northern portion of the Project Area. Development in the vicinity had increased throughout the area with concentrated development in Trancas Canyon to the west of the Project Area. The conditions within the Project Area and surrounding land remain mainly the same in the 1995 7.5-minute Point Dume, CA quadrangle map. Several new buildings are shown within the high school campus but little has changed otherwise.

The earliest available historic aerial photograph is from 1947. The 1947 aerial photograph shows the Project Area land as undeveloped. In 1947, the route of Morning View Drive is visible southwest of the Project Area. The 1952 aerials reveal some kind of agricultural production within the Project Area.

The aerial photograph taken in 1959, shows that the Juan Cabrillo Elementary School has been constructed in the northwestern portion of the Project Area and consists of at least four school buildings. By 1964, the aerial reveal additional construction has occurred southeast of the 1950s elementary school. The additional construction consists of at least four school buildings at the Malibu Park Junior High campus, which would later become Malibu High School.

The aerial photograph from 1975 shows the football field and baseball field at the northeast portion of junior high campus. Two more school buildings have been built by 1975 on the elementary school campus. By 1990, the land to the southeast of the high school has been developed, and there is the addition of a baseball field to the high school campus. The aerial image from 1994, shows development to the land surrounding the high school. The photographs from 2002 to present show little additional

development and landscaping changes here and there on the schools and neighboring plots. In 2018, school buildings at the high school campus have been demolished and new buildings have been constructed in their place.

5.2 Sacred Lands File Results

The results of the Sacred Lands File records search, as conducted by NAHC staff, were received by ECORP on February 25, 2020. The search results were negative, meaning that a search of the Sacred Lands File by the NAHC failed to indicate the presence of Native American Sacred Lands in the Project Area. The NAHC identified nine Native American groups and individuals with historical and traditional ties to the Project Area. A record of all correspondence is provided in Attachment A. If any additional comments are received after the submission of this report, they will be forwarded to the lead agency for further consideration and appropriate action. Correspondence between the NAHC and ECORP is included in Attachment A.

5.3 Archaeological Field Visit Results

ECORP archaeologists Robert Cunningham and Steve Wintergerst surveyed undeveloped portions of the Project Area for pre-contact and historic-era cultural resources on March 31, 2020. At the time of the survey, ground visibility within the undeveloped portions of the Project Area was poor (0 to 10 percent). Vegetation within the majority of the undeveloped portions of the Project Area consists of dense, waist-high brush. In areas along the eastern and western boundaries, brush reached heights of eight feet. One slope between the southwest corner of the athletic track and classroom buildings was too steep and densely vegetated to safely survey. In this instance, the crew surveyed the top and bottom of the slope. A deep and densely vegetated drainage was noted along the western boundary, west of the property boundary fence. In addition, a fenced-in area is located within the Project Area off Clover Heights Avenue, north of the softball field. The crew was provided keys to an access gate for this area. Although keys were provided to the crew to access the area, the crew found the lock on the gate had been cut. The area contained waist to chest high vegetation, with an area of particularly high brush (seven to eight feet high) near the center. A deep drainage trench, which appears to be modern in age, runs north to south through the center of this area, directing waterflow toward a storm drain located at the terminus of Clover Heights Avenue. Disturbances noted consist of past agricultural activity, weed abatement with heavy machinery, modern dumping, and bioturbation (animal burrowing). No pre-contact or historic-period sites or isolated finds were identified.

Developed areas of the school campuses were not subjected to pedestrian survey as these areas are unlikely to contain exposed native ground surfaces. These developed areas consist of classroom buildings, parking areas, black top areas, planters, landscaped areas, and athletic fields.

ECORP archaeologist Nicholas Bizzell surveyed developed and undeveloped portions of the 1.6-acre proposed bus depot location on July 15, 2021. At the time of the survey, ground visibility within the developed portions of this Project Area ranged from very poor (0 to 10 percent) to the undeveloped grassy areas with fair visibility (15 to 85 percent). Vegetation within this area consisted of low to highly dense brush. The developed area, the parking lot, was subjected to the pedestrian survey, even though this area is unlikely to contain exposed native ground surfaces. Disturbances noted consist of adjacent

equestrian activity including within the parking lot, weed abatement with heavy machinery, modern refuse, and bioturbation (animal burrowing). No pre-contact or historic-period sites or isolated finds were identified.

5.3.1 Archaeological Buried Site Sensitivity

The records search revealed that no pre-contact or historic-period cultural resources have been previously recorded within the Project Area, and no archaeological resources were identified as a result of the field survey. Despite the lack of evidence for surface-level archaeological features or deposits within the Project Area, the records search results for the surrounding one-mile radius, coupled with a review of soils and underlying geomorphology (Pleistocene and Holocene alluvial sediments), indicate that the Project Area contains the potential for buried pre-contact resources. The greater Malibu area is known to have been intensively occupied during the pre-contact period. Records search results for this study indicate that 26 pre-contact era resources have been recorded within one mile of the Project Area, including one pre-contact site located on the greater SMMUSD property (not within the Project Area). These Pre-contact sites consist of numerous habitation sites and several burial sites. The copious building development that has occurred within the Project Area somewhat lessens the likelihood of discovering intact archaeological deposits. However, due to the factors mentioned above, the Project Area may still contain buried deposits in undeveloped areas and in sediments that are located beneath the previous level of disturbance. Thus, the Project Area is considered to have a moderate to high potential for buried pre-contact resources to be uncovered during ground disturbing activities.

5.4 Built Environment Cultural Resources

Built environment cultural resources within the Project Area include the Malibu Middle and High School and the Juan Cabrillo Elementary School campuses. Site descriptions and evaluation follow. Confidential DPR site records are available in a separate confidential document.

5.4.1 Malibu Middle and High School

The Malibu Middle and High School Campus was formally recorded on March 25, 2020. Selected photographs and a detailed description of the campus, resulting from the intensive site survey, are provided below. The buildings on campus are marked with either a three-digit letter or with official building names on the exterior, and ECORP utilizes that naming scheme along with the PBS&J naming scheme in the descriptions below. There are six historic-period buildings are located on the campus, as well as at least seven modern buildings and structures. Table 3 highlights the buildings, their date of construction, and architect if known.

According to aerial photographs, the land where the high school campus is situated today was undeveloped prior to the high school being constructed in 1963. Aerial photographs from 1959 show the Juan Cabrillo Elementary School Campus on land to the west. By the 1964 aerials, the junior high campus had been constructed, confirming the 1963 construction date of Malibu Park Junior High School. In 1964, the school buildings on campus consisted of four buildings: Building E, part of Building F, Building G, Building H, and the Cafeteria. By 1975, in addition to the four existing buildings from the 1960s aerials the

campus consisted of the Buildings A, B, C, D, 500 with Building G, additions to Building F, the old gymnasium and pool, the swimming pool, the football field and the baseball field. The buildings are individually described below. Representative photographs of the campus buildings are provided in Attachment B.

Table 3: Malibu Middle and High School Individual Buildings

Building Identifier	Date Constructed and notes	Architect
Building A	1970s; Demolished and new building under construction	Unknown
Building B & C	1970s; Demolished and new building under construction	Unknown
Building D	Between 1967 and 1975	Unknown
Building E	1963; but original building has been demolished and new building constructed in 2018	Unknown
Building F	1963, additions by 1975	Orr, Strange, Inslee, and Senefeld
Building G	1963	Orr, Strange, Inslee, and Senefeld
Building H and Kitchen	1963	Orr, Strange, Inslee, and Senefeld
Gymnasium	Between 1967 and 1975	Unknown
New Gymnasium	Modern: 2000	Unknown
Amphitheater	1978	Unknown
500 Building	Between 1967 and 1975	Unknown
600 Building	Modern: 2002	Unknown
511 portable classroom	Modern: 2000	Unknown
512 portable classroom	Modern: 2000	Unknown
513 portable classroom	Modern: 2000	Unknown

Building A, B, and C

Buildings A, B, and C were constructed on campus sometime between 1967 and 1975. During the 2020 field visit to the campus, these three buildings have been demolished and the construction of three new buildings in their place is active. Building A, B, and C housed the Main Office, Attendance Office, Nurse's Office, and the Library. The main Malibu High School script was located on the Main Office.

Building D

Building D was constructed on campus sometime between 1967 and 1975 in the center of campus. The building is a two-story brick classroom building with a rectangular footprint and is oriented east west along the long axis (Figure 3). Building D or commonly known as the Mako Building houses seventeen

classrooms, a teacher's lounge, and restrooms. The classroom building has a flat roof and a board arcade overhang that functions as a walkway for the second story.

Figure 3. Building D: southern-facing façade (view northwest), taken March 25, 2020.

Building E

The original Building E on campus was constructed in 1963 but has been demolished. During the 2020 field visit and aerial review, the original building had been demolished and the construction of a new building in its place was built in 2018. Building E or commonly known as the Blue Building houses 16 classrooms and restrooms. The classroom building is a two-story metal building with a flat roof and a board arcade overhang that functions as a walkway for the second story.

Building F

Building F is a single-story classroom building. The building has a square footprint, a flat roof, smooth stucco siding, and a dropped roofline canopy that extends over the walkways along the western façade and faces Building D (Figure 4). Building F is commonly known as the Thresher Building houses three classrooms. The overhang on the northern-facing façade is flat and supported by metal poles. Horizontal pane awning windows are located along the eastern-facing façade. The building contains few architectural features related to a particular style. Based upon a review of historic aerial photographs, Building F was constructed in 1963 but has received additions over the years.

Figure 4. Building F: southern-facing façade (view north), taken March 25, 2020.

Building G

Building G is a single-story classroom building. The building has a square footprint with flat roof, covered rafters, a smooth stucco siding, and a dropped roofline canopies that extends over the walkways along the western façade, and overlooks the 500 Building (Figure 5). Building G is commonly known as the Leopard Building and houses two classrooms. The northern and southern facing façade contains large fixed and hopper windows. The building contains few architectural features related to a particular style. Based upon a review of historic aerial photographs, Building G was constructed in 1963.

Figure 5. Building G: western-facing façade (view east), taken March 25, 2020.

Building H and Kitchen

Building H houses the Auditorium and the cafeteria at the southern end of campus, near Morning View Drive. Building H has a flat roof and is constructed of brick (Figure 6). The building contains few architectural features related to a particular style. Based upon a review of historic aerial photographs, the building was constructed prior to 1964, and the footprint of the building remains the same as today.

Figure 6. Building H: southern-facing façade (view northwest), taken March 25, 2020.

500 Building

The 500 Building is another row of single-story classrooms. The building has a rectangular footprint and is oriented north-south along the long axis. The building has a flat roof with covered eaves, a dropped roofline canopy cover extends over the walkways along the eastern façade and is covered with smooth stucco siding (Figure 7). Rows of horizontal pane awning windows are located along the eastern-facing façade. The overhang on the southern-facing façade is flat and supported by metal poles to protect the students from the weather and is connected to the awning for Buildings D and F. The 500 Building has six classrooms. The building contains few architectural features related to a particular style. Based upon a review of historic aerial photographs, the building was constructed between 1967 and 1975.

Figure 7. 500 Building: eastern-facing façade (view south), taken March 25, 2020.

Gymnasium

The Old Gymnasium Building was constructed between 1967 and 1975 and is a large brick building located in the northern end of campus. The Old Gymnasium Building has a flat roof with several different rooflines, has some stucco siding, and is constructed of brick (Figure 8). The Old Gymnasium building contains a gymnasium, locker rooms, facility office, and storage rooms. The swimming pool and football field appears on aerial photographs taken in 1975 and is located north and east, respectively, of the Old Gymnasium Building.

Figure 8. Old Gymnasium Building: southern-facing façade (view north), taken March 25, 2020.

Modern Buildings

Modern Buildings at the Malibu Middle and High School Campus include the portable classrooms (511, 512, and 513) within the center of campus, portable classrooms on the blacktop near the Old Gymnasium, the New Gymnasium, the Amphitheater, the 600 Building, and Building E. These buildings were constructed after 1975.

Evaluation

Historical and archival research for the buildings located in the Malibu Middle and High School campus at the property has provided sufficient construction and use history with which to evaluate the School. Following is an evaluation of the Malibu Middle and High School buildings, both as individual resources and as a complex, using CRHR eligibility criteria.

Eligibility Criteria

The Malibu Middle and High School Campus currently consists of six historic-period buildings and structures. The Malibu Park Junior High School was constructed adjacent to the Juan Cabrillo Elementary School Campus in 1963 and opened in 1968. The junior high school was constructed to relieve overcrowding at schools located in Santa Monica. The Malibu Park Junior High School was not the first or most significant high school in the region as compared to other earlier local and regional examples. The extant school buildings were constructed after the period of heavy population growth in Malibu and Los Angeles County and do not represent any contribution to a specific change or development in educational practices in the region. Therefore, Malibu Middle and High School, as a campus including its individual buildings, is not associated with significant events in history, and is not eligible under CRHR Criterion 1.

No known individuals significant in the past are recorded as significantly associated with the Malibu Middle and High School. Archival research did not produce any association with the productive lives of any significant school administrator or prominent teacher. The Malibu Park Junior High School has been in operation since the 1960s, and in 1992 the school campus was converted into the Malibu High School. The schools have had many different principals, teachers, and students associated with the school over time. However, no individual of historical importance is best associated with the school. Therefore, Malibu Middle and High School, as a campus including its individual buildings, is not eligible under CRHR Criterion 2.

Malibu Middle and High School comprises an assemblage of buildings and structures that serve a unified purpose of education. The six historic-period buildings (i.e., over 50 years of age) on campus are closely associated with the Moderne style of architecture and contain some Moderne detailing. Overall, they were designed with function and form taking precedence over architectural style and merit. The architectural elements that represent this architectural style are the smooth stucco exterior, stylized motifs and rooflines, asymmetrical façades, and Classical Moderne detailing, including vertical features such as pilasters. These school buildings, however, also do not contain many of the important character-defining design features that are distinctive of the Moderne style that are seen in more prominent buildings in the region, such as strong vertical orientation including towers or tower elements, recessed windows sunken-

in vertical panels, and zigzag ornaments or sculptures. In addition, some of the buildings on campus were constructed in the 1960s by the architectural firm Orr, Strange, Inslee, and Senefeld. As compared to other examples of Moderne buildings in the region, including public buildings and schools in Los Angeles County that do contain strong vertical orientation and proper form and materials, the buildings on the Malibu Middle and High School campus ultimately appear as a modest example of that style and do not embody distinction among other Moderne buildings constructed during that period. Also, the main building that housed the script Malibu High School, Building A, B, and C, have been demolished and new buildings are being constructed in their place. These front buildings were good examples of the Modern style but are no longer present on the campus.

The buildings on campus, including the few modern buildings, are not good representations of any style of architecture and have mostly utilitarian features. The school buildings built in the 1960s were designed by architectural firm of Orr, Strange, Inslee, and Senefeld. The firm was comprised of architects who designed churches, hospitals, fire stations, and schools from the late 1940s to the 1960s in Southern California.

Based on the thorough review of each school building and the Malibu Middle and High School as a campus, including its individual buildings, does not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or possess any significant distinguishable components. Therefore, the Malibu Middle and High School, as a campus including its individual buildings, is not eligible under CRHR Criterion 3.

Lastly, the Malibu Middle and High School does not have the potential to yield information important in pre-contact history or history. Archival research potential for the Malibu Middle and High School has been exhausted, and the school's history is fairly well documented in the archival record. The Malibu Middle and High School cannot provide additional historically important information, and there is no potential for the school complex to provide additional information that is not already represented in the archival record. As a result, Malibu Middle and High School, as a campus including its individual buildings, is not eligible under CRHR Criterion 4.

In conclusion, Malibu Middle and High School, as a campus including its individual buildings, was evaluated using CRHR eligibility criteria and was found not eligible for the CRHR under any criteria.

Integrity

The property visit indicated that the school buildings retain integrity of location, setting, and materials. The school buildings have never moved location and Malibu Middle and High School remains within its setting in Malibu. The school buildings themselves remain intact structurally and have received minor maintenance over the years, thus retaining many of the original materials in parts of the buildings. Some of historic-period school buildings have been demolished and new buildings have been constructed in their place. The school buildings still serve the city of Malibu as a high school campus, so the feeling and association with the community and city still exists. The school buildings also fulfill their original purpose because they do serve the community as to original function. In addition, the modern additions have occurred on campus and some buildings no longer retain their original workmanship. Overall, the school

buildings retain integrity of location, setting, materials, association, and feeling; but the school buildings no longer retain integrity of workmanship and design.

Regardless of integrity, the Malibu Middle and High School campus is evaluated as not eligible for the CRHR.

Historic District Considerations

A records search shows that the Malibu Middle and High School campus is not currently within or associated with an identified historic district. According to the records search, there are currently no specific historic districts in Malibu for which this campus would serve as a contributing element Further, the school does not have significant historical associations or provide substantial architectural value to be recognized in correlation with other schools or buildings in the area to create a new historic district. Thus, the Malibu Middle and High School is not an element of any existing Historic District.

5.4.2 Juan Cabrillo Elementary School

The Juan Cabrillo Elementary School Campus was formally recorded on March 25, 2020. Selected photographs and a detailed description of the campus, resulting from the intensive site survey, are provided below. The buildings on campus are marked with either a three-digit letter or with official building names on the exterior, and ECORP utilizes that naming scheme in the descriptions below. There are seven historic-period buildings are located on the campus, as well as four modern buildings and structures. Table 4 highlights the buildings, their date of construction, and architect if known.

According to aerial photographs, the land where the campus is situated today was undeveloped in 1952. By the 1959 aerials, the campus had been constructed, confirming the 1955 construction date. In 1959, the campus buildings consisted of the Main Office, the Front Building, the 100 Building, the 150 Building, the front parking lot, and the pathway coverings. By 1964, in addition to the four existing buildings from the 1950s aerials and the campus consisted of the Library, the 20 Building, and one of the garages. The 1964 aerials also reveal the Malibu Park Junior High School campus east of the elementary school. By 1975, the second garage was constructed. The modern age buildings include the portable classrooms, the Hall, and one of the garages. The buildings are individually described below. Representative photographs of the campus buildings are provided in Attachment B.

Table 4: Juan Cabrillo Elementary School Individual Buildings

Building Identifier	Date Constructed and notes	Architect
Main Office	1955	Unknown
Front Building	1955	Unknown
Cottage A/B	Modern: Early 1990s	Unknown
Library	1963	Unknown
Hall	Modern: Early 1990s	Unknown
Building 100	1955	Unknown

Building 150	1955	Unknown
Building 20	1963	Unknown
Garages	1963 and 1975	Unknown
Portable Classrooms	Modern: Early 2000s	Unknown

Main Office Building

The main office building is a single-story administration office building located at the southern end of campus and overlooks Morning View Drive (Figure 9). The Main Office Building was constructed in 1955 and represents the Moderne architectural style. The building has a square footprint and is covered with smooth stucco siding. The building contains a flat roof. Based upon a review of historic aerial photographs, the building was constructed prior to 1959, and the footprint of the building remains the same as today.

The architectural elements of this building are mild but represent the Moderne architectural style is the flat roof, smooth stucco siding, the symmetrical façade, and large windows. Although the main building represents the Moderne style, the features are rather mild and lacks fluted pilasters.

Figure 9. Main Office Building: southern-facing façade (view northeast), taken March 25, 2020.

Front Building

The Front Building is a row of single-story classrooms. The building has a rectangular footprint and is oriented east-west along the long axis. The building has a slanted flat roof with covered rafters, a dropped roofline canopy cover extends over the walkways along the southern façade. The building is covered with smooth stucco siding (Figure 10). A row of vertical fixed and hopper windows is located on the southern-facing façade and run along the roofline to provide light into the classroom. The overhang on the southern-facing façade is flat and supported by metal poles. The northern-facing façade of the classroom building contains windows on the majority of the façade, typical of a modern classroom building. The building contains few architectural features related to a particular style. Based upon a review of historic

aerial photographs, the building was constructed prior to 1959, and the footprint of the building remains the same as today.

Figure 10. Front Building: northern-facing façade (view southeast), taken March 25, 2020.

Library

The Library is a single-story building. The building has a square footprint with a flat roof line, covered rafters, a smooth stucco siding, and an extended roofline canopy that extends over the walkways along the northern façade (Figure 11). The overhang on the northern-facing façade is flat and supported by metal poles. The building contains few architectural features related to a particular style. Based upon a review of historic aerial photographs, the Library was constructed between 1964 and 1967.

Figure 11. Library Building: northeastern-facing façade (view southwest), taken March 25, 2020.

20 Building

The 20 Building is a row of single-story classrooms. The building has a wide rectangular footprint and is oriented east-west along the long axis. The building has a flat roof with covered rafters, a smooth stucco siding, and an extended roofline canopy cover extends over the walkways along the northern and southern façade (Figure 12). The overhangs are flat and supported by metal poles. The northern and southern-facing façades of the classroom building contains windows on the majority of the façade, typical of a modern classroom building. The classroom entries are recessed and located on both the northern and southern facades. The building contains few architectural features related to a particular style. Based upon a review of historic aerial photographs, the building was constructed prior to 1959, and the footprint of the building remains the same as today.

Figure 12. Building: southern-facing façade (view northwest), taken March 25, 2020.

100 Building

The 100 Building is a row of single-story classrooms. The building has a rectangular footprint and is oriented east-west along the long axis. The building has a flat roof with covered rafters, a dropped roofline canopy cover extends over the walkway along the southern façade. The building is covered with smooth stucco siding (Figure 13). A row of vertical fixed and hopper windows is located on the northern-facing façade and run along the roofline to provide light into the classroom. The northern-facing façade of the classroom building also contains windows on the majority of the façade. The classroom entries are flush and located on both the northern and southern facades. The architectural elements of this building that represent the Moderne architectural style are the flat roof lines, large windows, and overhangs. Based upon a review of historic aerial photographs, the building was constructed prior to 1959, and the footprint of the building remains the same as today.

Figure 13. 100 Building: northern-facing façade (view southwest), taken March 25, 2020.

150 Building

The 150 Building is row of single-story classrooms. The building has a rectangular footprint and is oriented east-west along the long axis. The building has a flat roof with exposed rafters, a dropped roofline canopy cover extends over the walkway along the northern façade and overlooks the 100 Building. The building is covered with smooth stucco siding (Figure 14). The southern-facing façade of the classroom building also contains windows on the majority of the façade. The classroom entries are flush and located on both the northern and southern facades. The architectural elements of this building that represent the Moderne architectural style are the flat roof lines, large windows, and overhangs. Based upon a review of historic aerial photographs, the building was constructed prior to 1959, and the footprint of the building remains the same as today.

Figure 14. 150 Building: northern-facing façade (view southeast), taken March 25, 2020.

Garages

There are two sheet metal garages located at the northern end of the elementary school campus. The northern most garage appears on aerial photographs taken in 1964, while the eastern garage first appears on the 1975 aerials. The garages have moderately pitched side gabled roof and covered with corrugated sheet metal siding (Figure 15).

Figure 15. Garage Building: southern-facing façade (view north), taken March 25, 2020.

Modern Buildings

Modern Buildings on the Juan Cabrillo Elementary School Campus include the Cottage A&B portable classroom buildings, the Hall, the eastern garage, and portable classrooms at the northeastern edge of campus. These buildings were constructed after 1975.

Evaluation of Juan Cabrillo Elementary School

Historical and archival research for the buildings located in the Juan Cabrillo Elementary School campus at the property has provided sufficient construction and use history with which to evaluate the School. Following is an evaluation of the Juan Cabrillo Elementary School buildings, both as individual resources and as a complex, using CRHR eligibility criteria.

Eligibility Criteria

The Juan Cabrillo Elementary School Campus currently consists of seven historic-period buildings and structures. The Juan Cabrillo Elementary School was constructed on the current campus in 1955. The school was not the first or most significant elementary school in the region as compared to other earlier local and regional examples such as the Webster Elementary School in Malibu. The extant school buildings were constructed after the period of heavy population growth in Malibu and Los Angeles County and do not represent any contribution to a specific change or development in educational practices in the region. Therefore, Juan Cabrillo Elementary School, as a campus including its individual buildings, is not associated with significant events in history, and is not eligible under CRHR Criterion 1.

No known individuals significant in the past are recorded as significantly associated with the Juan Cabrillo Elementary School. Archival research did not produce any association with the productive lives of any significant school administrator or prominent teacher. The individuals for which buildings are named are not historically significant in the broader local, regional, or state context. The Juan Cabrillo Elementary School was in operation from 1955 to 2019. The adjacent Malibu Park Junior High School was constructed in 1963 and in 1992 the school campus was converted into the Malibu High School. The schools have had many different principals, teachers, and students associated with the school over time. However, no individual of historical importance is best associated with the school. Therefore, Juan Cabrillo Elementary School, as a campus including its individual buildings, is not eligible under CRHR Criterion 2.

Juan Cabrillo Elementary School comprises an assemblage of buildings and structures that serve a unified purpose of education. The seven historic-period buildings (i.e., over 50 years of age) on campus are closely associated with the Moderne style of architecture and contain some Moderne detailing. Overall, they were designed with function and form taking precedence over architectural style and merit. The architectural elements that represent this architectural style are the smooth stucco exterior, stylized motifs and rooflines, asymmetrical façades, and Classical Moderne detailing, including vertical features such as pilasters. These school buildings, however, also do not contain many of the important character-defining design features that are distinctive of the Moderne style that are seen in more prominent buildings in the region, such as strong vertical orientation including towers or tower elements, recessed windows sunken-in vertical panels, and zigzag ornaments or sculptures. In addition, the buildings on campus were constructed by unknown architects. As compared to other examples of Moderne buildings in the region, including public buildings and schools in Los Angeles County that do contain strong vertical orientation and proper form and materials, the buildings on the Juan Cabrillo Elementary School campus ultimately appear as a modest example of that style and do not embody distinction among other Moderne buildings constructed during that period.

The buildings on campus, including the few modern buildings, are not good representations of any style of architecture and have mostly utilitarian features. The school buildings built in the mid-1950s were designed by an unknown architectural firm, but likely built several public buildings during the 1950s to 1960s.

Based on the thorough review of each building, Juan Cabrillo Elementary School as a campus, including its individual buildings, does not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or possess any significant distinguishable components. Therefore, Juan Cabrillo Elementary School, as a campus including its individual buildings, is not eligible under CRHR Criterion 3.

Lastly, Juan Cabrillo Elementary School does not have the potential to yield information important in pre-contact history or history. Archival research potential for Juan Cabrillo Elementary School has been exhausted, and the school's history is fairly well documented in the archival record. Juan Cabrillo Elementary School cannot provide additional historically important information, and there is no potential for the school complex to provide additional information that is not already represented in the archival record. As a result, Juan Cabrillo Elementary School, as a campus including its individual buildings, is not eligible under CRHR Criterion 4.

In conclusion, Juan Cabrillo Elementary School, as a campus including its individual buildings, was evaluated using CRHR eligibility criteria and was found not eligible for the CRHR under any criteria.

Integrity

The property visit indicated that the school buildings retain integrity of location, setting, and materials. The school buildings have never moved location and Juan Cabrillo Elementary School remains within its setting in Malibu. The school buildings themselves remain intact structurally and have received minor maintenance over the years, thus retaining many of the original materials in parts of the buildings. The school buildings no longer serve the city of Malibu as an elementary school campus as it closed in 2019, so the feeling and association with the community and city does not exists. The school buildings currently no longer fulfill their original purpose because they do serve the community as to original function. In addition, the modern additions have occurred on campus and some buildings no longer retain their original workmanship. Overall, the school buildings retaining integrity of location, setting, and materials, but the school buildings no longer retain integrity of association, feeling, workmanship and design.

Regardless of integrity, the Juan Cabrillo Elementary School campus is evaluated as not eligible for the CRHR.

Historic District Considerations

A records search shows that the Juan Cabrillo Elementary School campus is not currently within or associated with an identified historic district. According to the records search, there are currently no specific historic districts in Malibu for which this campus would serve as a contributing element. Further, the school does not have significant historical associations or provide substantial architectural value to be recognized in correlation with other schools or buildings in the area to create a new historic district. Thus, the Juan Cabrillo Elementary School is not an element of any existing Historic District.

6.0 CONCLUSION AND RECOMMENDATIONS

ECORP conducted a cultural resources study for the for the Project. This study included a cultural resources records search, NAHC Sacred Lands File search, archival research, soils and geomorphology review, a field visit to thoroughly document the school buildings and structures, an archaeological field survey of unpaved portions of the Project Area, and an evaluation of eligibility for inclusion in the CRHR.

As a result of this study, no historic-period or pre-contact archaeological resources were identified within the Project Area. However, due presence of numerous pre-contact sites in the near vicinity, several of which contain human remains, the buried archaeological sensitivity of the area is considered high and there is a moderate to high potential for buried pre-contact resources to be uncovered during ground disturbing activities.

Two historic-period built environment resources are located within the Project Area (Malibu Middle and High School and the Juan Cabrillo Elementary School campuses). ECORP evaluated Malibu Middle and High School and the Juan Cabrillo Elementary School campuses and found them not eligible for the CRHR under all criteria. The Malibu High School and Middle School and the Juan Cabrillo Elementary School, as a campus including its individual buildings, are not currently listed in a local register of historical

resources, as defined in PRC 5020.1(k). Malibu Middle and High School and Juan Cabrillo Elementary School have not been identified in an historical resources survey, as defined in PRC 5024.1(g). In addition, Malibu Middle and High School and Juan Cabrillo Elementary School have not been determined by the CEQA lead agency to be a Historical Resource by another method. Therefore, Malibu High School and Middle School and Juan Cabrillo Elementary School, consisting of its campus and individual buildings, are not considered to be a Historical Resources as defined by CEQA and the proposed Project will not result in an impact to a known Historical Resource under CEQA.

6.1 Summary and Recommendations for Post-Review Discovery

In all cases, the lead agency will require that any unanticipated (or post-review) discoveries found during Project construction be managed through a procedure designed to assess and treat the find as quickly as possible and in accordance with applicable State and federal law. ECORP recommends the following mitigation measures be adopted and implemented by the lead agency to reduce potential adverse impacts to less than significant:

- An archaeologist, working under the direction of an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall monitor all ground disturbing activities within native sediments.
- If subsurface deposits believed to be cultural or human in origin are discovered during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeologist, shall evaluate the significance of the find, and shall have the authority to modify the no-work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find:
- If the professional archaeologist determines that the find does not represent a cultural resource, work may resume immediately and no agency notifications are required.
- If the professional archaeologist determines that the find does represent a cultural resource from any time period or cultural affiliation, he or she shall immediately notify the CEQA lead agency, and applicable landowner. The agencies shall consult on a finding of eligibility and implement appropriate treatment measures, if the find is determined to be eligible for inclusion in the CRHR. Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the site either: 1) is not eligible for the CRHR; or 2) that the treatment measures have been completed to their satisfaction.
- If the find includes human remains, or remains that are potentially human, he or she shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the Los Angeles County Medical Examiner-Coroner (as per § 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. If the Medical Examiner-Coroner determines the remains are Native American and not the result of a crime scene, the Medical Examiner-Coroner will notify the NAHC, which then will designate a Native American

Most Likely Descendant (MLD) for the Project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate information center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

The lead agency is responsible for ensuring compliance with these mitigation measures because damage to significant cultural resources is in violation of CEQA. Section 15097 of Title 14, Chapter 3, Article 7 of CEQA, *Mitigation Monitoring or Reporting*, "the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects. A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program."

7.0 REFERENCES CITED

Arnold, J. E. 1987. *Craft Specialization in the Prehistoric Channel Islands, California*. University of California Press, Berkeley.

Bailey, Betty. 1999. Webster Turns the big 5-0. *Malibu Times*. March 18, 1999. http://www.malibutimes.com/news/article_96f5593a-f875-5c3f-b0a0-62c7d6755f3e.html, Accessed March 25, 2020.

California State Parks. 2020. *Point Dume Historical Landmark*. Office of Historic Preservation. http://ohp.parks.ca.gov/ListedResources/Detail/965, Accessed March 24, 2020.

Castillo, E. D. 1978. The Impact of Euro-American Exploration and Settlement. In: *Handbook of North American Indians*. Volume 8, California. Heizer R. F., editor. Sturtevant William C. p. 99-127. Published by Smithsonian Institution, Washington, D.C.

Cleland, R. G. 1941. *The Cattle on a Thousand Hills: Southern California, 1850-1870*. San Marino, California: Huntington Library.

Cooper, Suzanne, Amy Hall, and Frank Cooper 2005. *Images of America: Los Angeles Art Deco*. Arcadia Publishing.

Dibblee, T. and H. E. Ehrenspeck 1993 *Geologic Map of the Point Dume Quadrangle, Los Angeles and Ventura Counties, California*. On file in the National Geologic Map Database. https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=26024, Accessed March 24, 2020.

Doyle, T. W., T. Doyle, C. H. Laubach, F. C. May, J. J. Merrick, L. Pfeifer, R. L. Rindge, J. B. Ringer. 2018. *The Story of Malibu*. The Malibu Lagoon Museum. https://www.malibucity.org/106/History-of-Malibu, Accessed March 24, 2020.

Golla, V. 2007. Linguistic Prehistory. In *California Prehistory: Colonization, Culture, and Complexity*, edited by T. L. Jones and K. A. Klar, pp. 71-82. Altamira Press, Lanham, Maryland.

Grant, C. 1978. Chumash: Introduction. In *Handbook of North American Indians, Volume 8, California*, edited by Robert F. Heizer, pp. 505-508. Smithsonian Institution, Washington, D.C.

Greenwood, R. S. 1978. Obispeño and Purisimeño Chumash. In *Handbook of North American Indians, Volume 8, California*, edited by Robert F. Heizer, pp. 520-523. Smithsonian Institution, Washington, D.C.

Grimes, Teresa and Christina Chiang. 2009. City of Riverside Modernism Context Statement. Accessed August 7, 2020 at https://www.riversideca.gov/historic/pdf/Modernism.pdf.

Gudde, E. G. 1998. *California Place Names: The Origin and Etymology of Current Geographical Names*. Berkeley, California: University of California Press.

Guldimann, Suzanne. 2013. *To the Point*. The Malibu Post. Friday, November 29, 2013. http://themalibupost.blogspot.com/2013/11/to-point.html, Accessed March 24, 2020.

Guldimann, Suzanne. 2011. *Decker School Was an Important Part of Malibu's History.* Malibu Surfside News. December 28, 2011. http://malibusurfsidenews-blog.blogspot.com/2011/12/decker-school-was-important-part-of.html, Accessed March 24. 2020.

Historic Resources Group. 2007. Cultural Resources of the Recent Past Historic Context Report. Accessed August 7, 2020 at http://www.parks.ca.gov/pages/1054/files/pasadena%20context%20report%20final%20revised%202007%2010%2010.pdf.

King, C. D. 1990. *Evolution of Chumash Society: A Comparative Study of Artifacts Used in Social System Maintenance in the Santa Barbara Channel Region Before A.D. 1804*. Garland Publishing, Inc. New York.

LAC. 2020. Explore LA: Historic Places. Los Angeles Conservancy Website. https://www.laconservancy.org, Accessed March 24, 2020.

LAHRI. 2020. HistoricPlacesLA. Los Angeles Historic Recourses Inventory website. Office of Historic Preservation. http://historicplacesla.org/, Accessed March 24, 2020.

McAlester, Virginia. 2013. *A Field Guide to American Houses,* Second Edition. Alfred A. Knopf, New York.

McCoy, Nancy T. and David G. Woodcock. 2017. *Architecture that Speaks: SCP Vosper and Ten Remarkable Buildings at Texas A&M*. Texas A&M University Press, College Station.

MacDonald, Lauren. 2008. *Mid-Century Modernism Historic Context,* City of Fresno Planning and Development Department, Planning Resource Associates, Inc., Fresno, California.

NETROnline. Historic Aerials. 2020. [https://www.historicaerials.com/viewer. Accessed March 24, 2020.

PBS&J. 2010. Malibu Middle and High School Campus Improvements Project, Historical Resource Impact Assessment. Prepared for the Santa Monica-Malibu Unified School District. June 2010.

PCR Services Corporation. 2015. *Draft Initial Study/Mitigated Negative Declaration: Olive Vista Middle School Seismic Modernization of the Physical Education and Multi-Purpose Room/Lunch Pavilion/Student Store Buildings*. Prepared for the Los Angeles United School District.

Rifkind, Carole. 1998. *A Field Guide to Contemporary Architecture*. Penguin Putnam Inc., New York, New York.

Robinson, W. W. 1948. *Land in California: The Story of Mission Lands, Ranchos, Squatters, Mining Claims, Railroad Grants, Land Scrip, Homesteads*. Berkeley, California: University of California Press.

Rogers, D. B. 1929. *Prehistoric Man of the Santa Barbara Coast.* Santa Barbara Museum of Natural History, Santa Barbara.

Sapphos Environmental, Inc. 2014. Los Angeles Unified School District Historic Context Statement, 1870 to 1969. Prepared for the Los Angeles Unified School District, Office of Environmental Health and Safety. March 2014.

Science Applications International Corporation. 2002. Los Angeles Unified School District Historic Context Statement. Prepared for the Los Angeles Unified School District. March 2002.

USDA. 2020. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed March 24, 2020

USGS. 1991. 7.5-minute Quadrangle Point Dume, California. Denver, Colorado: Geological Survey.

_____. 1981. 7.5-minute Quadrangle Point Dume, California. Denver, Colorado: Geological Survey.

_____. 1967. 7.5-minute Quadrangle Point Dume, California. Denver, Colorado: Geological Survey.

_____. 1950. 7.5-minute Quadrangle Point Dume, California. Denver, Colorado: Geological Survey.

_____. 1943. 15-minute Quadrangle Triunfo Pass, California. Denver, Colorado: Geological Survey.

_____. 1932. 7.5-minute Quadrangle Dume Point, California. Denver, Colorado: Geological Survey.

_____. 1932. 7.5-minute Quadrangle Solstice Canyon, California. Denver, Colorado: Geological Survey.

_____. 1921. 15-minute Quadrangle Triunfo Pass, California. Denver, Colorado: Geological Survey.

_____. 1903. 30-minute Quadrangle Camulos, California. Denver, Colorado: Geological Survey.

_____. 1900. 15-minute Quadrangle Triunfo Pass, California. Denver, Colorado: Geological Survey.

LIST OF ATTACHMENTS

Attachment A – Sacred Lands File Coordination

Attachment B – Project Area and Building Photographs

ATTACHMENT A

Sacred Lands File Coordination

From:	Paige Liss
To:	nahc@nahc.ca.gov
Cc:	Wendy Blumel
Subject:	Sacred Lands File Search Request for the SMMUSD Malibu High School Project in Los Angeles County, CA
Date:	Thursday, February 6, 2020 10:22:00 AM
Attachments:	2020-001_Sacred-Lands-File-NA-Contact-Form.pdf

ECORP is requesting a Sacred Lands File search for the SMMUSD Malibu High School Project in Los Angeles County, CA. I have attached a copy of the Sacred Lands File contact form above along with a map showing the project area. The results of this search can be sent to Wendy Blumel at wblumel@ecorpconsulting.com. They can also be faxed to my attention at **(909) 307-0056**. Please reference the project number 2020-001 on all correspondence.

Please let me know if you have any questions or need any additional information.

Thanks,

Paige Liss

Assistant Archaeologist

ECORP Consulting, Inc.

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Federal Small Business (SB)

California Small Business for Public Works (SB-PW)

3838 Camino Del Rio North, Suite 370, San Diego, CA 92108

Ph: 858.279.4040 ◆ Fax: 858.279.4043 ◆ Cell: 619.787.3989

pliss@ecorpconsulting.com ◆ www.ecorpconsulting.com

Rocklin ◆ Redlands ◆ Santa Ana ◆ San Diego ◆ Chico ◆ Flagstaff, AZ ◆ Santa Fe, NM

February 6, 2020

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: SMMUSD Malibu H.S./Middle School Campus Master Plan Project

County: Los Angeles

USGS Quadrangle Name: Point Dume, CA (1995, NAD27)

Township: 02S & 02S **Range:** 18W & 19W **Section(s):** 31 & 36

Company/Firm/Agency: ECORP Consulting, Inc.

Street Address: 215 N. Fifth Street

City: Redlands **Zip:** 92374

Phone: (909) 307-0046

Fax: (909) 307-0056

Email: wblumel@ecorpconsulting.com

Project Description:

ECORP provided Biological and Cultural Resources CEQA support services in support of preparation of a draft and final Environmental Impact Report ("EIR"), Mitigation Monitoring and Reporting Program, Findings, Statement of Overriding Considerations or Negative Declaration, and associated documents for Santa Monica-Malibu Unified School District's Malibu Middle and High School Campus Master Plan Project located at 30215 and 30237 Morning View Dr., Malibu, CA 90265. As part of the Campus-wide Master Plan, the Proposed Project seeks to redevelop the Juan Cabrillo site and the Malibu Middle and High School campuses, with the exception of the existing athletics fields, the newly constructed Building E, the Malibu Equestrian Park and the two buildings currently under construction.

Location: N:\2020\2020-001 SMMUSD Malibu HS and Middle School\MAPS\Cultural Resources\Records_Search\Malibu_CRM_RS.mxd (TR)-tcatellini 1/24/2020

Map Date: 1/24/2020

iService Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Records Search

2020-001 SMMUSD Malibu HS and Middle School

NATIVE AMERICAN HERITAGE COMMISSION

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Chumash

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

February 24, 2020

Wendy Blumel
ECORP Consulting

Via Email to: wblumel@ecorpconsulting.com

Re: SMMUSD Malibu H.S./Middle School Campus Master Plan Project, Los Angeles County

Dear Ms. Blumel:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Los Angeles County
2/25/2020

Barbareno/Ventureno Band of Mission Indians
Julie Tumamait-Stenslie, Chairperson
365 North Poli Ave — Chumash
Ojai, CA, 93023
Phone: (805) 646 - 6214
jtumamait@hotmail.com

Barbareno/ Ventureno Band of Mission Indians
Raudel Banuelos,
331 Mira Flores — Chumash
Camarillo, CA, 93012
Phone: (805) 427 - 0015

Barbareno/ Ventureno Band of Mission Indians
Eleanor Arrellanes,
P. O. Box 5687 — Chumash
Ventura, CA, 93005
Phone: (805) 701 - 3246

Barbareno/ Ventureno Band of Mission Indians
Patrick Tumamait,
992 El Camino Corto — Chumash
Ojai, CA, 93023
Phone: (805) 216 - 1253

Chumash Council of Bakersfield
Julio Quair, Chairperson
729 Texas Street — Chumash
Bakersfield, CA, 93307
Phone: (661) 322 - 0121
chumashtribe@sbcglobal.net

Coastal Band of the Chumash Nation
Gino Altamirano, Chairperson
P. O. Box 4464 — Chumash
Santa Barbara, CA, 93140
cbcn.consultation@gmail.com

Northern Chumash Tribal Council
Fred Collins, Spokesperson
P.O. Box 6533 — Chumash
Los Osos, CA, 93412
Phone: (805) 801 - 0347
fcollins@northernchumash.org

San Luis Obispo County Chumash Council
Mark Vigil, Chief
1030 Ritchie Road — Chumash
Grover Beach, CA, 93433
Phone: (805) 481 - 2461
Fax: (805) 474-4729

Santa Ynez Band of Chumash Indians
Kenneth Kahn, Chairperson
P.O. Box 517 — Chumash
Santa Ynez, CA, 93460
Phone: (805) 688 - 7997
Fax: (805) 686-9578
kkahn@santaynezchumash.org

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed SMMUSD Malibu H.S./Middle School Campus Master Plan Project, Los Angeles County.

ATTACHMENT B

Project Area and Building Photographs

PHOTOGRAPH RECORD

Page 1 **of** 1 - **Resource Name or #: Malibu High School 2020-001** **Year** 2020
Camera Format: Digital Lens Size: 35mm
Film Type and Speed: Digital Negatives Kept at: ECORP Consulting, Inc.

Mo.	Day	Time	Exp./Frame	Subject/Description	View Toward	Accession #
3	31		0364	Ground conditions on western project boundary	West	
3	31		0365	Ground conditions on western project boundary	West	
3	31		0366	Ground conditions on western project boundary	West	
3	31		0367	Ground conditions on western project boundary	Southwest	
3	31		0368	Fence north of softball field	East	
3	31		0369	Ground conditions north of softball field	Southeast	
3	31		0373	Ground conditions near NE corner of project area	East	
3	31		0374	Ground conditions near NE corner of project area	North	
3	31		0375	Slope east of parking lot and west of equestrian center	South	
3	31		0376	Ground conditions near southern boundary	East	
3	31		0377	Southern boundary west of Morning View Drive	East	
3	31		0378	Ground conditions on slope along eastern boundary	North	
3	31		0379	Steep slope west of track	South	
3	31		0380	Steep slope west of track	East	
3	31		0381	Fenced area north of softball field	East	
3	25		0966	Malibu High School, Building H, northern Corner	South	
3	25		0967	Malibu High School, Building H, southwest entrance	Northeast	
3	25		0968	Building H, southern corner	Northwest	
3	25		0969	Building H, southeast walkway	Northeast	
3	25		0970	Building H, outdoor seating	Northeast	
3	25		0971	Building D, northern walkway	East	
3	25		0972	Building D, northern side	Southeast	
3	25		0973	511 Administration	East	
3	25		0974	512 Counseling	Northeast	
3	25		0975	513 Nurse	Southeast	
3	25		0976	Building D, eastern walkway	South	
3	25		0977	Building D, southern side	Northwest	
3	25		0978	New building in place of A	South	
3	25		0979	New building in place of B and C	Southwest	
3	25		0980	Building E, northwest corner	Southeast	
3	25		0981	Building E, eastern side, northern corner	South	
3	25		0982	Overview	Southwest	
3	25		0983	Building F, southern corner	North	
3	25		0984	Building F, western corner	East	
3	25		0985	Building G, southern corner	Northeast	
3	25		0986	Building G, western corner	East	
3	25		0987	Amphitheatre	Northeast	
3	25		0988	500 Building adjoining G	South	
3	25		0989	500 building, southern corner	North	
3	25		0990	600 Building, eastern side	Northwest	
3	25		0991	600 Building, southern corner	North	
3	25		0992	New Gym, southern corner	North	
3	25		0993	Gym, southern portion	Northwest	
3	25		0994	Gym, northern portion	North	
3	25		0995	Gym, eastern corner	West	
3	25		0996	Pool facility buildings	North	
3	25		0997	Boys/Girls Club	West	
3	25		0998	Boys/Girls Club	South	
3	25		0999	Portable trailer, 5-9	East	
3	25		1001	Portable trailer, 2-3	Northeast	
3	25		1002	Portable trailer, library	West	
3	25		1003	Sports Field bathroom	North	
3	25		1004	Tennis courts	North	

3	25		1005	600 corner with new gym	Northeast	
3	25		1006	New gym entrance	Northeast	
3	25		1007	Front building under construction	East	
3	25		1008	Juan Cabrillo Elementary School sign	Northwest	
3	25		1009	Juan Cabrillo Elementary School Main Office, western façade	East	
3	25		1010	Juan Cabrillo Elementary School Main Office, southern façade	North	
3	25		1011	Cottage A/B portables	East	
3	25		1012	Front classroom building, southeastern façade	Northwest	
3	25		1013	Front classroom building, southern façade	North	
3	25		1014	Front classroom building, southern façade	Northeast	
3	25		1015	Front classroom building, northern façade	West	
3	25		1016	Library, northwestern façade	Southeast	
3	25		1017	20 Building, southern façade	Northwest	
3	25		1018	Library, northeastern façade	Southwest	
3	25		1019	20 Building, northeastern façade	Southwest	
3	25		1020	Portable classrooms – restroom trailers and classrooms	Northwest	
3	25		1021	Portable classrooms – C Trailers	Northwest	
3	25		1022	100 Building, northern façade	Southwest	
3	25		1023	Courtyard between the front classroom building and 100 Building	Southwest	
3	25		1024	100 Building, southern façade	West	
3	25		1025	Courtyard between the front classroom building and 100 Building	Southeast	
3	25		1026	100 Building, western façade	Northeast	
3	25		1027	Courtyard between the 150 building and 100 Building	Northeast	
3	25		1028	150 Building, western façade	Northeast	
3	25		1029	150 Building, northern façade	Southeast	
3	25		1030	Hall overview, northern façade	South	
3	25		1031	Hall overview, western façade	Northwest	
3	25		1032	Hall overview, southern façade	Northwest	
3	25		1033	Overview of fields, trailers, and storage	Northeast	
3	25		1034	Eastern Garage overview	North	
3	25		1035	Western Garage overview	Northwest	

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PHOTOLOG

Project Name: Sub to Placeworks – Malibu H.S.

Project Number:2020-001

Camera: Android **Year: 2021**

Month	Day	Time	Frame #	Description	View	Initials
07	15	09:59	0543	View of Parking Lot From NE Corner	SW	NB
07	15	10:03	0544	View of Parking Lot From West of Parking Lot	E	NB
07	15	10:09	0546	View of Bare Ground in Center of Parking Lot	Plan	NB
07	15	10:16	0547	Overview of Undeveloped ground from NE of undeveloped patch.	SW	NB
07	15	10:19	0548	Wrought Iron Fence on West of Project area	W	NB
07	15	10:22	0549	Patch of ground from undeveloped area adjacent to western fence	Plan	NB
07	15	10:25	0552	Metal bracket/debris just Southwest of Project area.	S	NB
07	15	10:26	0553	Burnt Piles just to the Southeast of Project area.	SE	NB
07	15	10:30	0554	Patch of Ground Showing Heavy mowed straw Cover	Plan	NB
07	15	10:33	0556	Bare ground where trucks turn around	S	NB
07	15	10:35	0557	Overview of undeveloped area from SW of project	NE	NB
07	15	10:40	0558	Dozer scars East of the project area.	E	NB

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Appendix H Geotechnical Exploration Reports

Appendices

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FAULT RUPTURE HAZARD INVESTIGATION
MALIBU MIDDLE AND HIGH SCHOOL
30215 MORNING VIEW DRIVE
MALIBU, CALIFORNIA 90265

Prepared for

SANTA MONICA MALIBU UNIFIED SCHOOL DISTRICT

2828 4th Street
Santa Monica, CA 90405-4308

Project No. 11382.020

March 9, 2021

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

March 9, 2021

Project No. 11382.020

Santa Monica – Malibu Unified School District
2828 Fourth Street
Santa Monica, California 90405-4308

Attention: Ms. Noemi Avila-Zamudio, Deputy Bond Program Manager

Subject: Fault Rupture Hazard Investigation
Malibu Middle and High School
30215 Morning View Drive
Malibu, California 90265

In response to the City of Malibu comment letter on the *Notice of Preparation* (NOP) for the *MMHS Campus Specific Plan and Local Coastal Program (LCP) Amendment Project,* dated September 21, 2020, Leighton Consulting Inc. (Leighton) in cooperation with Earth Consultants International (ECI) are presenting the results of our fault hazard study of the "*Escondido Thrust*" fault for the Malibu Middle and High School Campus in Malibu, California. This fault was not included as an active fault under the California Alquist-Priolo Earthquake Fault Zoning Act, but was a fault that required special geologic investigations under City of Malibu requirements.

California law (the Alquist-Priolo Earthquake Fault Zoning Act, Chapter 7.5, Div. 2, California Public Resources Code) requires that new structures be located a reasonable distance from the surface trace of active faults making the acquired information from these studies crucial to planning and construction of new developments. Locating active faults is normally done early in the planning process so building constraints (setback zones) can be established and alternative approaches to development can be considered.

The fault classification criteria adopted by the California Geological Survey, formerly the California Division of Mines and Geology, defines Earthquake Fault Zones along active or potentially active faults. The classification system of the Alquist-Priolo Earthquake Fault Zoning Act of 1972 is used in this report. In general, an active fault is one that has ruptured during the Quaternary Period, Holocene Epoch (last 11,700 years). A fault that

17781 Cowan ▪ Irvine, CA 92614-6009
949.250.1421 ▪ 949.250.1114 Fax

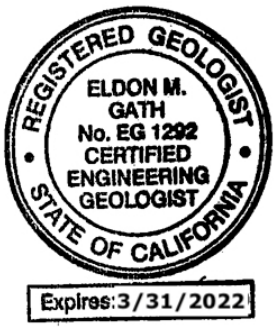
has ruptured during the last 1.8 million years, Quaternary Period Pleistocene Epoch, but has not been proven by direct evidence to have not moved within Holocene time is considered to be potentially active. A fault that has not moved during Holocene time (that is no movement within the last 11,700 years) is considered to be inactive for planning purposes.

If you have any questions or if we can be of further service, please contact us at ***(866) LEIGHTON***; specifically at the phone extension or e-mail addresses listed below. We appreciate this opportunity to be of service to SMMUSD on this project.

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Joe A. Roe, CEG 2456
Principal Geologist
Ext. 4263, jroe@leightongroup.com



Eldon Gath, CEG 1292
Senior Principal Geologist
Gath@earthconsultatns.com

JAR/EG/lr

Distribution: (1) Addressee (plus PDF on CD)

Leighton

TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION 1
1.1 Executive Summary 1
1.2 Purpose and Scope 2
1.3 Geologic Findings 4
1.4 Soil Descriptions in Fault Trench 7
1.5 Soil Descriptions in Cut Slope 12
1.6 Soil Age Estimates 15
2.0 CONCLUSIONS AND RECOMMENDATIONS 18
2.1 General 18
2.2 Conclusion 18
3.0 LIMITATIONS 20
4.0 REFERENCES CITED 21

TABLES

Table 1 – Soil Descriptions Exposed in Trench FT-1 8
Table 2 – Soil Descriptions Exposed in Cut Slope 13

ACCOMPANYING FIGURES, PLATES AND APPENDIX

Figure 1 – Site Location Map
Figure 2 – Location Map “Escondido Thrust Fault” – Treiman 1994
Figure 3 – Geologic Map of the Malibu Coast Area-Campbell 1996
Figure 4 -- Geologic Map of the Malibu Coast Area – Dibblee and Ehrenspeck 1993
Figure 5 -- Quaternary Geology of the Malibu Coast Area – Birekland 1972
Figure 6 – Location Map of FT-1 Cut Slope Cross Section and Previously Mapped Faults
Figure 7 -- Log of Cut Slope Stations 0-96
Figure 8 -- Cross Section 1
Figure 9 – 3-Dimensional Photo Model Showing Results of Cut-Slope Mapping Alongside Trench FT-1

Plate 1 – Log and Photomosaic of Trench FT-1 (Sta. 0 – Sta. 120)
Plate 2 – Log and Photomosaic of Trench FT-1 (Sta. 120 – Sta. 240)
Plate 3 -- Log and Photomosaic of Trench FT-1 (Sta. 240 – Sta. 325)
Attachment to Plates 1 thru 3 Descriptions of Soils Exposed in Trench 1

Appendix A - Soil Profile Descriptions and Soil Age Estimates

Leighton

1.0 INTRODUCTION

1.1 Executive Summary

In response to the City of Malibu comment letter on the *Notice of Preparation (NOP)* for the *MMHS Campus Specific Plan and Local Coastal Program (LCP) Amendment Project*, dated September 21, 2020, Leighton Consulting Inc. (Leighton) in cooperation with Earth Consultants International (ECI) has completed a fault rupture hazard investigation for the "*Escondido Thrust*" fault. This fault was not included as an active fault under the California Alquist-Priolo Earthquake Fault Zoning Act, but was a fault that required special geologic investigations under City of Malibu requirements.

The City's comment *"Strict application of the LCP standard would require a fault surface rupture hazard investigation to clear proposed building areas of the new project that are within 500 feet of the mapped location of the Escondido Thrust fault on Fault Evaluation Report (FER) -229. At this time and without further information, the fault should be further evaluated for the EIR."* As no such study had as of yet been completed for the Environmental Impact Report (EIR), with your authorization, we have complied with the City's comment letter and completed the requested investigation.

The "*Escondido Thrust*" referred to in the City's comment has been mapped by multiple geologists since the 1970s. It has not only been given different names (Malibu Coast fault, Paradise Cove fault, Rodriguez Canyon fault, Ramirez fault, and Escondido Thrust) by different geologists, it has also been mapped in different locations (±200 feet) by each geologist (*see References*) and with differing sense of movement, but they all show the fault trending roughly east-west through the High School campus area. Due to the prior grading and construction, undisturbed locations as required for the geological characterization of the fault zone, were quite limited in the campus area. A location immediately above and east of the running track was selected. Fortunately, an apparently undisturbed area existed between the new parking lot to the south and the high school's property line to the north, which was almost perfectly centered within the mapped traces of the faults. The fault trench (FT-1) excavated for this study was 315 feet long and up to 10 feet deep, ramped on both ends and appropriately benched so as to not require shoring.

Our investigation was designed to excavate a trench across the entire width of the potential fault locations in order to determine the fault's impact on an elevated

marine terrace surface and associated sediments that form the terrace sequence. Based on preliminary research, the terrace was assigned to the Malibu Terrace sequence (Birkeland, 1972), with an approximate age of 200,000 years. If the terrace deposits were undisturbed across the mapped fault locations, then it could be concluded that the fault was inactive, and would pose no constraints to the High School's future development plans.

However, if the base of the terrace was displaced across the faults, we would then trace the fault upwards through the overlying sediments and surface soil horizons, and attempt to make a determination as to the age of the most recent faulting event. If it could be demonstrated that the most recent event was older than the State of California-defined 11,700 years, the fault could still be concluded as inactive. If we could not so determine, additional investigation would likely be required at locations with younger overlying deposits. If the fault was determined to be younger than 11,700 years, it would then pose a significant planning constraint, and more focused trenches would be required to precisely locate the fault across the campus area and define setback zones.

Our investigation has shown that none of the previously mapped faults were encountered in the trench because the sediments of the trench were younger than the fault activity. The stratigraphy of the uppermost terrace sequence demonstrated that the faults did not affect either the uppermost sediments or the overlying pedogenic (soil) horizons. The terrace sediments and surface soil correlate to the Malibu Terrace of Marine Oxygen Isotope (MIS) Stage 7 at about 200,000 years in age. Mapping of a cut slope adjacent to and west of the trench encountered an unmapped fault zone in bedrock that is more northerly than the other faults mapped, but this fault terminates at a lower and previously undocumented terrace sequence that likely correlates to MIS Stage 9, or over 300,000 years old. Therefore, we conclude that the faults as previously mapped, and the new fault, are all inactive and pose no planning constraints to the High School.

1.2 Purpose and Scope

This report presents the results of our fault hazard investigation for the mapped faults in FER-229 located at 30215 Morning View Road, Malibu, California, see Figure 1, *Site Location Map*. More specifically, this study was focused in an area of relatively undisturbed sediments and west facing cut slope immediately east and north of the track and field, see Figure 2, *Location Map of Escondido Thrust Fault*.

The purpose of this investigation was to evaluate the risk of surface fault rupture in an area where previous studies performed by several geologists had demonstrated conflicting information, see Figure 6, *Location Map of FT-1 Cut Slope Cross Section and Previously Mapped Faults*. This fault investigation consisted of excavating and logging a 315 foot long and up to 10 feet deep trench, ramped on both ends and appropriately benched so as to not require shoring. At the conclusion of our field exploration the City geologist visited the trench exposure on two separate occasions to review exposed sequences of unbroken sediments of considerable age. Upon completion of the study and City review, the fault trench was backfilled and compacted and the study area restored to about pre-study conditions. Three phases of investigations were completed to develop conclusions about the general fault environment and fault activity around the Malibu High-School site.

Specifically, the scope of our work included the following tasks:

- Compiling and documenting existing geologic maps (Figures 3, 4 and 5) to determine the boundaries between bedrock geology, marine terrace deposits, and inferred fault locations. Documents reviewed in preparation of this report are listed in the *References* at the end of text.

- Excavating using a rubber tire backhoe and mapping a fault trench across Quaternary-age marine terrace deposits to identify lateral continuity, composition and age.

- Cleaning, logging, and coordination/review with City of Malibu geologist one fault trench (FT-1) for a total length of approximately 315 feet at the selected location (Figures 2 and 6). The fault trench logs and photo mosaic produced by Leighton and ECI as part of this current investigation are presented on Plates 1, 2 and 3 *Logs and Photo Mosaics of Fault Trenches.*

- Mapping of the west facing cut slope (Circa 1970's) located beneath FT-1 to characterize the marine abrasion platform at greater depth than our trench could expose, and the contact between the marine terrace deposits and bedrock. Observation and field evaluation of the backfill placement and compaction for FT-1 excavated during this investigation.

- Preparation of this report presenting a summary of our findings, conclusions and recommendation. The report is signed by California licensed Certified Engineering Geologists (CEG) who were actively involved in the trench siting,

excavation, review and reconnaissance with the City of Malibu geologist. All observations were documented and plotted in Figures 2 through 9, Plates 1 through 3, and soil age presented in Appendix A, *Soil Profile Descriptions and Soil Age Estimates*.

1.3 Geologic Findings

Mapped Geologic Interpretations: **Figure 2, *Location Map of Escondido Thrust Fault*** shows the fault environment as compiled by the California Geological Survey (CGS) Fault Evaluation Report FER-229 (Treiman, 1994). The compilation displays fault trends inferred and mapped by Campbell et al. (1970) and Dibblee and Ehrenspeck (1990-92). The original figure in the FER-229 report presents a roughly east-west trending dashed red line (*location approximate*) and southwest trending blue dotted and queried contact (*dotted where concealed, queried where uncertain*) identifying the inferred faults as late Quaternary in age (FER-229, figure 3b), a designation that does not preclude a Holocene age.

Figure 3, *Geologic Map of the Malibu Coast Area* shows the geologic units of the Malibu Coast area as mapped by Campbell et al. (1996). A preliminary map was first published in 1970 (Campbell et al., 1970) followed by an updated version in 1996 (Campbell et al., 1996). The map displays units ranging from Holocene and upper Pleistocene in age to lower Miocene. In the Figure 3 study area (black box) a low-angle, north-dipping thrust fault is inferred as the “Escondido Thrust Fault” (see cross-section A”-northward) which creates a distinct separation of the bedrock geology with Miocene Monterey shale overlying the Trancas Formation to the south, and Miocene Zuma volcanics to the north of the fault. Upper Pleistocene marine terrace deposits dominate the surface geology in the central part of the area, where the thrust fault is only inferred by dashed and dotted black lines. FT-1 trench location that is part of this study cuts through these terrace deposits on the eastern flank of the mapped terrace and is shown in black.

Figure 4, *Geologic Map of the Malibu Coast Area* shows the geologic units of the Malibu Coast area as mapped by Dibblee and Ehrenspeck (1993). A preliminary version of the map was first published in 1990 (Dibblee and Ehrenspeck, 1990) with a final version published in 1993 (Dibblee and Ehrenspeck, 1993), after additional mapping between 1990 and 1992 (Dibblee and Ehrenspeck, 1990-92). The map displays units ranging from Holocene and late Pleistocene to middle Miocene in age. Similar to Campbell et al. (1996), Dibblee and Ehrenspeck mapped a north-dipping thrust fault labeled as the “Ramirez

Fault," distinctly separating bedrock geology across the study area. Compared to Campbell et al. (1996), Dibblee and Ehrenspeck's interpretation shows the thrust-fault dipping at a higher angle and possibly as a strand of the Malibu Coast fault that is mapped to the north (see cross-section A-northward). The bedrock geology south of the fault is composed solely of Monterey Formation rocks. Bedrock units of the Trancas Formation and Zuma volcanics are mapped north of the fault. This map differs from that by Campbell et al. (1996), who mapped the Monterey shale overlying Trancas Formation bedrock south of the fault and Zuma volcanics only north of the fault. However, similar to Campbell et al. (1996), the surface geology in the central part of the study area is dominated by late Pleistocene older alluvial and terrace deposits.

Although the compilation of the published geologic maps reveals alternative geologic interpretations and fault terminologies between the different authors within the greater Malibu High-School area, our work was able to proceed to characterize the age of the faults.

Figure 5, *Quaternary Geology of the Malibu Coast Area* shows the distribution of Quaternary terrace deposits along the Malibu Coast area as mapped by Birkeland (1972). The map separates the terrace deposits into three distinct units, including the early Pleistocene Malibu terrace, the middle Pleistocene Corral terrace, and the late Pleistocene Dume terrace. All deposits consist of marine sands and fluvial/ near-shore gravel. The marine terrace as mapped across the site area is part of the Malibu terrace. The trench, FT-1 that is the main focus of this study cuts through the marine terrace on the eastern flank.

Trench and Cut Slope Investigation: **Figure 6, *Location Map of FT-1 Cut Slope Cross Section and Previously Mapped Faults*** is a close-up of the project area. It illustrates all of the previously mapped fault trends, location of trench FT-1, and cross-section 1 (Figure 8). It shows the Malibu High-School track and field to the west and the FT-1 trench location in roughly the center of the image. The track field and trench location are separated by a west facing cut slope that we used to map the terrace to bedrock contact not exposed in the trench, see **Figure 7, *Log of Cut Slope,*** and to add detail to the extent and thickness of the buried paleosol that caps the underlying older terrace sediments. Post-processed drone imagery was superimposed on the Figure 6 giving the trench location and cut slope mapping a spatial reference. All previously mapped faults transect the trench location in between station numbers Sta. 150 and Sta. 225. Station numbers in the cut slope (Sta. 0' – Sta. 96') were assigned to reference bedrock mapping as part

of this study (Figure 7). The mapping effort revealed intact Monterey Formation diatomite to the north of the fault (cut slope Sta. 0- Sta. 35), followed by a 10-foot wide fault gouge zone (Sta. 35- Sta.45), and a mix of sheared and weathered siltstone and volcanics to the south (Sta. 45- Sta. 96). The bedrock and fault mapping from this study mandates a revision to the regional mapping by both Dibblee and Ehrenspeck (1993), and Campbell et al. (1996). Both sources mapped Monterey Formation rocks only south of the fault location at trench station Sta. 200. However, bedrock and fault mapping in the cut slope show (Figure 7) intact Monterey Formation rocks to the north of the fault and a new fault zone exposed in bedrock at Sta. 35- Sta. 45, approximately 175 feet north of the previously mapped fault locations. This suggests the possibility of an extensive fault zone ranging from Sta. 35- Sta. 45 to trench station number Sta. 200, that uplifts to the surface sheared slivers of Trancas Formation and Zuma Volcanics (Figure 8).

Figure 8, *Cross Section 1* shows a cross-section profile 1-1' spanning the 315-foot long trench and extending about 300 feet to the north and south of the trench, respectively. A geo-referenced photomosaic of FT-1 is plotted onto the cross-section profiles illustrating the trench outline, trench depth, and the sequences of marine terrace deposits and soils found in the trench and adjacent cut slope. A vertical exaggeration of 2:1 was chosen to better highlight the thickness and extent of the deposits on a vertical scale. We confirmed the upper units correlate to the Malibu terrace of marine oxygen isotope stage 7 (MIS 7) and its surface soil, and the lowest sequence to a previously undocumented terrace of marine isotope stage 9 (MIS 9) (Figure 8), and its capping paleosol. The full trench log and explanation of exposed sequences (Qtm7 Surface Soil, Qtm7, and Qtm9) including descriptions and age calculations of individual soil profiles is presented in Plates 1-3 and Appendix A, respectively.

We used 2019 LiDAR data (Townsend, 2020) to generate a topographic profile that coincides with the trench surface seen in the photomosaic. All previously mapped faults were plotted onto this topographic profile. An additional topographic profile (red dashed line) was generated based on 1928 aerial photos to show the approximate topographic relief as it was in 1928. It confirms that the material encountered above the Qtm7 Surface Soil is artificial fill, likely from the construction of the adjacent track field (circa 1970's). The depth and extent of the marine terrace deposit units and the terrace-to-bedrock contacts were drawn using the contacts exposed in the trench and mapped in the adjacent cut slope. No faults were encountered within the trench, or within the marine terrace deposits in the

cut slope, and the newly mapped fault was demonstrated to be truncated by the MIS 9 terrace strath (Qtm9).

The cross-section (Figure 8) compiles the previously mapped fault locations and mapped geologic data from this study on the cross-section plane, illustrating that:

- No previously mapped fault was encountered in the trench and the stratigraphy of the uppermost terrace sequence demonstrated that the faults did not affect either the uppermost sediments or the overlying pedogenic horizons.
- The uppermost terrace sequence correlates to the Malibu Terrace of Marine Oxygen Isotope (MIS) Stage 7 at about 200,000 years old.
- The fault zone encountered in this study is confined to bedrock, terminates at the bedrock to MIS-9 terrace strath contact, and is located about 175 feet north of the previously mapped faults.
- Bedrock of the Monterey Formation underlies three units of marine terrace deposits and is the surface of an angular paleoshoreline.
- The marine terrace deposits thicken southward.

While there is a possibility of bedrock faulting below the terrace deposits as mapped by Campbell et al. (1996) and Dibblee and Ehrenspeck (1993), these possible faults do not affect the MIS 7 terrace as exposed in our trench. The general architecture of the marine terrace deposits and their depositional onlap to the Monterey Formation paleoshoreline are shown and summarized in a 3-dimensional aerial view in **Figure 9, *3-Dimensional Photo Model Showing Results of Cut Slope Mapping Alongside Trench FT-1***.

Plates 1 through 3 present our logging of the west wall, interpretation of mapped Qtm7 pedogenically altered soil units and photo mosaic of the trench profile from Sta. 0 to Sta. 325. The explanation of each soil unit is presented on Plate 3. The soil descriptions are provided in the sections below.

1.4 Soil Descriptions in Fault Trench

Samples collected for this stratigraphic profile were collected at various stations throughout the trench. The reviewer is referred herein to Plates 1 through 3 for our interpretation during trench logging and photo mosaic of the west trench wall. A majority of these samples were collected between stations Sta. 105 and Sta.

113 because this section of the trench exposed the entire stratigraphic profile, from the surface *A soil horizon* down to the fine sands of the *C horizon*. The profile had to be collected in three separate segments due to the lack of lateral continuity of some of the units due to channeling, in particular the gravel lenses and channel deposits. These channel deposits incise into the *Bt4, Bt5*, and *Bt6* package, as well as into the *BC* horizon below, creating an unconformity. In addition to the samples mentioned above, three additional soil samples were collected at various trench stations to check for lateral variations of the units. The descriptions are provided in Table 1 below.

TABLE 1 – SOIL DESCRIPTIONS EXPOSED IN TRENCH FT-1

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
Qtm 7: Surface Soil			
110	0-0.5 (±0.1)	A	**SANDY CLAY (CLs)**; very dark grayish brown (10YR 3/2) to very dark brown (10YR 2/2) with very dark grayish brown (10YR 3/2) clay films when dry, very dark brown (10YR 2/2) with very dark brown (10YR 2/2) clay films when moist; weak to moderate medium subangular blocky breaking to weak fine subangular blocky soil structure and single grained; hard to very hard when dry, firm when moist, very sticky and very plastic when wet; few thin clay films coating clasts and lining clast pockets; <10% subangular to subrounded, slightly weathered Monterey shale, fine grained igneous, fine-gravel-sized clasts up to 1 inch; no reaction to hydrochloric acid; many fine roots and rootlets; many pinhole-sized pores up to 1 inch; smells organic; clear wavy lower boundary.
110	0.5-1.6 (±0.3)	Bt1	**SANDY CLAY (CLs)**; very dark grayish brown (10YR 3/2) with very dark gray (10YR 3/1) clay films when dry, very dark brown (10YR 2/2) with black (10YR 2/1) clay films when moist; strong very coarse angular blocky breaking to strong medium to coarse angular blocky soil structure; very hard to extremely hard when dry, firm when moist, very sticky and very plastic when wet; common thin clay films on ped faces and coating clasts, common to many moderately thick to thick clay films lining clast pockets; 5% subangular, fine to medium slightly weathered to weathered gravel-sized clasts of Monterey shale; no reaction to hydrochloric acid; common to many fine roots, common to many pinhole-sized pores; clear to gradual wavy lower boundary.
110	1.6-2.1 (±0.2)	Bt2	**SILTY CLAY** to **CLAY (CL)**; very dark grayish brown (10YR 3/2) with very dark gray (10YR 3/1) to black (7.5YR 2.5/1) clay films when dry, very dark brown (10YR 2/2) with black (10YR 2/1) clay films when moist; strong coarse angular blocky breaking to strong medium angular blocky soil structure; very hard to extremely hard when dry, very firm to extremely firm when moist, sticky to very sticky and plastic to very plastic when wet; common thin clay films on ped faces

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
			and coating clasts, common to many moderately thick to thick clay films lining clast pockets; <10% subrounded to subangular gravel-sized clasts up to 1 inch consisting of weathered chert and siliceous shale; no reaction to hydrochloric acid; few to common fine roots; common pinhole-sized pores; clear to gradual wavy lower boundary.
110	2.1-2.5 (±0.1)	Bt3	**SILTY CLAY (CL)**; brown (7.5YR 4/4 to 4/3) with very dark grayish brown (10YR 3/2) to dark brown (7.5YR 3/2) clay films when dry, strong brown (7.5YR 4/6) with dark grayish brown (10YR 3/2) clay films when moist; strong very coarse angular blocky breaking to strong medium coarse angular blocky soil structure; very hard to extremely hard when dry, very firm to extremely firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces, few to common thin to moderately thick clay films coating clasts, many thick clay films lining clast pockets; ±10% unweathered to weathered, subangular to subrounded, coarse-sand- to fine gravel- sized clasts and few medium-gravel-sized clasts of Monterey siltstone; calcium carbonate coatings on ped faces; matrix has no reaction to hydrochloric acid; few fine roots and rootlets; few to common pinhole-sized pores; clear, wavy lower boundary.
105	2.5-3.3 (±0.2)	Btk	**SANDY CLAY LOAM** to **SANDY CLAY (CLs)**; brown (7.5YR 5/4) with dark brown (7.5YR 3/3) clay films when dry, brown to strong brown (7.5YR 4/5) with very dark brown (7.5YR 2.5/2) clay films when moist; strong very coarse angular blocky breaking to moderate to strong fine to medium angular blocky soil structure; very hard to extremely hard when dry, firm to very firm when moist, very sticky and plastic when wet; common moderately thick clay films on ped faces, common to many thin to moderately thick clay films coating clasts, common thin to moderately thick clay films lining clast pockets; ±15% weathered to grussified, rounded, fine-gravel- up to 1-inchsized clasts of Monterey siltstone, granitics, chert, and volcanics; calcium carbonate coatings on ped faces, matrix has a slight reaction to hydrochloric acid; organic staining; very few to few fine rootlets; few to common pinhole-sized pores; abrupt to clear wavy lower boundary.
113	2.5-4.3		**GRAVEL (GW)** in a **SANDY CLAY (CLs)** matrix; brown to dark grayish brown (7.5-10YR 4/2) with dark brown to very dark gray to grayish brown (7.5YR 3/1.5) clay films when dry, dark brown (7.5YR 3/2) with very dark brown (7.5YR 2.5/2) clay films when moist; weak to moderate fine subangular blocky breaking to weak very fine subangular blocky soil structure; hard and fragic when dry, firm when moist, very sticky and plastic to very plastic when wet; common moderately thick clay films coating clasts, common moderately thick to thick clay films lining clast pockets; >75% predominately rounded with a few angular, slightly weathered to weathered fine-gravel-sized clasts up to 1 1/3 inches, consisting of Monterey siltstone and

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
113	2.5-4.3		volcanics; no reaction to hydrochloric acid; common to many pinhole-sized pores; abrupt wavy to irregular lower boundary. (intraformational channel deposit incised into the surrounding terrace deposits).
Due to the lateral extent of the trench, we collected samples of the Bt4 horizon at multiple locations. This was done to determine if there were lateral variations of this soil horizon.			
105	2.5-3.3 (±0.2)	Bt4	**SILTY CLAY (CL)**; brown (7.5YR 5/6) with brown (7.5YR 4/3) clay films when dry, brown (7.5YR 4/4) with dark brown (7.5YR 3/3) clay films when moist; strong coarse angular blocky breaking to strong fine angular blocky soil structure; very hard when dry, very firm when moist, very sticky and very plastic when wet; few to common moderately thick to thick clay films on ped faces, common thin to moderately thick clay films coating clasts and lining clast pockets; <5% subrounded coarse-sand- to fine gravel- sized clasts of predominately Monterey siltstone; thin calcium carbonate coatings, matrix has no reaction to hydrochloric acid; few very fine rootlets; common pinhole sized pores; abrupt to clear wavy lower boundary.
210	5.4	Bt4	**SILT LOAM (ML)** to **SILTY CLAY (CL)**; brown to strong brown (7.5YR 5/5) with brown (7.5YR 4/2) clay films when dry, strong brown (7.5YR 5/6) with dark brown (7.5YR 3/2.5) clay films when moist; strong coarse angular blocky breaking to strong medium angular blocky soil structure; very hard to extremely hard when dry, very firm when moist, very sticky and very plastic when wet; few thin clay films on ped faces; calcium carbonate coatings on ped faces, matrix has no reaction to hydrochloric acid; very few very fine roots and rootlets; very few scattered pinhole-sized pores; abrupt to clear wavy lower boundary.
220	6.5	Bt4	**SILTY CLAY (CL)**; yellowish brown to brown (10-7.5YR 5/4) with dark yellowish brown (10YR 4/4) clay films when dry, dark yellowish brown (10YR 4/4) with dark yellowish brown (10YR 3.5/4) clay films when moist; strong coarse prismatic breaking to strong fine subangular blocky soil structure; hard to very hard and fragic when dry, firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces, common thin clay films in lining pores; <10% coarse- sand- to medium-gravel-sized clasts of weathered, porcelaneous and siliceous Monterey Formation siltstone; no reaction to hydrochloric acid; organic staining present; few scattered fine roots.
105 105	3.9-4.3 3.9-4.3	Bt5 Bt5	**SILTY CLAY (CL)**; brown (7.5YR 5/4) with brown (7.5YR 4.5/4) clay films when dry, brown (7.5YR 4/3) with brown (7.5YR 4/4) clay films when moist; strong medium angular blocky breaking to weak to moderate fine angular blocky soil structure and single grained; very hard when dry, firm when moist, very sticky and very plastic when wet; common to many thick and few thin clay films on ped faces, few

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
			thin clay films lining pores; <5% scattered subrounded coarse sand; no reaction to hydrochloric acid; silica stringers; organic staining; common pinhole-sized pores; clear wavy lower boundary.
105	4.3-4.7	Bt6	**SILTY CLAY** to **CLAY (CL)**; brown to reddish brown (7.5-5YR 5/4) with dark brown (7.5YR 3/4) clay films when dry, dark strong brown (7.5YR 3/6) with reddish brown to dark reddish brown (5YR 3.5/4) clay films when moist; strong medium angular blocky breaking to strong fine angular blocky soil structure; very hard to extremely hard when dry, very firm when moist, very sticky and very plastic when wet; many to continuous moderately thick clay films on ped faces, few to common thin clay films lining pores; <5% coarse sand-sized grains of weathered volcanics and Monterey Formation siltstone; no reaction to hydrochloric acid; silica coatings on ped faces; organic staining; common to many pinhole-sized pores; abrupt to clear wavy lower boundary.
113	4.3-5.5	BC1	**SILTY CLAY (CL)**; brown (7.5YR 5/4) with very dark gray to dark reddish brown (5YR 3/1.5) clay films when dry, dark yellowish brown (10YR 4/4) with dark brown (7.5YR 3/2) clay films when moist; strong very coarse subangular blocky breaking to strong medium subangular blocky soil structure; hard to very hard when dry, firm when moist, very sticky and very plastic when wet; common thin and few moderately thick clay films on ped faces; <5% scattered coarse sand and fine gravel consisting of very weathered phaneritic and felsic igneous clasts; no reaction to hydrochloric acid; very few root casts; few to common pinhole-sized pores; abrupt wavy lower boundary.
113	5.5-6.9	BC2	**GRAVEL (GW)** in a **SANDY LOAM** matrix; brown (7.5YR 4/2, 5/3, and 5/4) when dry, dark brown (7.5YR 3/3) with dark brown (7.5YR 3/4) clay films when moist; single grained; loose when dry and moist, slightly sticky and slightly plastic when wet; few thin clay films coating clasts; >75% rounded to subangular, slightly weathered to very weathered, fine-gravel- to 1-inch-sized clasts, few larger, consisting of phaneritic and felsic granitics, Monterey Formation siltstone, Santa Monica slate, and red volcanics; no reaction to hydrochloric acid; abrupt wavy lower boundary.
113 113	6.9-8.5 6.9-8.5	C_{ox} C_{ox}	**SAND (SP)**; brown (7.5YR 5/4) when dry, brown to dark brown (7.5YR 4/4-3/4) when moist; weak medium subangular blocky soil structure breaking to single grained; slightly hard when dry, friable when moist, non-sticky and non-plastic when wet; <5% slightly weathered to weathered, subangular, fine-gravel-sized clasts of chert, volcanics, and Monterey Formation siltstone; no reaction to hydrochloric acid; abrupt wavy lower boundary.

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
Qtm 9: Paleosol			
105	8.5	2Btb1	Fine **SANDY CLAY (CLs)** to **CLAY (CL)**; brown to reddish brown (7.5-5YR 5/4) with dark reddish brown (5YR 3/2-3/3) clay films when dry, brown to strong brown (7.5YR 4/4-4/6) with yellowish red (5YR 4/6) to dark reddish brown (5YR 3/3) clay films when moist; strong very coarse subangular blocky breaking to strong coarse subangular blocky soil structure; hard to very hard when dry, very firm when moist, very sticky and very plastic when wet; common thin to moderately thick and few thick clay films on ped faces, few thin clay films coating clasts, and many thin to moderately thick clay films lining clast pockets; <10% scattered coarse-sand- to fine-gravel-sized clasts consisting of subangular, weathered porcelaneous and siliceous Monterey Formation siltstone, chert, and volcanics; no reaction to hydrochloric acid; common pinhole-sized pores; lower boundary not observed.
101	9.5	2Btb1	**SILTY CLAY** to **CLAY (CL)**; strong brown (7.5YR 4.5/7) with strong brown (7.5YR 4.5/7) clay films when dry, brown to strong brown (7.5YR 4/4-4/6) with strong brown (7.5YR 4/6) clay films when moist; moderate to strong coarse subangular blocky breaking to moderate medium subangular blocky soil structure; slightly hard to hard when dry, firm when moist, very sticky and very plastic when wet; common to many moderately thick clay films on ped faces; <5% subrounded fine-gravel-sized clasts of Monterey Formation siltstone, chert, and weathered volcanics; no reaction to hydrochloric acid; manganese oxide staining; very few pinhole-sized pores; lower boundary not observed.

1.5 Soil Descriptions in Cut Slope

In order to link the sediments exposed in the trench (Plates 1 through 3) to the ones in the cut slope (Figure 7), we exposed and described the same C_{ox} and 2Bt1b horizons at both locations. The “depth” provided here is relative, with the contact between the C and 2Btb1 horizons set as our zero (0) value, and measurements made relative to that contact. The basal marine terrace deposits at the bottom of the paleosol were not exposed in the area of the cut slope that was sampled for the soil profile described here. This unit was exposed approximately 30 feet to the south, also in the cut slope, but not in the area sampled. We include it here for completeness sake, but do not include it in the soil profile descriptions used for the soil-age estimations (Table 1 Appendix A). The soil descriptions from the cut slope mapping are provided in Table 2 below.

TABLE 2 – SOIL DESCRIPTIONS EXPOSED IN CUT SLOPE

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
Qtm 7: Surface Soil			
0	+0.62	C_{ox}	**SILTY CLAY (CL)**; brown to yellowish brown (7.5-10YR 5/4) with brown (10YR 5/3) clay films when dry, dark yellowish brown (10YR 4/4) with brown (10YR 5/3) clay films when moist; strong very coarse subangular blocky breaking to strong coarse subangular blocky soil structure; very hard when dry, very firm when moist, very sticky and very plastic when wet; common to many thin to moderately thick clay films on ped faces; <5% scattered fine-gravel-sized clasts of unweathered to weathered, subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; common manganese oxide staining and nodules; slight organic staining with charcoal fragments; few to common fine roots, rootlets, and root casts; few to common pinhole size pores and ~2 mm root holes; abrupt and smooth to wavy lower boundary.
Qtm9: Paleosol			
0	-0.85	2Btb1	**SANDY CLAY (CLs) to CLAY (CL)**; reddish yellow to light brown (7.5YR 6/6-6/4) with brown (7.5YR 4/2) and brown (7.5YR 4/3) clay films when dry, strong brown (7.5YR 4/6) with dark brown (7.5YR 3/2) and dark brown to dark reddish brown (7.5-5YR 3/3) clay films when moist; strong coarse to very coarse angular blocky breaking to strong medium to coarse angular blocky soil structure; very hard to extremely hard when dry, very firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces and common to many moderately thick clay films lining clast pockets; <10% coarse-sand- to fine-gravel-sized clasts of weathered, subangular to subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; slight iron oxide staining; few scattered fine roots and rootlets; few to common pinhole size pores; lower boundary not observed.
0	-0.85	2Btb1	
0	-2.68	2Btb1	**SANDY CLAY (CLs)** to **CLAY (CL)**; dark reddish brown to dark brown (7.5-5YR 3/2) with brown (7.5YR 5/3) clay films when dry, dark brown (7.5YR 3/2) with brown (7.5YR 4/3) clay films when moist; strong very coarse angular blocky breaking to strong medium angular blocky soil structure; extremely hard when dry, very firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces, few thin clay films in pore linings; <10% coarse-sand to ½-inch-gravel-sized clasts of weathered, subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; slight

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
			organic and manganese oxide staining; common fine roots and rootlets; few pinhole size pores; clear and smooth lower boundary.
0	-4.4	2Btb2	**SANDY CLAY (CLs)**; grayish brown to brown (10-7.5YR 5/2.5) with brown (7.5YR 4/4) clay films when dry, dark brown (7.5YR 3/4) with dark brown (7.5YR 3/4) clay films when moist; moderate very coarse subangular blocky breaking to moderate medium to coarse subangular blocky soil structure; slightly hard when dry, friable when moist, sticky to very sticky and plastic to very plastic when wet; common thin clay films on ped faces, few thin clay films lining pores, few thin clay films coating clasts, common moderately thick clay films lining clast pockets; 10% coarse-sand- to ½-inch-gravel-sized clasts of weathered, subrounded volcanics, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; mottled; common fine roots; common pinhole size pores and root holes; lower boundary not observed.
0	-6.39	2Btb2	**SANDY CLAY (CLs)**; brown (10-7.5YR 4/3) with brown (7.5YR 4/3) clay films when dry, dark brown (7.5YR 3/3.5) with dark brown (7.5YR 3/4) clay films when moist; moderate coarse subangular blocky breaking to strong medium subangular blocky soil structure; slightly hard when dry, friable to firm when moist, sticky and plastic when wet; very few thin clay films on ped faces; <10% coarse-sand- to fine-gravel-sized clasts of weathered, subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; few fine roots and rootlets; very few scattered pinhole size pores; clear and wavy lower boundary.
0 0	-8.87 -8.87	2Btb3 2Btb3	**SANDY CLAY (CLs)**; brown (7.5YR 5/2-5/3) with dark brown (7.5YR 3/2) clay films when dry, brown (10YR 4/3) with dark brown (7.5YR 3/2) clay films when moist; moderate very coarse subangular blocky breaking to weak to moderate medium to coarse subangular blocky soil structure; very hard to extremely hard when dry, firm when moist, sticky and plastic when wet; very few thin clay films on ped faces; <10% coarse-sand- to 1-inch-gravel-sized clasts of weathered to very weathered, subrounded to rounded volcanics, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; organic staining; few to common fine to medium roots and root casts, very few scattered pinhole size pores, abrupt and wavy lower boundary.
40	-9.39	2Btb4	Gravelly **SANDY CLAY LOAM (CL)**; yellowish brown (10YR 5/4) with dark brown to dark reddish brown (7.5-5YR 3/3) clay films when dry, brown to dark brown (10Y 3.5/3) with dark brown (7.5YR 3/4) clay films when moist; massive breaking to moderate to strong coarse to very coarse subangular blocky soil structure and single-grained; slightly hard to hard and fragic when dry, friable to firm when moist, sticky and plastic when wet; few to common thin clay films on ped faces; 10 to 25% coarse-sand- to ¾-inch-gravel-sized clasts of

Sampled Station (feet)	Depth (feet)	Soil Horizon	Description
			slightly weathered to weathered, mostly rounded Santa Monica slate and Monterey Formation siltstone, few angular black volcanic clasts; no reaction to hydrochloric acid; slight iron oxide and manganese oxide staining on clasts; common fine roots and rootlets; very few to few pinhole size pores; lower boundary not observed.
Bedrock			
0 0	-10.14 -10.14	R R	**SILTY CLAYEY SANDSTONE**; white (2.5Y 8/1), grayish brown (2.5Y 5/2), and dark yellowish brown (10YR 4/6) on weathered surfaces when dry, light gray to pale yellow (2.5Y 7/2.5), weak red (2.5YR 4.5/2), and dark yellowish brown (10YR 4/6) on fresh surfaces when moist; thin to thickly bedded, hard to very hard when dry, firm when moist, slightly sticky and slightly plastic to plastic when wet; strong reaction to hydrochloric acid; manganese oxide staining and nodules; very few scattered rootlets; lower boundary not observed. [Slightly weathered Monterey Formation sandstone forming the marine abrasion platform].

1.6 Soil Age Estimates

As anticipated, the trench exposed a sequence of elevated beach and fluvial sediments upon which a well-developed soil has formed (Plates 1-3 and Appendix A). The sediments reflect the near-coastal riverine environment deposited across a now elevated marine abrasion platform (strath terrace). Unanticipated was that this marine terrace actually cut across an older, now buried, marine terrace sequence that is also capped by a well-developed paleosol. This paleosol was only exposed in the deepest part of the trench (Sta. 77 to Sta. 108.5) but was subsequently traced across the cut slope to the west of the trench.

In order to confirm the age of the units exposed in the trench, we collected a composite soil profile between Sta. 105 and Sta. 113. Samples of the uppermost soil horizons, including the A, Bt1, Bt2 and Bt3 horizons, were collected at Sta. 110. Due to the lateral discontinuity and variable thicknesses of these units, we then moved north to Sta.105, where we collected samples of the Btk, Bt4, Bt5, and Bt6 horizons. Samples of the bottom portion the surface soil profile (the BC1, BC2, and C_{ox} horizons), and the upper part of the buried soil (2Btb1 horizon) were collected at Sta.113. At this same station, fluvial gravels incised into the Bt4, Bt5, and Bt6 horizons, as well as the upper portion of the BC horizons. A sample of the Bt4 horizon was collected from this station, and additional samples of the same

Bt4 horizon were also collected at Sta. 210 and Sta. 220 to evaluate the potential lateral variability of the soil. Lastly, because a slight color change was observed within the 2Btb1 horizon, a second sample of this horizon was collected at Sta. 101.

Recognizing that the bottom of the trench exposed a buried soil developed in older deposits, and that this buried soil would allow us to extend back the age of the overall sedimentary section used to evaluate the recency of activity of the fault exposed, we then sampled and described the soils exposed in the cut slope adjacent to the trench. The buried soil exposed in the cut slope includes three argillic (2Bt1b, 2Btb2 and 2Btb3) horizons sitting directly on top of a marine abrasion platform cut into the diatomaceous, laminated to thickly bedded sandy siltstone to clayey siltstone of the Monterey Formation (Tm).

The samples collected from each soil horizon were transported to our office where they were described using a combination of the methodologies and nomenclature established by the Soil Survey Staff (1975, 1992), the National Soil Survey Center (2012) and Birkeland (1984, 1999). We used these descriptions to calculate two soil index values that can then be compared to the soil index values calculated for soils developed in the southern and central California region that have been dated using either numerical or relative dating methods. Additional information regarding the methodology used to describe and analyze these soils is provided in Appendix A.

The two soil index values calculated for the surface and buried soil (paleosol) observed in the trench and cut slope are the Soil Development Index (SDI) of Harden (1982) and Harden and Taylor (1983), and the Maximum Horizon Index (MHI) of Ponti (1985). The Soil Development Index is derived by summing the characteristics of the entire soil profile (non-normalized), and the soil characteristics of the upper 200 cm (~6 feet; normalized). If the soil is more than 6 feet thick, the portion of the profile below 6 feet is not included in the final normalized value. If the soil profile is less than 6 feet thick, the deeper horizon is “stretched” to make the entire profile 6 feet thick. The two soils analyzed for this study were both more than 6 feet thick, so they were truncated at that depth for the purposes of calculating their normalized SDI values. The Maximum Horizon Index (MHI) value uses only the characteristics of the better-developed horizon to estimate the age of the entire soil profile. Typically, the SDI (normalized) and MHI values yield similar age estimates, but the soils exposed in this study, especially the surface soil, returned significantly different age estimates using these two

methods. Given that the surface soil was independently correlated to the Malibu marine terrace, Marine Oxygen Isotope (MIS) Stage 7 at about 200,000 years in age (Birkeland, 1972) and thus that its age is generally known, we used this knowledge to check the validity of the ages provided by the soil-age regressions used. We found that the MHI-derived age estimates more closely correlate with the geomorphically derived age of the surface soil.

Our soil-age estimation analysis suggests that the surface soil exposed in the trench is between about 102,000 (median) and 273,000 (maximum) years old. These age estimates bracket the age assigned to this MIS Stage 7 terrace, with the formation of the marine abrasion platform occurring during the sea-level highstand ending about 200,000 years ago, and deposition of the marine terrace deposits occurring soon thereafter, approximately 195,000 years ago. The soil began to form as soon as the surface became stable, after the marine terrace sediments were deposited. Similarly, the buried soil (paleosol) partly exposed at the bottom of the trench and fully exposed in the cut slope is estimated to have been exposed to soil-forming processes at the ground surface, prior to burial, for between about 55,000 and 163,000 years. To these estimates of length of soil formation we add the age of the overlying surface soil to derive a minimum age for this paleosol. The resultant age estimates range from about 160,000 (median, rounded) to 440,000 (maximum, rounded) years. Given that this paleosol pre-dates deposition of the overlying MIS Stage 7 marine terrace deposits, this age range suggests that the paleosol developed on marine terrace sediments that were deposited at the end of either the interglacial that corresponds to MIS 9, dated at about 300-325,000 years ago, or MIS 11, dated at about 375-400,000 years ago.

2.0 CONCLUSIONS AND RECOMMENDATIONS

2.1 General

Based on the results of our detailed subsurface fault trench observations and review of prior studies, it is our opinion that there is no evidence that active (Holocene) faulting has occurred within the areas covered by fault trench FT-1 as shown on Plates 1 through 3. This conclusion is based upon our fault investigation and review of other referenced documents deemed applicable to this study. Specifically, Leighton Consulting Inc. and ECI has documented the presence of sediments and soils, dated by non-radiometric techniques to at least 200,000 years old, being unaffected by younger fault offsets.

2.2 Conclusion

Leighton Consulting, Inc. and ECI again state that it has found no evidence of active faulting at Malibu Middle and High School, and that based on this study no fault-related structural setbacks associated with the "*Escondido Thrust*" or inferred faults including the unmapped fault discovered during this study are required for Malibu Middle and High School. Significant findings of this study include:

- The trench exposed uplifted near shore marine and fluvial sediments overlying a marine abrasion surface cut across an older underlying marine terrace sequence.
- The trench stratigraphy was adequate to demonstrate the absence of faulting within the units exposed, and the geomorphic positioning and pedogenic development demonstrates a clear Pleistocene age for the sediments, probably about 200,000 years old as correlated to MIS Stage 7 (Malibu Terrace).
- The Stage 7 terrace is cut across an older, likely Stage 9, terrace sequence that has a well-developed paleosol formed on it.
- A previously unmapped fault was exposed in the cut slope farther to the north of the mapped fault traces.
- Although we could not completely preclude minor distributed faulting at the base of the buried older terrace where the Stage 9 deposits thicken, the primary gouge zone of this new fault was shown to be truncated by the Stage 9 marine abrasion platform, and the Stage 9 terrace paleosol was shown to be continuous and undeformed across the entire width of the fault zone.

- All faults, both the variously mapped traces and the new one exposed in the cut slope west of the trench, are demonstrably Pleistocene in age, inactive at least 200,000 years, and probably more than 300,000 years old.
- None of the faults investigated is active under Alquist-Priolo definitions, and none poses a surface rupture hazard to Malibu Middle and High School or its future development plans within the fault zone.
- This investigation and its conclusions should satisfactorily address the City of Malibu's EIR comment about the fault rupture hazard to campus safety and planning.
- Geotechnical studies should be conducted for future planned improvements on the campus as required to meet California Building Code (CBC), Division of the State Architect (DSA) and California Geological Survey requirements.

3.0 LIMITATIONS

Our subject fault hazard rupture investigation was performed in general accordance with the current geologic standard-of-practice for fault rupture hazard investigations and California Geologic Survey (CGS) requirements. This report was necessarily based in part upon data obtained from a limited number of observances, and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This report is intended to present known geologic and fault data represented in the referenced reports and as a result of this study. This report is subject to review by City of Malibu and therefore the recommendations contained herein should only be relied upon after approval by the City.

Until reviewed and accepted by the City of Malibu, this report may be subject to change. Changes may be required as part of the City review process. Leighton Consulting, Inc. assumes no risk or liability for consequential damages that may arise due to design work progressing before this report is reviewed and accepted by the City of Malibu.

4.0 REFERENCES CITED

Birkeland, P.W., 1972, Late Quaternary eustatic sea-level changes along the Malibu Coast, Los Angeles, County, California: *Journal of Geology*, Vol. 80, pp. 432-448.

Birkeland, P.W., 1984, Soils and Geomorphology: Oxford University Press, New York, 372p.

Birkeland, P.W., 1999, Soils and Geomorphology: Oxford University Press, Inc., 3rd edition, 430p.

Campbell, R.H., Blackerby, B.A., Yerkes, R.F., Schoellhamer, J.E., Birkeland, P.W., and Wentworth, C.M., 1970, Preliminary geologic map of the Point Dume quadrangle, Los Angeles County, California: U.S. Geological Survey Open-File Map, 1:12,000.

Campbell, R.H., Blackerby, B.A., Yerkes, R.F., Schoellhamer, J.E., Birkeland, P.W., and Wentworth, C.M., 1996, Geologic map of the Point Dume quadrangle, Los Angeles County, California: United States Geologic Survey, Geologic Quadrangle Map GQ-1747, scale 1:24,000.

Dibblee, T.W., Jr., and Ehrenspeck, H.E., 1990, Geologic map of the Point Mugu and Triunfo Pass quadrangles, Ventura and Los Angeles Counties, California: Dibblee Geological Foundation Map DF-29, scale 1:24,000.

Dibblee, T.W., Jr., and Ehrenspeck, H.E., 1990-92, mapping in progress on the Malibu Beach and Triunfo Pass quadrangles, scale 1:24,000.

Dibblee, T.W., Jr., and Ehrenspeck, H.E., 1993, Geologic map of the Point Dume Quadrangle, Los Angeles and Ventura Counties, California: Dibblee Geological Foundation Map DF-48, scale 1:24,000.

Harden, J.W., 1982, A quantitative index of soil development from field descriptions: Examples from a chronosequence in central California: *Geoderma*, Vol. 28, pp. 1-28.

Harden, J.W., and Taylor, E.M., 1983, A quantitative comparison of soil development in four climatic regimes: *Quaternary Research*, Vol. 28, pp. 342-359.

National Soil Survey Center, 2012, Field Book for Describing and Sampling Soils: U.S. Department of Agriculture, Natural Resources Conservation Service, Version 3.0.

Ponti, D.J., 1985, The Quaternary alluvial sequence of the Antelope Valley, California: Geological Society of America Special Paper 203, pp. 79-96.

Soil Survey Staff, 1975, Soil Taxonomy: US Department of Agriculture Handbook #436: US Government Printing Office, Washington, DC.

Soil Survey Staff, 1992, Keys to Soil Taxonomy: SMSS Technical Monograph #19: Pocahontas Press, Inc., Blacksberg, Virginia, 5th edition, 556p.

Spratt, R.M., Lisiecki, L.E., 2016, A Late Pleistocene sea level stack, Climate of the Past, 12, 1079-1092. doi: 10.5194/cp-12-1079-2016.

Townsend, K., 2020, Post-fire Debris Flows in Santa Monica Mountains, CA 2019. National Center for Airborne Laser Mapping (NCALM). Survey Date: 09/25/2019 - 09/26/2019; Distributed by OpenTopography. https://doi.org/10.5069/G9MK6B2P. Accessed: 2021-01-30.

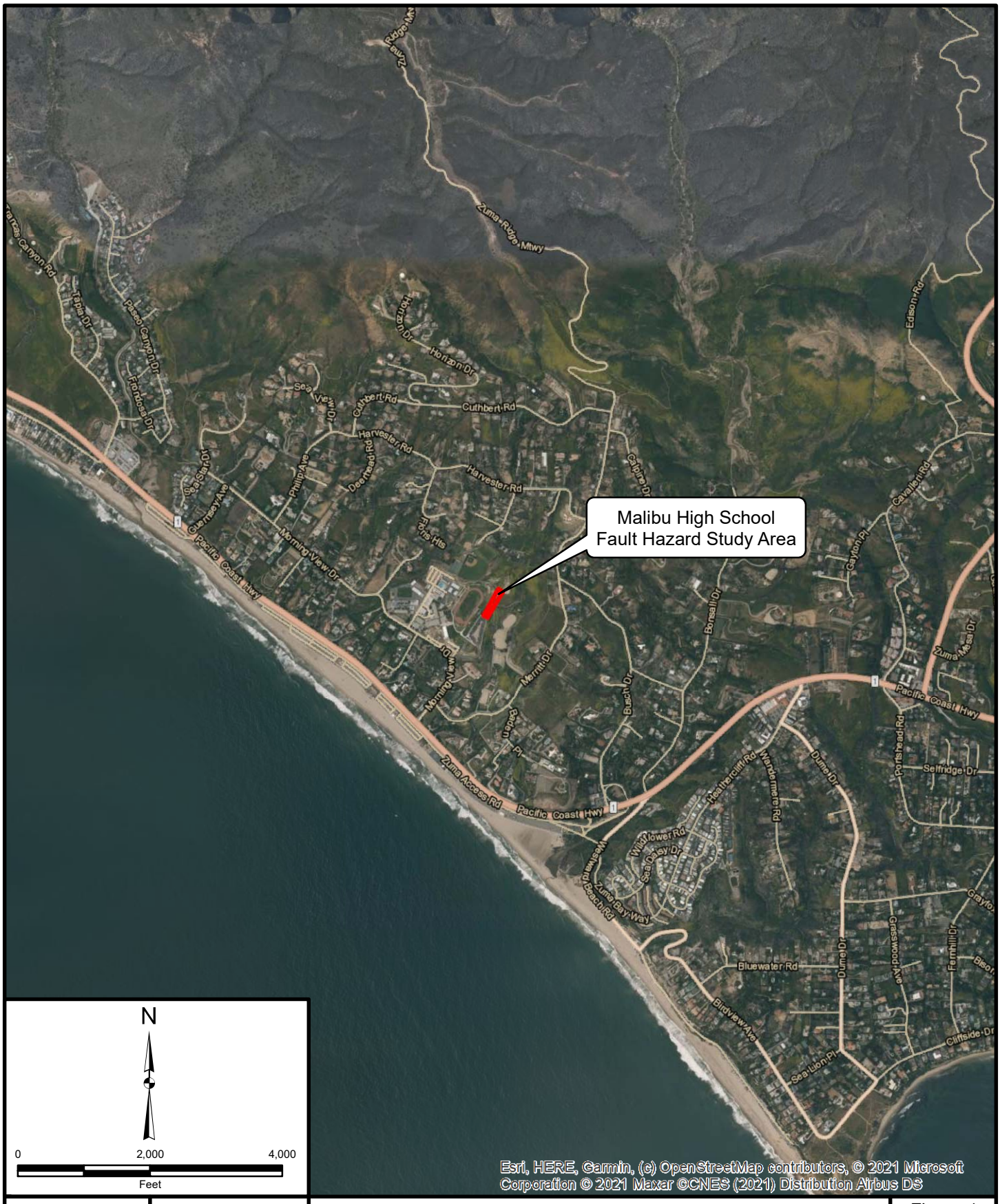
Treiman, J.A., 1994, Malibu Coast fault, Los Angeles county, California: California Department of Conservation, Division of mines and Geology Fault Evaluation Report FER-229, in Fault Evaluation Reports Prepared Under the Alquist-Priolo Earthquake Fault Zoning Act, Region 2 – Southern California: California Geological Survey CGS CD 2002-02 (2002).

Treiman, J.A., Compiler, 2000, Fault number 99, Malibu Coast fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults. Accessed: 2021/01/28.

United States Department of Agriculture, Aerial Photography from 1928; Flight C-300, Frame Nos. H-70-72, H-84-88; now housed at the University of Santa Barbara Library for Aerial Photography.

FIGURES AND PLATES

Leighton



Project: 11382.020	Eng/Geol: JAR
Scale:1 " = 2,000 '	Date: March 2021

Base Map: ESRI ArcGIS Online 2021
Thematic Information: Leighton
Author: Leighton Geomatics (btran)

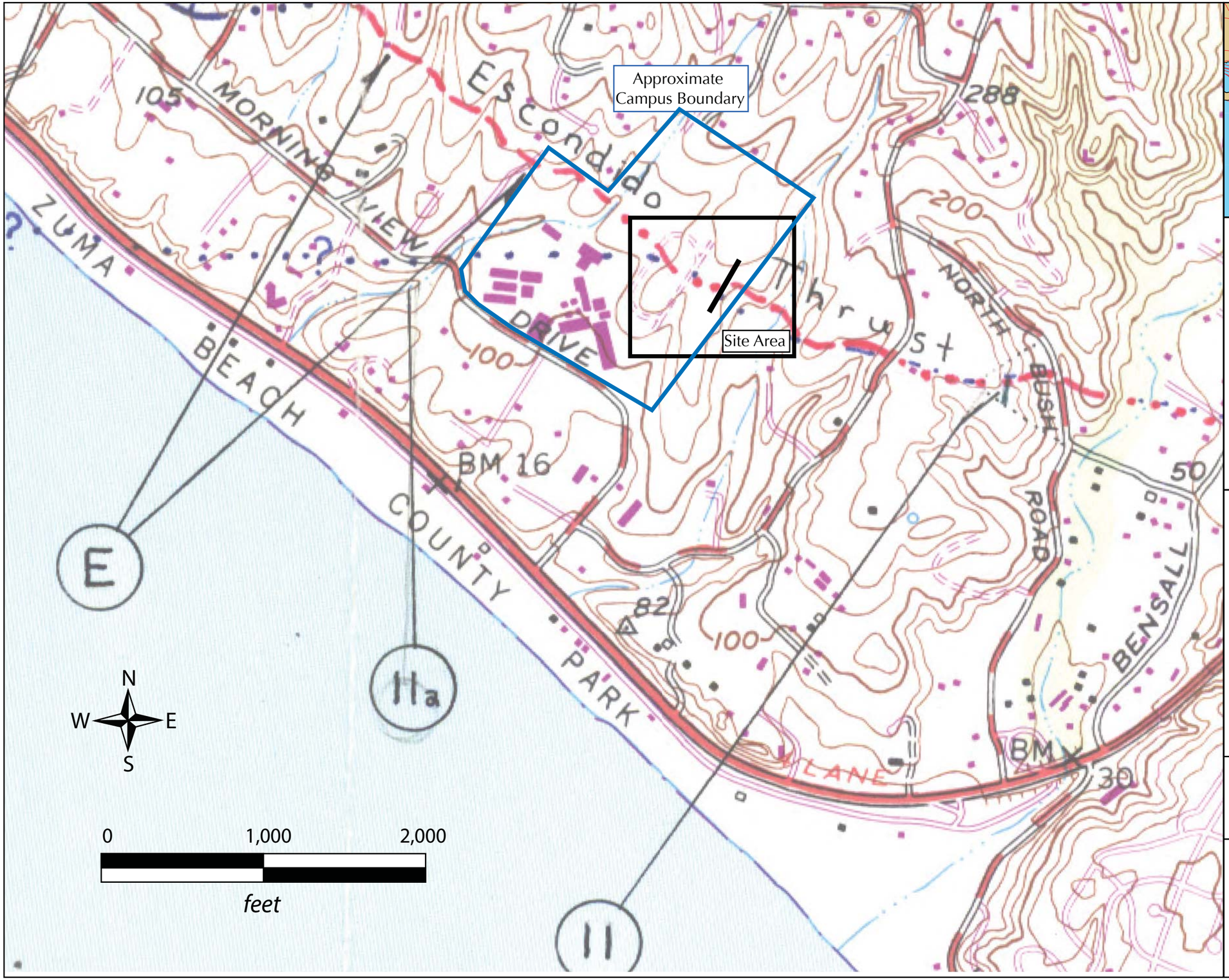
SITE LOCATION MAP

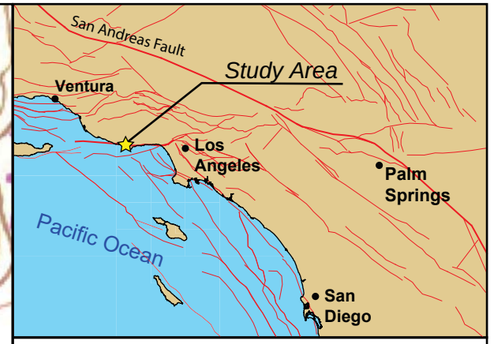
Fault Rupture Hazard Investigation
30215 Morning View Drive
Malibu, California

Figure 1

Leighton

Map Saved as V:\Drafting\11382\020\Maps\11382-020_F01_SLM_2021-03-08.mxd on 3/8/2021 2:30:54 PM





EXPLANATION

Mapped Geologic Faults

FER-229, 1994
Faults from Campbell and others (1970); dotted where concealed

FER-229, 1994
Faults from Dibblee and Ehrenspeck (1990-1992); dotted where concealed

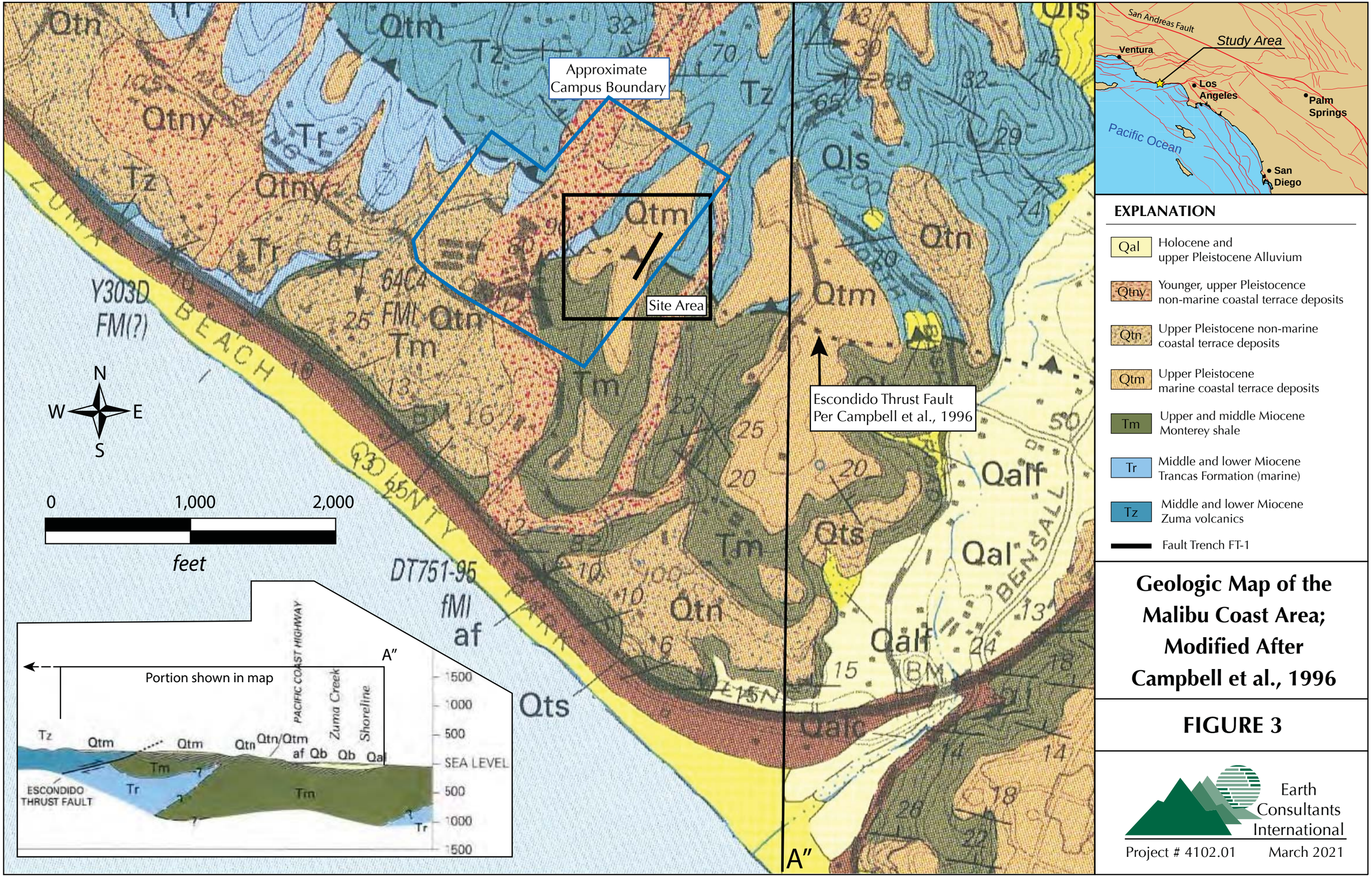
Fault Trench FT-1

Location Map of "Escondido Thrust Fault" Modified After Fault Evaluation Report #229 (Treiman, 1994)

FIGURE 2

Earth Consultants International

Project # 4102.01 March 2021



EXPLANATION

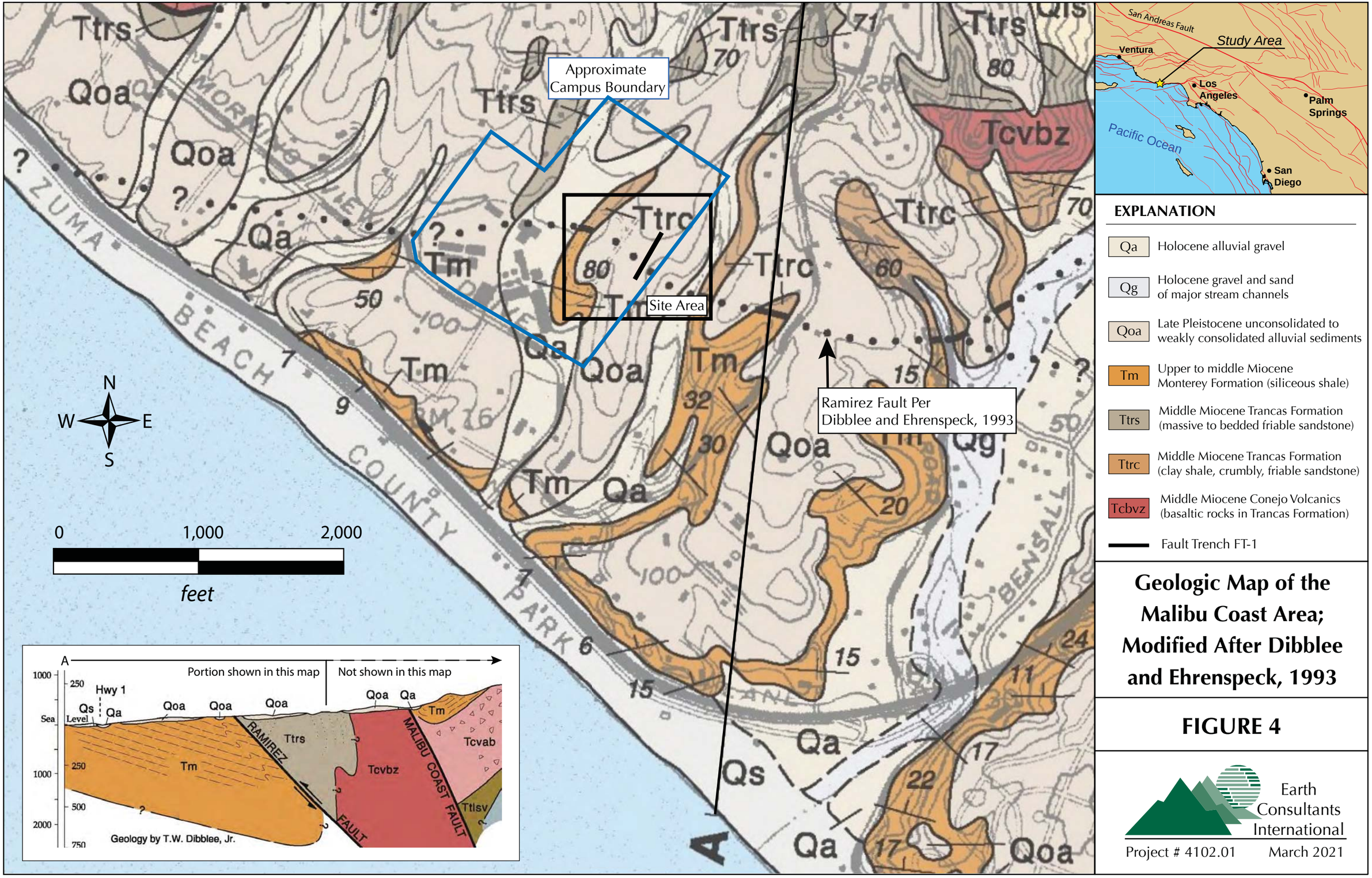
- Qal — Holocene and upper Pleistocene Alluvium
- Qtny — Younger, upper Pleistocence non-marine coastal terrace deposits
- Qtn — Upper Pleistocene non-marine coastal terrace deposits
- Qtm — Upper Pleistocene marine coastal terrace deposits
- Tm — Upper and middle Miocene Monterey shale
- Tr — Middle and lower Miocene Trancas Formation (marine)
- Tz — Middle and lower Miocene Zuma volcanics
- Fault Trench FT-1

Geologic Map of the Malibu Coast Area; Modified After Campbell et al., 1996

FIGURE 3

Earth Consultants International

Project # 4102.01 March 2021



EXPLANATION

Qa	Holocene alluvial gravel
Qg	Holocene gravel and sand of major stream channels
Qoa	Late Pleistocene unconsolidated to weakly consolidated alluvial sediments
Tm	Upper to middle Miocene Monterey Formation (siliceous shale)
Ttrs	Middle Miocene Trancas Formation (massive to bedded friable sandstone)
Ttrc	Middle Miocene Trancas Formation (clay shale, crumbly, friable sandstone)
Tcbvz	Middle Miocene Conejo Volcanics (basaltic rocks in Trancas Formation)
—	Fault Trench FT-1

Geologic Map of the Malibu Coast Area; Modified After Dibblee and Ehrenspeck, 1993

FIGURE 4

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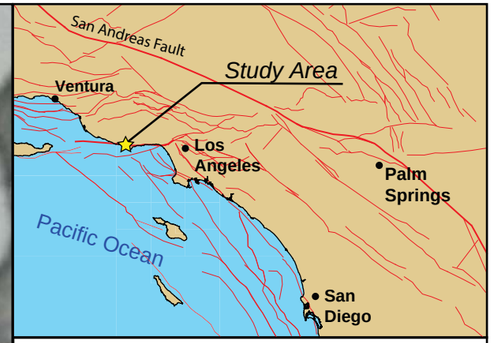
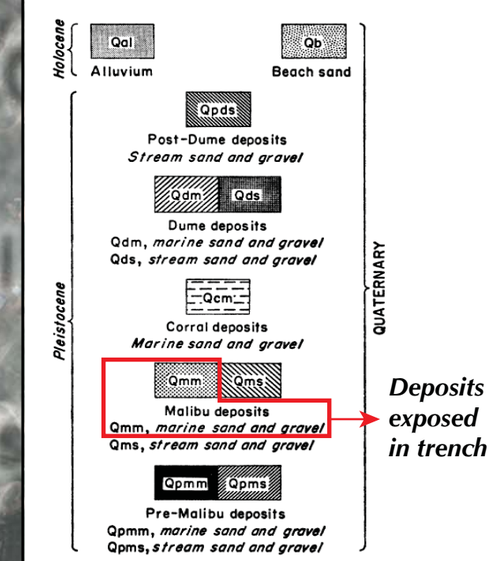
Basemap: Bing (2020)



EXPLANATION

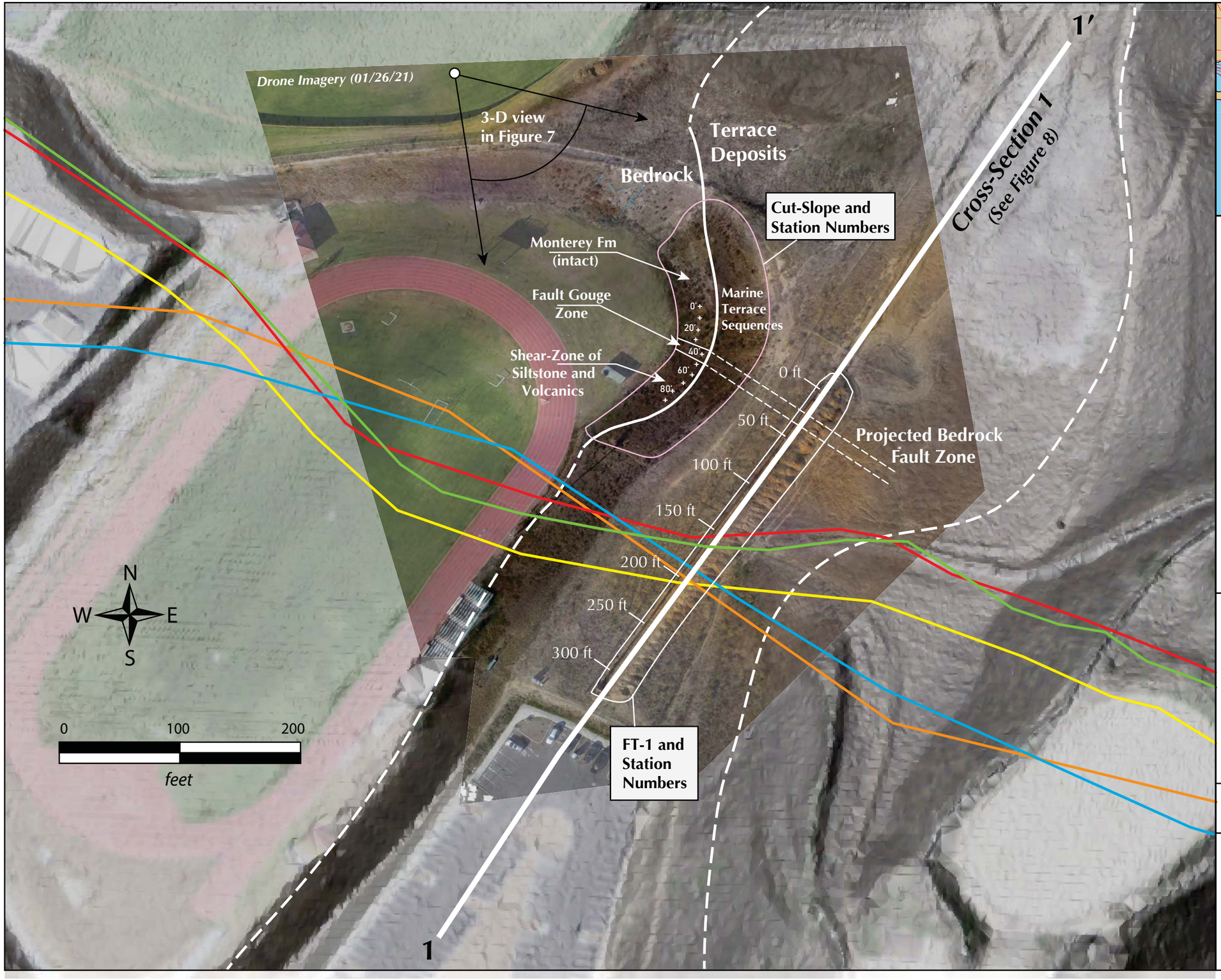


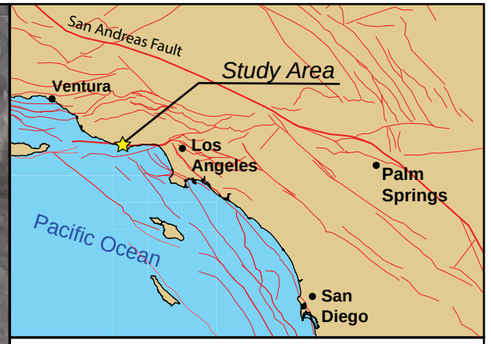
Quaternary Geology of the Malibu Coast Area; Modified After Birkeland, 1972

FIGURE 5

Earth Consultants International

Project # 4102.01 March 2021





EXPLANATION

Mapped Geologic Faults

- FER-229, 1994 *(after Campbell, 1970)*
- FER-229, 1994 (after Dibblee, 1990)
- Dibblee, 1993
- Campbell et al. 1996
- USGS qfaults, 2014

Basemaps: GoogleEarth2019

Airborne LiDAR (2019)
Source: OpenTopography.org

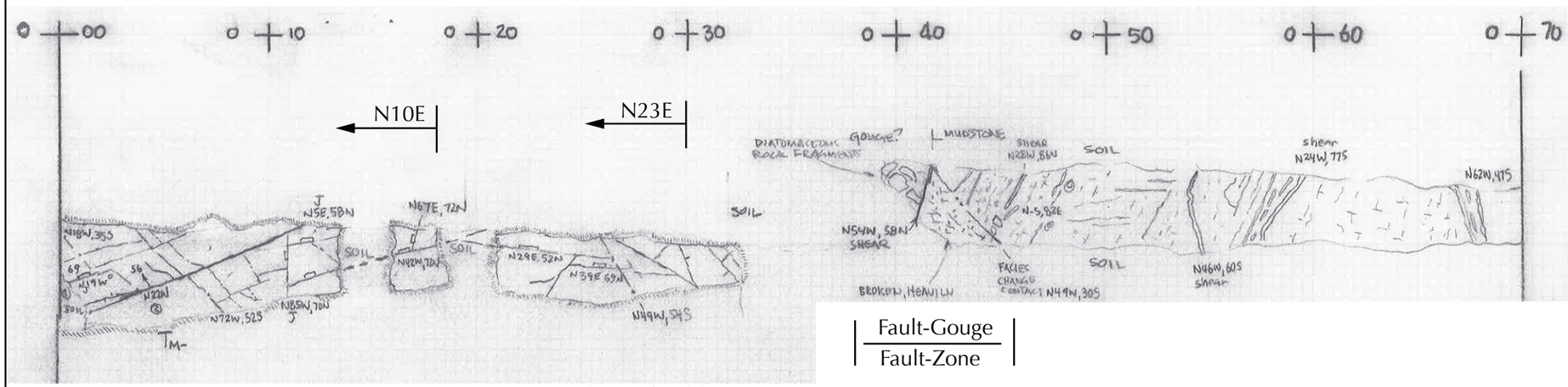
Drone Imagery (01/26/2021)

Location Map of FT-1, Cut-Slope, Cross-Section 1, and Previously Mapped Faults; Malibu High-School, CA

FIGURE 6

Earth Consultants International

Project # 4102.01 March 2021



Fault-Gouge
Fault-Zone

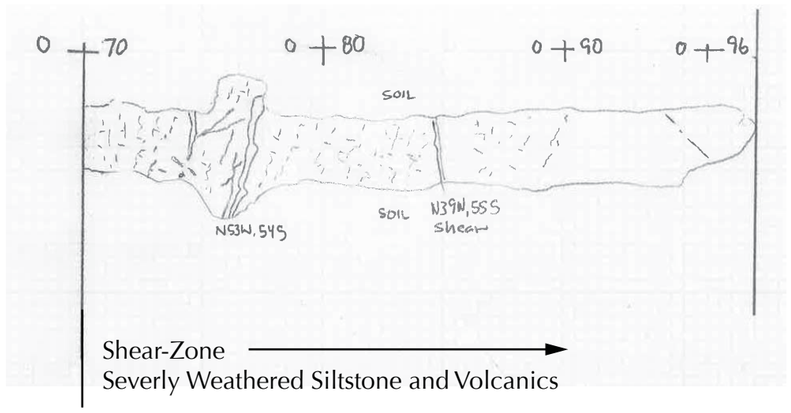
Diatomaceous
Lamiated
Very Hard

Becomes Massive

Becoming More
Intensly Fractured

Soil Filled Cracks and Wedges,
Rock Relatively Soft

Shear-Zone
Facies Change
Severly Weathered Siltstone and Volcanics



Shear-Zone
Severly Weathered Siltstone and Volcanics

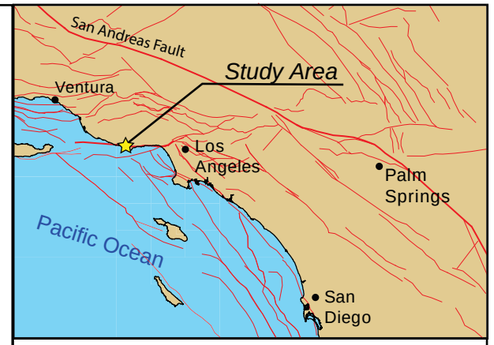
Symbols

Bedding Laminations

Joint

Fault

Concretions



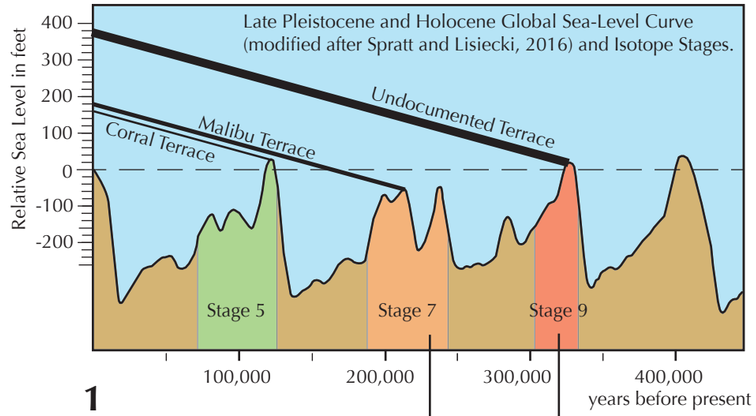
Log of Cut-Slope
(0′ - 96′)

FIGURE 7

Earth Consultants International

Project # 4102.01 March 2021

Cross-Section 1



Fault locations as mapped by other authors:

Dibblee, 1993

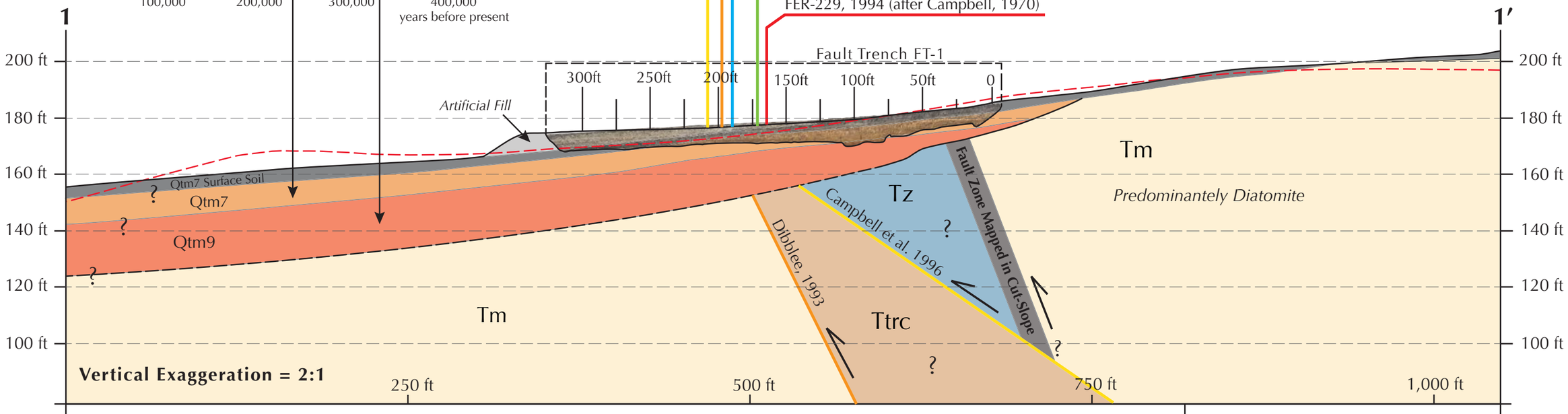
FER-229, 1994 (after Dibblee, 1990)

Campbell et al. 1996

USGS qfaults, 2020

FER-229, 1994 (after Campbell, 1970)

Southwest ⟷ Northeast



EXPLANATION

Marine Terrace Deposits

- Stage 7 — Qtm7 Surface Soil
- Stage 7 — Qtm7
- Stage 9 — Qtm9

Bedrock Units

- Tm — Upper Miocene Monterey Fm
- Tz — Middle and Lower Miocene Zuma Volcanics ***after Campbell et al. (1996)***
- Ttrc — Middle Miocene Trancas Formation (clay shale, crumbly, friable sandstone) ***after Dibblee (1993)***

Topography Lines

- 1928 Topography (based on 1928 aerial photos)
- 2019 Topography (based on 2019 airborne LiDAR; Source: OpenTopography.org)

FIGURE 8

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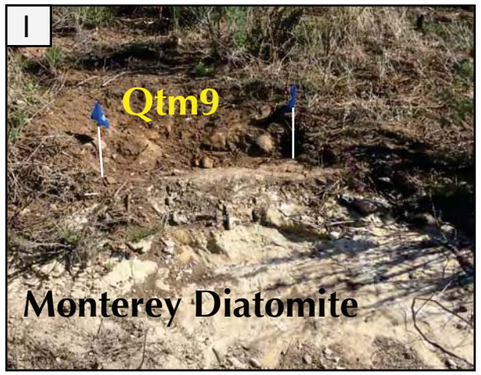
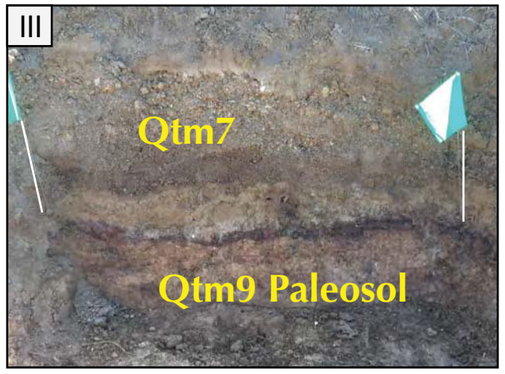
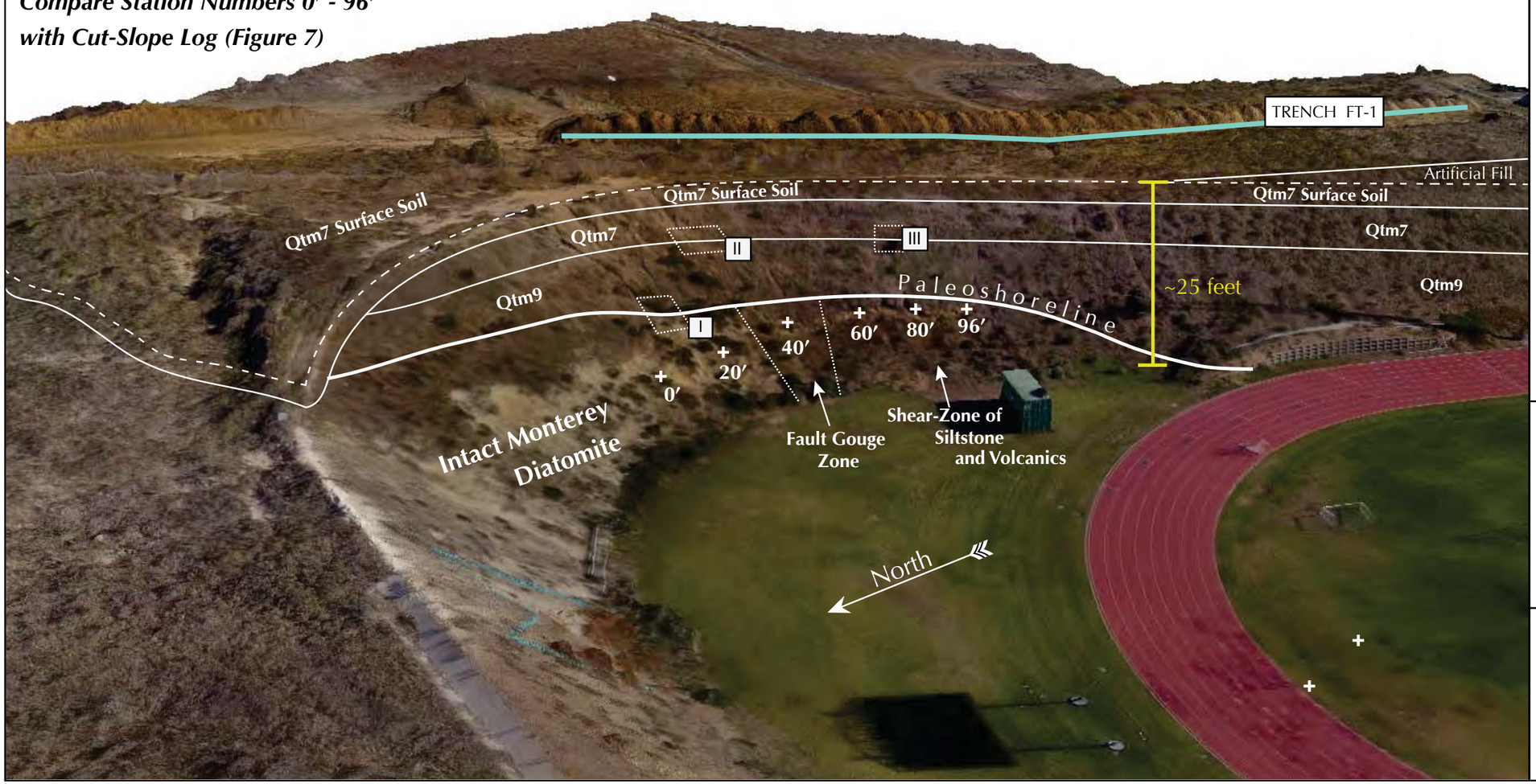




Compare Station Numbers 0′ - 96′ with Cut-Slope Log (Figure 7)



3-Dimensional Photo Model Showing Results of Cut-Slope Mapping Alongside Trench FT-1

FIGURE 9

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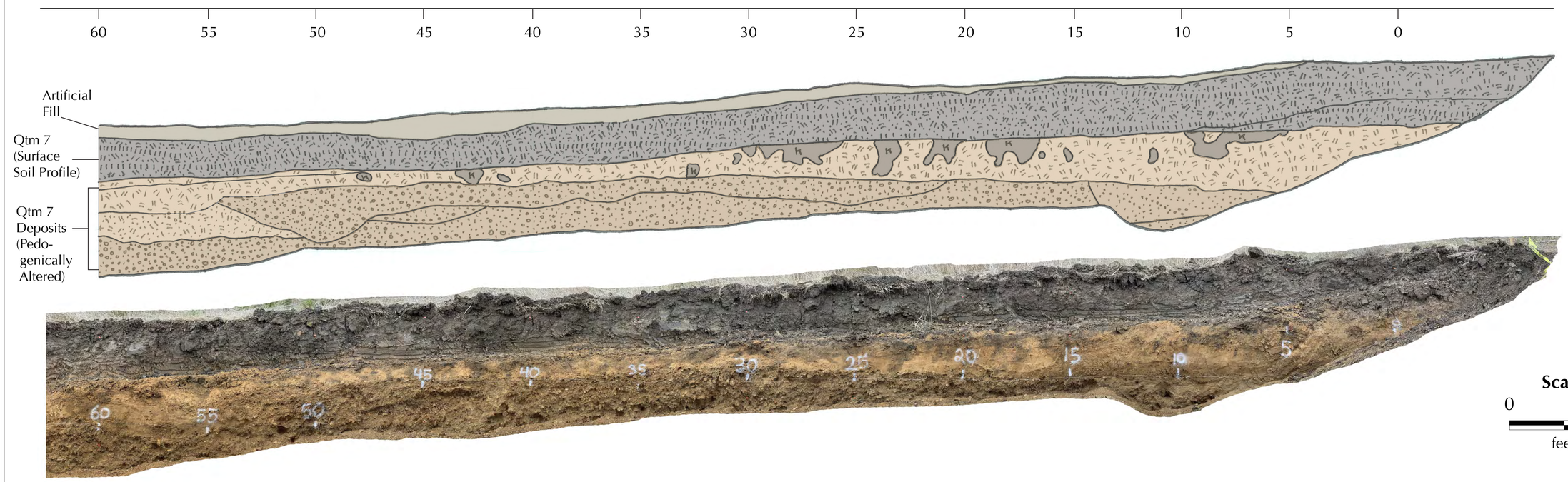
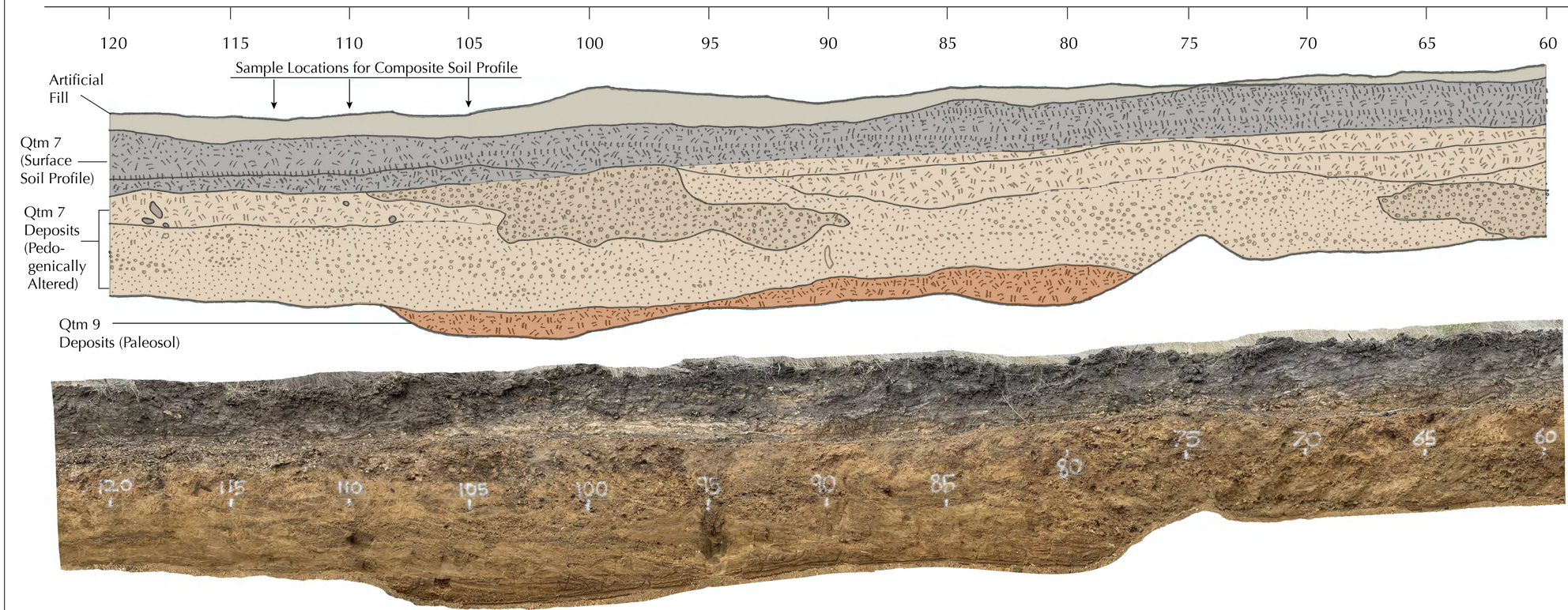


See Plate 3 for Full Explanation of Units



Log and Photomosaic

of Trench FT-1

0 - 60 Feet (Top)

60 - 120 Feet (Bottom)

PLATE 1

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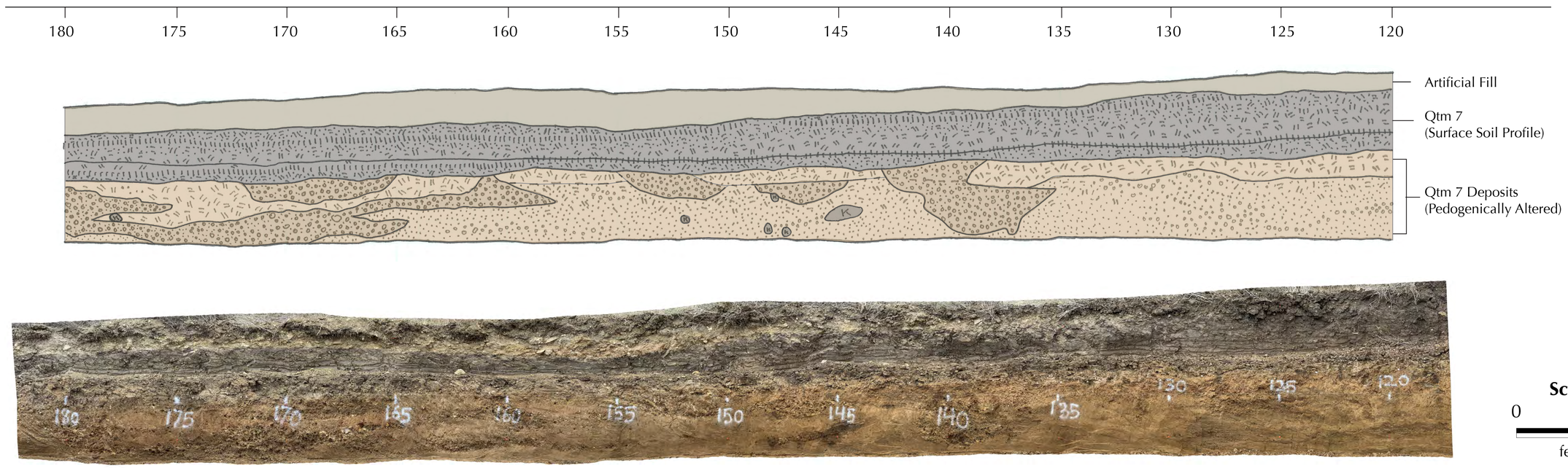

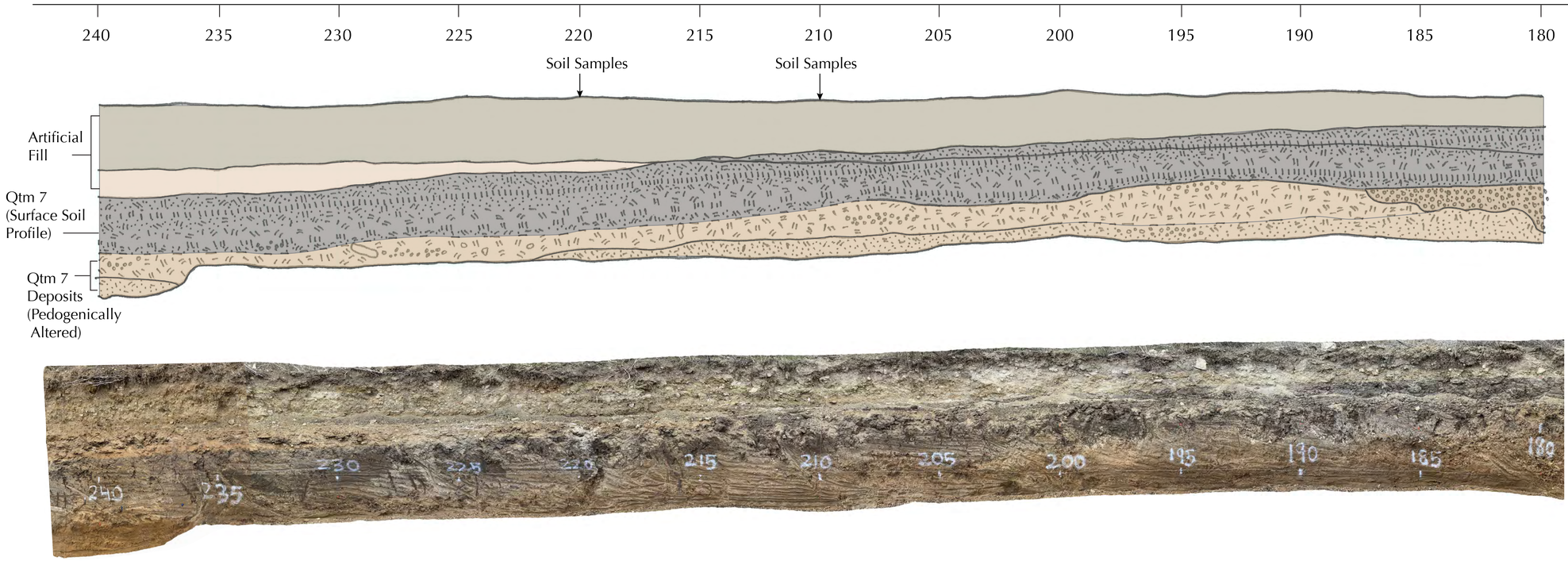

Log and Photomosaic

of Trench FT-1

120 - 180 Feet (Top)

180 - 240 Feet (Bottom)

PLATE 2

See Plate 3 for Full Explanation of Units

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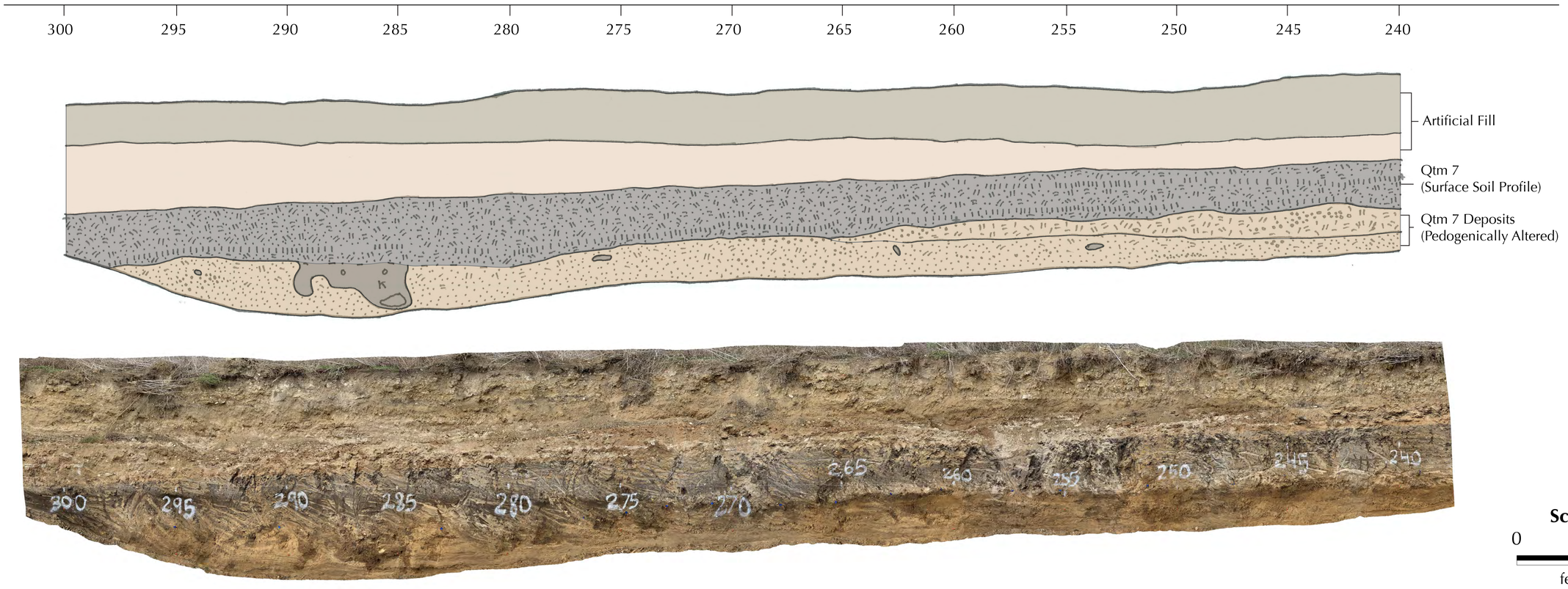
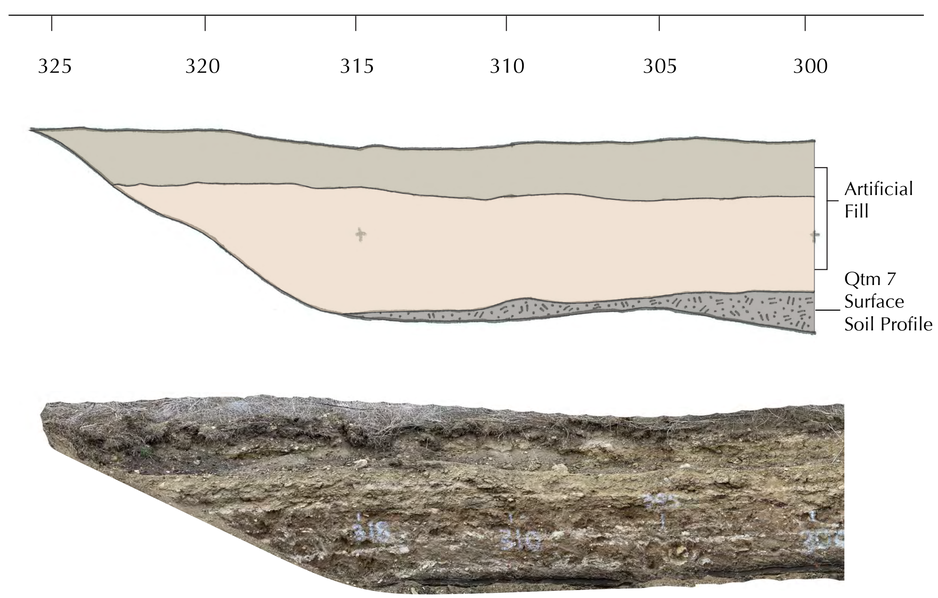


Scale

0 5

feet



EXPLANATION

(See Attachment for Full Description of Soils)

Artificial Fill Units

- Af 1
- Af 2

Marine Isotope Stage 7

- Qtm 7 (Surface Soil Profile)
- Qtm 7 (Pedogenically Altered Sediments)
- Qtm 7 (Channel)
- Krotovina

Marine Isotope Stage 9

- Qtm 9 (Paleosol)

Symbols

- Clay
- Silt
- Sand
- Gravel
- Sharp Contact
- Approximate Contact
- Gradual Soil Contact

Log and Photomosaic of Trench FT-1

240 - 300 Feet (Top)

300 - 320 Feet (Bottom)

PLATE 3

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Attachment to Plates 1 through 3

Descriptions of Soils Exposed in Trench 1

Samples collected for this stratigraphic profile were collected at various stations throughout the trench. A majority of these samples were collected between stations 105 and 113 because this section of the trench exposed the entire stratigraphic profile, from the surface A soil horizon down to the fine sands of the C horizon. The profile had to be collected in three separate segments due to the lack of lateral continuity of some of the units, in particular the gravel lenses and channel deposits. These channel deposits incise into the Bt4, Bt5, and Bt6 package, as well as into the BC horizon below, creating an unconformity.

In addition to the samples mentioned above, three additional soil samples were collected at various trench stations to check for lateral variations of the units.

Sampled Station (ft)	Depth (ft)	Soil Horizon	Description
Qtm 7: Surface Soil			
@110	0 - 0.5, (±0.1)	A	**SANDY CLAY**; very dark grayish brown (10YR 3/2) to very dark brown (10YR 2/2) with very dark grayish brown (10YR 3/2) clay films when dry, very dark brown (10YR 2/2) with very dark brown (10YR 2/2) clay films when moist; weak to moderate medium subangular blocky breaking to weak fine subangular blocky soil structure and single grained; hard to very hard when dry, firm when moist, very sticky and very plastic when wet; few thin clay films coating clasts and lining clast pockets; <10% subangular to subrounded, slightly weathered Monterey shale, fine grained igneous, fine-gravel-sized clasts up to 1 inch; no reaction to hydrochloric acid; many fine roots and rootlets; many pinhole-sized pores up to 1 inch; smells organic; clear wavy lower boundary.
@110	0.5-1.6, (±0.3)	Bt1	**SANDY CLAY**; very dark grayish brown (10YR 3/2) with very dark gray (10YR 3/1) clay films when dry, very dark brown (10YR 2/2) with black (10YR 2/1) clay films when moist; strong very coarse angular blocky breaking to strong medium to coarse angular blocky soil structure; very hard to extremely hard when dry, firm when moist, very sticky and very plastic when wet; common thin clay films on ped faces and coating clasts, common to many moderately thick to thick clay films lining clast pockets; 5% subangular, fine to medium slightly weathered to weathered gravel-sized clasts of Monterey shale; no reaction to hydrochloric acid; common to many fine roots, common to many pinhole-sized pores; clear to gradual wavy lower boundary.

Sampled Station (ft)	Depth (ft)	Soil Horizon	Description
@110	1.6 -2.1, (±0.2)	Bt2	**SILTY CLAY** to **CLAY**; very dark grayish brown (10YR 3/2) with very dark gray (10YR 3/1) to black (7.5YR 2.5/1) clay films when dry, very dark brown (10YR 2/2) with black (10YR 2/1) clay films when moist; strong coarse angular blocky breaking to strong medium angular blocky soil structure; very hard to extremely hard when dry, very firm to extremely firm when moist, sticky to very sticky and plastic to very plastic when wet; common thin clay films on ped faces and coating clasts, common to many moderately thick to thick clay films lining clast pockets; <10% subrounded to subangular gravel-sized clasts up to 1 inch consisting of weathered chert and siliceous shale; no reaction to hydrochloric acid; few to common fine roots; common pinhole-sized pores; clear to gradual wavy lower boundary.
110	2.1 -2.5 (±0.1)	Bt3	**SILTY CLAY**; brown (7.5YR 4/4 to 4/3) with very dark grayish brown (10YR 3/2) to dark brown (7.5YR 3/2) clay films when dry, strong brown (7.5YR 4/6) with dark grayish brown (10YR 3/2) clay films when moist; strong very coarse angular blocky breaking to strong medium coarse angular blocky soil structure; very hard to extremely hard when dry, very firm to extremely firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces, few to common thin to moderately thick clay films coating clasts, many thick clay films lining clast pockets; ±10% unweathered to weathered, subangular to subrounded, coarse-sand- to fine-gravel-sized clasts and few medium-gravel-sized clasts of Monterey siltstone; calcium carbonate coatings on ped faces; matrix has no reaction to hydrochloric acid; few fine roots and rootlets; few to common pinhole-sized pores; clear, wavy lower boundary.
105	2.5 - 3.3 (±0.2)	Btk	**SANDY CLAY LOAM** to **SANDY CLAY**; brown (7.5YR 5/4) with dark brown (7.5YR 3/3) clay films when dry, brown to strong brown (7.5YR 4/5) with very dark brown (7.5YR 2.5/2) clay films when moist; strong very coarse angular blocky breaking to moderate to strong fine to medium angular blocky soil structure; very hard to extremely hard when dry, firm to very firm when moist, very sticky and plastic when wet; common moderately thick clay films on ped faces, common to many thin to moderately thick clay films coating clasts, common thin to moderately thick clay films lining clast pockets; ±15% weathered to grussified, rounded, fine-gravel- up to 1-inch-sized clasts of Monterey siltstone, granitics, chert, and

Sampled Station (ft)	Depth (ft)	Soil Horizon	Description
			volcanics; calcium carbonate coatings on ped faces, matrix has a slight reaction to hydrochloric acid; organic staining; very few to few fine rootlets; few to common pinhole-sized pores; abrupt to clear wavy lower boundary.
113	2.5 - 4.3		**GRAVEL** in a **SANDY CLAY** matrix; brown to dark grayish brown (7.5-10YR 4/2) with dark brown to very dark gray to grayish brown (7.5YR 3/1.5) clay films when dry, dark brown (7.5YR 3/2) with very dark brown (7.5YR 2.5/2) clay films when moist; weak to moderate fine subangular blocky breaking to weak very fine subangular blocky soil structure; hard and fragic when dry, firm when moist, very sticky and plastic to very plastic when wet; common moderately thick clay films coating clasts, common moderately thick to thick clay films lining clast pockets; >75% predominately rounded with a few angular, slightly weathered to weathered fine-gravel-sized clasts up to 1 1/3 inches, consisting of Monterey siltstone and volcanics; no reaction to hydrochloric acid; common to many pinhole-sized pores; abrupt wavy to irregular lower boundary. (intraformational channel deposit incised into the surrounding terrace deposits)
Due to the lateral extent of the trench, we collected samples of the Bt4 horizon at multiple locations. This was done to determine if there were lateral variations of this soil horizon.			
105	2.5 - 3.3 (±0.2)	Bt4	**SILTY CLAY**; brown (7.5YR 5/6) with brown (7.5YR 4/3) clay films when dry, brown (7.5YR 4/4) with dark brown (7.5YR 3/3) clay films when moist; strong coarse angular blocky breaking to strong fine angular blocky soil structure; very hard when dry, very firm when moist, very sticky and very plastic when wet; few to common moderately thick to thick clay films on ped faces, common thin to moderately thick clay films coating clasts and lining clast pockets; <5% subrounded coarse-sand- to fine-gravel-sized clasts of predominately Monterey siltstone; thin calcium carbonate coatings, matrix has no reaction to hydrochloric acid; few very fine rootlets; common pinhole-sized pores; abrupt to clear wavy lower boundary.
@210	5.4′	Bt4	**SILT LOAM** to **SILTY CLAY**; brown to strong brown (7.5YR 5/5) with brown (7.5YR 4/2) clay films when dry, strong brown (7.5YR 5/6) with dark brown (7.5YR 3/2.5) clay films when moist; strong coarse angular blocky breaking to strong medium angular blocky soil structure; very hard to extremely hard when dry, very firm when moist, very sticky and very plastic when wet; few thin clay films on ped faces; calcium carbonate

Sampled Station (ft)	Depth (ft)	Soil Horizon	Description
			coatings on ped faces, matrix has no reaction to hydrochloric acid; very few very fine roots and rootlets; very few scattered pinhole-sized pores; abrupt to clear wavy lower boundary.
220	6.5	Bt4	**SILTY CLAY**; yellowish brown to brown (10-7.5YR 5/4) with dark yellowish brown (10YR 4/4) clay films when dry, dark yellowish brown (10YR 4/4) with dark yellowish brown (10YR 3.5/4) clay films when moist; strong coarse prismatic breaking to strong fine subangular blocky soil structure; hard to very hard and fragic when dry, firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces, common thin clay films in lining pores; <10% coarse- sand- to medium-gravel-sized clasts of weathered, porcelaneous and siliceous Monterey Formation siltstone; no reaction to hydrochloric acid; organic staining present; few scattered fine roots.
105	3.9-4.3	Bt5	**SILTY CLAY**; brown (7.5YR 5/4) with brown (7.5YR 4.5/4) clay films when dry, brown (7.5YR 4/3) with brown (7.5YR 4/4) clay films when moist; strong medium angular blocky breaking to weak to moderate fine angular blocky soil structure and single grained; very hard when dry, firm when moist, very sticky and very plastic when wet; common to many thick and few thin clay films on ped faces, few thin clay films lining pores; <5% scattered subrounded coarse sand; no reaction to hydrochloric acid; silica stringers; organic staining; common pinhole-sized pores; clear wavy lower boundary.
105	4.3 - 4.7	Bt6	**SILTY CLAY** to **CLAY**; brown to reddish brown (7.5-5YR 5/4) with dark brown (7.5YR 3/4) clay films when dry, dark strong brown (7.5YR 3/6) with reddish brown to dark reddish brown (5YR 3.5/4) clay films when moist; strong medium angular blocky breaking to strong fine angular blocky soil structure; very hard to extremely hard when dry, very firm when moist, very sticky and very plastic when wet; many to continuous moderately thick clay films on ped faces, few to common thin clay films lining pores; <5% coarse sand-sized grains of weathered volcanics and Monterey Formation siltstone; no reaction to hydrochloric acid; silica coatings on ped faces; organic staining; common to many pinhole-sized pores; abrupt to clear wavy lower boundary.
113	4.3 -5.5	BC1	**SILTY CLAY**; brown (7.5YR 5/4) with very dark gray to dark reddish brown (5YR 3/1.5) clay films when dry, dark yellowish brown (10YR 4/4) with dark brown (7.5YR 3/2) clay films when

Sampled Station (ft)	Depth (ft)	Soil Horizon	Description
			moist; strong very coarse subangular blocky breaking to strong medium subangular blocky soil structure; hard to very hard when dry, firm when moist, very sticky and very plastic when wet; common thin and few moderately thick clay films on ped faces; <5% scattered coarse sand and fine gravel consisting of very weathered phaneritic and felsic igneous clasts; no reaction to hydrochloric acid; very few root casts; few to common pinhole-sized pores; abrupt wavy lower boundary.
113	5.5 - 6.9	BC2	**GRAVEL** in a **SANDY LOAM** matrix; brown (7.5YR 4/2, 5/3, and 5/4) when dry, dark brown (7.5YR 3/3) with dark brown (7.5YR 3/4) clay films when moist; single grained; loose when dry and moist, slightly sticky and slightly plastic when wet; few thin clay films coating clasts; >75% rounded to subangular, slightly weathered to very weathered, fine-gravel- to 1-inch-sized clasts, few larger, consisting of phaneritic and felsic granitics, Monterey Formation siltstone, Santa Monica slate, and red volcanics; no reaction to hydrochloric acid; abrupt wavy lower boundary.
113	6.9 - 8.5	C_{ox}	**SAND**; brown (7.5YR 5/4) when dry, brown to dark brown (7.5YR 4/4-3/4) when moist; weak medium subangular blocky soil structure breaking to single grained; slightly hard when dry, friable when moist, non-sticky and non-plastic when wet; <5% slightly weathered to weathered, subangular, fine-gravel-sized clasts of chert, volcanics, and Monterey Formation siltstone; no reaction to hydrochloric acid; abrupt wavy lower boundary.
Qtm9: Paleosol			
105	8.5	2Btb1	Fine **SANDY CLAY** to **CLAY**; brown to reddish brown (7.5-5YR 5/4) with dark reddish brown (5YR 3/2-3/3) clay films when dry, brown to strong brown (7.5YR 4/4-4/6) with yellowish red (5YR 4/6) to dark reddish brown (5YR 3/3) clay films when moist; strong very coarse subangular blocky breaking to strong coarse subangular blocky soil structure; hard to very hard when dry, very firm when moist, very sticky and very plastic when wet; common thin to moderately thick and few thick clay films on ped faces, few thin clay films coating clasts, and many thin to moderately thick clay films lining clast pockets; <10% scattered coarse-sand- to fine-gravel-sized clasts consisting of subangular, weathered porcelaneous and siliceous Monterey Formation siltstone, chert, and volcanics; no reaction to

Sampled Station (ft)	Depth (ft)	Soil Horizon	Description
			hydrochloric acid; common pinhole-sized pores; lower boundary not observed.
@101	9.5	2Btb1	**SILTY CLAY** to **CLAY**; strong brown (7.5YR 4.5/7) with strong brown (7.5YR 4.5/7) clay films when dry, brown to strong brown (7.5YR 4/4-4/6) with strong brown (7.5YR 4/6) clay films when moist; moderate to strong coarse subangular blocky breaking to moderate medium subangular blocky soil structure; slightly hard to hard when dry, firm when moist, very sticky and very plastic when wet; common to many moderately thick clay films on ped faces; <5% subrounded fine-gravel-sized clasts of Monterey Formation siltstone, chert, and weathered volcanics; no reaction to hydrochloric acid; manganese oxide staining; very few pinhole-sized pores; lower boundary not observed.

Descriptions of Soils Exposed in Cut Slope

In order to link the sediments exposed in the trench to the ones in the cut slope, we exposed and described the same C_{ox} and 2Bt1b horizons at both locations. The "depth" provided here is relative, with the contact between the C and 2Btb1 horizons set as our zero (0) value, and measurements made relative to that contact. The basal marine terrace deposits at the bottom of the paleosol were not exposed in the area of the cut slope that was sampled for the soil profile described here. This unit was exposed approximately 30 feet to the south, also in the cut slope, but not in the area sampled. We include it here for completeness sake, but do not include it in the soil profile descriptions used for the soil-age estimations (Table 1 in the Soils appendix).

Sample Station (ft)	Depth (ft)	Soil Horizon	Description
Qtm 7: surface soil			
0	+0.62	C_{ox}	**SILTY CLAY**; brown to yellowish brown (7.5-10YR 5/4) with brown (10YR 5/3) clay films when dry, dark yellowish brown (10YR 4/4) with brown (10YR 5/3) clay films when moist; strong very coarse subangular blocky breaking to strong coarse subangular blocky soil structure; very hard when dry, very firm when moist, very sticky and very plastic when wet; common to many thin to moderately thick clay films on ped faces; <5% scattered fine-gravel-sized clasts of unweathered to weathered, subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; common manganese oxide staining and nodules; slight organic staining with charcoal fragments; few to common fine roots, rootlets, and root casts; few to common pinhole size pores and ~2 mm root holes; abrupt and smooth to wavy lower boundary.
Qtm 9: Paleosol			
0	-0.85	2Btb1	**SANDY CLAY to CLAY**; reddish yellow to light brown (7.5YR 6/6-6/4) with brown (7.5YR 4/2) and brown (7.5YR 4/3) clay films when dry, strong brown (7.5YR 4/6) with dark brown (7.5YR 3/2) and dark brown to dark reddish brown (7.5-5YR 3/3) clay films when moist; strong coarse to very coarse angular blocky breaking to strong medium to coarse angular blocky soil structure; very hard to extremely hard when dry, very firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces and common to many moderately thick clay films lining clast pockets; <10% coarse-sand- to fine-gravel-sized clasts of weathered, subangular to subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; slight iron oxide staining; few scattered

Sample Station (ft)	Depth (ft)	Soil Horizon	Description
			fine roots and rootlets; few to common pinhole size pores; lower boundary not observed.
0	-2.68	2Btb1	**SANDY CLAY** to **CLAY**; dark reddish brown to dark brown (7.5-5YR 3/2) with brown (7.5YR 5/3) clay films when dry, dark brown (7.5YR 3/2) with brown (7.5YR 4/3) clay films when moist; strong very coarse angular blocky breaking to strong medium angular blocky soil structure; extremely hard when dry, very firm when moist, very sticky and very plastic when wet; many moderately thick to thick clay films on ped faces, few thin clay films in pore linings; <10% coarse-sand- to ½-inch-gravel-sized clasts of weathered, subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; slight organic and manganese oxide staining; common fine roots and rootlets; few pinhole size pores; clear and smooth lower boundary.
0	-4.4	2Btb2	**SANDY CLAY**; grayish brown to brown (10-7.5YR 5/2.5) with brown (7.5YR 4/4) clay films when dry, dark brown (7.5YR 3/4) with dark brown (7.5YR 3/4) clay films when moist; moderate very coarse subangular blocky breaking to moderate medium to coarse subangular blocky soil structure; slightly hard when dry, friable when moist, sticky to very sticky and plastic to very plastic when wet; common thin clay films on ped faces, few thin clay films lining pores, few thin clay films coating clasts, common moderately thick clay films lining clast pockets; 10% coarse-sand- to ½-inch-gravel-sized clasts of weathered, subrounded volcanics, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; mottled; common fine roots; common pinhole size pores and root holes; lower boundary not observed.
0	-6.39	2Btb2	**SANDY CLAY**; brown (10-7.5YR 4/3) with brown (7.5YR 4/3) clay films when dry, dark brown (7.5YR 3/3.5) with dark brown (7.5YR 3/4) clay films when moist; moderate coarse subangular blocky breaking to strong medium subangular blocky soil structure; slightly hard when dry, friable to firm when moist, sticky and plastic when wet; very few thin clay films on ped faces; <10% coarse-sand- to fine-gravel-sized clasts of weathered, subrounded volcanics, chert, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; few fine roots and rootlets; very few scattered pinhole size pores; clear and wavy lower boundary.
0	-8.87	2Btb3	**SANDY CLAY**; brown (7.5YR 5/2-5/3) with dark brown (7.5YR 3/2) clay films when dry, brown (10YR 4/3) with dark brown (7.5YR 3/2) clay films when moist; moderate very coarse subangular blocky breaking to weak to moderate medium to coarse subangular blocky soil structure; very hard to extremely

Sample Station (ft)	Depth (ft)	Soil Horizon	Description
			hard when dry, firm when moist, sticky and plastic when wet; very few thin clay films on ped faces; <10% coarse-sand- to 1-inch-gravel-sized clasts of weathered to very weathered, subrounded to rounded volcanics, Santa Monica slate, and Monterey Formation siltstone; no reaction to hydrochloric acid; organic staining; few to common fine to medium roots and root casts, very few scattered pinhole size pores, abrupt and wavy lower boundary.
40	-9.39	2Btb4	Gravelly **SANDY CLAY LOAM**; yellowish brown (10YR 5/4) with dark brown to dark reddish brown (7.5-5YR 3/3) clay films when dry, brown to dark brown (10Y 3.5/3) with dark brown (7.5YR 3/4) clay films when moist; massive breaking to moderate to strong coarse to very coarse subangular blocky soil structure and single-grained; slightly hard to hard and fragic when dry, friable to firm when moist, sticky and plastic when wet; few to common thin clay films on ped faces; 10 to 25% coarse-sand- to ¾-inch-gravel-sized clasts of slightly weathered to weathered, mostly rounded Santa Monica slate and Monterey Formation siltstone, few angular black volcanic clasts; no reaction to hydrochloric acid; slight iron oxide and manganese oxide staining on clasts; common fine roots and rootlets; very few to few pinhole size pores; lower boundary not observed.
Bedrock			
0	-10.14	R	**SILTY CLAYEY SANDSTONE**; white (2.5Y 8/1), grayish brown (2.5Y 5/2), and dark yellowish brown (10YR 4/6) on weathered surfaces when dry, light gray to pale yellow (2.5Y 7/2.5), weak red (2.5YR 4.5/2), and dark yellowish brown (10YR 4/6) on fresh surfaces when moist; thin to thickly bedded, hard to very hard when dry, firm when moist, slightly sticky and slightly plastic to plastic when wet; strong reaction to hydrochloric acid; manganese oxide staining and nodules; very few scattered rootlets; lower boundary not observed. [Slightly weathered Monterey Formation sandstone forming the marine abrasion platform]

APPENDIX A

SOIL PROFILE DESCRIPTIONS AND SOIL AGE ESTIMATES

Leighton

APPENDIX A:
Soil Profile Descriptions and Soil Age Estimates

Introduction

Undisturbed, in-situ organic materials such as charcoal that could be used to obtain an absolute, numerical age of the soils exposed in the trench and cut slope were not observed. Furthermore, the materials exposed were, based on their topographic and geomorphic position, anticipated to be older than 50,000 years, and thus beyond the upper limits of the radiocarbon dating method. As a result, we relied on non-radiometric dating techniques to estimate the age of the soils underlying the site near the ground surface, and, in more specific terms, within the depth of our exploratory trench and the mapped cut slope. The method used to estimate the age of the soils is described below.

The term soil as used here refers to a natural body of mineral and/or organic material consisting of layers (or horizons) that are different from the underlying geologic material in their "morphological, physical, chemical and mineralogical properties and their biological characteristics" (Birkeland, 1984, 1999). These differences are the result of weathering and the effects of five main soil-forming factors: parent material, climate, slope or topography, organisms, and time (Jenny, 1941). Time is an important factor because the longer a geologic deposit is exposed to the effects of weathering and soil formation, the better developed the soil characteristics become. We take advantage of this factor when estimating the age of a soil.

Methodology

We described the soils observed in the trench and the cut slope to the northeast of the existing football field and track facility using a combination of the characteristics and nomenclature established by the Soil Survey Staff (1975, 1992), the National Soil Survey Center (2012), and Birkeland (1984, 1999). Colors of the soil horizons and geologic layers were based on a comparison of the color of the matrix and clay films in the dry and wet states to color chips in a Munsell Soil Color Chart. Characteristics of the individual soil horizons that we recorded include: 1) texture, i.e., grain size distribution; 2) structure, i.e., whether the soil mass breaks into distinctive peds, or is single-grained; 3) the amount, distribution, and thickness of translocated clay forming films or stains on the soil ped faces and clasts, in pores, and in between sand grains (called bridges); 4) the looseness or induration of the soil peds when dry and moist; and 5) the stickiness and plasticity of the wet soil. Finally, the sharpness and relief characteristics of the contact (or boundary) between horizons observed were also noted. The characteristics of the soils described in the trench excavated for this study, as well as in the previously mentioned cut slope, are summarized in Table A-1 below, and the detailed descriptions of the soil horizons

observed in each exposure are provided at the end of this appendix, and as an attachment to the trench logs (Plates 1 through 3 and attachments).

To estimate the age of a geologic deposit using soil-stratigraphic techniques we compare the characteristics of the soils in question to those of other soils in the region developed in similar parent materials that have been dated using both numerical (such as radiocarbon or optically stimulated luminescence – OSL) and relative (such as age estimation, geomorphic position or level of dissection) dating methods. Because the parent material controls, to a certain extent, the soils that develop on it, the characteristics of the parent material are “subtracted” from the characteristics of the soil being analyzed to develop a realistic estimate of the length of time that a geologic deposit has been subjected to the effects of weathering and soil formation. Field studies have shown that all other conditions being equal, a soil developed in fine-grained sediments is better developed, with increased horizonation and illuviation, than a coarse-grained soil of similar age (Rockwell et al., 1985).

At the site, the geologic deposits (parent material) consist of locally channelized, stratified terrace sediments that, given their characteristics, appear to have been deposited in a high energy, near-shore marine environment. These sediments consist of massive, medium- and coarse-grained sands that are locally cross bedded and contain laterally discontinuous fluvial gravel lenses.

A surface soil and one buried soil or paleosol were recognized within the terrace deposits. These soils were recognized based on their accumulation of secondary (translocated or illuviated) clay forming clay films in argillic (Bt) soil horizons, reddening of the matrix and clay films in many of the deeper horizons, and the accumulation of pedogenic calcium carbonate. As discussed further below, both the surface soil and the buried soil have characteristics that indicate long periods of surface stability and soil formation, with one major depositional event in between that buried what used to be the surface under a thick section of new sediment. The thick section of new sediment buried the paleosol, essentially stopping soil development of that section. With time, once deposition ceased, plants became established on the new ground surface and a new soil began to form. Bioturbation by burrowing organisms and plant roots obliterated any laminations or primary sedimentary structures and incorporated organic matter deep into the new surface soil, as indicated by the dark colors (low values and chromas in the Munsell soil color notations) observed in the upper approximately 2 feet. We used the characteristics of the two soils recognized (the surface soil and the buried soil) to estimate the amount of time that it took for each of these soils to form, and obtain a minimum age for the sediments that these soils formed into.

As indicated above, to estimate the age of the soils, we "subtract" the characteristics of the parent material from the characteristics of the developed soil. The bottom of the trench exposed a sand that we suggest best represents the marine terrace deposits that are the parent material for the overlying soil horizons. However, this sand has colors that indicate some degree of oxidation, so we used colors more typical of unoxidized beach sands. The same sand was used for the analysis of the soils exposed in the cut slope. The parent material used in the analyses is a sand with 10YR hues (5/4 when dry, 4/4 when moist), massive breaking to single-grained soil structure; loose when dry and moist, non-sticky and non-plastic when wet, with no clay films.

To conduct a quantitative comparison with other dated soils, the characteristics of the soil horizons analyzed were assigned numerical values that were then used to calculate the soil's degree of development. We used two of these quantitative methods for this study: Harden's (1982) Soil Development Index (SDI), and Ponti's (1985) Maximum Horizon Index. The SDI values were normalized to a depth of 200 cm to compare the results to equally normalized SDI values presented in the published regression curves used. Both SDI and MHI values have been shown to be useful relative indicators of soil age, with older, better developed soils having higher SDI and MHI values (Harden, 1982; Harden and Taylor, 1983; Rockwell et al., 1984; Rockwell et al., 1990; Bornyasz and Rockwell, 1997). We then compared the soils' SDI and MHI values with the soil age regressions presented in Dolan et al. (1997), which are based on the chronosequences by Rockwell (1983), Rockwell et al. (1985), Harden (1982), and McFadden and Weldon (1987). The MHI and SDI values calculated for the soil profiles analyzed for this study, and the estimated ages of the soils observed in the borings are provided in Table A-2 below.

FINDINGS

Soils and Soil Age Estimates

The trench, as well as the portions of the adjacent cut slope excavated for this study, exposed a sequence of marine terrace deposits. Over time, and as a result of chemical weathering, aeolian inputs of silt and clay, and soil formation (pedogenesis), the original sandy deposits have become finer-grained, with clay and silt dominating the grain-size fraction in the A and B soil horizons described in both the surface and buried soil. Each of these soils is described further below, and the age estimates that we obtained for each soil profile are also provided.

The approximately 7.5-foot-thick **surface soil** exposed in the trench has an A/Bt1/Bt2/Bt3/Btk/Bt4/Bt5/Bt6/BC1/BC2/C_{ox} profile. Colors of these horizons are in the 10YR and 7.5YR hues. The upper A/Bt1/Bt2/Bt3/Btk/Bt4 horizons exhibit low chromas due to reworking and mixing of organic material, in part as a result of human activity (i.e.,

dry farming and/or discing for wildfire management). Texturally, the upper A, all of the Bt, and the BC1 horizons consist of sandy clay, silty clay, and sandy clay loam, whereas the BC2 and C_{ox} horizons consist of gravel with a sandy loam matrix, and sand, respectively. With the exception of the gravelly BC2 horizon, the rest of the profile generally has less than 10% gravel. Structure of the better-developed argillic (Bt) horizons is typically strong coarse to very coarse angular blocky breaking to strong fine to medium angular blocky, but at least one sample also displayed strong medium prismatic structure. Clay films in the argillic section typically occur as few to many thin to moderately thick on ped faces, few to common thin in pores, few to many thin to moderately thick on clasts, and few to many thin to moderately thick in clast pockets. The few clasts observed within the fine-grained horizons of this surface soil are typically slightly weathered to weathered (classified using McFadden et al.'s [1] [1982] descriptions of weathered clasts into Stages I to IV; see footnote), and include porcelaneous and siliceous shale of the Monterey Formation, chert, volcanics, granitics, and slate. The slate fragments are from the Santa Monica slate. All of these rock types crop out in the Santa Monica Mountains to the north of the site, indicating that the mountains are the source for the sediment deposited onsite.

The normalized (to 200-cm depth) SDI value for the surface is 103.62, and its MHI value is 0.6788. Using these values, the soil-age regressions return a minimum age for the surface soil of between 12,600 (using SDI) and 36,900 (MHI) years, a median age of between 38,600 (SDI) and 101,700 (MHI) years, and a maximum age of between 116,900 (SDI) and 273,100 (MHI) years (see Table A-2). The non-normalized SDI value yields age estimates for this soil of 14,400 (minimum), 44,000 (mean) and 132,500 (maximum) years. The minimum ages calculated for this soil are not consistent with its topographic and geomorphic position and are not considered further here. Typically, the normalized SDI- and MHI-derived ages agree closely, with only a 10 to 20% variability. This is not the case for this soil. The MHI-derived age estimates are, in our opinion, a better

[1]**McFadden et al. (1982) Clast Weathering Stages:**

Stage I: Unweathered bedrock, rings sharply to blow of hammer. Mafic rocks exhibiting stage I weathering characteristics are estimated to have been exposed to weathering agents for less than about 1,000 years. Leucocratic (light-colored igneous rocks) exhibiting stage I characteristics are thought to have been exposed to weathering agents for less than about 4,000 years.

Stage II: Slightly weathered bedrock, incipient to moderate surface pitting, fractured, with oxidation rinds greater than 1-2 mm in thickness, yields moderate ring to blow of hammer. Stage II mafic rocks have been exposed to weathering agents for about 4,000 years, whereas stage II leucocratic rocks could have been weathering for as much as about 10,000 years.

Stage III: Substantially weathered bedrock, surface highly pitted, strongly fractured, mafic minerals and feldspars may be strongly altered, clasts can be broken with difficulty by hand, dull sound to blow of hammer. Stage III mafic rocks are estimated to have been exposed to weathering agents for 10,000 to 75,000 years; stage III leucocratic rocks could have been weathering for as much as 400,000 years.

Stage IV: Very strongly weathered bedrock, easily disaggregated by hand into grus; very dull sound when struck with hammer. Stage IV mafic rocks have weathered for more than about 75,000 years; stage IV leucocratic rocks have weathered for more than 400,000 years.

representation of the true age of this soil. This value is based on the characteristics of the better developed argillic soil horizon rather than the entire soil profile. The lower SDI value calculated for this soil appears to be the result of continued input of organic materials into the A soil horizon and the upper argillic soil horizons, resulting in the low chroma values that have overprinted the reddened colors expected in a soil that has been exposed to weathering and soil formation for a long time. Essentially, a younger topsoil is developing on, and at the expense of the relict soil that has been at the surface since the Pleistocene. Thus, using the MHI-derived age estimates, the age of the surface soil is between about 102,000 (median) and 273,000 (maximum) years. These age estimates bracket the age assigned to this Stage 7 terrace, with the formation of the marine abrasion platform occurring during the sea-level highstand ending about 200,000 years ago, and deposition of the marine terrace deposits occurring soon thereafter, approximately 195,000 years ago. The soil began to form as soon as the surface became stable, after the marine terrace sediments were deposited.

The **buried soil** (paleosol) observed in both the trench and in the cut slope north of the trench was locally truncated by erosion, likely as a result of wave action during formation of the marine abrasion platform that preceded the deposition of the marine terrace sediments that buried the paleosol. This truncation is suggested by the observation that the A soil horizon and possibly a small portion of the argillic section are missing from the buried soil profile.

Only the top two feet of the 2Bt1 horizon were exposed in the trench, at its bottom, but this same soil horizon and several underlying argillic soil horizons were exposed in the cut slope. Overall, three argillic (Bt) soil horizons were recognized and sampled, with the thicker horizons divided into two sections and sampled separately, to account for slight differences within the same profile with increasing depth. In the area of the cut slope sampled for the soil-stratigraphic analysis, the deepest argillic horizon was underlain by slightly weathered sandstone assigned to the Monterey Formation (R horizon). Approximately 30 feet to the south of the section of the cut slope that was sampled, the argillic soil horizon sits on a deposit of gravelly sandy clay loam that represents the basal section of the marine terrace sediments that were deposited on top of the marine abrasion platform cut on the underlying bedrock.

The composite paleosol analyzed for this study has a 2Btb1/2Btb2/2Btb3/R profile. The argillic soil horizons have sandy clay to clay textures, 7.5YR hues in the matrix, and 7.5YR and 5YR hues in the clay films. The argillic horizons in the upper 5 feet of the paleosol have moderate to strong coarse to very coarse angular blocky and subangular blocky structure, and translocated clay forms common to many thin to thick clay films on ped

faces, common to many thin to moderately thick clay films lining clast pockets, and few thin clay films lining pores. The argillic horizons have about 5-10% fine-gravel sized clasts of porcelaneous and siliceous Monterey Formation siltstone, Santa Monica slate, chert, and volcanics. These clasts typically display characteristics of weathering Stages I to III. The underlying bedrock consists of bedded clayey sandstone of the Monterey Formation.

The characteristics summarized above yield a normalized SDI value for this paleosol of 96.1, and a MHI value of 0.5843. These values in turn indicate a median estimate for the amount of time this soil was exposed to soil-forming processes at the surface, prior to burial, of between 34,200 (SDI) and 59,800 (MHI) years, and maximum estimates of between 104,200 (SDI) and 166,800 (MHI) years. The non-normalized SDI value of 143.9 yields mean and maximum estimates of length of soil formation of 73,700 and 216,800 years, respectively. In this soil, the SDI and MHI values yield estimates of the length of soil formation that are not as dissimilar as the values calculated for the surface soil above. The average of the non-normalized SDI-, normalized SDI-, and MHI-derived estimates of soil formation are 55,900 (median) and 162,600 (maximum) years. Combined with the estimated age of the surface soil described above, this paleosol is between about 160,000 (median) and 440,000 (maximum) years old. Given that this paleosol pre-dates deposition of the overlying Stage 7 marine terrace deposits, this age range suggests that the paleosol developed on marine terrace sediments that were deposited at the end of either the interglacial that corresponds to Marine Isotope Stage 9 (MIS 9), dated at about 300-325,000 years ago, or MIS 11, dated at about 375-400,000 years ago.

Table A-1: Abbreviated Descriptions for the Soils in Trench T-1 and the Cut Slope

Profile	Thickness (cm)	Texture	Color		Structure	Consistency				Clay Films
			Dry	Moist		Dry	Moist	Wet		
Trench 1										
Surface Soil										
A	15	SC	10YR 3/2	10YR 2/2	1-2msbk->1fsbk+sg	h-vh	fi	vs	vp	1ncl, 1nclpo
Bt1	34	SC	10YR 3/2, 10YR 3/1 cf	10YR 2/2, 10YR 2/1 cf	3vcabk->3m-cabk	vh-eh	fi	vs	vp	2npf, 2ncl, 2-3mk-kclpo,
Bt2	15	SiC-C	10YR 3/2, 10YR 3/1 cf	10YR 2/2, 10YR 2/1 cf	3cabk->3mabk	vh-eh	vfi-efi	s-vs	p-vp	2npf, 2ncl, 2-3mk-kclpo
Bt3	12	SiC	7.5YR 4/6, 10YR 3/2 cf	7.5-10YR4/4 10YR 3/2 cf	3vcabk->3m-cabk	vh-eh	vfi-efi	vs	vp	3mk-kpf, 1-2n-mkcl, 3kclpo
Btk	24	SCL-SC	7.5YR 4/4, 7.5YR 3/2.5cf	7.5YR 4/5, 7.5YR 2.5/2cf	3vcabk->2-3f-mabk	vh-eh	fi-vfi	vs	p	2mkpf, 2-3n-mkcl, 2n-mkclpo
Bt4	18	SiC	7.5YR 5/6, 7.5YR 4/3 cf; 7.5YR 5/5, 7.5YR 4/2 cf; 10YR 5/4, 10YR 4/4 cf	7.5YR 4/4, 7.5YR 3/3 cf; 7.5YR 5/6, 7.5YR 3/2.5 cf; 10YR 4/4, 10YR 3.5/4 cf	3m-cpr->3fabk; 3cabk->3mabk; 2-3csbk->3msbk	vh; vh-eh; h-vh	vfi, vfi, fi	vs; vs; vs	vp; vp; vp	1k+2mkpf; 1npf; 3mk-kpf 2npo, 2nmkcl+clpo, 3mk-kpf
Bt5	12	SiC	7.5YR 5/4, 7.5YR 4.5/4 cf	7.5YR 4/3, 7.5YR 4/4 cf	3mabk->1-2fabk+sg	vh	fi	vs	vp	2-3k+1npf; 1npo
Bt6	12	SiC-C	10YR 5/4, 7.5YR 3/4 cf	10YR 3/6, 7.5YR 3/4 cf	3mabk->3fabk	vh-eh	vfi	vs	vp	3-4mkpf; 1-2npo
BC1	37	SiC	10YR 5/4, 10YR 4/4 cf	10YR 4/4 10YR 3.5/4 cf	3vcsbk->3msbk	h-vh	fi	vs	vp	2n+1mkpf
BC2	43	SL	10YR 4/4, 10YR 4/4 cf	7.5YR 3/4 , 7.5YR 3/4cf	sg	lo	lo	ss	ps	1ncl
C	30	S	10YR5/4	10YR3/6	1msbk->sg	sh	fr	so	po	N/A
Buried Soil 1										**Buried Soil 1**
2Bt1b	15	SC-C	7.5YR 4.5/6, 7.5YR 4/4 cf	7.5YR 4/6, 5YR 4/6-3/4 cf	3vcsbk->3csbk	h-vh	vfi	vs	vp	2n+1kmkpf, 3nmkclpo
2Bt1b	15	SiC-C	7.5YR 4.5/7, 7.5YR 4.5/7 if cf	7.5YR 4/6, 7.5YR 4/6 if cf	2-3csbk->2msbk	sh-h	fi	vs	vp	2-3mkpf
Cut Slope										
Surface Soil										
2Bt1b	50	SC-C	7.5YR 3/4, 7.5YR 3/, 7.5YR 3/4 cf	7.5YR 4/6, 7.5YR 3/2, 5YR 3/3 cf	3cvcabk->3mcabk	vh-eh	vfi	vs	vp	3mk-kpf, 2-3mkclpo
2Bt1b	50	SC-C	7.5 YR 4.5/4, 7.5YR ¾ cf	7.5YR 3.5/4, 7.5YR 3/4 cf	3vcabk->3mabk	eh	vfi	vs	vp	3mk-kpf, 1npo
2Bt2b	62	SC	10YR 4.5/4, 7.5YR 4/4 cf	10-7.5YR 3/4, 7.5YR 3/4 cf	2vcsbk->2m-csbk	sh	fr	s-vs	p-vp	2npf, 1npo, 1ncl, 2mkclpo
2Bt2b	62	SC	10YR 4.5/4, 10YR4/4 cf	10YR 3/4, 10YR 3/4cf	2csbk->2msbk	sh	fr-fi	s	p	v1npf
2Bt3b	85	SC	10YR 4/3, 10YR 3/3 cf	10YR 3/3, 10YR 3/3 cf	2vcsbk->1-2m-csbk	vh-eh	fi	s	p	v1npf
R	9	SCL	2.5Y 8/1, 2.5Y5/2, 10YR 4/6	2.5Y 7/2.5, 2.5Y 4.5/2, 10YR 4/6	m, bedded	vh-eh	fi	ss	ps-p	none

ABBREVIATIONS:

TEXTURE: g = gravelly; S= sand; LS = loamy sand; SL = sandy loam; L = loam; SCL = sandy clay loam; SC = sandy clay; CL = clay loam; Si = silt; SiL = silt loam; SiCL = silty clay loam; SiC = silty clay; C = clay. **STRUCTURE**: Grade: 1 = weak; 2 = moderate, 3 = strong. Class: f = fine, m = medium, c = coarse; vc = very coarse. Type: m = massive; sg = single-grained; gr = granular, cr = crumb, abk = angular blocky, sbk = subangular blocky, pr = prismatic. **CONSISTENCY**: Dry: lo = loose, so = soft, sh = slightly hard, h = hard, vh = very hard, eh = extremely hard. Moist: lo = loose, vfr = very friable, fr = friable, fi = firm, vfi = very firm, efi = extremely firm. Wet: ns = non-sticky, ss = slightly sticky, s= sticky, vs = very sticky; np = non-plastic, sp = slightly plastic, p = plastic, vp = very plastic. **CLAY FILMS**: Abundance: v1 = very few, 1 = few, 2 = common, 3 = many, 4 = continuous. Thickness: n = thin, mk = moderately thick, k = thick. Location: cl = on clasts; clop = in clast pockets, po = in pores, br = forming bridges between grains, pf = on ped faces. -> = breaking to

Table A-2: Length of Time (LofT) the Upper Soils Were Exposed to Soil-Forming Processes at the Ground Surface (rounded to the nearest 100 years) **and Minimum Age of the Section** (rounded to nearest 1,000 years)

Soil	Profile Index	Profile Index Value	95% Predicted Age Confidence Interval		
			Average LofT (years)	Minimum LofT (years)	Maximum LofT (years)
Surface Soil*	MHI	0.68	**101,700**	36,900	**273,100**
	SDI (NN)	111.80	44,000	14,400	132,500
	SDI (N-200)	103.49	38,500	12,500	116,700
Preferred Age of the Surface Soil (rounded to nearest 1,000 yrs)				**102,000 - 273,000**	
Paleosol^	MHI	0.58	**59,800**	23,000	**166,800**
	SDI (NN)	143.90	73,700	24,300	216,800
	SDI (N-200)	96.10	34,200	11,100	104,200
Preferred Length of Soil Formation for the Paleosol (rounded to nearest 1,000 years)				**60,000 – 167,000**	
Preferred Age of the Entire Sedimentary Section Exposed (rounded to nearest 1,000 yrs)				**162,000 - 440,00**	

Abbreviations: MHI = Mean Horizon Index; SDI = Soil Development Index; NN = not normalized; N-200 = Normalized to 200 cm in thickness

Age estimates in **bold** are our preferred values for the age of these soils. Typically given as a range between the minimum and median, or the median and maximum, depending on the characteristics observed and the depth of the soil profile.

Surface Soil* as described from samples collected between stations 101 and 220 in Fault Trench 1.

Paleosol^ as described from samples collected between stations 101 and 113in Fault Trench 1 and in the cut slope.

References

Birkeland, P.W., 1972, Late Quaternary eustatic sea-level changes along the Malibu Coast, Los Angeles, County, California: *Journal of Geology*, Vol. 80, pp. 432-448.

Birkeland, P.W., 1984, Soils and Geomorphology: Oxford University Press, New York, 372p.

Birkeland, P.W., 1999, Soils and Geomorphology: Oxford University Press, Inc., 3rd edition, 430p.

Bornyasz, M.S., and Rockwell, T.K., 1997, Towards a multivariant analysis of over 150 dated soils from central California to northern Baja California: *Geological Society of America*, Abstracts with Programs, Vol. 29, No. 5, p. 45.

Dolan, J.F., Sieh, K., Rockwell, T.K., Guptill, P., and Miller, G., 1997, Active tectonics, paleoseismology, and seismic hazards of the Hollywood fault, northern Los Angeles basin, California: *Geological Society of America Bulletin*, Vol. 109, No. 12, pp. 1595-1616.

Jenny, H., 1941, Factors of Soil Formation: McGraw-Hill, New York, 281p.

Harden, J.W., 1982, A quantitative index of soil development from field descriptions: Examples from a chronosequence in central California: *Geoderma*, Vol. 28, pp. 1-28.

Harden, J.W., and Taylor, E.M., 1983, A quantitative comparison of soil development in four climatic regimes: *Quaternary Research*, Vol. 28, pp. 342-359.

Harrison, J.B.J., McFadden, L.B., Weldon, R.J., 1990, Spatial soil variability in the Cajon Pass chronosequence: Implications for the use of soils as a geochronological tool: *Geomorphology*, Vol. 3, pp. 399-416.

McFadden, L.D., 1982, The impacts of temporal and spatial climatic changes on alluvial soil genesis in southern California: Ph.D. Dissertation, University of Arizona, 430p.

McFadden, L.D., Tinsley, J.C., and Bull, W.B., 1982, Late Quaternary Pedogenesis and Alluvial Chronologies of the Los Angeles Basin and San Gabriel Mountains Areas, Southern California; in Tinsley, J.C., Matti, J.C. and McFadden, L.D., 1982, (editors), Late Quaternary Pedogenesis and Alluvial Chronologies of the Los Angeles and San Gabriel Mountains Area, Southern California and Holocene Faulting and Alluvial Stratigraphy within the Cucamonga Fault Zone: A Preliminary Review: Guidebook, 78th Annual Meeting of the Cordilleran Section of the Geological Society of America, Anaheim, California, April 19-21, 1982, pp 1-13.

McFadden, L.D., and Weldon, R. III, 1987, Rates and processes of soil development on Quaternary traces in Cajon Pass, California: *Geological Society of America Bulletin*, Vol. 98, pp. 280-293.

Muhs, D.R., Wehmiller, J.F., Simmons, K.R., and York, L.L., 2003, Quaternary sea-level history of the United States: *Developments in Quaternary Science*, Vol. 1, pp. 147-183, DOI:10.1016/S1571-0866(03)01008-X.

Munsell Color Charts, 2000, GretagMacbeth, 617 Little Britain Rd, New Windsor, NY 12553.

National Soil Survey Center, 2012, Field Book for Describing and Sampling Soils: U.S. Department of Agriculture, Natural Resources Conservation Service, Version 3.0.

Ponti, D.J., 1985, The Quaternary alluvial sequence of the Antelope Valley, California: Geological Society of America Special Paper 203, pp. 79-96.

Rockwell, T. K., 1983, Soil chronology, geology, and neotectonics of the north-central Ventura Basin, California: Ph.D. Dissertation, University of California, Santa Barbara, 424p.

Rockwell, T.K., 1988, Neotectonics of the San Cayetano fault, California: *Geological Society of America Bulletin*, Vol. 100, pp. 500-513.

Rockwell, T.K., Keller, E.A. and Clark, M.N., 1984, Chronology and rates of faulting of Ventura River terraces, California: *Geological Society of America Bulletin*, Vol. 95, pp. 1466-1474.

Rockwell, T.K., Johnson, D.L., Keller, E.A. and Dembroff, G.R., l985, A late Pleistocene-Holocene soil chronosequence in the central Ventura Basin, Southern California, U.S.A; *in* Richards, K., Arnett, R. and Ellis, S., (editors), Geomorphology and Soils: George Allen and Unwin, pp. 309-327.

Rockwell, T., Loughman, C., and Merifield, P., 1990, Late Quaternary rate of slip along the San Jacinto fault zone near Anza, southern California: *Journal of Geophysical Research*, Vol. 95, No. B6, pp. 8593-8605.

Soil Survey Staff, 1975, Soil Taxonomy: US Department of Agriculture Handbook #436: US Government Printing Office, Washington, DC.

Soil Survey Staff, 1992, Keys to Soil Taxonomy: SMSS Technical Monograph #19: Pocahontas Press, Inc., Blacksberg, Virginia, 5th edition, 556p.

Tinsley, J.C., Matti, J.C. and McFadden, L.D., 1982, (editors), Late Quaternary Pedogenesis and Alluvial Chronologies of the Los Angeles and San Gabriel

Mountains Area, Southern California and Holocene Faulting and Alluvial Stratigraphy within the Cucamonga Fault Zone: A Preliminary Review: Guidebook, 78th Annual Meeting of the Cordilleran Section of the Geological Society of America, Anaheim, California, April 19-21, 1982, 44p.

GEOTECHNICAL EXPLORATION
MALIBU MIDDLE & HIGH SCHOOL CAMPUS PLAN
PHASE I NEW HIGH SCHOOL CORE PROJECT
30237 MORNING VIEW DRIVE,
CITY OF MALIBU, CALIFORNIA

Prepared for

Santa Monica – Malibu Unified School District

2828 Fourth Street
Santa Monica, California 90405-4308

Project No. 11382.016

November 20, 2020

Revised January 15, 2021

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

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November 20, 2020

Revised January 15, 2021

Project No. 11382.016

Santa Monica – Malibu Unified School District
c/o HMC Architects
633 West 5th Street, 3rd Floor
Los Angeles, California 90071

Attention: Ms. Noemi Avila Zamudio,
Deputy Bond Program Manager

Subject: Geotechnical Exploration Report
Malibu Middle and High School Campus Plan
Phase I High School Core Project - Building C
30237 Morning View Drive
Malibu, Los Angeles County, California

In accordance with our proposal, dated June 17, 2020, authorized on July 16, 2020; Leighton Consulting, Inc. (Leighton) has prepared this geotechnical exploration report for the subject project. The purpose of our geotechnical exploration was to evaluate subsurface conditions at the project site and provide geotechnical recommendations to aid in design and construction.

We understand that the subject Phase I High School Core improvements include the demolition of the existing Juan Cabrillo Elementary School campus (11 buildings) and construction of a new Type II-B sprinklered 2-Story 80,000 square foot multi-purpose classrooms building (Building "C") at grade with no subterranean structures planned. Ancillary improvements include perimeter drive access, paved parking, utilities, hardscape and paver construction.

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The Phase I High School Core Project - Building C, as currently proposed, is considered feasible from a geotechnical standpoint. Geotechnical recommendations with respect to earthwork and foundation design are presented in this report.

We appreciate the opportunity to provide our services for this project. We trust that the information contained herein meets the project requirements. If you have any questions or concerns, please contact us at your convenience. The undersigned can be reached at **(866) *LEIGHTON***, specifically at the phone extension and e-mail address listed below.

Respectfully submitted,

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TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION 1

1.1 Description and Proposed Development 1
1.2 Previous Geotechnical Explorations 1
1.3 Purpose and Scope of Work 3

2.0 GEOTECHNICAL FINDINGS 6

2.1 Regional Geologic Setting 6
2.2 Subsurface Conditions 7
2.3 Infiltration 8
2.4 Expansive Soil 9
2.5 Soil Corrosivity 10
2.6 Groundwater 12

3.0 GEOLOGIC-SEISMIC HAZARDS EVALUATION 13

3.1 Faulting 13
3.2 Historical Seismicity 15
3.3 Liquefaction and Lateral Spreading 16
3.4 Seismically-Induced Settlement 16
3.5 Landslides 17
3.6 Flooding 17
3.7 Debris Flows 17
3.8 Slope Softening and Slope Creep 19
3.9 Seiches and Tsunamis 19

4.0 FINDINGS AND CONCLUSIONS 20

5.0 RECOMMENDATIONS 22

5.1 Earthwork 22

5.1.1 Site Preparation and Overexcavation 22
5.1.2 Subgrade Stabilization and Fill Placement 24
5.1.3 Excavation Adjacent to Constructed Footings 26
5.1.4 Temporary Excavations 26
5.1.5 Pipe Bedding and Trench Backfill 27

5.2 Corrosion Protection Measures 28
5.3 Foundations 28

5.3.1 Shallow Spread Footings 28
5.3.2 Modulus of Subgrade Reaction 30
5.3.3 Flagpole-Type Foundations 30

5.4 Seismic Design Parameters 30

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TABLE OF CONTENTS (Continued)

5.5 Slabs-on-Grade 32
5.6 Lateral Earth Pressures 33
5.7 Pavement Design 35
5.8 Additional Geotechnical Services 38

6.0 LIMITATIONS 39

7.0 REFERENCES 41

TABLES

Table 1 – Summary of Percolation Test Results 9
Table 2 – Soil Corrosivity as a Function of Resistivity 10
Table 3 – Sulfate Concentration and Exposure 11
Table 4 – Corrosivity Test Results 11
Table 5 – Soil Geotechnical Properties Synopsis 12
Table 6 – 2019 CBC Seismic Design Parameters (Mapped Values) 31
Table 7 – Site-Specific 2019 CBC Seismic Design Parameters 32
Table 8 – Retaining Wall Design Earth Pressures 33

LIST OF ATTACHMENTS

Figure 1 – Site Location Map Rear of Text
Figure 2 – Regional Geology Map Rear of Text
Figure 3 – Regional Faults and Historic Seismicity Map Rear of Text
Figure 4 – Seismic Hazards Map Rear of Text
Figure 5 – Flood Hazard Zone Map Rear of Text
Figure 6 – Retaining Wall Backfill Rear of Text

Appendix A – Exploration logs
Appendix B – Percolation Test Results
Appendix C – Laboratory Test Results
Appendix D – Seismicity Data
Appendix E – Liquefaction and Seismic Settlement
Appendix F – General Earthwork and Grading Specifications

Plate 1 – Geotechnical Map Rear of Report
Plate 2 – Geotechnical Cross Sections A-A', B-B' Rear of Report

1.0 INTRODUCTION

1.1 Description and Proposed Development

Juan Cabrillo Elementary School (JCES) campus is located at 30237 Morning View Drive, immediately adjacent to and northeast of the Malibu Middle and High School (MMHS) campus in the city of Malibu, California. Currently, the JCES campus includes 11 classroom/administration buildings, playgrounds, playfields, asphalt paved parking lots, and various other ancillary improvements. The project site location (latitude N34.0251°, longitude -118.8286°) is shown on Figure 1, *Site Location Map*.

Our understanding of the project is based on review of the *Request for Qualifications/Proposals for Geotechnical Services, Malibu Middle & High School Campus Plan: Phase I New High School Core Project*, undated and our previous experience on site as geotechnical engineer of record. The MMHS Campus Plan, to be constructed in four phases (Phases 1, 2, 3, 4a and 4b) beginning in fall of 2022 will redevelop and modernize the existing MMHS campus and JCES to create three distinct areas: Middle School Core, High School Core and shared facilities with all Phases completed by 2030. Implementation of the campus plan will result in eventual demolition of all 11 buildings at JCES and 7 buildings on the MMHS campus.

The Phase I High School Core project (Proposed Building “C”) will be located at the southwest corner of the campus, following demolition of the JCES Campus. We understand Building “C” is currently proposed as a two-story, Type II-B, 2-Story 80,000 square foot multi-purpose building with 25 classrooms, administration offices, supportive services, a library, 6 science labs, Art 3D sculpture and ceramics studio, lunch shelter, and a career center. The planned footprint of Building C improvements are is shown on Plate 1, *Geotechnical Map*.

1.2 Previous Geotechnical Explorations

Leighton Consulting, Inc. (Leighton) performed a series of previous geotechnical explorations at the MMHS and JCES campuses. Information collected during previous explorations supplemented explorations performed as part of the current study. The locations of previous explorations are presented on Plate 1.

2009: New Administration and Classroom Building: In early 2009, Leighton performed a geotechnical investigation in support of a proposed new administration and classroom building located in the southeastern portion of the campus, fronting Morning View Avenue, along with new bleachers and light poles for the existing football field. The field exploration program consisted of four (4) hollow-stem auger borings (B-1 through B-4) drilled to approximate depths ranging from 5 to 51½ feet below ground surface (bgs). Five (5) previous borings excavated by Associated Soils Engineering, Inc. (ASE, 1999) were incorporated into our analysis. The findings and recommendations were provided in a report dated January 16, 2009 (Leighton, 2009a).

2009-2010: Supplemental Explorations: In late 2009 through 2010, Leighton performed a series of supplemental geotechnical investigations throughout the MMHS campus in support of Parking Lot A, a stormwater collection and disposal system, and infiltration for the existing basketball courts. In total, four (4) additional hollow-stem augers and three (3) test pits were excavated on-site. The results of our findings were presented in a series of addenda to our geotechnical report (Leighton, 2009b through 2009d, and 2010a through 2010b).

2011: Stairway System: In support of a proposed stairway and ramp system located on the slope behind Building E, Leighton performed evaluation consisting of geologic mapping and slope stability analysis. The results of our findings and analysis are presented in a report dated October 10, 2011 (Leighton, 2011).

2016: Parking Lot E Access Road: A supplemental geotechnical exploration was performed for a proposed access road to Parking Lot E, consisting of one bucket auger (LBA-1) advanced to an approximate depth of 80 feet bgs. Subsurface stratigraphy was down-hole logged by our State of California Certified Engineering Geologist and geotechnical recommendations were provided in a report dated September 21, 2016 (Leighton, 2016a).

2016: Building E Replacement: In support of the proposed replacement of Building E, located on the southeast portion of the campus, Leighton advanced three (3) hollow-stem auger borings (LB-1 through LB-3) to depths ranging from 13½ feet to 36½ feet bgs. Findings and recommendations were presented in a report dated November 18, 2016 (Leighton, 2016b).

2017: Addendum 1 to Geotechnical Report, Response to Review Comments, Existing Building E Replacement: The response report was prepared to provide

additional information to California Geological Survey (CGS) regarding slope stability for the 45-foot-high slope located east of Building E. Shear strength parameters and stability analyses were provided to CGS to aid in their review (Leighton, 2017a).

2017: Addendum 2 to Geotechnical Report, Response to City of Malibu Review Comments, Existing Building E Replacement: The response report was prepared to provide additional information to the City of Malibu regarding slope stability for a 45-foot-high slope located east of Building E. Shear strength parameters, seismic coefficients and stability analyses were provided to aid the City to aid in their review (Leighton, 2017b).

1.3 Purpose and Scope of Work

The purpose of our current geotechnical exploration was to evaluate subsurface conditions at the High School Core (JCES) Building C site and provide geotechnical recommendations to aid in design and construction of the project as currently proposed. The scope of this geotechnical exploration included the following tasks:

- **Background Review** – A background review was performed of our previous geotechnical reports and published geotechnical maps related to the project site and vicinity that are contained in Leighton's in-house library. References used in preparation of this report are listed in Section 7.0.

- **Pre-Field Exploration Activities** – Boring locations were marked during a pre-field site reconnaissance. Underground Service Alert (USA) was notified to locate and mark existing underground utilities prior to our subsurface exploration.

- **Field Exploration** – Our field exploration was performed on August 17, 2020, and consisted of drilling eight (8) hollow-stem auger borings (2020 LB-1 through 2020 LB-7 and 2020 LP-1) to depths ranging from 15 to 31½ feet bgs. In addition, six cone penetrometer (CPT) soundings (designated CPT-1 through CPT-6) were advanced to depths ranging from approximately 25 to 52 feet bgs. The approximate locations and depths of subsurface explorations (both current and previous) are shown on Plate 1.

  Soil and bedrock encountered in the borings were logged in the field by a Leighton representative and described in accordance with the Unified Soil

Classification System (ASTM D 2488). During drilling, bulk and relatively undisturbed drive samples were obtained from the borings for geotechnical laboratory testing and evaluation. The relatively undisturbed samples were collected utilizing a Modified California Ring sampler conducted in accordance with ASTM Test Method D 3550. Standard Penetration Tests (SPTs) were performed using a 24-inch-long, 1-3/8-inch I.D. and 2-inch O.D. split spoon sampler. The samplers were driven for a total penetration of 18 inches unless practical refusal, using a 140-pound automatic hammer falling freely for 30 inches in general accordance with ASTM Test Method D 1586. The number of blow counts per 6 inches of penetration was recorded on the boring logs. After completion of drilling the borings were backfilled with tamped soil cuttings. Logs of the hollow stem auger borings and CPTs, both past and present, are included in Appendix A, *Exploration Logs*.

- **Percolation Testing** – Boring LP-1 was converted to a temporary percolation test well upon completion of drilling and sampling. In-situ percolation testing was performed in general accordance with the County of Los Angeles Department of Public Works (LADPW) *Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration* (LADPW, 2017). The results of the percolation testing are presented in Appendix B, *Percolation Test Results*. Refer to the discussion of infiltration rate presented in Section 2.3 *Infiltration*. Upon completion of the percolation testing, the well casing was removed and the boring backfilled with soil cuttings and patched with asphalt concrete (AC) to match existing site conditions.

- **Geotechnical Laboratory Testing** – Visual classification and laboratory testing were conducted on selected samples obtained during our field investigation. The laboratory testing program was performed to determine the geotechnical engineering properties of subsurface materials. The following laboratory tests were performed:

  - Moisture content and dry density (ASTM D2937),
  - Atterberg Limits (ASTM D4318),
  - Direct Shear (ASTM D3080),
  - Consolidation (ASTM D2435),
  - Expansion Index (ASTM D4829),
  - Modified Proctor Compaction (ASTM D1557),

- R-Value (DOT CA Test 301), and
- Soluble sulfate, soluble chloride, pH and minimum resistivity (CTM 417 Part II, CTM 422, and CTM 532/643).

Results of moisture content and dry density testing are presented on the boring logs in Appendix A. Full laboratory test results are presented in Appendix C, *Laboratory Test Results*.

- **Engineering Analyses** – Geotechnical analysis was performed on the collected data to develop conclusions and recommendations for design and construction.
- **Report Preparation** – This geotechnical report presents our findings, conclusions, and recommendations.

2.0 GEOTECHNICAL FINDINGS

2.1 Regional Geologic Setting

The JCES campus is located within a narrow, terraced coastal strip separating the present-day beach from the high and steeper slopes of the Santa Monica Mountains. The Santa Monica Mountains are part of Transverse Ranges Geomorphic Province. The 11 geomorphic provinces in California represent topographic-geologic groupings of convenience based primarily on landforms, characteristics, lithologies, and late Cenozoic structural and geomorphic history. The Santa Monica Mountains thus have certain similarities with the Santa Ynez, San Gabriel, and San Bernardino mountain chains, as well as the offshore Channel Islands. The Transverse Ranges share pronounced topographic and structural east-west trends, in contrast to most major physiographic features of California which trend northwest-southeast or north-south.

Within the Cenozoic era, geologic evidence suggests the Santa Monica Mountains region has undergone two significant periods of crustal deformation, one in the middle Miocene time and a second period in Quaternary time up to the present. The former period was marked by crustal extension, volcanism, and the contemporaneous development of large detachment sheets (Campbell et al., 1996). The latter period encompasses the compressional regime active today. Compression of the western Santa Monica Mountains has resulted along several north-dipping thrust ramps such as the Malibu Coast Fault (e.g., Section A-A' of Campbell et al., 1996), and the Anacapa Fault of the Transverse Ranges province approximately 3 miles offshore from Point Dume. Because the Malibu Coast and Anacapa fault zones are active seismogenic structures close to the site, they are considered to be the most significant geologic structures influencing project design.

The Santa Monica Mountains expose a thick sequence of Cretaceous-age and younger sedimentary and extrusive igneous rocks. The sedimentary section includes sandstones, siltstones, and mudstones. The volcanic rocks include subaerial and subaqueous flows, breccias, and tuffs with reported aggregate stratigraphic thickness exceeding 28,000 feet for the eastern Santa Monica Mountains (Campbell et al., 1996). Close to the site, at least 4,500 to 5,000 feet of mostly marine sediments overlie crystalline metamorphic basement rock, according to well data (Campbell et al., 1996).

Important topographic and geomorphic features found in the Malibu coastal strip include Point Dume, and three principal marine terraces, at elevations from approximately 100 to 250 feet (Birkeland, 1972). The MMHS campus is situated on the middle of the three terraces. The terraces represent wave-cut platforms incised into bedrock or older surficial deposits. They are capped by marine shoreface deposits and non-marine stream terrace alluvium and debris flow deposits. Most of the terrace surfaces near the site have been dissected by erosion to a greater or lesser extent, with subsequent deposition of clastic gravel, sand, silt, and clay in the eroded channels.

2.2 Subsurface Conditions

Presented below is a brief description of the subsurface conditions encountered in the explorations completed at the site. More detailed descriptions of the geologic units encountered are presented on the logs in Appendix A. Subsurface conditions described on the logs represent the conditions at the actual exploratory excavation locations. Other variations may occur beyond and/or between the excavations. Lines of demarcation between the geologic units and the various earth materials on the logs represent approximated boundaries, and (unless otherwise noted) actual transitions may be gradual.

Three geologic units were identified during field exploration, Artificial Fill (Afu), Quaternary Young Terrace Deposits (Qyd) equivalent to Quaternary Old Playa and Estuarine Deposits (Qol of Figure 2), and bedrock of the Tertiary age Monterey Formation (Tm). Campus site development has essentially masked or removed all surface exposures of natural geologic units and structure. Thus, it is not feasible to independently map the distribution of units over the project area. Local geology was developed from the map by the United States Geological Survey (Yerkes and Campbell, 2005). Figure 2, *Regional Geology Map*, illustrates the approximate distribution of geologic units at the site. The geologic profile interpreted from the boring data is presented on Plate 2, *Geologic Cross-Sections A-A', B-B'*.

The encountered geologic units are described below:

Undocumented Artificial Fill (Map Symbol: Afu): In general, artificial fill materials represent a relatively thin veneer across the project area and were encountered at thicknesses ranging from 1 to 7 feet. As encountered in our subsurface explorations, the site artificial fill materials consist predominantly of locally derived dark brown to black clay with minor amounts of olive brown silty

sand. Because there is no readily available documentation regarding the origin or date of placement, it is considered uncertified and is recommended to be removed, reworked and replaced as engineered (certified) fill.

Quaternary Young Terrace Deposits (Map Symbol: Qyd): Beneath the veneer of artificial fill, Quaternary Young Terrace Deposits were encountered in each of our current subsurface explorations. In general, the terrace deposits consist of orange brown, medium stiff to hard clay and sandy clay grading to medium dense to very dense clayey silty sand and sand with varying proportions of siltstone and sandstone bedrock fragments.

Tertiary Monterey Formation (Map Symbol: Tm): Sandstone bedrock of the Tertiary Monterey Formation was encountered at a depth of 45 feet bgs in Boring LB-6 (Plate 1). Borings LB-3 and LB-5 encountered auger refusal at depths of approximately 21 feet and 27 feet bgs, respectively. Auger refusal likely occurred when the borings encountered the underlying bedrock of the Monterey Formation or basal gravel/cobbles at the wave cut interface. Based on previous explorations and regional geologic mapping, Monterey Formation bedrock is known to underlie the entire school campus at varying depths. Limited exposures of Monterey Formation bedrock were mapped during downhole logging and slope mapping as striking northwest to northeast and dipping at approximately 15 to 24 degrees southerly (Plate 1).

2.3 Infiltration

Percolation testing was performed within boring LP-1 to evaluate the infiltration characteristics of subsurface soils. The percolation test was conducted in general accordance with the County of Los Angeles Department of Public Works (LADPW) *Guidelines for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration* document (LADPW, 2017). Results of the percolation testing are presented in Appendix B, *Percolation Test Results.* The test location is shown on Plate 1.

A boring percolation test is useful for field measurements of the infiltration rate of soils, and is suited for testing when the design depth of the infiltration device is deeper than current existing grades, especially in areas where it is difficult to dig test pits, or where the depths of these test pits would be considerably deep. At the subject site, testing consisted of advancing the boring to the invert depth of typical infiltration devices.

The infiltration rate for our tests was calculated by dividing the rate of discharge by the infiltration surface area, or flow area. The volume of discharge was calculated by adding the total volume of water that dropped within the PVC pipe and within the annulus, and incorporating a porosity reduction factor to account for the porosity of the annulus material. The infiltration surface area was based on the average water height within the slotted pipe section of the test well.

Detailed results of the field testing data and measured infiltration rate for the test well are presented in Appendix B. The test result is summarized below:

Table 1 – Summary of Percolation Test Results

Boring	Zone Tested (feet bgs)	Measured Infiltration Rate (inch per hour)
LP-1	10 to 15	0.01

Based on the results of the percolation test performed and the low permeability clay soil that underlies the site, infiltration is not considered feasible according to County requirements (LADPW, 2017).

Dense sand interpreted in CPT's and sampled in several borings are cemented with iron oxide which decreases pore space between particles. As with other areas on this campus these sand zones have been determined to be limited in area representing channelization into the sediments as sea levels lowered over time. Infiltration into these channels may result in seepage downslope and offsite. The site is predominately underlain by expansive clay (lean and fat), infiltration of stormwater may mound due to shallow bedrock and laterally migrate along clay beds or along bedrock contact activating expansive clay. The school discharges wastewater to several septic systems on the campus. Details of the leach fields are unknown and infiltration of stormwater could impact the leach fields. Infiltration of stormwater is not recommended at this site.

2.4 Expansive Soil

Expansive soils contain significant amounts of clay particles that swell considerably when wetted and which shrink when dried. Foundations constructed on these soils are subject to uplifting forces caused by the swelling. Implementation of standard engineering and earthwork construction practices, such as proper foundation design and proper moisture conditioning of earthen fills will reduce the effects associated with expansive soils.

The near surface soils are considered to have a *high to very high expansion potential*. Expansion Index (EI) testing of two representative bulk samples from the upper 5 feet at the site indicate the site soils have an EI of 116 to 134. Upon completion of mass grading of the site, additional expansion testing should be performed to quantify EI values upon completion of grading.

2.5 Soil Corrosivity

Soil Resistivity: In general, soil resistivity, which is a measure of how easily electrical current flows through soils, is the most influential factor for ferrous corrosivity. Based on findings of studies presented in the American Society for Testing and Materials (ASTM) STP 1013 titled "Effects of Soil Characteristics on Corrosion" (February, 1989), an approximate relationship between soil resistivity and soil corrosiveness was developed as shown in Table 2 below.

Table 2 - Soil Corrosivity as a Function of Resistivity

Soil Resistivity (ohm-cm)	Classification of Soil Corrosiveness
0 to 900	Very severe corrosion
900 to 2,300	Severely corrosive
2,300 to 5,000	Moderately corrosive
5,000 to 10,000	Mildly corrosive
10,000 to >100,000	Very mildly corrosive

Sulfate Exposure: Sulfate ions in the soil can lower the soil resistivity and can be highly aggressive to Portland cement concrete by combining chemically with certain constituents of the concrete, principally tricalcium aluminate. This reaction is accompanied by expansion and eventual disruption of the concrete matrix. A potentially high sulfate content could also cause corrosion of reinforcing steel in concrete. Section 1904A of the 2016 California Building Code (CBC) defers to the American Concrete Institute's (ACI's) ACI 318-14 for concrete durability requirements. Table 19.3.1.1 of ACI 318-14 lists "*Exposure categories and classes*," including sulfate exposure as follows:

Table 3 - Sulfate Concentration and Exposure

Soluble Sulfate in Water (parts-per-million)	Water-Soluble Sulfate (SO4) in soil (percentage by weight)	ACI 318-14 Sulfate Class
0-150	0.00 - 0.10	S0 (negligible)
150-1,500	0.10 - 0.20	S1 (moderate*)
1,500-10,000	0.20 - 2.00	S2 (severe)
>10,000	>2.00	S3 (very severe)

*or seawater

Two representative, near surface (0 to 5 feet bgs) bulk soil samples were tested to evaluate corrosion potential. The chemical analysis test results for the onsite soil from our geotechnical exploration are included in Appendix C, *Laboratory Test Results.* The results of chemical analysis are summarized below.

Table 4 - Corrosivity Test Results

Test Parameter	Test Results		General Classification of Hazard
	2020-LB-4 @ 0-5’	2020-LB-6 @0-5’	
Water-Soluble Sulfate-SO_4 in Soil (ppm)	148	235	Negligible to moderate sulfate exposure to buried concrete-S1 Exposure Class
Percent by Weight SO_4	0.148	0.235	
Water-Soluble Chloride in Soil (ppm)	80	240	Non-corrosive to buried concrete (per Caltrans Specifications)
Percent by Weight (Chl^-)	0.080	0.240	
pH	8.14	8.50	Mildly alkaline
Minimum Resistivity (saturated, ohm-cm)	800	945	Very severely corrosive to buried ferrous pipes

Based on geotechnical laboratory testing performed on selected soil samples collected from the site and review of previous laboratory test results, a synopsis of geotechnical properties of the site soils is provided in Table 5 below. Geotechnical laboratory testing results are presented in Appendix C, *Laboratory Test Results.*

Table 5 – Soil Geotechnical Properties Synopsis

Parameters	Soil Properties
In-situ Moisture:	Moist to very moist
In-situ Density:	stiff to hard for cohesive soils and medium dense to very dense for granular soils
Swell/Expansion Potential:	swell/expansion potential is high.
Collapse Potential:	Not susceptible to collapse when wetted
Strength:	Adequate to provide structural support
Corrosivity:	Moderate sulfate attack of concrete but severely corrosive to ferrous metals.

2.6 Groundwater

Groundwater was not encountered during our current investigation to the maximum depth drilled of approximately 46½ feet bgs. However, moist to very moist soils and bedrock were encountered within explored depths. Groundwater was encountered in our 2009 exploration (Leighton, 2009a) within Boring B-3 at a depth of 48½ feet (Elevation +46 feet mean sea level).

Groundwater depth was measured in an existing 4-inch diameter monitoring well (MW-2). The details of well construction are unknown, however the total depth measured was 77.4 feet bgs with a depth to static water level as 58.7 feet bgs corresponding to approximately Elevation (El.) +52 feet mean sea level (msl). The location of the monitoring well installed by others is shown on Plate 1.

Seasonal fluctuations should be expected during periods of intense localized rainfall. Groundwater is not expected to pose a constraint to construction.

3.0 GEOLOGIC-SEISMIC HAZARDS EVALUATION

Geologic and seismic hazards include surface faulting, seismic shaking, liquefaction and lateral spreading, seismically-induced settlement, landslides, flooding, and seiches and tsunamis. The following sections discuss these hazards and their potential impact at the project site.

3.1 Faulting

Based on our review of aerial photos, geologic and topographic maps including fault evaluation reports, no active faults or lineaments are known or mapped as crossing the project site (Hart and Bryant, 2007). The site is not situated on a pressure ridge, active geologic fault or active fault trace. As such the potential for fault rupture at the site is considered low during the life of the school, the student risk factor is therefore also considered low. The site is in close proximity (less than 5 miles) to two significant active faults that include the onshore Malibu Coast Fault and offshore Anacapa Fault. Both faults consist of slanted, north-dipping shear planes accommodating north-over-south crustal shortening in the present-day compressional stress field. Regional faults are shown on Figure 3, *Regional Fault and Historical Seismicity Map*.

Malibu Coast Fault: The closest active zoned fault to the site is the Malibu Coast Fault. The surface trace is located approximately 1.1 miles north of the site at its closest approach. The fault exhibits left-lateral oblique displacement, with a reported vertical slip rate component of about 0.4 millimeters per year (Lajoie et al., 1979) and a horizontal slip rate component of 0.3 millimeters per year (Petersen et al., 1996). The entire 23-mile-long fault zone is considered to be a potential source in the present statewide probabilistic seismic hazard model, and is considered capable of generating a maximum moment magnitude earthquake of 6.7 (Petersen et al., 1996).

Anacapa Fault: The offshore Anacapa Fault is located approximately 5 miles south of the site. Relatively little detailed knowledge exists regarding its average late Quaternary slip rate or total offset. It is apparent, however, from both oceanic sub-bottom reflection profiles (Greene and Kennedy, 1987), and historical seismicity that the fault is properly classified as active. Peterson et al. (1996) assigns a poorly constrained slip rate of 3.0 millimeters per year and a calculated maximum moment magnitude earthquake of 7.3 to this 46-mile-long fault.

The fault classification criteria adopted by the California Geological Survey (CGS) defines Earthquake Fault Zones along active or potentially active faults in accordance with the Alquist-Priolo Earthquake Fault Zoning Act of 1972. Thus, an active fault is one that has ruptured during Holocene time (the last 11,700 years). A fault that has ruptured during the last 1.8 million years (Pleistocene time) but has not been proven by direct evidence to have not moved within Holocene time is considered to be potentially active. A fault that has not moved during both Pleistocene and Holocene (Quaternary) time (that is no movement within the last 1.8 million years) is considered inactive. Review of the State of California Earthquake Fault Zones map for the 7.5 Minute Point Dume Quadrangle (CGS, 1994) indicate the site is not within an Alquist-Priolo Earthquake Fault Zone, consequently the State does not require a fault investigation.

Potentially Active Faults: The City of Malibu has employed a stricter, more conservative standard for fault surface rupture hazards. This standard was derived from the 1990 Seismic Safety Element for Los Angeles County, and was modified after CGS evaluated the Malibu Coast Fault Zone in 1994. As part of the City's requirements, any structures (habitable) within 500 feet of faults, regardless of activity, as mapped within CGS (1994) should be evaluated.

While not currently mapped as active zoned faults by the State of California, The Escondido Thrust Fault and Paradise Cove Fault are potentially active faults that are both mapped as traversing the campus of MMHS. The approximate locations of these features, inferred or interpreted by others as faults and/or depositional contacts between bedrock units, are shown on Plate 1.

Escondido Thrust Fault: As discussed in CGS (1994), the Escondido Thrust Fault is reportedly a poorly defined, low-angle, north-dipping thrust fault extending from Trancas Canyon easterly toward Escondido Beach. In general, the Escondido Thrust fault is mapped as separating the Tertiary Monterey Formation footwall from the older, overriding Trancas Formation and Zuma Volcanics thrust sheet. While there is evidence the eastern portions of the Escondido Fault displaces units no younger than 124,000 years old; western segments of the fault, coincident with previously mapped traces of the Malibu Coast Fault by Dibblee and Ehrensbeck (Diblee, 1993), exhibits displacements of Quaternary terrace deposits. However, the Escondido Thrust Fault shows **no** evidence of Holocene displacement and is thus considered not active per State of California definition. As mapped by Campbell and others (Campbell et. al, 1996), the Escondido Thrust Fault crosses the MMHS Campus approximately 600 feet northeast of the proposed footprint of

Building “C”. Dibblee maps the Escondido Thrust Fault within the MMHS and JCES campus as diverting to the southwest, and crossing the JCES campus approximately 100 feet north of the proposed footprint of Building “C” (Dibblee, 1993).

Paradise Cove Fault: The Paradise Cove Fault is a roughly east-west trending near vertical fault separating a tightly folded dolomitic unit from Monterey Formation Shale. The fault is not exposed at the surface but has been inferred based on stratigraphic contrast. As mapped by Campbell and others (Campbell, et al., 1996) and Dibblee (Dibblee, 1993), portions of the Paradise Canyon Fault west of Zuma Canyon appear to have been overridden by the Escondido Thrust Fault; implying the Escondido Thrust Fault is younger than the Paradise Cove Fault. As noted in CGS (1994), the Paradise Canyon Fault shows no evidence of Holocene displacement and is considered not active per State of California definition.

3.2 Historical Seismicity

An evaluation of historical seismicity from significant past earthquakes related to the site was performed. Peak ground accelerations (PGA) at the site resulting from significant past earthquakes between 1800 to 2020, with magnitudes M4.0 or greater, were estimated using the EQSEARCH computer program (Blake, 2000). This historical seismicity search was performed for a 100-kilometer (62-mile) radius from the project site, and is included in Appendix D, *Seismicity Data*. The largest earthquake magnitude found in the search was the M7.7 earthquake, known as the Arvin-Tehachapi quake that occurred on July 21, 1952 approximately 68.2 miles (109.7 kilometers) from the site producing an estimated site acceleration of approximately 0.052g. The largest estimated PGA found in the search was 0.330g from a M7.0 earthquake approximately 4.3 miles (6.9 kilometers) from the site occurring on September 24, 1827.

Review of additional data publicly available from the Center for Engineering Strong Motion Data (CESMD) website (http://strongmotioncenter.org/) was reviewed for stations in the vicinity of the project site. The data reviewed indicates that a site (CGS-CSMIP Station 24396) approximately 1.8 miles to the southeast of the project site experienced a peak ground acceleration of 0.130g from the M6.4 Northridge Earthquake that occurred on January 17, 1994.

3.3 Liquefaction and Lateral Spreading

Liquefaction is the loss of soil strength due to a buildup of excess pore-water pressure during strong and long-duration ground shaking. Liquefaction is associated primarily with loose (low density), saturated, relatively uniform fine- to medium-grained, clean cohesionless soils. As shaking action of an earthquake progresses, soil granules are rearranged and the soil densifies within a short period. This rapid densification of soil results in a buildup of pore-water pressure. When the pore-water pressure approaches the total overburden pressure, soil shear strength reduces abruptly and temporarily behaves similar to a fluid. For liquefaction to occur there must be:

(1) loose, clean granular soils,
(2) shallow groundwater, **and**
(3) strong, long-duration ground shaking

According to the State of California Seismic Hazard Zones Map (CGS, 2002), the site is not located within an area that has been identified as being potentially susceptible to liquefaction as shown on Figure 4, *Seismic Hazards Map*.

Moreover, due to the near-surface presence of stiff/hard, clay impacted terrace deposits and relatively shallow bedrock, the potential for liquefaction at this site is low.

Since the potential for liquefaction is considered low, the potential for lateral spreading to occur at the site is also considered low.

3.4 Seismically-Induced Settlement

Seismically-induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). These settlements occur primarily within loose to moderately dense sandy soil due to reduction in volume during and shortly after an earthquake event. Due to the predominantly stiff nature of underlying soils and shallow bedrock, seismically induced total and differential settlement under the building is expected to be negligible (Appendix E).

3.5 Landslides

The proposed project site is not located in an area mapped as potentially susceptible to seismically-induced landslides as shown on Figure 4, *Seismic Hazards Map*. No landslides are mapped or known to exist at the project site or vicinity. Previous grading and construction at the site has created stepped building pads and parking lots. The potential for seismically induced landslides at the site is considered low.

3.6 Flooding

The site is not located within a designated 100-500 year flood zone as defined by the Federal Emergency Management Agency (FEMA, 2008) as shown on Figure 5, *Flood Hazard Zone Map*, and therefore the potential for flooding is considered low.

Earthquake-induced flooding can be caused by failure of dams or other water-retaining structures as a result of an earthquake. Due to the absence of such structures near the site, the potential for earthquake-induced flooding at the site is considered low, see Figure 6, *Dam Inundation Map*.

3.7 Debris Flows

Leighton performed geologic reconnaissance to visually evaluate the areas impacted by debris flow and erosion that occurred after the Woolsey Fire during the November and December 2018 rain events at MMHS. During the rain event, a 48-inch-diameter storm drain at the cul-de-sac on Clover Heights Avenue was plugged with debris and debris flows overtopped the inlet structure, spilling onto the campus. See *Plate 1* for flow path.

It is generally accepted that debris flows most commonly occur on slopes with gradients ranging from 26 to 45 degrees (USGS,1975) The potential for debris flow depends on soil type, water content, and degree of vegetation in the source zone. Debris flows occurring in this area were the result of the Woolsey Fire where vegetation and structures were burned and stripped from the surrounding slopes. The loss of surficial support provided by vegetation and the accumulation of moisture from prolonged rain events in the loose and disturbed soil resulted in the debris flow.

Slopes with gradients between 11 and 26 degrees are recognized as transport zones across which debris flows generated from the upslope source areas are transported and where flow velocity remains relatively constant. In these areas, the loose soil and ash was stripped along the path of flow as observed in the narrow drainage incisions, thereby increasing flow volume. Areas where the slope gradient is 11 degrees or flatter, i.e. the MMHS campus, are depositional areas where mud is deposited as the flow velocity decelerates.

The source zone (north of the campus) emanates from the northwesterly trending, steep sided canyons north of Cuthbert Road which lack vegetation and mature trees within the canyon. The transport zone is generally defined as the mouth of the canyon from approximately Cuthbert Road where debris flows blocked the road, down gradient to south of the intersection of Harvester Road and Clover Heights Avenue, an area of approximately 2,400 linear feet in length. The depositional zone is identified as the MMHS campus ballfields, immediately south of the northern chain link fence boundary down gradient to the debris basin in the southwest region of the parking lot, or a linear distance of approximately 1,100 feet

Although there are relatively thick deposits of colluvium and ash on slopes above and surrounding the campus, the gradient of the flow pathway (depositional zone) as observed (see Plate 1), not considering minor slopes, is relatively flat, approximately 5 degrees.

Potential debris and mud flows could emanate from the main and tributary canyon upslope of the campus located approximately 2,400 feet north of the campus and transported down gradient. Although we don't have specific field data in the source area, considering the two rainfall events that occurred in November and early December 2018 which resulted in deposition from upslope debris flows, we do not anticipate a thick overburden of soil to remain on slopes in this area. Since the December 2018 debris flow the slopes above the campus have revegetated with light grasses and homes are being rebuilt and drainage pathways corrected.

Based on the relatively gentle slope inclination (±5 degrees) and long depositional zone (1,100 feet), which has a defined flow path, it is our opinion the occurrence of a debris flow emanating from the source area to cause significant structural damage to the MMHS campus is low.

3.8 Slope Softening and Slope Creep

As moisture infiltrates into the subsurface soil (such as from rain or irrigation), the wet density of the soil tends to increase, while the effective stress of the soil tends to decrease. In clay soils, slope softening can then occur, where the slope deforms in order to mobilize the shear stress needed to maintain stability. Slope softening can continue over time as the soils become more and more saturated. Slope creep is a related phenomenon whereby the soils on and adjacent to fill and natural soil slopes loosen with time due to weathering processes, incrementally moving downslope due to gravitational forces. A contributing factor at this site is the presence of expansive soil, which expands and shrinks during wetting and drying cycles. The expanding and shrinking of the soil could cause a ratcheting effect, where soil and relatively light surface improvements, such as concrete slabs, tend to move laterally toward the unconfined slope face during expansion and downward during periods of shrinkage. This would result in a gradual downward and lateral movement of the surficial soils (and surficial improvements). Principal factors that affect the severity of slope softening or slope creep include amount water infiltration into the subsurface soil, and the distance of improvements from the top of slope.

Building C, as currently designed, has flatwork (sidewalks and perimeter access road) planned near the top of the canyon along the west northwest side of the project (Plate 1). As such, measures will need to be implemented to limit the potential effects of slope softening/slope creep on the planned flatwork improvements. This is addressed in the recommendations Section 5.0 below.

3.9 Seiches and Tsunamis

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are predominately ocean waves generated by undersea large magnitude fault displacement or major ground movement. Based on review of the Tsunami Inundation Map for Emergency Planning, State of California, County of Los Angeles, Point Dume Quadrangle (CalEMA, 2009), the site is not located within a Tsunami Inundation area. However, the site is located within the tsunami runup area mapped by the City of Malibu General Plan (City of Malibu, 1995). The 100-year return period wave has a 5.1-foot height and the 500-year return period wave has an 8.7-foot height. The site is above Elevation +90 feet msl.

4.0 FINDINGS AND CONCLUSIONS

Presented below is a summary of findings and conclusions based on the results of our evaluation of the project site:

- This site is **not** located within a currently designated Alquist-Priolo Special Studies Zone for surface fault rupture. However, as is the case for most of Southern California, strong ground shaking has and will occur at this site. This site is also **not** within a currently designated liquefaction hazard zone. Due to primarily clay and dense sands, damaging liquefaction is unlikely to occur at this site. The site is not located in any State of California geologic or seismic hazard zone that could preclude the development of the proposed project.

- The City of Malibu has employed a stricter, more conservative standard for evaluation of fault surface rupture hazards. This standard was derived from the 1990 Seismic Safety Element for Los Angeles County, and was modified after the California Geological Survey evaluated the Malibu Coast Fault Zone in 1994. As part of the City's requirements, any structures (habitable) within 500 feet of faults, regardless of activity, should be evaluated.

- While not currently mapped as active zoned faults by the State of California, the Escondido Thrust Fault and Paradise Cove Fault are potentially active faults that are both mapped as traversing the campuses of MMHS and JCES. The approximate locations of these features, inferred by others as faults and/or depositional contacts between bedrock units, are shown on Plate 1.

- The site is underlain by undocumented artificial fill ranging in thickness from 1 to 7 feet overlying terrace deposits generally consisting of dense to very dense sands and stiff to hard lean to fat clay.

- Groundwater was not encountered during the current exploration. Groundwater is not expected to pose a constraint to construction. Current depth to static water level measured in a monitoring well is about 58 feet bgs corresponding to approximately El. +52 feet msl. The location of the monitoring well is shown on Plate 1.

- The potential for liquefaction and liquefaction-induced ground failure to occur at the site is considered low.

- The potential seismically-induced settlement at the site is estimated to be less than ¼ inch.

- Based on our observations and testing, the onsite soils that will be in contact with the planned structures are expected to have a high expansion potential. Additional testing is recommended during design stage or at completion of grading. For purposes of design, we recommend using an Expansion Index (EI) greater than 130.

- Concrete in contact with the onsite soil is expected to have negligible to moderate exposure to water-soluble sulfates and low exposure to chloride in the soil. The onsite soil, however, is considered severely corrosive to ferrous metal.

- The subsurface materials are anticipated to be readily excavated using conventional earthmoving equipment in good working condition.

- The proposed improvements may be supported on conventional shallow footing foundation systems established on engineered fill.

Based upon the results of our geotechnical evaluation of the site, the proposed improvements are considered feasible from a geotechnical standpoint.

5.0 RECOMMENDATIONS

The following recommendations have been developed based on the exhibited engineering properties of the onsite soils and their anticipated behavior both during and after construction. Recommendations are specifically provided for grading, design of foundations, seismic design considerations, floor slabs, and paving.

Proposed new replacement Building C may be supported on spread-type shallow foundation systems such as footings or post-tensioned concrete slabs with thickened edges established on engineered fill soils.

We recommend that all earthwork for the subject project be performed in accordance with the following recommendations and applicable governing agency grading requirements. Leighton should review the grading plan, foundation plans, and specifications when they are available to verify that the recommendations presented in this report have been properly interpreted and incorporated. Final loading and bearing pressure diagrams should be provided for our review once prepared to confirm recommendations and settlement estimates remain valid for the project as currently proposed.

5.1 Earthwork

Earthwork guide specifications are presented in Appendix F, *Earthwork and Grading Guide Specifications*. Earthwork for this new Building C constructed at grade is expected to include overexcavation and recompaction, backfill and buried utility rerouting. Project earthwork is expected to include complete demolition/removal of existing improvements in new foundation areas and complete overexcavation and recompaction of any remaining undocumented fill soils below new improvement footprints as described in the following subsections:

5.1.1 Site Preparation and Overexcavation

After the site is cleared, the soils should be carefully observed for the removal of all unsuitable deposits such as existing fill and highly expansive organic black fat clay. We recommend that after removal of pavements and hardscape, and complete demolition of existing structures within the proposed improvement footprint, all undocumented fill and unsuitable soils should be excavated from these proposed improvement footprints to expose native subgrade.

Overexcavation of Undocumented Fill: Undocumented fill was encountered as deep as 7 feet bgs in our borings. Deeper fill may be encountered between boring locations.

This overexcavation bottom should extend horizontally either the thickness of fill below spread footings or at least 5 feet horizontally beyond the outside edges of proposed footings, whichever is deeper. Any underground obstructions encountered should be removed. Those lines should be removed or rerouted where interfering with proposed construction.

Overexcavation of Bedrock: To mitigate the potential for differential settlement of the proposed new building caused by bearing stiffness variance between bedrock and fill or natural soil, we recommend that bedrock, although not anticpated, be overexcavated below footing elevations to establish at least 5 feet of engineered fill below footing bottoms. To facilitate earthwork logistics, we recommend that the entire footprint of the proposed new buildings and 5 feet beyond be overexcavated and replaced as engineered fill, where feasible.

***Overexcavation in the Creep Zone*:** Leighton understands concrete flatwork, perimeter access road and fences are planned atop and near the drainage channel on the western side of the property, within the “creep zone.” In order to construct these improvements near the top of the slope within the anticipated creep zone and minimize or eliminate the effects of creep upon the wall and flatwork, recommendations provided in the following paragraph should be considered.

A minimum overexcavation of 5 feet and construction of a properly benched stability fill is recommended. Deeper overexcavation may be necessary depending on the depth of lateral cracks, the depth of which is best observed and evaluated during grading. A relatively inexpensive option to address creep related problems in top-of-slope walls and/or fences is to design the structure so that tilting or cracking will be less visually obvious, or such that it may be economically replaced or repaired. If, however, a better degree of creep mitigation is desired, the walls or fences may be provided with the deepened foundations or caissons and grade beams. In addition, the inclusion of frequent crack control joints (10-foot intervals or closer) within walls and flatwork should be considered.

Surface Drainage: Water should not be allowed to pond or accumulate anywhere except in detention basins. Drainage should be designed to collect and direct surface water away from structures to approved drainage facilities. Hardscape drains should be installed and drain to storm water disposal systems. Drainage patterns approved at the time of fine grading should be maintained throughout the life of proposed structures. Irrigation should not be allowed for at least 10-feet-horizontally around structures supported on shallow spread footings and/or with slabs-on-grade.

5.1.2 Subgrade Stabilization and Fill Placement

The subgrade is anticipated to consist of clayey soils, which are moisture sensitive and will require additional precautions especially during the rainy season. When grading is interrupted by heavy rains, fill operations should not be resumed until the moisture content and the dry density of the placed fill are satisfactory.

Clayey soils should be overexcavated as necessary to permit the placing of at least 2 feet of relatively non-expansive soils (Expansion Index, EI, less than 20) beneath concrete slabs and walks.

Moisture Content: After excavating as recommended, the moisture content of the clayey soils should be determined, and the clayey soils slowly and uniformly conditioned (moistened or dried) as necessary to bring the soils to a uniformly moist condition. Any surface soils that may have dried out too much should be slowly and uniformly moistened as necessary to bring these soils to uniformly moist condition. The moisture content of the clayey soils should be brought to approximately 3 to 5 percent over optimum moisture content to a depth of 12 inches below grade. The moisture content of the subgrade should be checked and approved prior to placing the required fill. When grading is interrupted by heavy rains, fill operations should not be resumed until the moisture content and the dry density of the placed fill are satisfactory.

Subgrade Evaluation: After moisture conditioning as required, the exposed soils should be rolled with heavy compaction equipment. At least the upper 12 inches of the exposed soils should be compacted to at least 90 percent relative compaction based on ASTM Test Method D 1557. If the subgrade soils are wet and soft, it may be necessary to place a layer of

crushed rock or a geomembrane, or both, over the exposed soils to provide a base for the compaction of the required fill. In this case, the soft natural soils should be carefully excavated prior to placing the crushed rock layer.

Fill Placement and Compaction: The onsite soils, less any deleterious material or organic matter (fat organic black clay), can be used in required fills. Cobbles larger than 6 inches in largest diameter should not be used in the fill. Any required import material should consist of relatively non-expansive soils with an Expansion Index (EI) less than 30. The imported materials should contain sufficient fines (binder material) so as to be relatively impermeable and result in a stable subgrade when compacted. All proposed import materials should be approved by the geotechnical engineer of record prior to being placed at the site.

All fill soil should be placed in thin, loose lifts, moisture-conditioned, as necessary, to within 2 percent of optimum moisture content for granular soils and 3 to 5 % for clayey soils, and compacted to a minimum 90% relative compaction as determined by ASTM D 1557 standard test method (modified Proctor compaction curve) within building footprints. Aggregate base for pavement sections should be compacted to a minimum of 95% relative compaction. At least the upper 12 inches of the exposed soils in roadways and access drives, parking lots and (concrete –paver) flatwork areas, should be compacted to at least 95 percent relative compaction based on ASTM Test Method D 1557.

Wet and Pumping Soil: Subgrade stability issues may be encountered during subgrade preparation and site grading due to the moisture sensitivity of the clayey soils that are expected to comprise the subgrade and the relatively high in-situ moisture contents of the material based on recovered soil samples. Stability problems may be mitigated by either undercuting unstable soils or performing chemical or mechanical modification of the subgrade to allow grading activities to proceed. Chemical modification consists of the addition of either lime or Portland cement to a properly processed subgrade followed by recompaction. Chemical modification will require the geotechnical engineer's approval prior to implementing a modification program. Mechanical stabilization consists of the placement of a coarse (2- to 4-inch nominal particle diameter) crushed aggregate to serve as working mat. Depending upon the degree of instability, a geogrid may also be required in conjunction with the coarse aggregate.

5.1.3 Excavation Adjacent to Constructed Footings

It is essential that excavation not undermine foundations of structures that will remain in place along the boundaries of the project including leach fields and septic systems. As-built details of any structure(s) to remain should be provided to Leighton and the structural engineer prior to incorporation into the new design.

Excavations near existing footings that will remain, if any, should be performed with care so that the existing footings are not undermined and the subgrade supporting the footings is not disturbed. Excavation adjacent to existing foundations that extend below bearing elevation may require slot-cutting techniques or shoring to perform the excavation and protect the foundations.

5.1.4 Temporary Excavations

All temporary excavations, including utility trenches, retaining wall excavations, and other excavations should be performed in accordance with project plans, specifications and all State of California Occupational Safety and Health Administration (CalOSHA) requirements.

No surcharge loads should be permitted within a horizontal distance equal to the height of cut or 5 feet, whichever is greater from the top of the slope, unless the cut is shored appropriately. Excavations that extend below an imaginary plane inclined at 45 degrees below the edge of any adjacent existing site foundations should be properly shored to maintain support of these structures.

Temporary excavations should be treated in accordance with CalOSHA excavation regulations. The sides of excavations should be shored or sloped accordingly. CalOSHA allows the sides of unbraced excavations, up to a maximum height of 20 feet, to be cut to a ¾:1 (horizontal:vertical) slope for Type A soils, 1:1 for Type B soils, and 1½:1 for Type C soils.

The onsite soils are predominately clay within the proposed structural depths and generally conform to CalOSHA Type C soils. CalOSHA regulations are applicable in areas with no restriction of surrounding ground deformations. Shoring should be designed for areas with deformation

restrictions. The soil type should be verified or revised based on geotechnical observation and testing during construction, as soil classifications may vary over short horizontal distances. Heavy construction loads, such as those resulting from stockpiles and heavy machinery, should be kept a minimum distance equivalent to the excavation height or 5 feet, whichever is greater, from the excavation unless the excavation is shored and these surcharges are considered in the design of the shoring system.

5.1.5 Pipe Bedding and Trench Backfill

Pipeline trenches should be backfilled with compacted fill in accordance with this report, and applicable *Standard Specifications for Public Works Construction* (Greenbook), current edition standards. Backfill in and above the pipe zone should be as follows:

Pipe Zone: The pipe bedding zone should be backfilled with Controlled Low Strength Material (CLSM) consisting of at least one sack of Portland cement per cubic-yard of sand, conforming to Section 201-6 of the 2018 Edition of the *Standard Specifications for Public Works Construction* (Greenbook). Due to expansive clays, sand bedding for conduits should not be allowed on this site below the building footprint to a lateral distance of 3 feet beyond the building footprint. CLSM bedding should be placed to 1 foot (0.3 m) over the top of the conduit and vibrated. CLSM should **not** be jetted.

Over Pipe Zone: Above the pipe zone, trenches can be backfilled with excavated on-site soils free of debris, organic and oversized material larger than (>) 3 inches in largest dimension. As an option, the whole trench can be backfilled with one-sack CLSM same as presented above for the pipe bedding zone. Oversized rock (cobbles and/or boulders) should either be removed from any backfill, or pulverized for use in backfill only above the pipe zone. Gravel larger than ¾ inch in diameter should be mixed with at least 80 percent soil by weight passing the No. 4 sieve. Native soil backfill over the pipe-bedding zone should be placed in thin lifts, moisture conditioned, as necessary, and mechanically compacted using a minimum standard of 90% relative compaction (relative to the laboratory modified Proctor maximum **dry** density), relative to the ASTM D 1557 laboratory maximum dry density within building footprints, or 85% under hardscape areas. Backfill above the pipe zone should **not** be jetted. In any case, backfill above the pipe zone (bedding) should be observed and tested by Leighton.

5.2 Corrosion Protection Measures

Water-soluble sulfates in soil can react adversely with concrete. As referenced in the 2019 California Building Code (CBC), Section 1904A, concrete subject to exposure to sulfates shall comply with requirements set forth in ACI 318. Based on laboratory testing results of the onsite soils from recent and prior investigations, concrete structures in contact with the onsite soil will likely have **"negligible" to "Moderate"** exposure to water-soluble sulfates in the soil. Therefore, common Type II Portland cement may be used for concrete construction in contact with site soils. Subgrade soil should be tested for water-soluble sulfate content prior to final design of the concrete structures once grading is complete. Import fill soil should be geotechnically tested for corrosivity and sulfate attack before import to the site. *Further testing of import soils should include analytical testing for chemicals of concern prior to import and acceptance.*

Based on corrosivity test results of the onsite soils from recent and prior investigations, the onsite soil is considered severely corrosive to ferrous metals. Therefore, based on these results, ferrous pipe buried in moist to wet site earth materials should be avoided by using high-density polyethylene (HDPE), polyvinyl chloride (PVC) and/or other non-ferrous pipe when possible. Ferrous pipe can also be protected by polyethylene bags, tap or coatings, di-electric fittings or other means to separate the pipe from on-site soils.

5.3 Foundations

Based on our preliminary investigation and our experience in the region, the proposed new buildings may be supported on spread-type shallow foundation systems such as footings or post-tensioned concrete slabs with thickened edges established on engineered fill or undisturbed natural soils.

5.3.1 Shallow Spread Footings

Footings for proposed structures should have a minimum embedment of 3 feet and have a minimum width of 2 feet. Footings for proposed temporary structures may be supported directly on grade.

Bearing Value: Footings established on engineered fill or undisturbed natural soils may be designed to impose an allowable bearing pressure of 4,000 pounds per square foot (psf).

The ultimate bearing capacity can be taken as 12,000 psf. This value does not incorporate a factor of safety and may only be used for an ultimate bearing capacity check with appropriate factored loads.

The recommended bearing value is a net value, and the weight of concrete in the footings can be taken as 50 pounds per cubic foot (pcf); the weight of soil backfill can be neglected when determining the downward loads.

Settlement: The above recommended allowable bearing capacities are generally based on a total post-construction settlement of about ½ inch for dead plus live column loads not exceeding 150 kips.

Differential settlement due to static loading is generally estimated at ¼ inch over a horizontal distance of 40 feet. Once developed by the structural engineer, we should review total dead and sustained live loads for each column including plan location and span distance, to evaluate if differential settlements between dissimilarly loaded columns will be tolerable. Excessive differential settlement can be mitigated with the use of reduced bearing pressures, deeper footing embedment, possibly changing overexcavation schemes and using imported base material under spread footings, or possibly other methods.

Lateral Resistance: Soil resistance available to withstand lateral loads on a shallow foundation is a function of the frictional resistance along the base of the footing and the passive resistance that may develop as the face of the structure tends to move into the soil. The frictional resistance between the base of the foundation and the subgrade soil may be computed using a coefficient of friction of 0.3. The passive resistance may be computed using an equivalent fluid pressure of 250 pounds-per-cubic-foot (pcf), assuming there is constant contact between the footing and undisturbed soil. The passive resistance can be increased by one-third when considering short-duration wind or seismic loads. The friction resistance and the passive resistance of the soils can be combined without reduction in determining the total lateral resistance.

Uplift Resistance: To evaluate uplift resistance provided by the dead weight of soils above the footing, the frustum of soil above the footing may be estimated by a 30 degree outward projection from vertical. A unit weight of 120 pcf may be used for the soil volume within the frustum.

To evaluate uplift resistance provided by the shear resistance soils above the footing, an allowable shear value of 75 psf may be used along vertical shear planes from the bottom of the footing to the ground surface along the perimeter the footings. A factor of safety of 3 was used to develop the allowable shear value

5.3.2 Modulus of Subgrade Reaction

For foundations established in undisturbed natural soil or engineered fill, an initial unit modulus of subgrade reaction (k_1) value of 100 pounds per cubic inch (pci) may be used.

The k_1 value presented herein, which corresponds to a 1-foot-square footing, should be reduced as shown below to incorporate foundation size effects:

$$k = k_1 \left(\frac{B+1}{2B}\right)^2$$

where B is the square footing width.

Leighton should review the resulting foundation deformation contours developed by the structural engineer for conformance with geotechnical settlement estimates.

5.3.3 Flagpole-Type Foundations

Canopy structures, light poles, and fencing may be supported on flagpole-type foundations. Flagpole-type foundations may be designed to impose an allowable vertical bearing pressure of 3,000 psf and an allowable lateral bearing pressure of 600 psf per foot below grade. The allowable vertical and lateral bearing pressures may be increased by one-third for short-duration loading such as wind or seismic loading. The recommended bearing value is a net value, and the weight of concrete in the flagpole footings can be taken as 50 pounds per cubic foot

5.4 Seismic Design Parameters

To accommodate effects of ground shaking produced by regional seismic events, seismic design can be performed by the project structural engineer in accordance with the 2019 CBC. The table below, *2019 CBC Mapped Seismic Parameters*,

lists seismic design parameters based on the 2019 CBC, Section 1613A.3 (ASCE 7-16) methodology.

Table 6 - 2019 CBC Seismic Design Parameters (Mapped Values)

Categorization Coefficient	Design Value
Site Latitude	34.0251N
Site Longitude	-118.8286W
Site Class	D
Mapped spectral response acceleration parameter at short period, S_S	1.607
Mapped spectral response acceleration parameter at a period of 1 sec, S_1	0.557
Short Period (0.2 sec) Site Coefficient, F_a	1
Long Period (1.0 sec) Site Coefficient, F_v	null[5]
Adjusted spectral response acceleration parameter at short period, S_{MS}	1.607
Adjusted spectral response acceleration parameter at a period of 1 sec, S_{M1}	null[5]
Design spectral response acceleration parameter at short period, S_{DS}	1.071
Design spectral response acceleration parameter at a period of 1 sec, S_{D1}	null[5]
Site Modified Peak Ground Acceleration, PGA_M	0.764

1. All were derived from the SEA web page: https://seismicmaps.org/
2. All coefficients in units of g (spectral acceleration)
3. See Appendix C for details of the seismic evaluation.
4. *Requires C_s calculation, see below.
5. See Section 11.4.8 of ASCE 7-16

Based on the 2019 CBC Table 1613.2.3(2), the long period site coefficient should be determined in accordance with Section 11.4.8 of ASCE 7-16 since the mapped spectral response acceleration at 1 second is greater than 0.2g for Site Class D. In accordance with Section 11.4.8 of ASCE 7-16, a site-specific seismic analysis is required; however, the values provided herein may be utilized if design is performed in accordance with exception (2) in Section 11.4.8 of ASCE 7-16, with special requirements for the seismic response coefficient (Cs). The project structural engineer should review the seismic parameters.

The 2019 CBC site-specific seismic design parameters are summarized below. Details, including the site-specific response spectra are presented in Appendix D, *Seismicity Data*.

Table 7 - Site-Specific 2019 CBC Seismic Design Parameters

Categorization/Coefficients	Design Value
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS}	1.836g
Adjusted Spectral Response Acceleration at 1s Period, S_{M1}	1.140g
Design Spectral Response Acceleration at 0.2s Period, S_{DS}	1.224g
Design Spectral Response Acceleration at 1s Period, S_{D1}	0.760g

5.5 Slabs-on-Grade

More stringent requirements may be required by the structural engineer and/or architect; however, slabs-on-grade should have the following minimum recommended components:

- **Subgrade:** The near-surface soils are expansive and will shrink and swell with changes in the moisture content. Therefore, floor slabs-on-grade and adjacent concrete flatwork should be underlain by at least 2 feet of relatively non-expansive fill (EI < 20). Any concrete slabs-on-grade constructed directly on clayey subgrade should be designed by the structural engineer in accordance with 2019 CBC requirements for soils with a high expansion potential.

  Slab-on-grade subgrade soil should be moisture conditioned to or within 3% to 5% over optimum moisture content, to a minimum depth of 18 inches within building footprints, and compacted to 90% of the modified proctor (ASTM D 1557) laboratory maximum density prior to placing either a moisture barrier, steel and/or concrete.

- **Moisture Barrier:** A moisture barrier consisting of at least 15-mil-thick Stego-wrap vapor barriers (see: http://www.stegoindustries.com/products/stego_wrap_vapor_barrier.php), or equivalent, should then be placed below slabs where moisture-sensitive floor coverings or equipment will be placed.

- **Reinforced Concrete**: A conventionally reinforced concrete slab-on-grade with a thickness of at least 5 inches should within the building footprint and 6-inches for exterior SOG be placed in pedestrian areas without heavy loads. Reinforcing steel should be designed by the structural engineer, but as a minimum should be No. 3 rebar placed at 18 inches on-center, each direction (perpendicularly), mid-depth in the slab. A modulus of subgrade reaction (k) as a linear spring constant, of 75 pounds-per-square-inch per inch deflection

(pci) can be used for design of heavily loaded slabs-on-grade, assuming a linear response up to deflections on the order of ¾ inch.

Minor cracking of concrete after curing due to expansion, drying and shrinkage is normal and will occur. However, cracking is often aggravated by a high water-to-cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low-slump concrete or low water/cement ratios can reduce the potential for shrinkage cracking.

5.6 Lateral Earth Pressures

Recommended lateral earth pressures are provided as equivalent fluid unit weights, in psf/ft. or pcf. These values do not contain an appreciable factor of safety, so the structural engineer should apply the applicable factors of safety and/or load factors during design.

On-site soils are likely **not** suitable to be used as retaining wall backfill due to its high expansion potential. However, site soils can be variable in composition and expansive characteristics. Should site soil be desired for reuse behind retaining walls the material should be tested to ensure Expansion Index is less than 20 (EI < 20). Recommended lateral earth pressures for retaining walls backfilled with sandy soils with drained conditions as shown on Figure 6, *Retaining Wall Backfill* are as follows:

Table 8 - Retaining Wall Design Earth Pressures

Retaining Wall Condition (Level Backfill)	Equivalent Fluid Pressure (pounds-per-cubic-foot)*
Active (cantilever)	40
At-Rest (braced)	60
Passive Resistance	250
Seismic Increment (add to active pressure)	25
Coefficient of Friction	0.3

*Only for level and drained properly compacted backfill

Walls that are free to rotate or deflect may be designed using active earth pressure. For walls that are fixed against rotation, the at-rest pressure should be used. For the seismic condition, the pressure should be added to the active earth pressure.

Retaining Wall Surcharges: In addition to the above lateral forces due to retained earth, surcharge due to above grade loads on the wall backfill, such as existing building foundations, should be considered in design of retaining walls.

Vertical surcharge loads behind a retaining wall on or in backfill within a 1:1 (horizontal:vertical) plane projection up and out from the retaining wall toe, should be considered as lateral and vertical surcharge. Unrestrained (cantilever) retaining walls should be designed to resist one-third of these surcharge loads applied as a uniform horizontal pressure on the wall. Braced walls should also be designed to resist an additional uniform horizontal-pressure equivalent to one-half of uniform vertical surcharge loads. Consideration should be given to underpinning existing structures to remain in this zone, to reduce surcharge loads on the wall and to reduce the potential for inducing damaging settlement within these existing buildings, due to soil movement within the wall influence zone.

In areas where autos and pickup trucks will drive we suggest assuming a uniform vertical surcharge of 300 psf, which would result in active and at-rest horizontal surcharges of 100 psf and 150 psf, respectively. This should be doubled in areas of heavy construction traffic (such as concrete trucks, heavy equipment delivery-trucks, etc.). If crane outrigger loads or other point load sources are applied as wall surcharge, this will require additional analyses based on load source and location relative to the wall.

Sliding and Overturning: Total depth of retained earth for design of walls and for uplift resistance, should be measured as the vertical height of the stem below the ground surface at the wall face for stem design, or measured at the heel of the footing for overturning and sliding. A soil unit weight of 120 pcf may be assumed for calculating the actual weight of the soil over the wall footing, if drained, or 60 pcf if submerged, for properly compacted backfill.

Drainage: Adequate drainage may be provided by a subdrain system positioned behind the walls. Typically, this system consists of a 4-inch minimum diameter perforated pipe placed near the base of the wall (perforations placed downward). The pipe should be bedded and backfilled with pervious backfill material described in Section 300-3.5.2 of the Standard Specifications for Public Works Construction

(Green Book), 2018 Edition. This pervious backfill should extend as shown on Figure 6 to within 2 feet of the outside finished grade. This pervious backfill and pipe should be wrapped in filter fabric, such as Mirafi 140N or equivalent, placed as described in Section 300-8.1 of the Standard Specifications for Public Works Construction (Green Book), 2018 Edition. The subdrain outlet should be connected to a free-draining outlet or sump.

Miradrain, Enkadrain, or similar drainage geocomposites may be used for wall drainage as an alternative to the Class 2 permeable material or drain rock backfill, particularly where horizontal space is limited adjacent to shoring (where walls are cast against shoring). These drainage panels should be connected to the perforated drainpipe at the base of the wall.

5.7 Pavement Design

To provide support for paving, the subgrade soils should be prepared as recommended in Section 5.1, Grading. Compaction of the subgrade, including trench backfills, to at least 90 to 95 percent as recommended relative compaction based on ASTM Test Method D 1557 and achieving a firm, hard and unyielding surface will be important for paving support. The upper 12 inches of vehicular pavement subgrade should be compacted to 95% relative compaction. The preparation of the paving area subgrade should be performed immediately prior to placement of the base course. Proper drainage of the paved areas should be provided since this will reduce moisture infiltration into the subgrade and increase the life of the paving.

Base Course: The base course for both asphalt concrete and Portland Cement Concrete paving should meet the specifications for Class 2 Aggregate Base as defined in Section 26 of the latest edition of the State of California, Department of Transportation, and Standard Specifications. Alternatively, the base course could meet the specifications for untreated base as defined in Section 200-2 of the latest edition of *Standard Specifications for Public Works Construction* (Greenbook). Crushed Miscellaneous Base (CMB) may be used for the base course provided the geotechnical consultant evaluates and tests it before delivery to the site.

Asphalt Concrete: The required asphalt paving and base thicknesses will depend on the expected wheel loads and volume of traffic (Traffic Index or TI). Assuming that the paving subgrade will consist of the onsite soils with an R-value of 5 (Appendix C) compacted to at least 90 percent relative compaction based on

ASTM Test Method D 1557 below 12 inches and 95% relative compaction in the upper 12 inches, the minimum recommended paving thicknesses are presented in the following table:

Area	Traffic Index	Asphalt Concrete (inches)	Base Course (inches)
Light Truck	5	3	10
Heavy Truck	6	4	12
Main Drives	7	4	16

The asphalt paving sections were determined using the Caltrans design method. We can determine the recommended paving and base course thicknesses for other Traffic Indices if required. Careful inspection is recommended to verify that the recommended thicknesses or greater are achieved, and that proper construction procedures are followed.

Portland Cement Concrete Paving: PCC paving and walks supported on clayey onsite soils should be underlain by at least 2 feet of engineered fill consisting of relatively non-expansive (EI < 20) soils.

PCC paving sections were determined in accordance with procedures developed by the Portland Cement Association. Concrete paving sections for a range of Traffic Indices are presented in the table below. We have assumed that the PCC will have a compressive strength (f_c') of at least 3,000 pounds per square inch (psi).

Area	Traffic Index	Portland Cement Concrete (inches)	Base Course (inches)
Light Truck	5	6	4
Heavy Truck	6	6½	4
Main Drives	7	7	4

The paving should be provided with expansion joints at regular intervals no more than 15 feet in each direction. Load transfer devices, such as dowels or keys, are recommended at joints in the paving to reduce possible offsets. The paving sections in the above table have been developed based on the strength of unreinforced concrete. Steel reinforcing may be added to the paving to reduce cracking and to prolong the life of the paving.

Paver Construction: A Traffic Index of 5 or less was assumed in our analysis with additional consideration for weekly trash truck traffic and occasional fire engine traffic. The resulting interlocking paver section is presented below. The assumed traffic index should be reviewed by the project civil engineer to determine if the assumed value is suitable for the proposed project.

Interlocking Paver Section

Assumed Traffic Index	Interlocking Paver Minimum Thickness*	Bedding Sand	Class II Aggregate Base
5 or less	3 inches	1 to 1½ inches	16 inches

* Assumed paver thickness

Standard interlocking pavers suitable for traffic loading typically are 3 1/8 inches (80 mm) thick and should be underlain by approximately 1 to 1.5 inch of bedding sand conforming to ASTM C 33 gradation requirements per the manufacturer's recommendations. The sand should be washed, clean, non-plastic, and free from deleterious or foreign matter, and the sand layer should be underlain by an aggregate base layer of the minimum thickness, as indicated in the table above. The Class II aggregate base (Caltrans, R-value of 78, minimum) should be compacted to a minimum of 95 percent relative compaction determined in accordance with the modified Proctor compaction test (ASTM Test Method D1557). Prior to placement of base course, the underlying subgrade soil in the areas of vehicular paver construction should be overexcavated to a minimum depth of 12 inches, moisture-conditioned to 3 to 5 percent above optimum moisture content, and recompacted to a minimum of 95 percent relative compaction in accordance with ASTM Test Method D 1557.

In order to minimize differential movement of the concrete pavers, we also recommend that the pavers be placed after the majority of the heavy duty construction traffic (such as concrete trucks) has occurred. If this is not feasible, to prevent distortion, construction matting can be considered to protect the pavers to the degree possible during the remaining construction at the site.

Should crushed miscellaneous base (CMB) be considered for placement in paver areas, the CMB material should be submitted to the geotechnical engineer for evaluation and approval prior to implementing into site construction as the geotechnical engineering properties of the CMB may affect the thickness of

recommended base course. Field observations and periodic testing, as needed during placement of the base course materials, should be undertaken by the geotechnical engineer of record to ensure that the requirements of the standard specifications are fulfilled

5.8 Additional Geotechnical Services

Our geotechnical recommendations are contingent upon Leighton Consulting, Inc., providing geotechnical observation and testing services during earthwork and foundation construction. There is a potential for encountering deeper undocumented fill, underground obstructions (septic and leach field facilities) or otherwise unacceptable existing soils between or beyond our boring locations. We are unaware of any existing fill placement documentation for this site. Therefore, inconsistent existing fill materials may be encountered during construction, possibly requiring revised geotechnical recommendations.

Our geotechnical recommendations provided in this report are based on information available at the time the report was prepared and may change as plans are developed. Additional geotechnical exploration, testing and/or analysis may be required based on final plans. Leighton Consulting, Inc. should review site grading and foundation plans when available, to comment further on geotechnical aspects of this project and check to see general conformance of final project plans to recommendations presented in this report.

Leighton Consulting, Inc. should be retained to provide geotechnical observation and testing during excavation and all phases of earthwork. Our conclusions and recommendations should be reviewed and verified by us during construction and revised accordingly if geotechnical conditions encountered vary from our findings and interpretations. Geotechnical observation and testing should be provided:

- During all excavation,
- During compaction of all fill materials,
- After excavation of all footings and prior to placement of concrete,
- During deep foundation installation if required,
- During utility trench backfilling and compaction,
- During pavement subgrade and base preparation, and/or
- If and when any unusual geotechnical conditions are encountered.

6.0 LIMITATIONS

Leighton's work was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional opinions included in this report.

As in many projects, conditions revealed in excavations may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by the geotechnical consultant and additional recommendations be obtained, as warranted.

This report is issued with the understanding that it is the responsibility of the owner or a duly authorized agent acting on behalf of the owner, to ensure that the information and recommendations contained herein are brought to the attention of the necessary design consultants for the project and incorporated into the plans; and that the necessary steps are taken to see that the contractors carry out such recommendations in the field.

The findings of this report are considered valid as of the present date. However, changes in the condition of a property can occur with the passage of time, whether due to natural processes or the work of man on the subject or adjacent properties. In addition, changes in standards of practice may occur from legislation or the broadening of knowledge. Accordingly, the findings of this report may at some future time be invalidated wholly or partially by changes outside Leighton's control.

The conclusions and recommendations in this report are based in part upon data that were obtained from a necessarily limited number of observations, site visits, excavations, samples and tests. Such information can be obtained only with respect to the specific locations explored, and therefore may not completely define all subsurface conditions throughout the site. The nature of many sites is that differing geotechnical or geological conditions can occur within small distances and under varying climatic conditions. Furthermore, changes in subsurface conditions can and do occur over time. Therefore, the findings, conclusions, and recommendations presented in this report should be considered preliminary if unanticipated conditions are encountered and additional explorations, testing, and analyses may be necessary to develop alternative recommendations.

This report has been prepared for the expressed use of Santa Monica – Malibu Unified School District and its design consultants, and only as related expressly to the assessment of the geotechnical constraints of developing the subject site and for

construction purposes. This report may not be used by others or for other projects without the expressed written consent of Santa Monica – Malibu School District and our firm.

If parties other than Leighton are engaged to provide construction geotechnical services, they must be notified that they will be required to assume complete responsibility for the geotechnical phase of the project by concurring with the findings and recommendations in this report or by providing alternative recommendations.

Any persons using this report for bidding or construction purposes should perform such independent investigations as they deem necessary to satisfy themselves as to the surface and/or subsurface conditions to be encountered and the procedures to be used in the performance of work on the subject site.

7.0 REFERENCES

Associated Soils Engineering, Inc., 1999, Geotechnical Exploration Report, Malibu High School Improvements, 30237 Morning View Drive, Malibu, California, Project No. 99-5199, dated October 14, 1999.

Birekland, P. W., 1972, Late Quaternary Eustatic Sea-Level Changes along the Malibu Coast, Los Angeles County, California: Journal of Geology, V. 80, No. 4, PP. 432-448.

Bryant, W.A., and Hart, E.W., 2007, Fault Rupture Hazard Zones in California, Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zones Maps, California Geological Survey: Special Publication 42.

California Building Standards Commission, 2019, 2019 California Building Code (CBC), California Code of Regulations, Title 24, Part 2, Volume 2 of 2, Based on 2015 International Building Code, Effective January 1, 2019.

California Office of Emergency Management Agency (Cal EMA), 2009, Tsunami Inundation Map for Emergency Planning, Point Dume Quadrangle, Los Angeles County, California, map scale 1:24,000, dated March 1, 2009

California Geological Survey (CGS; formerly California Division of Mines and Geology, CDMG), 1994, Fault Evaluation Report FER-229, Malibu Coast Fault, Los Angeles County, California, October 3, 1994.

_____, 2001, Seismic Hazard Zone Report for the Point Dume 7.5-Minute Quadrangle, Los Angeles and Ventura Counties, California, 2001, SHZ Report 056.

_____, 2002, State of California Seismic Hazard Zones Map, Point Dume Quadrangle, Los Angeles and Ventura Counties, California, released February 7, 2002, map scale 1:24,000.

Campbell, R.H., Blackerby, B.A., Yerkes, R.F., Schoellhamer, J.E, Birkeland, P.W>, and Wentworth, C.M., 1996 Geologic Map of the Point Dume Quadrangle, Los Angeles County, California: U.S. Geological Survey Geologic Quadrangle Map GQ-1747, Scale 1:24,000.

Center for Engineering Strong Motion Data, CESMD, http://strongmotioncenter.org/

City of Malibu, 1995, City of Malibu General Plan, dated November 1995, Supplemented December 2017

County of Los Angeles, Department of Public Works (LADPW), 2017, Guidelines for Design, Investigation, and Reporting Low Impact Development Stormwater Infiltration, Department of Public Works, Geotechnical and Materials Engineering Division, dated June 30, 2017.

Diblee, T. Jr. and Ehrensbeck, H E., 1993, Geologic Map of the Point Dume Quadrangle, Los Angeles and Ventura Counties, Dibblee Geology Center Map # DF-48, Scale 1:24,000

Greene, H. G. and Kennedy, M. P. (eds.), 1986, Geology of the Mid-Southern California Continental Margin Geologic Map Series: California Division of Mines and Geology, Scale 1:250,000.

Federal Emergency Management Agency (FEMA), 2008, Flood Insurance Rate Map, Los Angeles County, California and Incorporated Areas, Map No. 06037C1514F, September 26, 2008.

Leighton Consulting, Inc., 2009a, Geotechnical Investigation and Recommendations for the Proposed New Administration and Classroom Building and Bleachers with Light Poles for the Football Field, Malibu Middle / High School, 30215 Morning View Drive, Malibu, California, Prepared for Santa Monica - Malibu Unified School District, Project No. 602311-001, dated January 16, 2009.

_____, 2009b, Addendum No. 1 to Geotechnical Investigation and Recommendations for the Proposed New Administration and Classroom Building and Bleachers with Light Poles for the Football Field, Malibu Middle / High School, 30215 Morning View Drive, City of Malibu, California, Prepared for Santa Monica - Malibu Unified School District, Project No. 602311-001, dated January 19, 2009.

_____, 2009c, Addendum No. 2, Results of In-Hole Hydraulic Conductivity Testing, Proposed New Administration and Classroom Building and Bleachers with Light Poles for the Football Field, Malibu Middle / High School, 30215 Morning View Drive, Malibu, California, Prepared for Santa Monica - Malibu Unified School District, Project No. 602311-001, dated January 19, 2009.

_____, 2009d, Addendum No. 3, Geotechnical Exploration for Proposed Parking Lot A and Storm Water Collection/Dispersal Devices, Malibu Middle / High School,

30215 Morning View Drive, Malibu, California, Prepared for Santa Monica - Malibu Unified School District, Project No. 602311-002, dated October 1, 2009.

_____, 2010a, Addendum No. 4, Supplemental In-Situ Hydraulic Conductivity Testing and Geotechnical Exploration Report, Southern Portion of Parking Lot A (North Student Lot) Malibu Middle / High School, 30215 Morning View Drive, Malibu, California, Prepared for Santa Monica - Malibu Unified School District, Project No. 602311-003, dated January 15, 2010.

_____, 2010b, Addendum No. 5, Surface Infiltration Test Report, Basketball Courts East of Swimming Pool, Malibu Middle / High School, 30215 Morning View Drive, Malibu, California, Prepared for Santa Monica - Malibu Unified School District, Project No. 602311-004, revised dated March 9, 2010.

_____, 2011, Geotechnical Evaluation Report Proposed Stairway System on the Northeast Side Malibu Middle/High School Campus, 30215 Morning View Drive, City of Malibu, California, Project No. 602311-006, dated October 10, 2011.

_____, 2016a, Supplemental Geotechnical Exploration Report, Proposed Access Road to New Stadium Parking Lot E, Malibu Middle and High School Campus, 30215 Morning View Drive, City of Malibu, California, Project No. 11382.002, dated September 21, 2016.

_____, 2016b, Geotechnical Exploration Existing Building E Replacement, Malibu Middle and High School, 30215 Morning View Drive, Malibu, California, Prepared for Santa Monica - Malibu Unified School District, Project No. 11382.004, dated November 18, 2016.

_____, 2017a, Addendum to Geotechnical Exploration Report Response to Review Comments Existing Building E Replacement Malibu Middle and High School (MMHS) 30215 Morning View Drive Malibu, California, dated February 3, 2017

_____, 2017b, Addendum No. 2 to Geotechnical Exploration Report Response to Review Comments Existing Building E Replacement Malibu Middle and High School (MMHS) 30215 Morning View Drive Malibu, California, dated April 28, 2017

Peterson, M. D., Byran, W. A., Cramer, C. H., Cao, T., Reichle, M. S., Frankel, A. D., Lienkaemper, J. J, McCrory, P. A., and Schwartz, D. P., 1996, Probabilistic Seismic Hazard Assessment for the State of California: California Division of Mines and Geology Open-File Report 96-08, 33 P.

United State geological Survey, 1975, Soil Slips, Debris Flows, and Rainstorms in the Santa Monica Mountains and Vicinity, Southern California: U.S. Geologic Survey Professional Paper 851, dated January 1, 1975

Yerkes, R. F. and Campbell, R. H., 2005, Preliminary Geologic Map of the Los Angeles 30'x60' Quadrangle, Southern California, Version 1.0: U.S. Geological Survey, scale 1:24,000.

Yerkes, R. F., and Lee, W. H. K., 1987, Late Quaternary Deformation in the Western Transverse Ranges, in Morton, D. M., and Yerkes, R. F. (eds.), Recent Reverse Faulting in the Transverse Ranges, California: U. S. Geological Survey Professional Paper 1339, PP. 71-82.

Project: 11382.016	Eng/Geol: CCK/JAR
Scale:1 " = 2,000 '	Date: October 2020

Base Map: ESRI ArcGIS Online 2020
Thematic Information: Leighton
Author: Leighton Geomatics (btran)

SITE LOCATION MAP

Phase I New High School Core Project
30215 Morning View Drive
Malibu, Los Angeles County, California

Figure 1

Leighton

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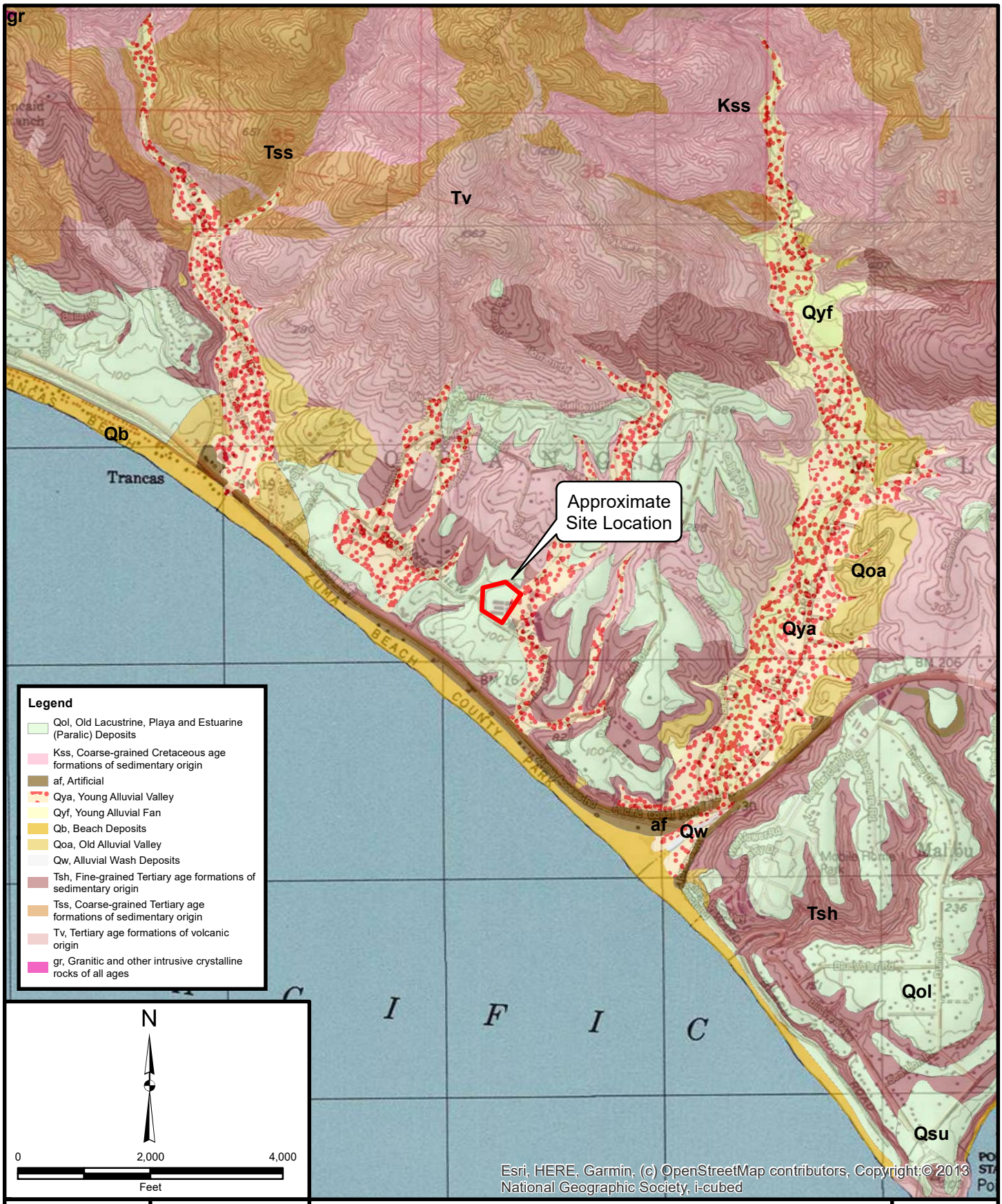

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Scale:1 " = 2,000 '	Date: October 2020

Base Map: ESRI ArcGIS Online 2020
Thematic Information: Leighton, USGS
Author: Leighton Geomatics (btran)

REGIONAL GEOLOGY MAP

Phase I New High School Core Project
30215 Morning View Drive
Malibu, Los Angeles County, California

Figure 2

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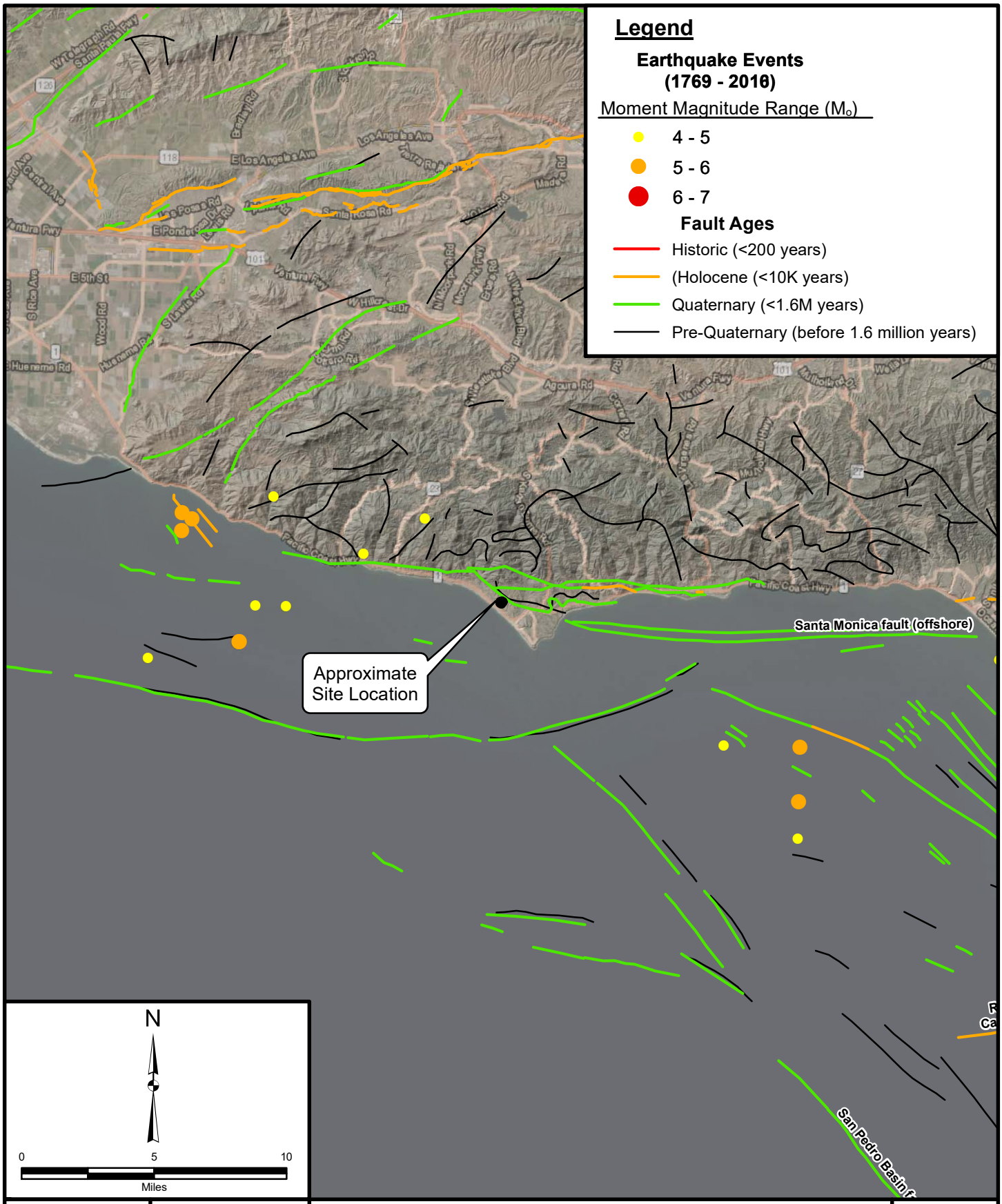

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Thematic Information: Leighton, Bryant, W. A. (compiler), 2005, Digital Database of Quaternary and Younger Faults from the Fault Activity Map of California, version 2.0: CGS, USGS, SCEC.
Author: Leighton Geomatics (btran)

REGIONAL FAULT AND HISTORICAL SEISMICITY MAP

Phase I New High School Core Project
30215 Morning View Drive
Malibu, Los Angeles County, California

Figure 3

Leighton

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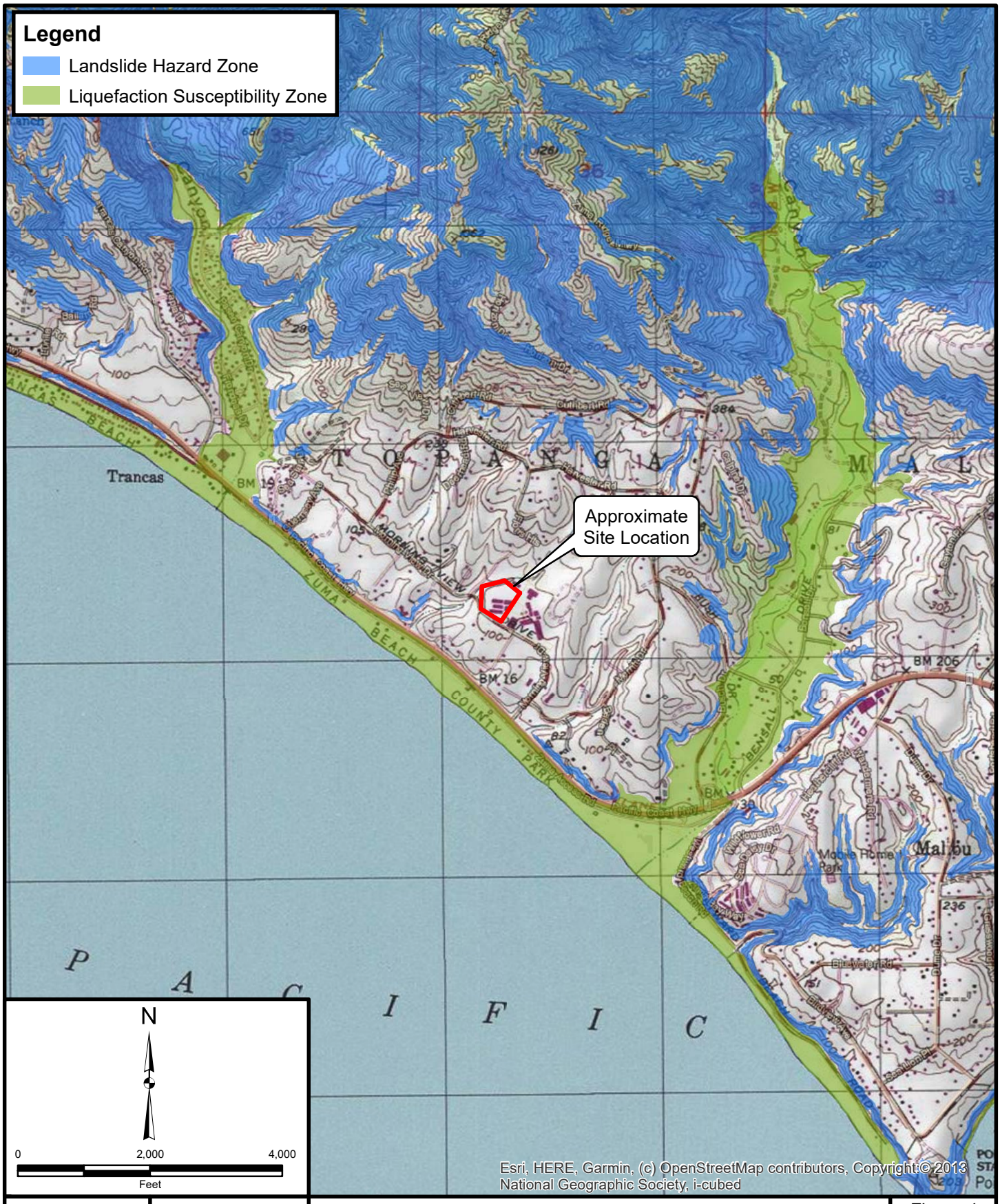

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Scale:1 " = 2,000 '	Date: October 2020

Base Map: ESRI ArcGIS Online 2020
Thematic Information: Leighton, CGS
Author: Leighton Geomatics (btran)

SEISMIC HAZARD MAP

Phase I New High School Core Project
30215 Morning View Drive
Malibu, Los Angeles County, California

Figure 4

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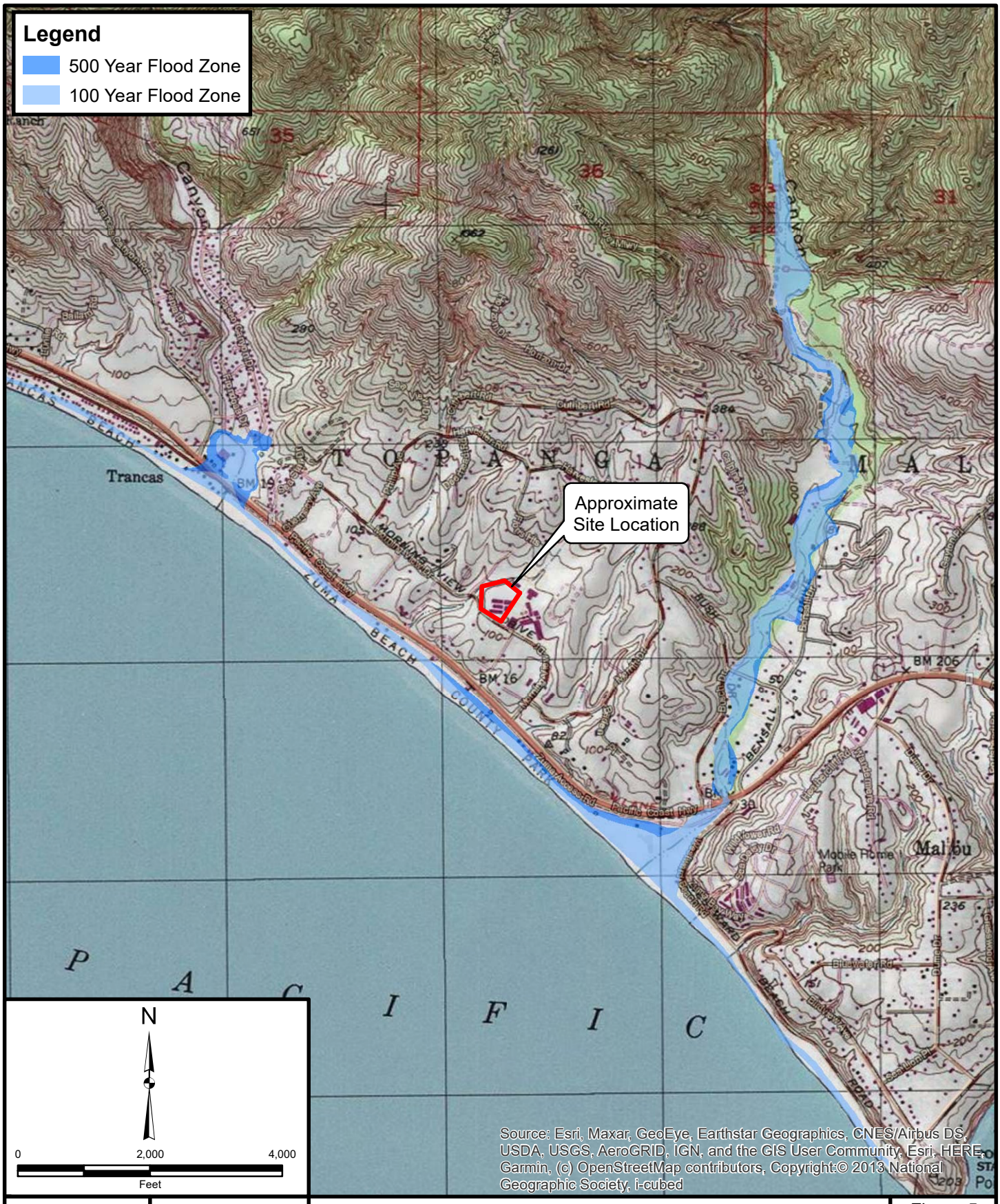

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Thematic Information: Leighton, CA DWR, FEMA
Author: Leighton Geomatics (btran)

FLOOD HAZARD ZONE MAP

Phase I New High School Core Project
30215 Morning View Drive
Malibu, Los Angeles County, California

Figure 5

Leighton

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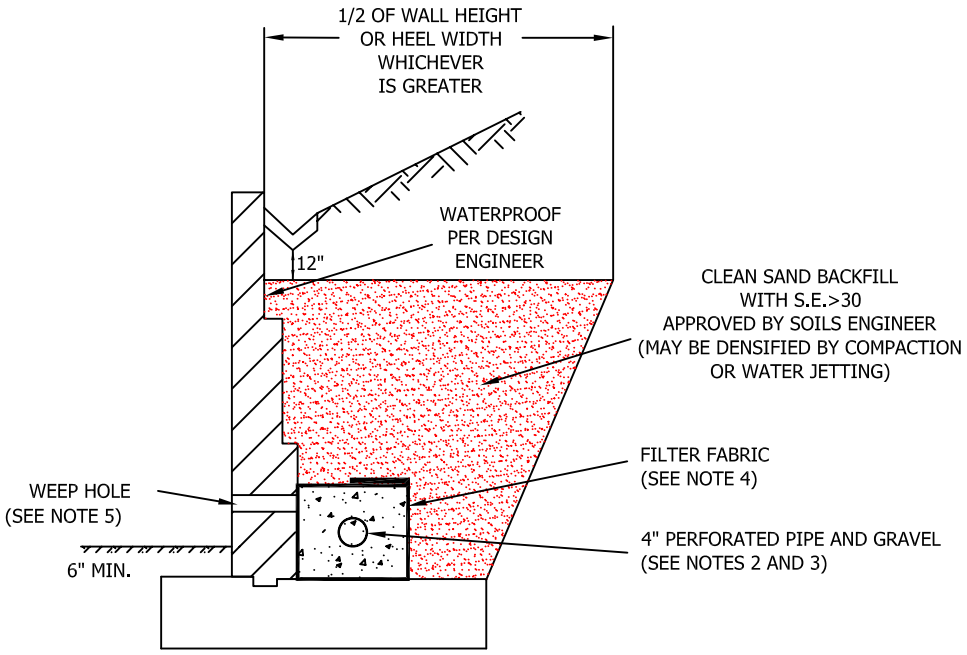
SUBDRAIN OPTIONS AND BACKFILL WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF >50



NOTE: AS AN ALTERNATE TO CLEAN SAND BACKFILL, CLEAN GRAVEL MAY BE UTILIZED WITH APPROVED FILTER FABRIC. A SECOND ALTERNATE IS TO UTILIZE AN AGGREGATE BASE MATERIAL COMPACTED TO 90% RELATIVE COMPACTION. A SAMPLE OF THE PROPOSED BASE MUST BE APPROVED BY THE GEOTECHNICAL CONSULTANT PRIOR TO BACKFILL FOR SUITABILITY. COMPACTION SHOULD BE ACHIEVED WITHOUT DAMAGING THE WALL.

GENERAL NOTES:

* Waterproofing should be provided where moisture nuisance problem through the wall is undesirable.
* Water proofing of the walls is not under purview of the geotechnical engineer
* All drains should have a gradient of 1 percent minimum
*Outlet portion of the subdrain should have a 4-inch diameter solid pipe discharged into a suitable disposal area designed by the project engineer. The subdrain pipe should be accessible for maintenance (rodding)
*Other subdrain backfill options are subject to the review by the geotechnical engineer and modification of design parameters.

Notes:
1) Sand should have a sand equivalent of 30 or greater and may be densified by water jetting.
2) 1 Cu. ft. per ft. of 1/4- to 1 1/2-inch size gravel wrapped in filter fabric
3) Pipe type should be ASTM D1527 Acrylonitrile Butadiene Styrene (ABS) SDR35 or ASTM D1785 Polyvinyl Chloride plastic (PVC), Schedule 40, Armco A2000 PVC, or approved equivalent. Pipe should be installed with perforations down. Perforations should be 3/8 inch in diameter placed at the ends of a 120-degree arc in two rows at 3-inch on center (staggered)
4) Filter fabric should be Mirafi 140NC or approved equivalent.
5) Weephole should be 3-inch minimum diameter and provided at 10-foot maximum intervals. If exposure is permitted, weepholes should be located 12 inches above finished grade. If exposure is not permitted such as for a wall adjacent to a sidewalk/curb, a pipe under the sidewalk to be discharged through the curb face or equivalent should be provided. For a basement-type wall, a proper subdrain outlet system should be provided.
6) Retaining wall plans should be reviewed and approved by the geotechnical engineer.
7) Walls over six feet in height are subject to a special review by the geotechnical engineer and modifications to the above requirements.

RETAINING WALL BACKFILL AND SUBDRAIN DETAIL

WHEN NATIVE MATERIAL HAS EXPANSION INDEX OF >50

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APPENDIX A

EXPLORATION LOGS

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GEOTECHNICAL BORING LOG 2020-LB-1

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	113'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0								*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
									@0': 3 inches of asphalt concrete over 6 inches of base course.	
110				B-1				CL	**Artificial Fill, undocumented (Afu):** @0.75': CLAY; dark brown to black; moist; trace fine sand; medium to high plasticity.	
	5			R-1	6 9 12	85	28		**Non-Marine Terrace Deposits (Qyd):** @5': CLAY; stiff; dark brown; moist; trace fine sand and gravel.	
105				R-2	7 14 21	93	28		@7': CLAY; very stiff; dark brown; moist; little fine sand; fine gravel; medium to high plasticity; trace carbonate precipitate.	
	10			R-3	10 16 26	94	28	CL	@10': CLAY; hard; dark brown; moist; little fine sand; carbonate veins; MnO points.	
100										
	15			S-4	3 5 7		25		@15': CLAY; very stiff; dark brown; moist; little fine sand; fine gravel; moderate plasticity; trace carbonate nodules and MnO points.	
95										
	20			R-5	8 11 19	103	16		@20': CLAY; very stiff; brown; moist; fine sand and gravel; moderate plasticity; trace carbonates.	
90										
	25			S-6	3 3 5		25	SC	@25': Clayey SAND; medium dense; brown to orange brown; moist; fine to coarse sand; mostly fine sand; no to low plasticity; carbonate veins.	
85										
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

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GEOTECHNICAL BORING LOG 2020-LB-1

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	113'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	30			R-7		12 17 22	102	22	CL	@30': Sandy CLAY; hard; orange brown; moist; mostly fine sand; fine gravel; moderate plasticity.	
80										**Total Depth: 31.5 feet** **No groundwater encountered.** **Backfilled with soil cuttings, tamped, and patched with asphalt.**	
	35										
75											
	40										
70											
	45										
65											
	50										
60											
	55										
55											
	60										

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG 2020-LB-2

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	115'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
115	0								*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
				B-1				CL	@0': 3 inches of asphalt concrete over 5 inches of base course. **Artificial Fill, undocumented (Afu):** @0.66': CLAY; dark brown to black; moist; trace fine sand; medium to high plasticity.	
110	5			S-1	2 4 9		21		@5': CLAY; very stiff; dark brown to black; moist; trace fine sand and gravel; medium to high plasticity; hydrocarbon odor.	
									Non-Marine Terrace Deposits (Qyd): @6.5': CLAY; dark brown to orange brown; moist.	
105	10			S-2	4 7 10		27	CL	@10': CLAY; very stiff; brown; moist; little fine sand and gravel; carbonate veins.	
100	15			S-3	2 6 10		25		@15': CLAY; very stiff; brown; moist; little fine sand and gravel; carbonate veins.	
95	20			S-4	5 5 10		6	SC	@20': Clayey SAND; medium dense; brown; moist; fine to coarse sand; mostly fine sand; fine gravel.	
90	25								**Total Depth: 21.5 feet** **No groundwater encountered.** **Backfilled with soil cuttings, tammped, and patched with asphalt.**	
85	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

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GEOTECHNICAL BORING LOG 2020-LB-3

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	119'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S								*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	0			B-1					CL	@0': 2.5 inches of asphalt concrete over 4 inches of base course. **Artificial Fill, undocumented (Afu):** @0.54': CLAY; dark brown to black; moist; few to little fine sand; few fine gravel.	
115	5			R-1		5 7 14	102	23	CL	**Non-Marine Terrace Deposits (Qyd):** @5': CLAY; very stiff; dark brown; moist; little fine sand; few fine gravel.	
				R-2A R-2B		17 50/4"	102	23		@7': Hard, no sample recovered. Rig encountered difficult drilling, auger grinding on rock. Auger refusal at 7'10". Stepped over 5 feet and redrilled down to 7'.	
110						4 10 21				@7': CLAY; hard; dark brown; moist; few fine sand; little fine gravel; medium plasticity.	
	10			R-3		11 12 15	102	18		@10': Sandy CLAY; very stiff; orange brown; moist; fine sand and gravel, low to moderate plasticity.	
105											
	15			S-4		15 25 50/4"		15	SC	@15': Clayey SAND with gravel; hard; yellowish brown; moist; fine to coarse sand; fine to coarse gravel; some mechanically broken rock fragments.	
100											
	20			R-5		50/4"	109	15		@20': Clayey SAND; very dense; yellowish brown; moist; fine to coarse sand; mostly fine sand; fine to coarse gravel; FeO spots and stains along pedogenic surfaces.	
95										**Total Depth: 21.33 feet** **Auger refusal at 21.33'.** **No groundwater encountered.** **Backfilled with soil cuttings, tamped, and patched with asphalt.**	
	25										
90											
	30										

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

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GEOTECHNICAL BORING LOG 2020-LB-4

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	118'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0									*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
				B-1			97	14	CL	@0': 2 inches of asphalt concrete over 4 inches of base course. **Artificial Fill, undocumented (Afu):** @0.5': CLAY; dark brown; moist; medium to high plasticity.	MD, DS, EI, CN RV, CR
115									CL	**Non-Marine Terrace Deposits (Qyd):** @2': CLAY with sand; yellowish brown; moist; little fine sand and gravel.	
	5			R-1		10 12 16	110	18		@5': CLAY with sand; very stiff; yellowish brown; moist; mostly fine sand; fine gravel.	AL, DS, CN
110				R-2		7 12 21	105	21		@7': CLAY; very stiff; yellowish brown; moist; fine sand and gravel; low to moderate plasticity; carbonate veins throughout.	AL
	10			R-3		5 10 16	105	17		@10': CLAY; very stiff; orange brown; moist; fine sand and gravel; low to moderate plasticity; carbonate veins throughout; caliche.	AL, DS, CN
105											
	15			R-4		8 19 32	107	20		@15': CLAY; hard; orange brown; moist; fine sand and gravel; low to moderate plasticity; carbonate veins.	AL
100											
	20			S-5		5 16 14		22	CH	@20': CLAY, fat; hard; orange brown; moist; fine to coarse sand; fine gravel; low to medium plasticity; MnO spotting.	AL
95											
	25			R-6		15 20 50/5"	104	21		@25': CLAY, fat; hard; orange brown; moist; fine sand; fine gravel.	AL
90											
	30										

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

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GEOTECHNICAL BORING LOG 2020-LB-4

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	118'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	30			S-7	5 8 14		26	SC	@30': Clayey SAND; medium dense; orange brown; moist; fine to coarse sand; mostly fine sand; fine gravel; no to low plasticity.	
85	35								**Total Depth: 31.5 feet** **No groundwater encountered.** **Backfilled with soil cuttings, tamped, and patched with asphalt.**	
80	40									
75	45									
70	50									
65	55									
60	60									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG 2020-LB-5

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	113'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S								*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
113	0			B-1					CL	@0': 4 inches of asphalt concrete over 1 inches of base course. **Artificial Fill, undocumented (Afu):** @0.41': Silty SAND; grayish olive brown; moist; mostly fine sand.	
110										**Non-Marine Terrace Deposits (Qyd):** @1': Sandy CLAY; orange brown; moist; little fine sand.	
	5			R-1		3 4 5	96	24		@5': CLAY with Sand; medium stiff; orange brown; moist; fine sand; few fine gravel; moderately plastic; laminated with dark brown to black layers of clay.	
105				R-2		3 5 9	97	22		@7': CLAY with Sand; stiff; orange brown and dark brown; moist; fine sand; fine gravel. Transitions to dark brown CLAY at 8'.	
	10			R-3		3 8 12	95	26		@10': CLAY; very stiff; dark brown to black; moist; trace fine sand; moderate plasticity. Transitions to orange brown CLAY; moist; few fine sand; fine to coarse gravel.	
100											
	15			S-4		3 3 6		24		@15': Sandy CLAY; stiff; orange brown; moist; fine sand; fine gravel; carbonate layers and blebs.	
95											
	20			R-5		11 19 43	106	21		@20': Sandy CLAY; hard; orange brown; moist; fine sand; little fine gravel; low plasticity; carbonate veins.	
90										Rig encountered difficult drilling, rattling, possible cobbles.	
	25			S-6		6 17 17		27	SC	@25': Clayey SAND; very dense; orange brown; moist; mostly fine sand; fine gravel; no to low plasticity.	
				R-7		50/2"					
85										**Total Depth: 27.16 feet** **Auger refusal at 27.16'.** **No groundwater encountered.** **Backfilled with soil cuttings, tamped, and patched with asphalt.**	
	30										

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG 2020-LB-6

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	112'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0								@0': 6 inches of asphalt concrete over 6 inches of base course.	
110				B-1		99	12		**Artificial Fill, undocumented (Afu):** @1': Silty SAND; olive brown; moist; mostly fine sand over CLAY; dark brown; moist; moderate plasticity.	MD, DS, EI, CN RV, CR
								CL	**Non-Marine Terrace Deposits (Qyd):** @2': CLAY with sand; orange brown; moist; fine sand; moderate plasticity.	
	5			R-1	7 7 14	99	23	CH	@5': CLAY, fat; stiff; brown; moist; mostly fine sand; low plasticity; carbonate layers.	AL
105				R-2	7 14 19	100	25		@7': CLAY, fat; very stiff; dark brown; moist; medium plasticity; carbonate veins; caliche.	AL, DS, CN
	10			R-3	19 24 21	105	16		@10': CLAY, fat; hard; orange brown; moist; fine sand; fine to coarse gravel; low to medium plasticity	AL
100										
	15			R-4	12 16 48	113	16	CL	@15': CLAY; hard; orange brown; moist; fine sand; fine gravel; medium plasticity; trace carbonate veins; caliche.	AL, DS, CN
95										
	20			S-5	7 8 16		20	CH	@20': CLAY, fat; hard; orange brown; moist; little fine sand and gravel; MnO veins throughout.	AL
90										
	25			R-6	9 13 30	110	19	CL	@25': CLAY; very stiff; orange brown; moist; little fine sand and gravel; trace MnO staining.	AL
85										
	30									

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:
- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

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GEOTECHNICAL BORING LOG 2020-LB-6

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	112'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	30			S-7		8 24 29		5	SP	@30': SAND, poorly-graded; very dense; yellowish orange brown; moist; fine to coarse sand; mostly fine sand; trace fine gravel.	
80										@33': SAND, poorly-graded, with gravel; fine and rounded gravel, oxidation ring around gravel.	
	35			R-8		42 50/5"	103	9		@35': SAND, poorly-graded; very dense; yellowish brown; moist; mostly fine sand; fine rounded gravel.	
75											
	40			S-8		10 11 36		33		@40': SAND, poorly-graded with CLAY beds; dense SAND; hard CLAY; gray to orange brown; moist; fine to coarse sand; mostly fine sand; dark FeO stained sand layer; laminated clay layers; FeO staining along clay laminations and pedogenic surfaces.	
70											
	45			R-9		50/4"	62	57		**(Tm):** @45': SANDSTONE; olive brown; moist; fine sand; trace fine rounded gravel.	
65										**Total Depth: 46.5 feet** **No groundwater encountered.** **Backfilled with soil cuttings, tamped, and patched with asphalt.**	
	50										
60											
	55										
55											
	60										

This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.

SAMPLE TYPES:
- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

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GEOTECHNICAL BORING LOG 2020-LB-7

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	113'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No. (Bulk / Driven)	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	0								@0': 6 inches of asphalt concrete over 6 inches of base course.	
				B-1				CL	**Artificial Fill, undocumented (Afu):** @1': Silty SAND; olive brown; moist; mostly fine sand.	
110									**Non-Marine Terrace Deposits (Qyd):** @1.5': Sandy CLAY; orange brown; moist; fine sand and gravel.	
	5			R-1	6 11 20	105	16		@5': Sandy CLAY; very stiff; orange brown; moist; fine sand; fine gravel; carbonate veins.	
105				R-2	10 16 29	109	18		@7': Sandy CLAY; hard; orange brown; moist; fine sand and gravel; few carbonates; spotty MnO at 8'.	
	10			R-3	11 20 50/5"	109	18		@10': Sandy CLAY; hard; orange brown; moist; fine sand and gravel; carbonate veins and nodules; spotty MnO.	
100										
	15			S-4	7 10 17		22		@15': Sandy CLAY; hard; brown to orange brown; moist; fine sand; fine gravel, granitic fragments; 1/4-inch-thick carbonate veins	
95										
	20			R-5	12 20 50/5"	114	18	SC	@20': Clayey SAND; very dense; orange brown; moist; fine to coarse sand; mostly fine sand.	
90										
	25			S-6	10 20 37		4	SP	@25': SAND, poorly-graded; dense; yellowish orange brown; moist; fine to coarse sand; mostly fine sand.	
85										
	30									

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG 2020-LB-7

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	113'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log (N / S)	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
	30			R-7		12 12 10	102	5	SP	@30': SAND, poorly-graded; medium dense; yellowish brown to grayish brown; moist; fine to coarse sand; round, fine gravel at the top of sample; bedded and laminated Silty SAND at 31.5'.	
80										**Total Depth: 31.5 feet** **No groundwater encountered.** **Backfilled with soil cuttings, tamped, and patched with asphalt.**	
	35										
75											
	40										
70											
	45										
65											
	50										
60											
	55										
55											
	60										

SAMPLE TYPES:

- B BULK SAMPLE
- C CORE SAMPLE
- G GRAB SAMPLE
- R RING SAMPLE
- S SPLIT SPOON SAMPLE
- T TUBE SAMPLE

TYPE OF TESTS:

- -200 % FINES PASSING
- AL ATTERBERG LIMITS
- CN CONSOLIDATION
- CO COLLAPSE
- CR CORROSION
- CU UNDRAINED TRIAXIAL
- DS DIRECT SHEAR
- EI EXPANSION INDEX
- H HYDROMETER
- MD MAXIMUM DENSITY
- PP POCKET PENETROMETER
- RV R VALUE
- SA SIEVE ANALYSIS
- SE SAND EQUIVALENT
- SG SPECIFIC GRAVITY
- UC UNCONFINED COMPRESSIVE STRENGTH

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG 2020-LP-1

Project No.	11382.016	**Date Drilled**	8-17-20
Project	SMMUSD MMHS Phase 1	**Logged By**	MM
Drilling Co.	Martini Drilling	**Hole Diameter**	8"
Drilling Method	Hollow Stem Auger - 140lb - Autohammer - 30" Drop	**Ground Elevation**	112'
Location	See Plate 1- Geotechnical Map	**Sampled By**	MM

Elevation Feet	Depth Feet	Graphic Log	Attitudes	Sample No.	Bulk / Driven	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION	Type of Tests
		N S								*This Soil Description applies only to a location of the exploration at the time of sampling. Subsurface conditions may differ at other locations and may change with time. The description is a simplification of the actual conditions encountered. Transitions between soil types may be gradual.*	
	0									@0': 3 inches of asphalt concrete over 3 inches of base course.	
				B-1					CL	**Artificial Fill, undocumented (Afu):** @0.5': Silty SAND; olive brown; moist; fine sand; fine gravel.	
110										**Non-Marine Terrace Deposits (Qyd):** @1': Sandy CLAY; orange brown; moist.	
	5			R-1		5 5 7	99	21		@5': Sandy CLAY; stiff; orange brown; moist; fine sand; fine to coarse gravel; moderately plastic; dark brown to black clay intermixed.	
105				R-2		5 10 17	96	26		@7': CLAY; very stiff; dark brown to black; moist; trace fine sand; medium to high plasticity.	
	10			R-3		9 12 18	106	21		@10': CLAY with SAND; very stiff; brown; moist; little fine sand; carbonate veins throughout.	
100											
				S-4		7 5 9		19	SC	@13.5': Clayey SAND; medium dense; orange brown; moist; mostly fine sand; fine gravel; no to low plasticity.	
	15									**Total Depth: 15 feet** **No groundwater encountered.** **Converted boring to temporary percolation well on 08/17/2020.** **Installed solid 2-inch-diameter pipe from 0-10 feet.** **Installed slotted pipe from 10-15 feet.** **Added Monterey #3 SAND around pipe from 15-6.75 feet.** **Backfilled with soil cuttings and patched with asphalt upon completion of testing on 08/18/2020.**	
95											
	20										
90											
	25										
85											
	30										

SAMPLE TYPES:

B	BULK SAMPLE
C	CORE SAMPLE
G	GRAB SAMPLE
R	RING SAMPLE
S	SPLIT SPOON SAMPLE
T	TUBE SAMPLE

TYPE OF TESTS:

-200	% FINES PASSING	DS	DIRECT SHEAR	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	EI	EXPANSION INDEX	SE	SAND EQUIVALENT
CN	CONSOLIDATION	H	HYDROMETER	SG	SPECIFIC GRAVITY
CO	COLLAPSE	MD	MAXIMUM DENSITY	UC	UNCONFINED COMPRESSIVE STRENGTH
CR	CORROSION	PP	POCKET PENETROMETER		
CU	UNDRAINED TRIAXIAL	RV	R VALUE		

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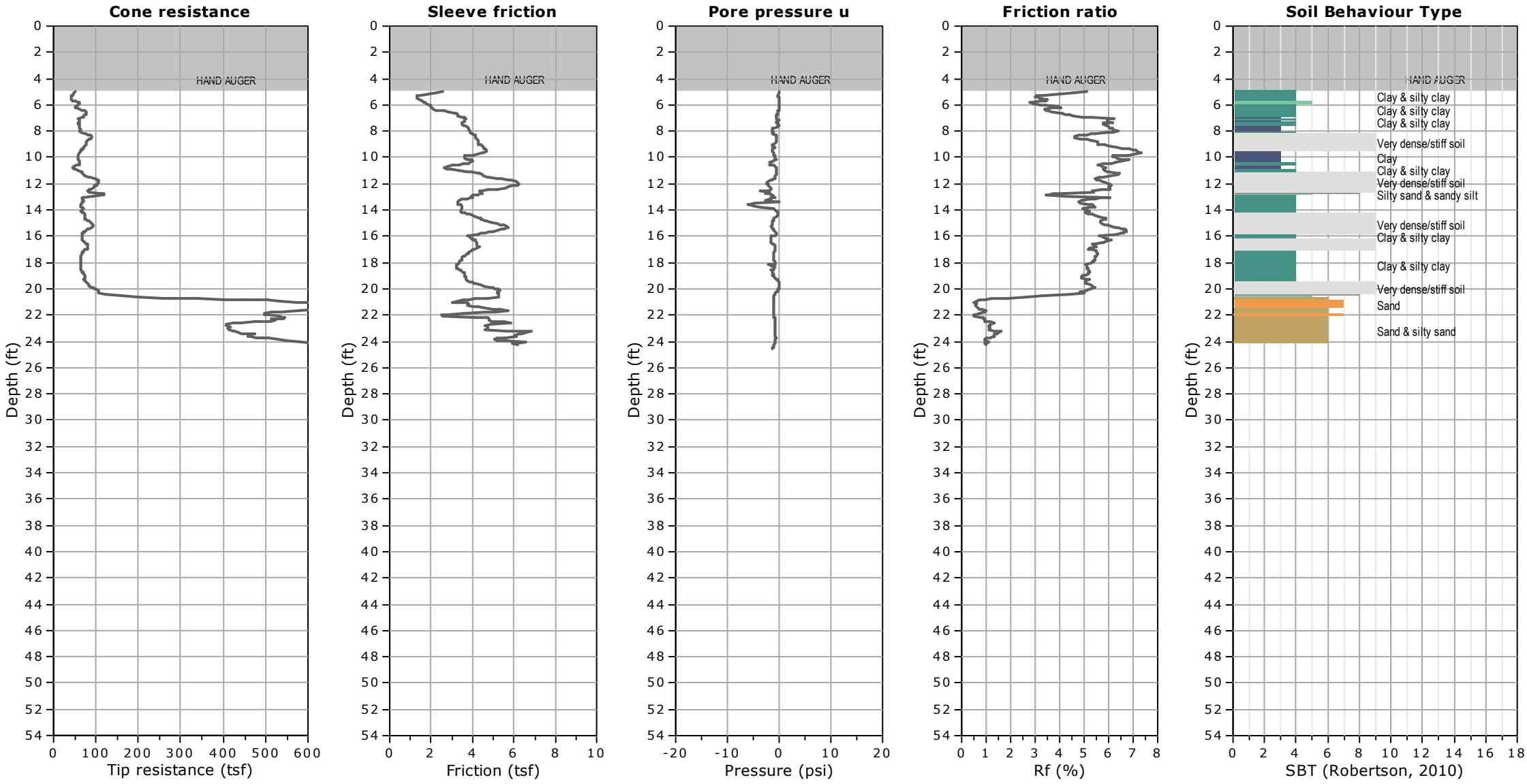
Kehoe Testing and Engineering
714-901-7270
steve@kehoetesting.com
www.kehoetesting.com

Project: **Leighton Consulting / Malibu High School**
Location: **Malibu, CA**

CPT-1
Total depth: 24.61 ft, Date: 8/17/2020



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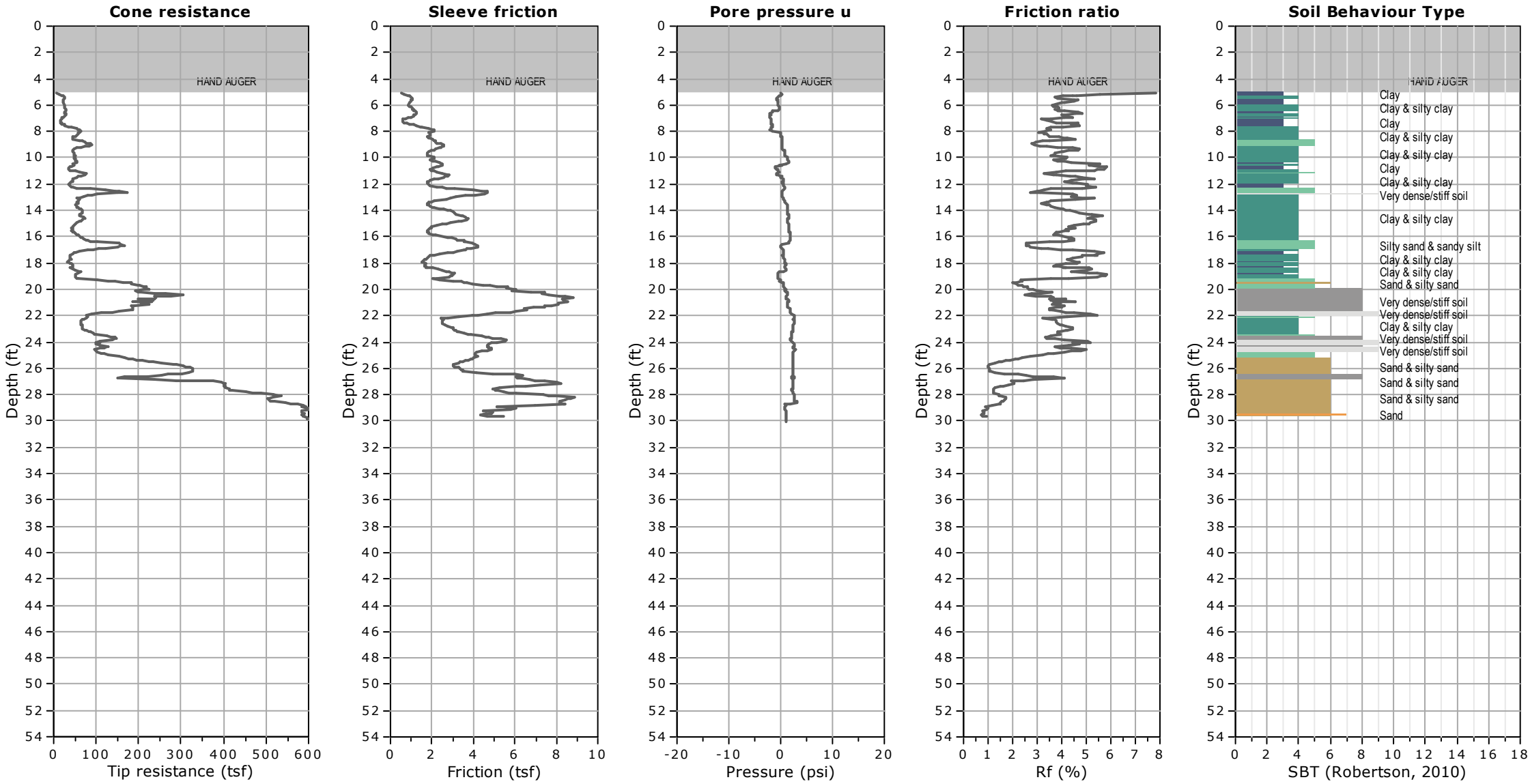
Project: **Leighton Consulting / Malibu High School**
Location: **Malibu, CA**

CPT-2
Total depth: 30.07 ft, Date: 8/17/2020



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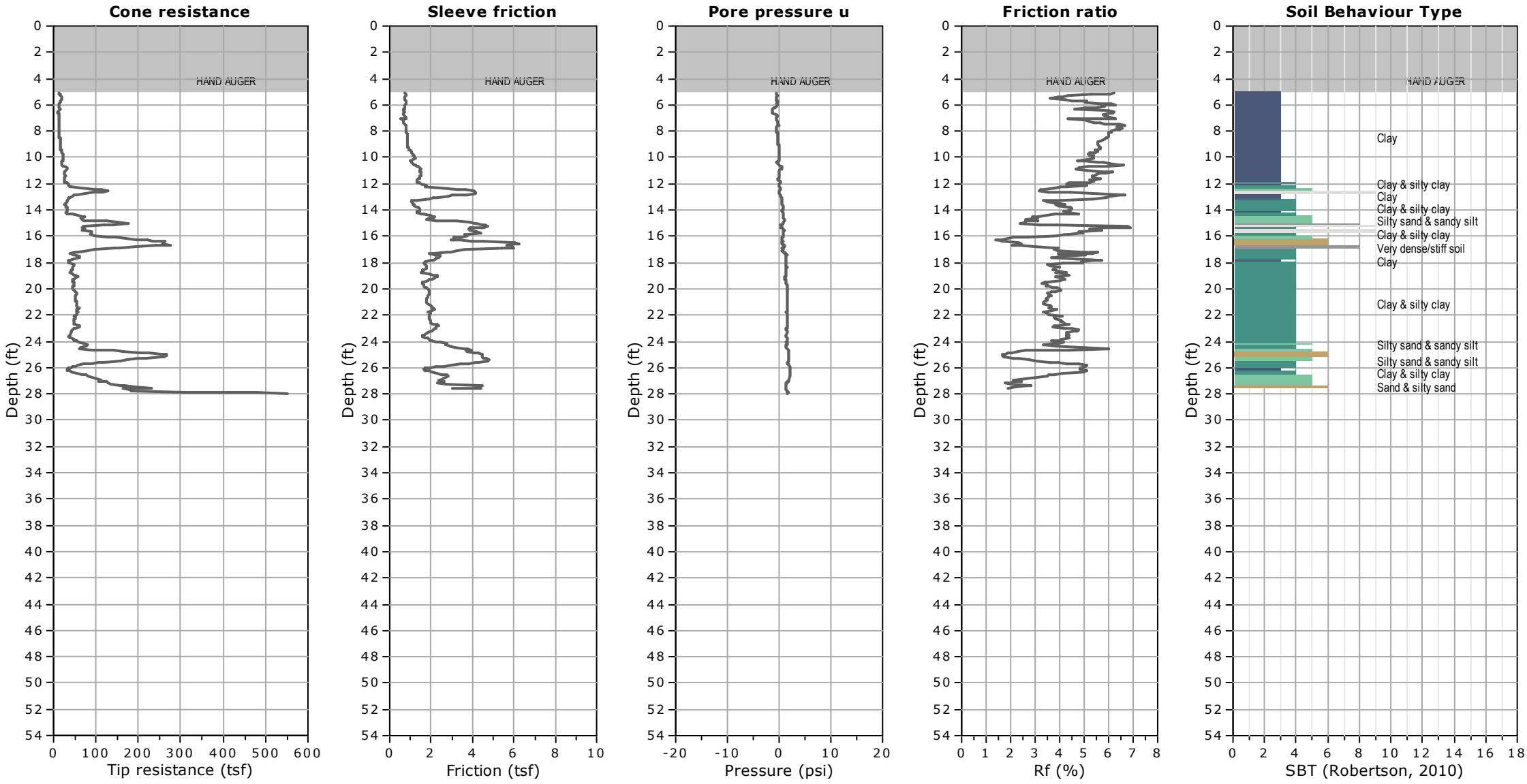
Project: **Leighton Consulting / Malibu High School**
Location: **Malibu, CA**

CPT-3
Total depth: 27.95 ft, Date: 8/17/2020



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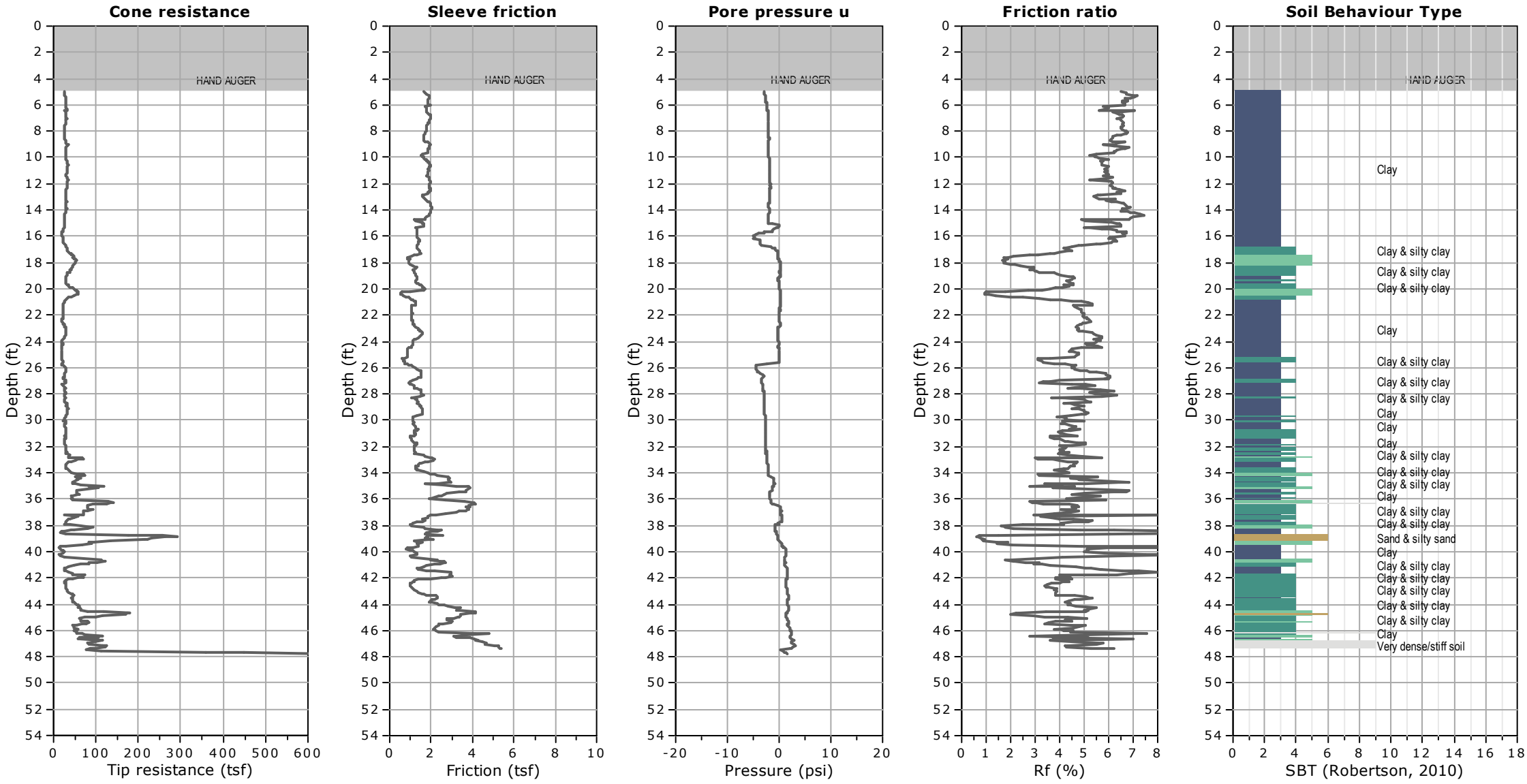
Project: **Leighton Consulting / Malibu High School**
Location: **Malibu, CA**

CPT-4
Total depth: 47.74 ft, Date: 8/17/2020



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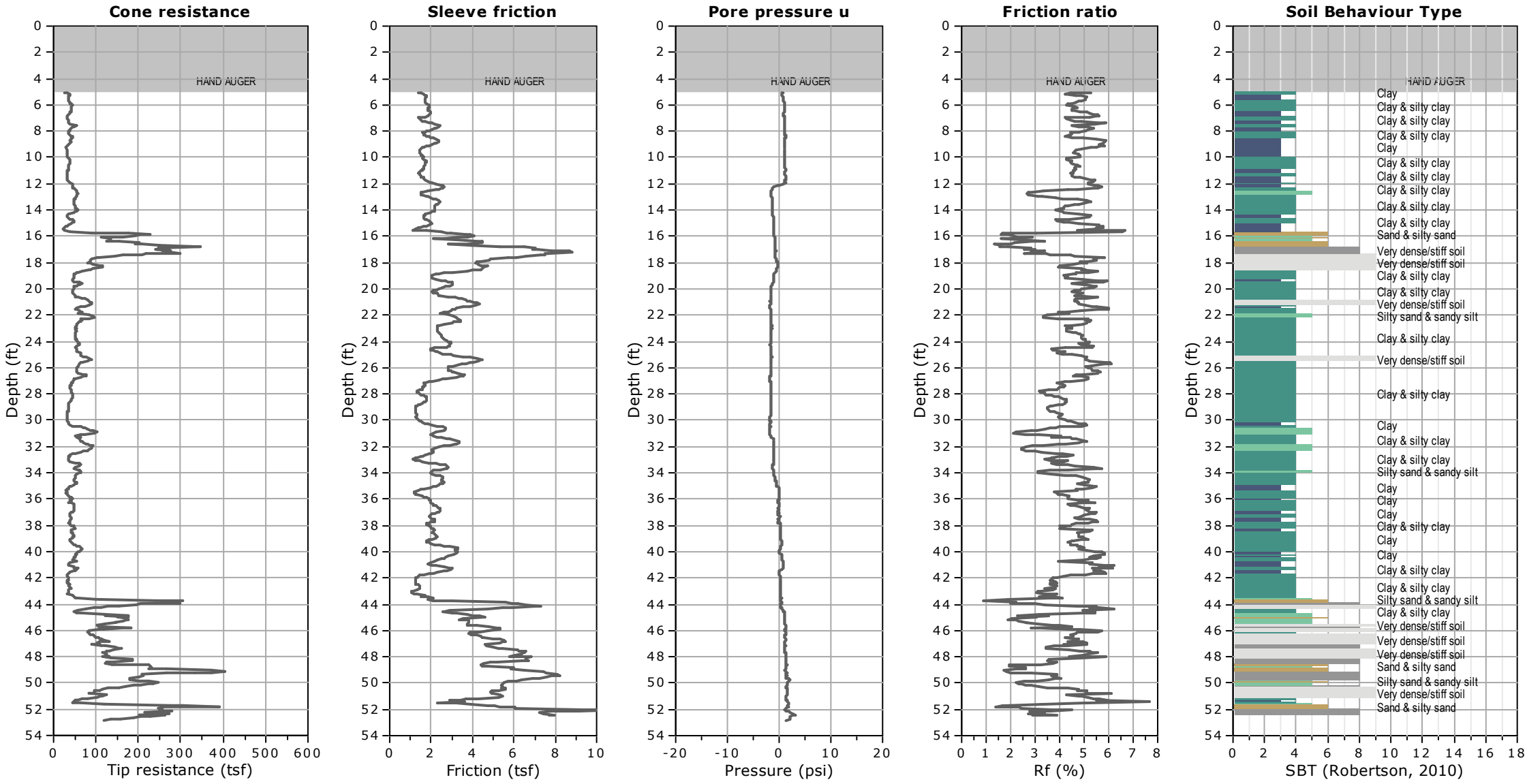
Project: **Leighton Consulting / Malibu High School**
Location: **Malibu, CA**

CPT-5
Total depth: 52.84 ft, Date: 8/17/2020



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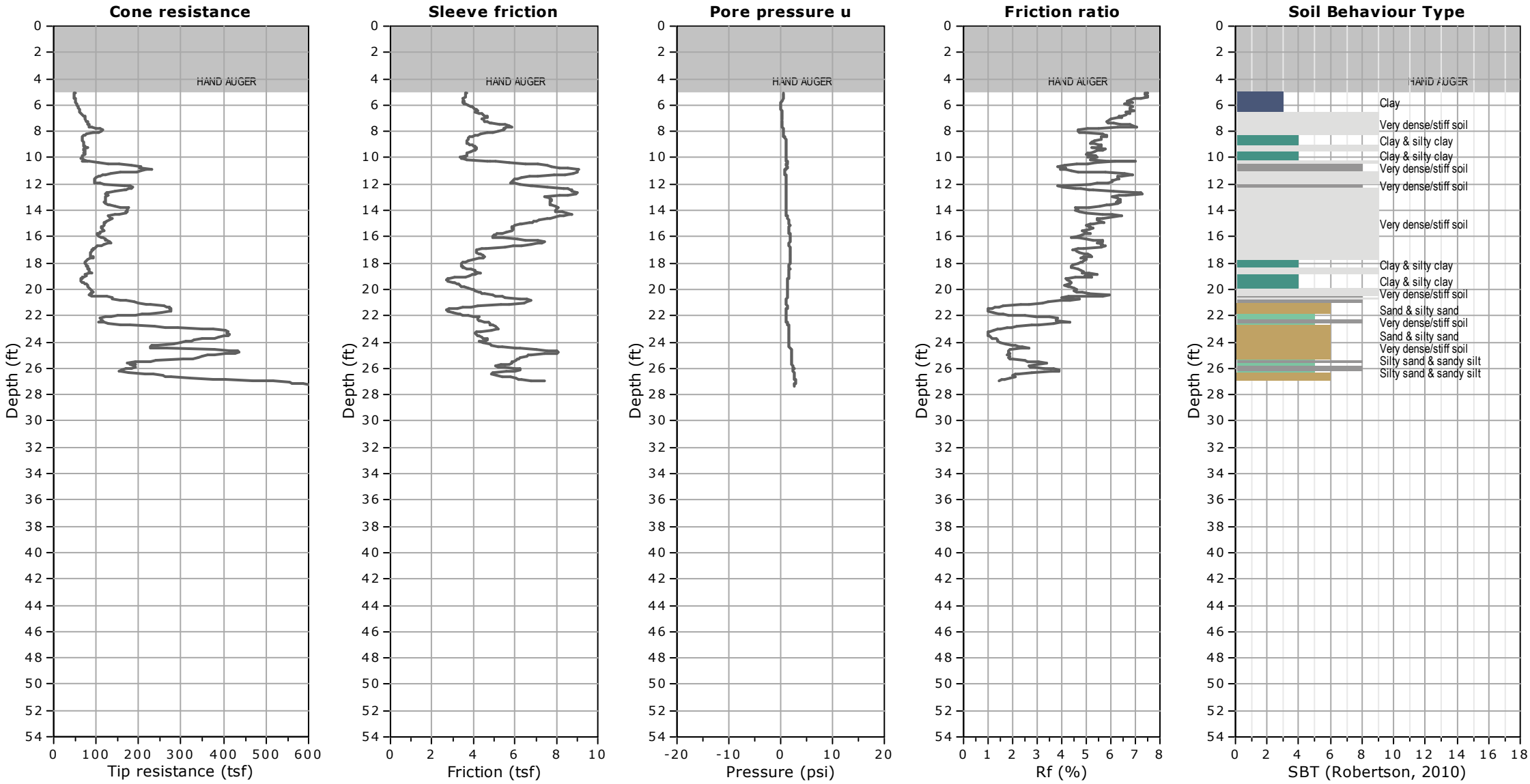
Project: **Leighton Consulting / Malibu High School**
Location: **Malibu, CA**

CPT-6
Total depth: 27.38 ft, Date: 8/17/2020



Leighton Consulting
Malibu High School
Malibu, CA

CPT Shear Wave Measurements

Location	Tip Depth (ft)	Geophone Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-4	5.02	4.02	4.49	8.56	525	
	10.07	9.07	9.29	15.52	598	689
	15.12	14.12	14.26	22.34	638	729
	20.44	19.44	19.54	29.54	662	734
	25.00	24.00	24.08	35.00	688	832
	30.05	29.05	29.12	40.14	725	980
	35.07	34.07	34.13	44.52	767	1144
	40.06	39.06	39.11	47.86	817	1492
	45.05	44.05	44.10	52.68	837	1034
	47.70	46.70	46.74	54.28	861	1655

Shear Wave Source Offset - 2 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

APPENDIX B

PERCOLATION TEST RESULTS

Leighton

Boring Percolation Test Data Sheet

Project Number:	11382.016	**Test Hole Number:**	LP-1
Project Name:	SMMUSD MMHS PH 1	**Date Excavated:**	8/17/2020
Earth Description:	Older Alluvium	**Date Tested:**	8/18/2020
Liquid Description:	Tap water	**Depth of boring (ft):**	15
Tested By:	MM	**Radius of boring (in):**	4
Time Interval Standard		**Radius of casing (in):**	1
Start Time for Pre-Soak:	8/18/20 8:21 AM	**Length of slotted of casing (ft):**	5
Start Time for Standard:	8/18/20 9:21 AM	**Depth to Initial Water Depth (ft):**	7.75
Standard Time Interval		**Porosity of Annulus Material, *n* :**	0.35
Between Readings, mins:	30	**Bentonite Plug at Bottom:**	no

Percolation Data

Reading	Time	Time Interval, Δt (min.)	Initial/Final Depth to Water (ft.)	Initial/Final Water Height, H_0/H_f (in.)	Total Water Drop, Δd (in.)	Infiltration Rate (in./hr.)
P1	8:21	30	7.75	87.0	0.2	0.00
	8:51		7.77	86.8		
P2	8:51	30	7.77	86.8	0.5	0.01
	9:21		7.81	86.3		
1	9:21	30	7.81	86.3	0.2	0.00
	9:51		7.83	86.0		
2	9:51	30	7.83	86.0	0.2	0.00
	10:21		7.85	85.8		
3	10:21	30	7.85	85.8	0.4	0.01
	10:51		7.88	85.4		
4	10:51	30	7.88	85.4	0.2	0.00
	11:21		7.90	85.2		
5	11:21	30	7.90	85.2	0.2	0.00
	11:51		7.92	85.0		
6	11:51	30	7.92	85.0	0.4	0.01
	12:21		7.95	84.6		
7	12:21	30	7.95	84.6	0.2	0.00
	12:51		7.97	84.4		
8	12:51	30	7.97	84.4	0.2	0.00
	13:21		7.99	84.1		

Infiltration Rate (I) = Discharge Volume/Surface Area of Test Section/Time Interval

Measured Infiltration Rate, I (Average of Last 3 ReadingsLast Readings) = **0.01** **in./hr.**

APPENDIX C

LABORATORY TEST RESULTS

Leighton

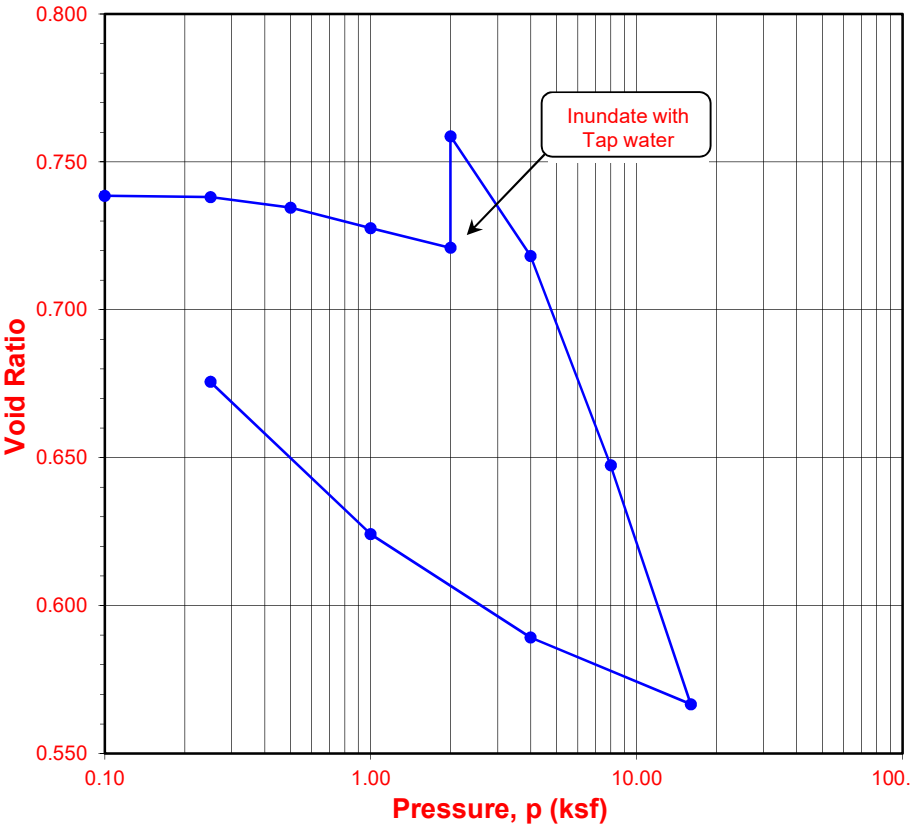
ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Leighton

Project Name:	SMMUSD MMHS Phase 1	Tested By: GB/YN	Date: 08/26/20
Project No.:	11382.016	Checked By: J. Ward	Date: 09/15/20
Boring No.:	2020-LB-4	Depth (ft.): 0-5	
Sample No.:	B-1	Sample Type:	90% Remold
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s		

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	175.82
Weight of Ring (g)	43.23
Height after consol. (in.)	0.9643
Before Test	
Wt.Wet Sample+Cont. (g)	189.90
Wt.of Dry Sample+Cont. (g)	176.18
Weight of Container (g)	75.84
Initial Moisture Content (%)	13.7
Initial Dry Density (pcf)	97.0
Initial Saturation (%)	50
Initial Vertical Reading (in.)	0.2835
After Test	
Wt.of Wet Sample+Cont. (g)	248.25
Wt. of Dry Sample+Cont. (g)	218.66
Weight of Container (g)	59.58
Final Moisture Content (%)	25.54
Final Dry Density (pcf)	99.9
Final Saturation (%)	100
Final Vertical Reading (in.)	0.2443
Specific Gravity (assumed)	2.70
Water Density (pcf)	62.43

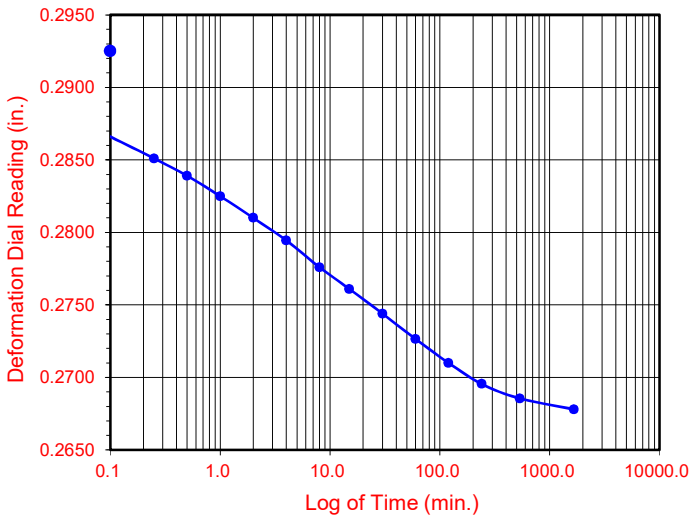


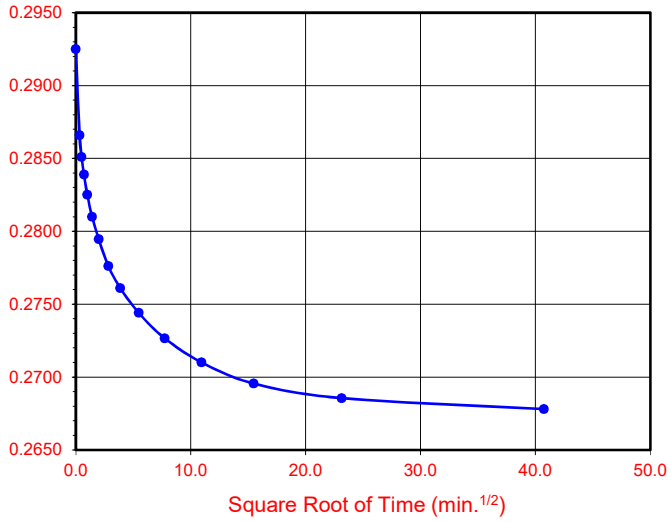
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.2840	1.0005	0.00	-0.05	0.739	-0.05
0.25	0.2833	0.9998	0.05	0.02	0.738	-0.03
0.50	0.2806	0.9971	0.11	0.29	0.735	0.18
1.00	0.2757	0.9922	0.20	0.78	0.728	0.58
2.00	0.2708	0.9873	0.31	1.27	0.721	0.96
2.00	0.2925	1.0090	0.31	-0.90	0.759	-1.21
4.00	0.2678	0.9843	0.45	1.57	0.718	1.12
8.00	0.2255	0.9420	0.61	5.80	0.647	5.19
16.00	0.1770	0.8935	0.81	10.65	0.567	9.84
4.00	0.1914	0.9079	0.67	9.21	0.589	8.54
1.00	0.2133	0.9298	0.49	7.02	0.624	6.53
0.25	0.2443	0.9608	0.35	3.92	0.676	3.57

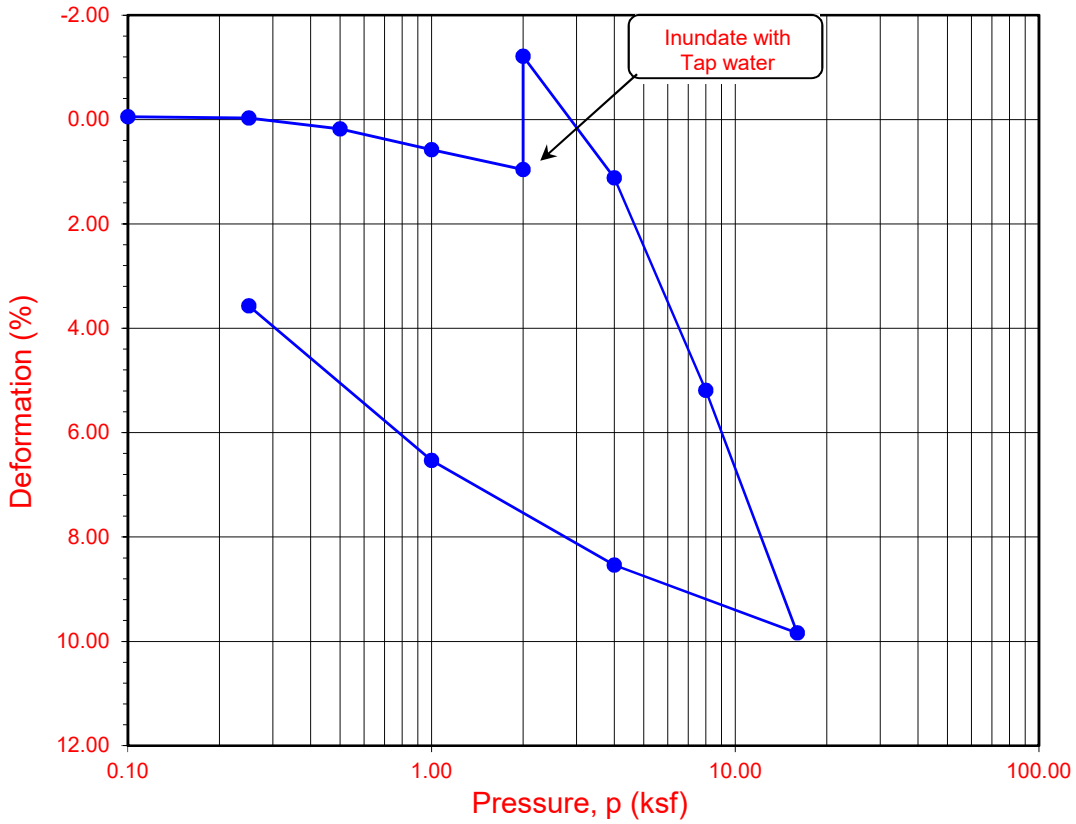
Time Readings @ 4 ksf

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)
8/30/20	5:20:00	0.0	0.0	0.2925
8/30/20	5:20:06	0.1	0.3	0.2866
8/30/20	5:20:15	0.2	0.5	0.2851
8/30/20	5:20:30	0.5	0.7	0.2839
8/30/20	5:21:00	1.0	1.0	0.2825
8/30/20	5:22:00	2.0	1.4	0.2810
8/30/20	5:24:00	4.0	2.0	0.2795
8/30/20	5:28:00	8.0	2.8	0.2776
8/30/20	5:35:00	15.0	3.9	0.2761
8/30/20	5:50:00	30.0	5.5	0.2744
8/30/20	6:20:00	60.0	7.7	0.2727
8/30/20	7:20:00	120.0	11.0	0.2710
8/30/20	9:20:00	240.0	15.5	0.2696
8/30/20	14:15:00	535.0	23.1	0.2686
8/31/20	9:01:00	1661.0	40.8	0.2678

Time Readings @ 4 ksf







Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
2020-LB-4	**B-1**	**0-5**	**13.7**	**25.5**	**97.0**	**99.9**	**0.738**	**0.676**	**50**	**100**

Soil Identification: Dark yellowish brown lean clay with sand (CL)s

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11382.016

SMMUSD MMHS Phase 1

09-20

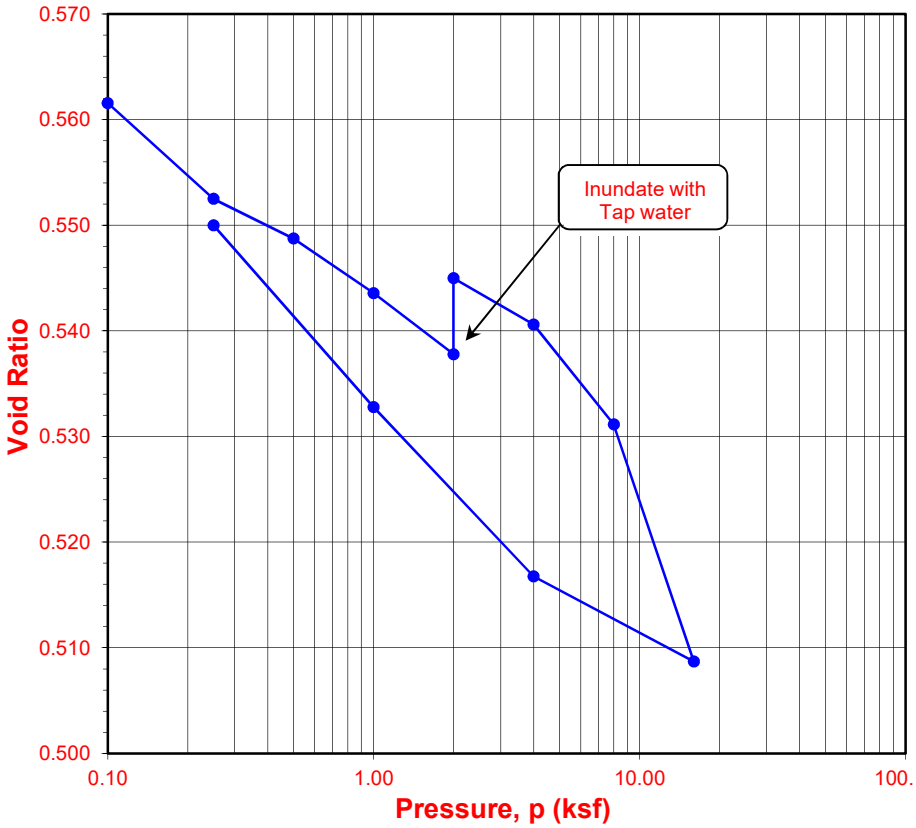
ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Leighton

Project Name:	SMMUSD MMHS Phase 1	Tested By: GB/YN	Date: 08/22/20
Project No.:	11382.016	Checked By: J. Ward	Date: 09/14/20
Boring No.:	2020-LB-4	Depth (ft.): 5.0	
Sample No.:	R-1	Sample Type: Ring	
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s		

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	200.00
Weight of Ring (g)	44.67
Height after consol. (in.)	0.9914
Before Test	
Wt.Wet Sample+Cont. (g)	181.04
Wt.of Dry Sample+Cont. (g)	162.59
Weight of Container (g)	58.00
Initial Moisture Content (%)	17.6
Initial Dry Density (pcf)	109.8
Initial Saturation (%)	86
Initial Vertical Reading (in.)	0.2600
After Test	
Wt.of Wet Sample+Cont. (g)	262.52
Wt. of Dry Sample+Cont. (g)	234.57
Weight of Container (g)	61.85
Final Moisture Content (%)	21.83
Final Dry Density (pcf)	107.4
Final Saturation (%)	100
Final Vertical Reading (in.)	0.2482
Specific Gravity (assumed)	2.75
Water Density (pcf)	62.43

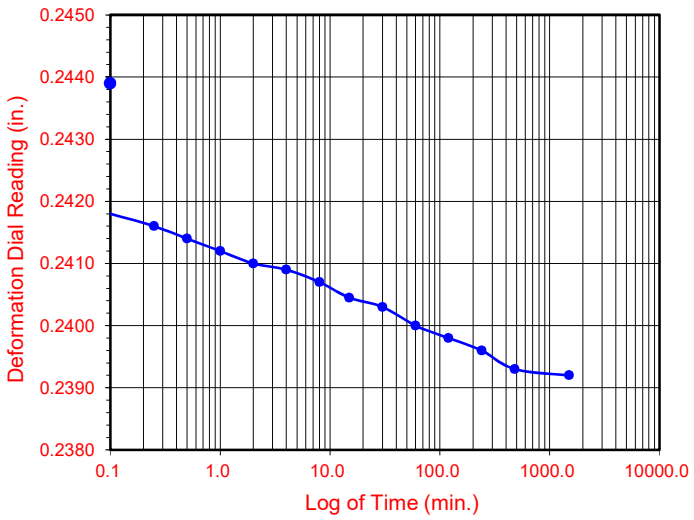


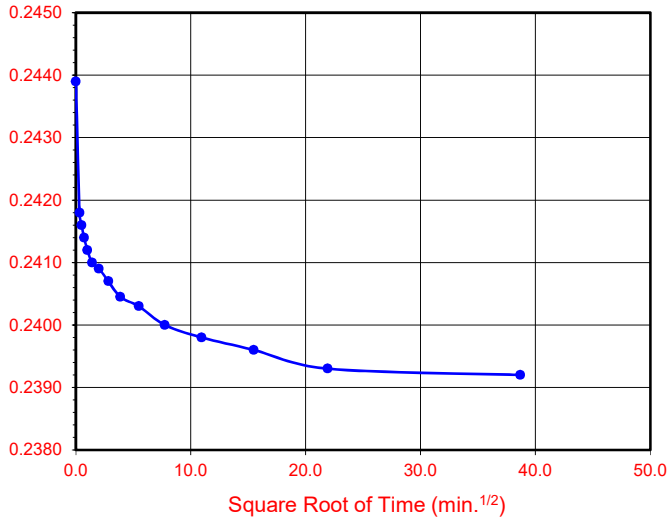
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.2588	0.9988	0.00	0.12	0.562	0.12
0.25	0.2521	0.9921	0.09	0.79	0.552	0.70
0.50	0.2488	0.9888	0.18	1.12	0.549	0.94
1.00	0.2444	0.9844	0.29	1.56	0.544	1.27
2.00	0.2393	0.9793	0.43	2.07	0.538	1.64
2.00	0.2439	0.9839	0.43	1.61	0.545	1.18
4.00	0.2392	0.9792	0.62	2.08	0.541	1.46
8.00	0.2310	0.9710	0.84	2.91	0.531	2.07
16.00	0.2143	0.9543	1.07	4.57	0.509	3.50
4.00	0.2219	0.9619	0.83	3.82	0.517	2.99
1.00	0.2350	0.9750	0.54	2.50	0.533	1.96
0.25	0.2482	0.9882	0.32	1.18	0.550	0.86

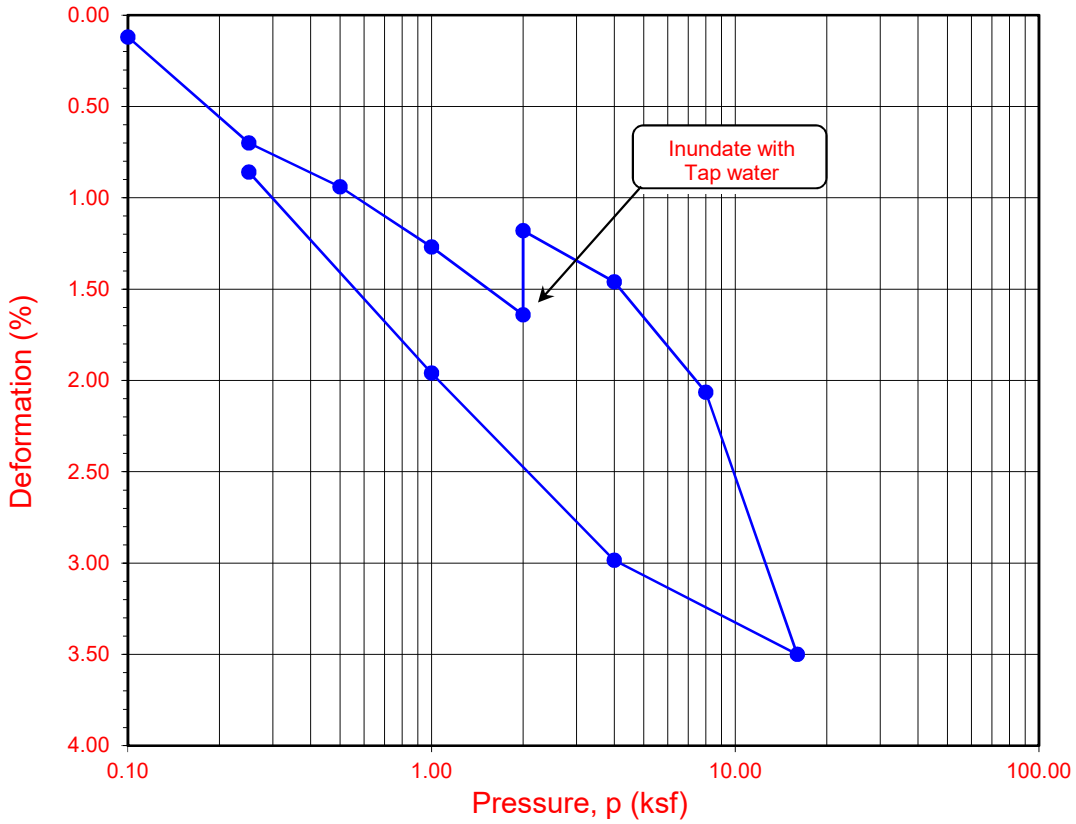
Time Readings @ 4 ksf

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)
8/25/20	7:25:00	0.0	0.0	0.2439
8/25/20	7:25:06	0.1	0.3	0.2418
8/25/20	7:25:15	0.2	0.5	0.2416
8/25/20	7:25:30	0.5	0.7	0.2414
8/25/20	7:26:00	1.0	1.0	0.2412
8/25/20	7:27:00	2.0	1.4	0.2410
8/25/20	7:29:00	4.0	2.0	0.2409
8/25/20	7:33:00	8.0	2.8	0.2407
8/25/20	7:40:00	15.0	3.9	0.2405
8/25/20	7:55:00	30.0	5.5	0.2403
8/25/20	8:25:00	60.0	7.7	0.2400
8/25/20	9:25:00	120.0	11.0	0.2398
8/25/20	11:25:00	240.0	15.5	0.2396
8/25/20	15:25:00	480.0	21.9	0.2393
8/26/20	8:22:00	1497.0	38.7	0.2392

Time Readings @ 4 ksf







Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
2020-LB-4	**R-1**	**5.0**	**17.6**	**21.8**	**109.8**	**107.4**	**0.563**	**0.550**	**86**	**100**

Soil Identification: Dark yellowish brown lean clay with sand (CL)s

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11382.016

SMMUSD MMHS Phase 1

09-20

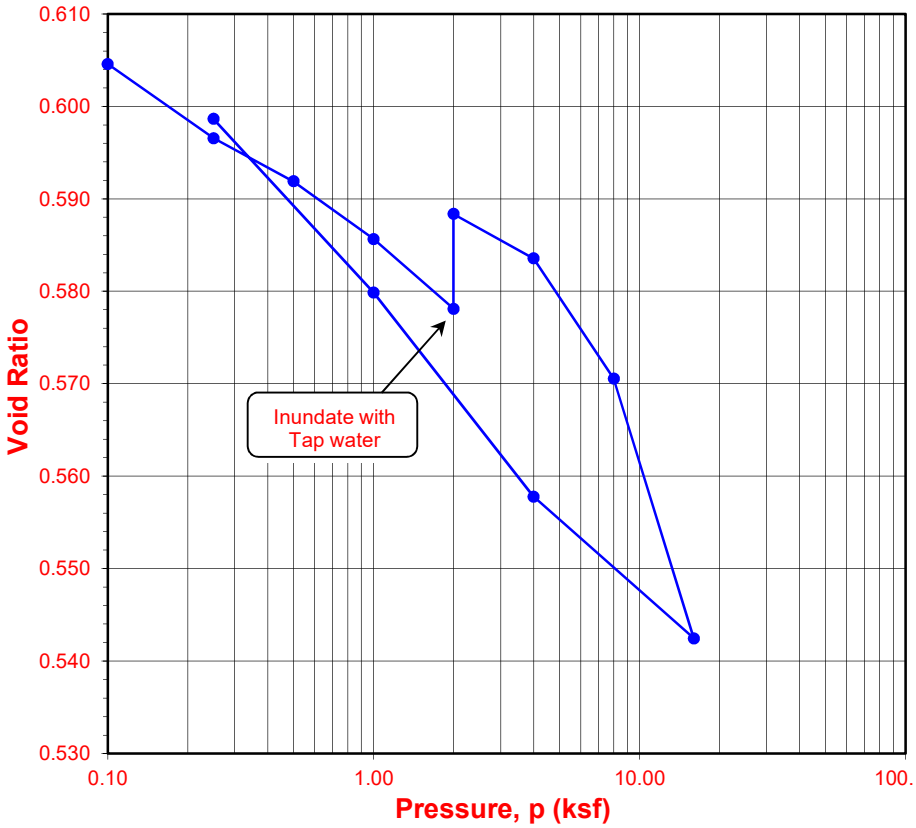
ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Leighton

Project Name:	SMMUSD MMHS Phase 1	Tested By: GB/YN	Date: 08/22/20
Project No.:	11382.016	Checked By: J. Ward	Date: 09/14/20
Boring No.:	2020-LB-4	Depth (ft.): 10.0	
Sample No.:	R-3	Sample Type: Ring	
Soil Identification:	Yellowish brown lean clay (CL), caliche noted		

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	187.46
Weight of Ring (g)	39.55
Height after consol. (in.)	0.9956
Before Test	
Wt.Wet Sample+Cont. (g)	176.00
Wt.of Dry Sample+Cont. (g)	155.43
Weight of Container (g)	35.70
Initial Moisture Content (%)	17.2
Initial Dry Density (pcf)	105.0
Initial Saturation (%)	77
Initial Vertical Reading (in.)	0.2774
After Test	
Wt.of Wet Sample+Cont. (g)	247.00
Wt. of Dry Sample+Cont. (g)	216.42
Weight of Container (g)	58.00
Final Moisture Content (%)	25.73
Final Dry Density (pcf)	99.3
Final Saturation (%)	100
Final Vertical Reading (in.)	0.2713
Specific Gravity (assumed)	2.70
Water Density (pcf)	62.43

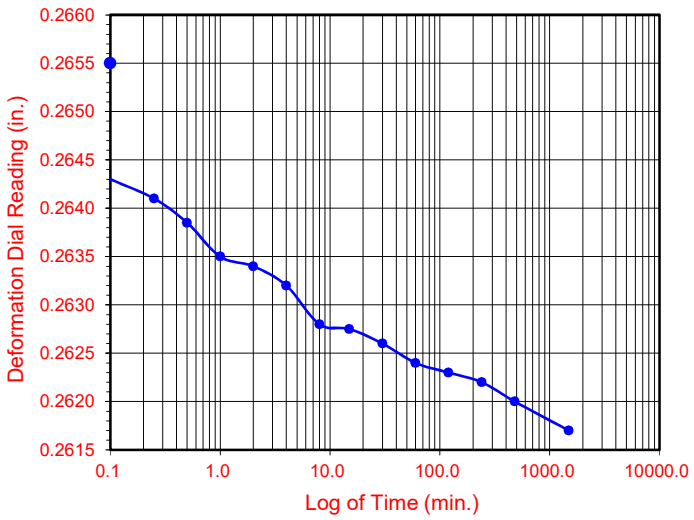


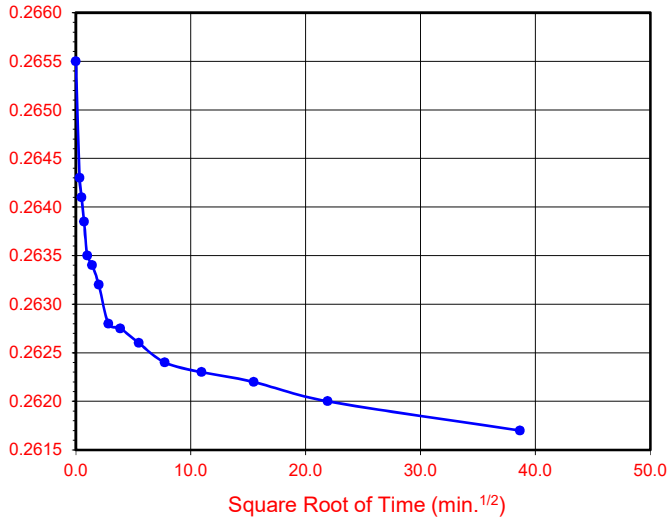
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.2767	0.9993	0.00	0.07	0.605	0.07
0.25	0.2716	0.9942	0.01	0.58	0.597	0.57
0.50	0.2685	0.9911	0.03	0.89	0.592	0.86
1.00	0.2643	0.9869	0.06	1.31	0.586	1.25
2.00	0.2591	0.9817	0.11	1.83	0.578	1.72
2.00	0.2655	0.9881	0.11	1.19	0.588	1.08
4.00	0.2617	0.9843	0.19	1.57	0.584	1.38
8.00	0.2522	0.9748	0.33	2.52	0.571	2.19
16.00	0.2328	0.9554	0.52	4.46	0.542	3.94
4.00	0.2440	0.9666	0.36	3.35	0.558	2.99
1.00	0.2590	0.9816	0.23	1.84	0.580	1.61
0.25	0.2713	0.9939	0.17	0.61	0.599	0.44

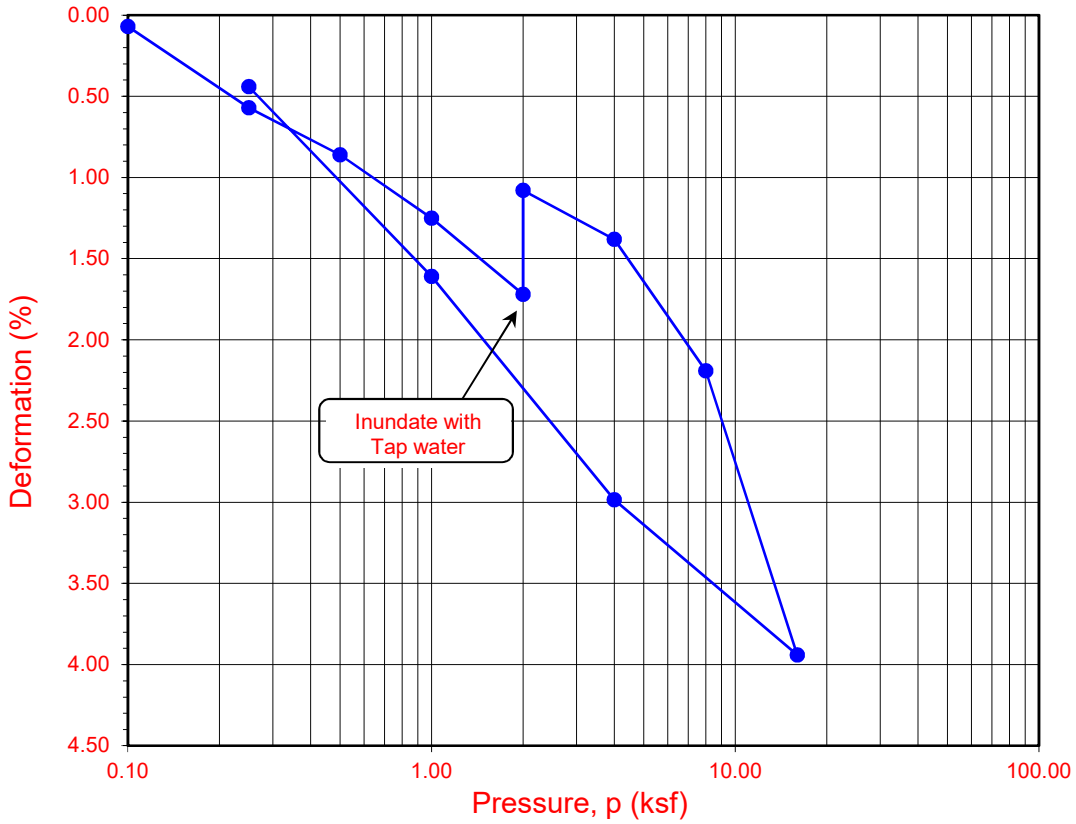
Time Readings @ 4 ksf

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)
8/25/20	7:30:00	0.0	0.0	0.2655
8/25/20	7:30:06	0.1	0.3	0.2643
8/25/20	7:30:15	0.2	0.5	0.2641
8/25/20	7:30:30	0.5	0.7	0.2639
8/25/20	7:31:00	1.0	1.0	0.2635
8/25/20	7:32:00	2.0	1.4	0.2634
8/25/20	7:34:00	4.0	2.0	0.2632
8/25/20	7:38:00	8.0	2.8	0.2628
8/25/20	7:45:00	15.0	3.9	0.2628
8/25/20	8:00:00	30.0	5.5	0.2626
8/25/20	8:30:00	60.0	7.7	0.2624
8/25/20	9:30:00	120.0	11.0	0.2623
8/25/20	11:30:00	240.0	15.5	0.2622
8/25/20	15:30:00	480.0	21.9	0.2620
8/26/20	8:24:00	1494.0	38.7	0.2617

Time Readings @ 4 ksf







Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
2020-LB-4	**R-3**	**10.0**	**17.2**	**25.7**	**105.0**	**99.3**	**0.606**	**0.599**	**77**	**100**

Soil Identification: Yellowish brown lean clay (CL), caliche noted

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11382.016

SMMUSD MMHS Phase 1

09-20

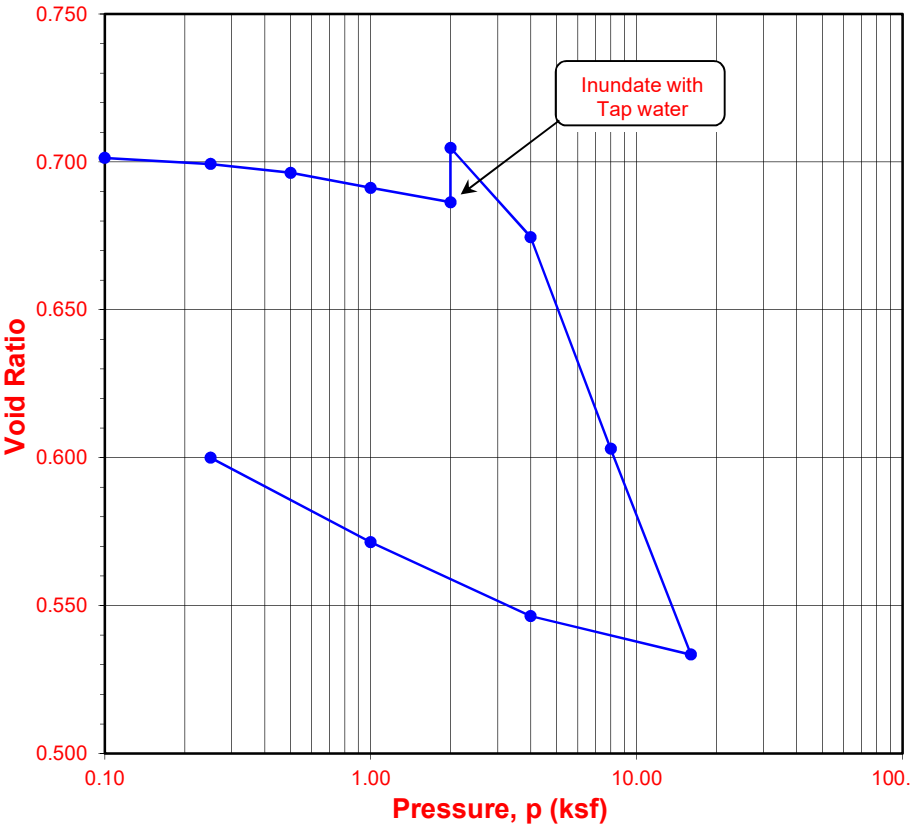
ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Leighton

Project Name:	SMMUSD MMHS Phase 1	Tested By: GB/YN	Date: 08/26/20
Project No.:	11382.016	Checked By: J. Ward	Date: 09/15/20
Boring No.:	2020-LB-6	Depth (ft.): 0-5	
Sample No.:	B-1	Sample Type:	90% Remold
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s		

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	173.83
Weight of Ring (g)	40.69
Height after consol. (in.)	0.9402
Before Test	
Wt.Wet Sample+Cont. (g)	214.82
Wt.of Dry Sample+Cont. (g)	200.37
Weight of Container (g)	77.79
Initial Moisture Content (%)	11.8
Initial Dry Density (pcf)	99.1
Initial Saturation (%)	45
Initial Vertical Reading (in.)	0.3294
After Test	
Wt.of Wet Sample+Cont. (g)	255.91
Wt. of Dry Sample+Cont. (g)	230.20
Weight of Container (g)	70.38
Final Moisture Content (%)	21.58
Final Dry Density (pcf)	105.4
Final Saturation (%)	97
Final Vertical Reading (in.)	0.2663
Specific Gravity (assumed)	2.70
Water Density (pcf)	62.43

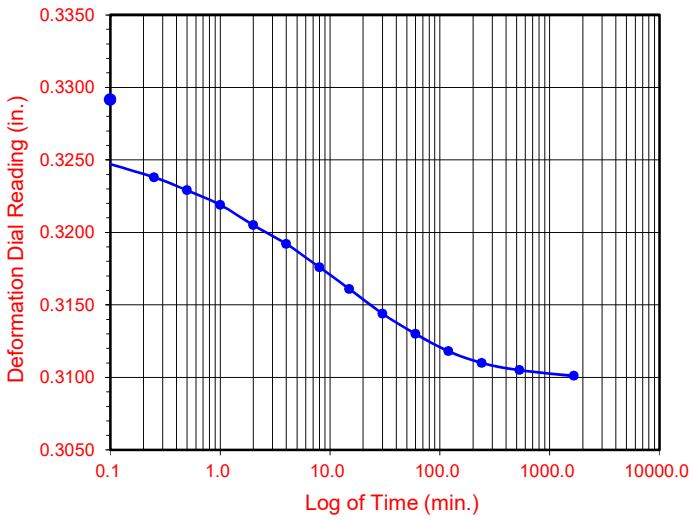


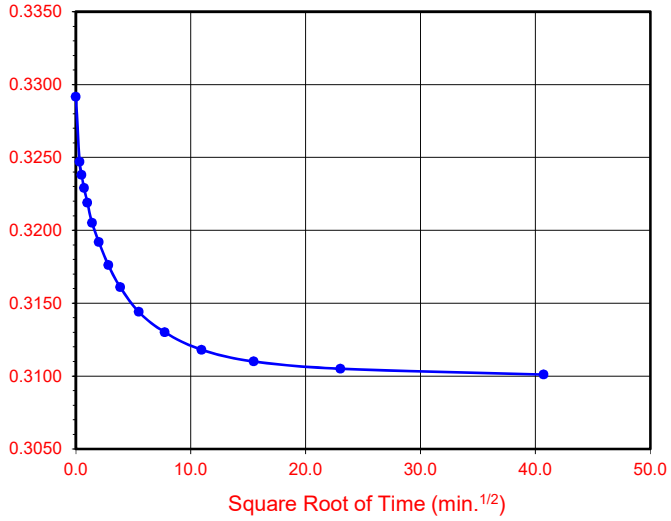
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.3292	0.9998	0.00	0.03	0.701	0.03
0.25	0.3277	0.9983	0.03	0.18	0.699	0.15
0.50	0.3256	0.9962	0.06	0.38	0.696	0.32
1.00	0.3221	0.9927	0.11	0.73	0.691	0.62
2.00	0.3184	0.9890	0.20	1.11	0.686	0.91
2.00	0.3292	0.9998	0.20	0.03	0.705	-0.17
4.00	0.3101	0.9807	0.33	1.93	0.675	1.60
8.00	0.2666	0.9372	0.48	6.28	0.603	5.80
16.00	0.2238	0.8944	0.67	10.56	0.533	9.89
4.00	0.2332	0.9038	0.50	9.63	0.546	9.13
1.00	0.2489	0.9195	0.39	8.05	0.571	7.66
0.25	0.2663	0.9369	0.33	6.31	0.600	5.98

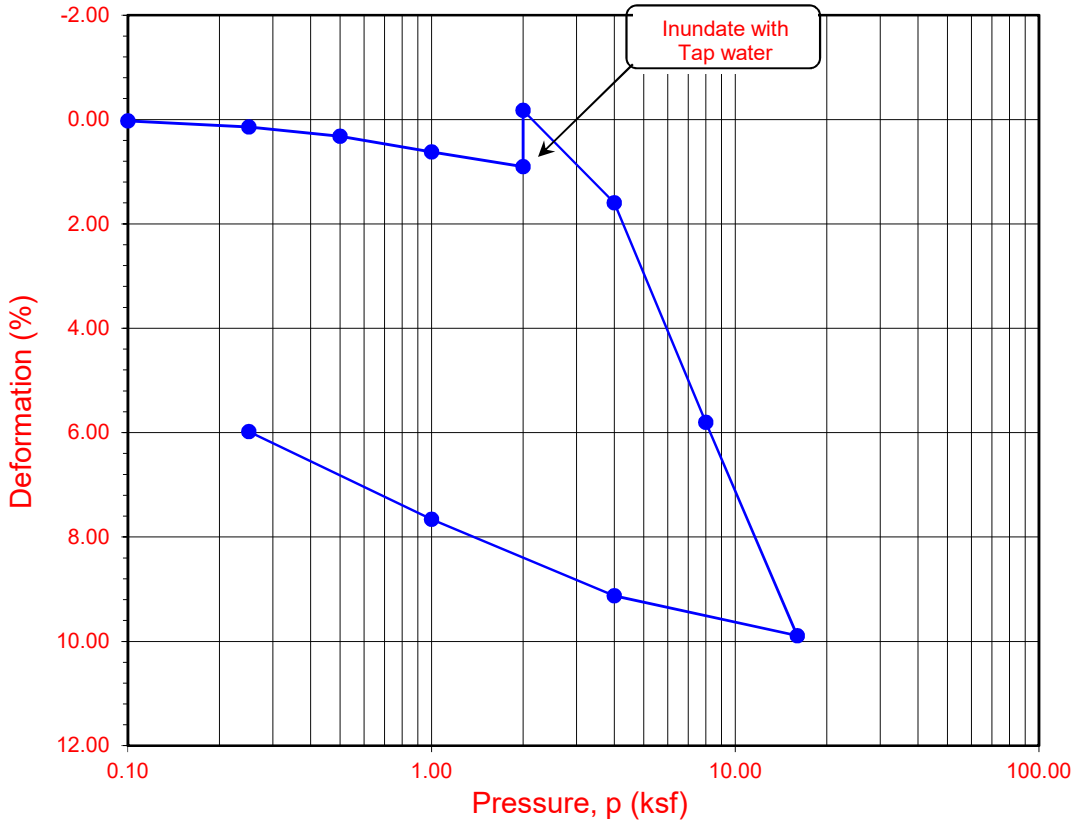
Time Readings @ 4 ksf

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)
8/30/20	5:25:00	0.0	0.0	0.3292
8/30/20	5:25:06	0.1	0.3	0.3247
8/30/20	5:25:15	0.2	0.5	0.3238
8/30/20	5:25:30	0.5	0.7	0.3229
8/30/20	5:26:00	1.0	1.0	0.3219
8/30/20	5:27:00	2.0	1.4	0.3205
8/30/20	5:29:00	4.0	2.0	0.3192
8/30/20	5:33:00	8.0	2.8	0.3176
8/30/20	5:40:00	15.0	3.9	0.3161
8/30/20	5:55:00	30.0	5.5	0.3144
8/30/20	6:25:00	60.0	7.7	0.3130
8/30/20	7:25:00	120.0	11.0	0.3118
8/30/20	9:25:00	240.0	15.5	0.3110
8/30/20	14:15:00	530.0	23.0	0.3105
8/31/20	9:03:00	1658.0	40.7	0.3101

Time Readings @ 4 ksf







Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
2020-LB-6	**B-1**	**0-5**	**11.8**	**21.6**	**99.1**	**105.4**	**0.702**	**0.600**	**45**	**97**

Soil Identification: Dark yellowish brown lean clay with sand (CL)s

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11382.016

SMMUSD MMHS Phase 1

09-20

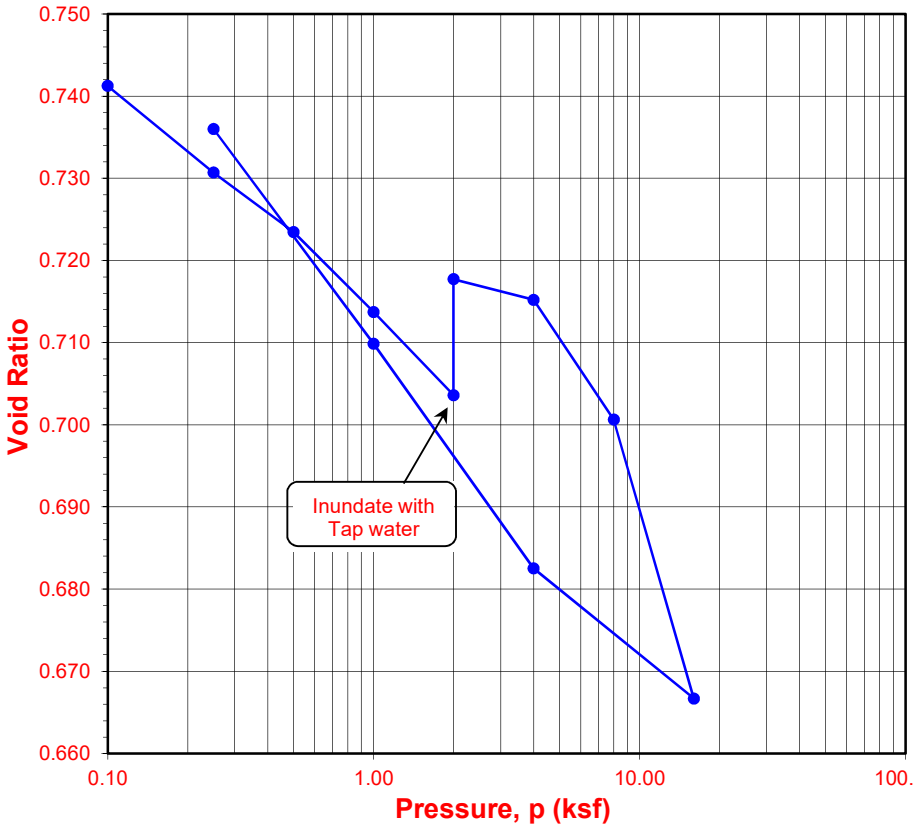
ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Leighton

Project Name:	SMMUSD MMHS Phase 1	Tested By: GB/YN	Date: 08/22/20
Project No.:	11382.016	Checked By: J. Ward	Date: 09/14/20
Boring No.:	2020-LB-6	Depth (ft.): 7.0	
Sample No.:	R-2	Sample Type: Ring	
Soil Identification:	Dark yellowish brown fat clay (CH), caliche noted		

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	192.94
Weight of Ring (g)	42.48
Height after consol. (in.)	0.9967
Before Test	
Wt.Wet Sample+Cont. (g)	203.31
Wt.of Dry Sample+Cont. (g)	174.40
Weight of Container (g)	57.27
Initial Moisture Content (%)	24.7
Initial Dry Density (pcf)	100.4
Initial Saturation (%)	93
Initial Vertical Reading (in.)	0.2929
After Test	
Wt.of Wet Sample+Cont. (g)	229.56
Wt. of Dry Sample+Cont. (g)	197.21
Weight of Container (g)	35.71
Final Moisture Content (%)	27.18
Final Dry Density (pcf)	99.3
Final Saturation (%)	100
Final Vertical Reading (in.)	0.2869
Specific Gravity (assumed)	2.80
Water Density (pcf)	62.43

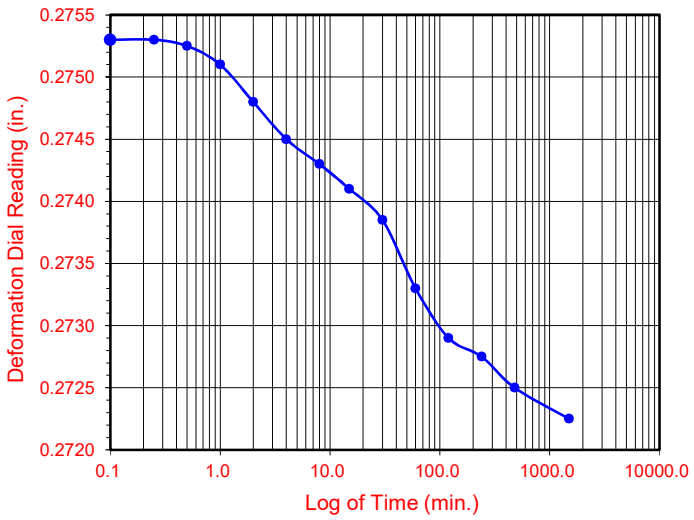


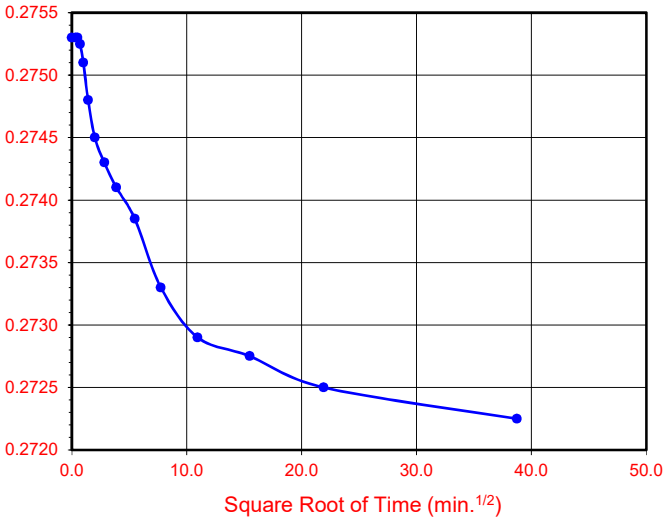
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.2926	0.9997	0.00	0.03	0.741	0.03
0.25	0.2861	0.9932	0.05	0.69	0.731	0.64
0.50	0.2811	0.9882	0.13	1.18	0.723	1.05
1.00	0.2745	0.9816	0.23	1.84	0.714	1.61
2.00	0.2672	0.9743	0.38	2.57	0.704	2.19
2.00	0.2753	0.9824	0.38	1.76	0.718	1.38
4.00	0.2723	0.9794	0.54	2.07	0.715	1.53
8.00	0.2621	0.9692	0.72	3.08	0.701	2.36
16.00	0.2404	0.9475	0.94	5.25	0.667	4.31
4.00	0.2517	0.9588	0.72	4.12	0.683	3.40
1.00	0.2698	0.9769	0.48	2.31	0.710	1.83
0.25	0.2869	0.9940	0.27	0.60	0.736	0.33

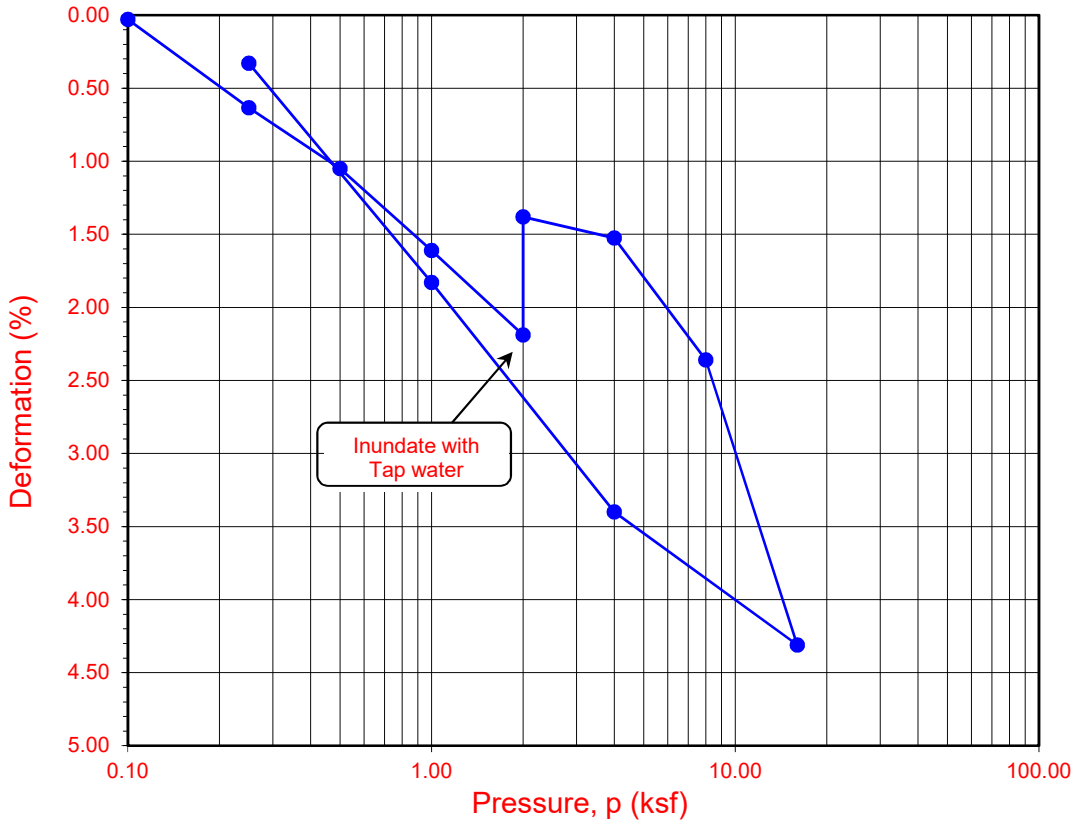
Time Readings @ 4 ksf

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)
8/25/20	7:20:00	0.0	0.0	0.2753
8/25/20	7:20:06	0.1	0.3	0.2753
8/25/20	7:20:15	0.2	0.5	0.2753
8/25/20	7:20:30	0.5	0.7	0.2753
8/25/20	7:21:00	1.0	1.0	0.2751
8/25/20	7:22:00	2.0	1.4	0.2748
8/25/20	7:24:00	4.0	2.0	0.2745
8/25/20	7:28:00	8.0	2.8	0.2743
8/25/20	7:35:00	15.0	3.9	0.2741
8/25/20	7:50:00	30.0	5.5	0.2739
8/25/20	8:20:00	60.0	7.7	0.2733
8/25/20	9:20:00	120.0	11.0	0.2729
8/25/20	11:20:00	240.0	15.5	0.2728
8/25/20	15:20:00	480.0	21.9	0.2725
8/26/20	8:20:00	1500.0	38.7	0.2723

Time Readings @ 4 ksf







Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
2020-LB-6	**R-2**	**7.0**	**24.7**	**27.2**	**100.4**	**99.3**	**0.742**	**0.736**	**93**	**100**

Soil Identification: Dark yellowish brown fat clay (CH), caliche noted

Leighton

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS
ASTM D 2435

Project No.: 11382.016

SMMUSD MMHS Phase 1

09-20

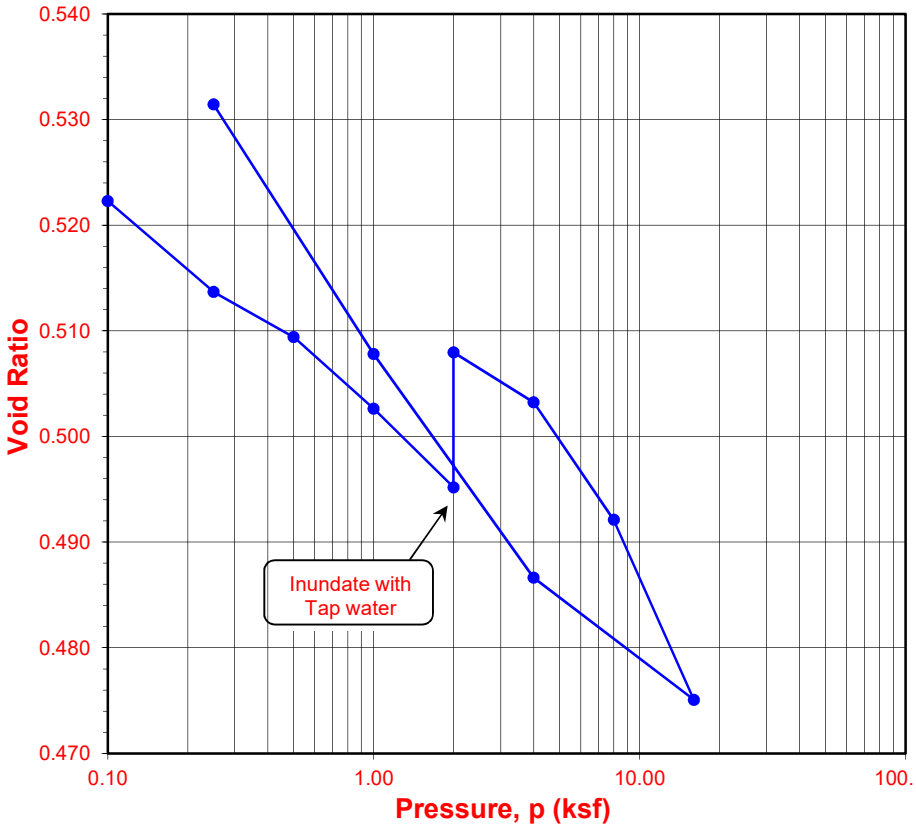
ONE-DIMENSIONAL CONSOLIDATION PROPERTIES of SOILS

ASTM D 2435

Leighton

Project Name:	SMMUSD MMHS Phase 1	Tested By: GB/YN	Date: 08/22/20
Project No.:	11382.016	Checked By: J. Ward	Date: 09/14/20
Boring No.:	2020-LB-6	Depth (ft.): 15.0	
Sample No.:	R-4	Sample Type: Ring	
Soil Identification:	Dark yellowish brown lean clay (CL), caliche noted		

Sample Diameter (in.)	2.415
Sample Thickness (in.)	1.000
Wt. of Sample + Ring (g)	199.63
Weight of Ring (g)	41.73
Height after consol. (in.)	1.0055
Before Test	
Wt.Wet Sample+Cont. (g)	187.85
Wt.of Dry Sample+Cont. (g)	170.40
Weight of Container (g)	61.85
Initial Moisture Content (%)	16.1
Initial Dry Density (pcf)	113.1
Initial Saturation (%)	85
Initial Vertical Reading (in.)	0.2891
After Test	
Wt.of Wet Sample+Cont. (g)	269.89
Wt. of Dry Sample+Cont. (g)	242.33
Weight of Container (g)	68.28
Final Moisture Content (%)	20.83
Final Dry Density (pcf)	109.4
Final Saturation (%)	100
Final Vertical Reading (in.)	0.2934
Specific Gravity (assumed)	2.76
Water Density (pcf)	62.43

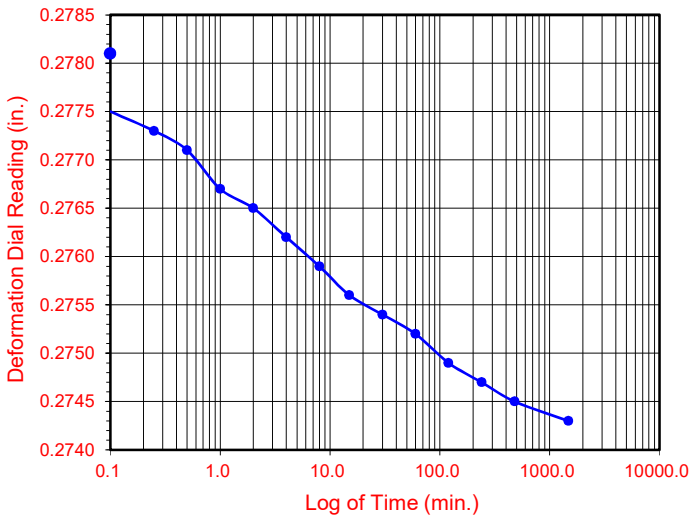


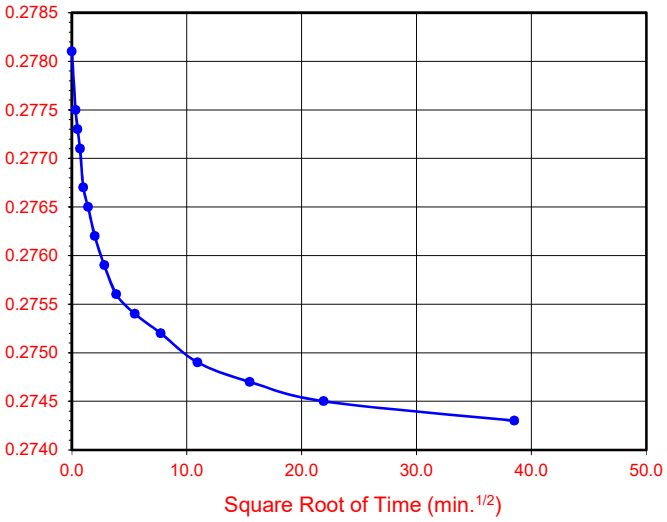
Pressure (p) (ksf)	Final Reading (in.)	Apparent Thickness (in.)	Load Compliance (%)	Deformation % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.10	0.2886	0.9995	0.00	0.05	0.522	0.05
0.25	0.2828	0.9937	0.02	0.64	0.514	0.62
0.50	0.2798	0.9907	0.04	0.93	0.509	0.89
1.00	0.2750	0.9859	0.07	1.41	0.503	1.34
2.00	0.2697	0.9806	0.11	1.94	0.495	1.83
2.00	0.2781	0.9890	0.11	1.10	0.508	0.99
4.00	0.2743	0.9852	0.18	1.48	0.503	1.30
8.00	0.2660	0.9769	0.28	2.31	0.492	2.03
16.00	0.2535	0.9644	0.41	3.56	0.475	3.15
4.00	0.2622	0.9731	0.30	2.69	0.487	2.39
1.00	0.2772	0.9881	0.19	1.19	0.508	1.00
0.25	0.2934	1.0043	0.12	-0.43	0.531	-0.55

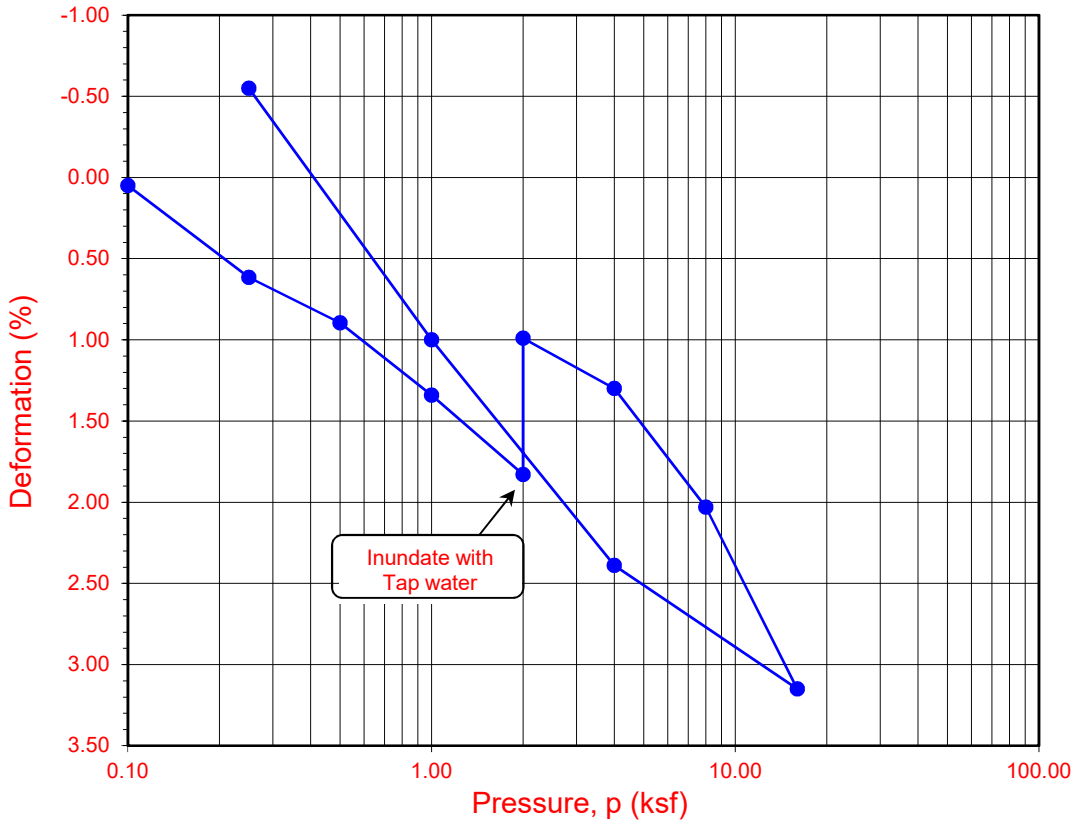
Time Readings @ 4 ksf

Date	Time	Elapsed Time (min)	Square Root of Time	Dial Rdgs. (in.)
8/25/20	7:42:00	0.0	0.0	0.2781
8/25/20	7:42:06	0.1	0.3	0.2775
8/25/20	7:42:15	0.2	0.5	0.2773
8/25/20	7:42:30	0.5	0.7	0.2771
8/25/20	7:43:00	1.0	1.0	0.2767
8/25/20	7:44:00	2.0	1.4	0.2765
8/25/20	7:46:00	4.0	2.0	0.2762
8/25/20	7:50:00	8.0	2.8	0.2759
8/25/20	7:57:00	15.0	3.9	0.2756
8/25/20	8:12:00	30.0	5.5	0.2754
8/25/20	8:42:00	60.0	7.7	0.2752
8/25/20	9:42:00	120.0	11.0	0.2749
8/25/20	11:42:00	240.0	15.5	0.2747
8/25/20	15:42:00	480.0	21.9	0.2745
8/26/20	8:26:00	1484.0	38.5	0.2743

Time Readings @ 4 ksf







Boring No.	Sample No.	Depth (ft.)	Moisture Content (%)		Dry Density (pcf)		Void Ratio		Degree of Saturation (%)	
			Initial	Final	Initial	Final	Initial	Final	Initial	Final
2020-LB-6	**R-4**	**15.0**	**16.1**	**20.8**	**113.1**	**109.4**	**0.523**	**0.531**	**85**	**100**

Soil Identification: Dark yellowish brown lean clay (CL), caliche noted

Leighton

TESTS for SULFATE CONTENT
CHLORIDE CONTENT and pH of SOILS

Project Name: SMMUSD MMHS Phase 1 Tested By : G. Berdy Date: 08/25/20

Project No. : 11382.016 Checked By: J. Ward Date: 09/15/20

Boring No.	2020-LB-4	2020-LB-6		
Sample No.	B-1	B-1		
Sample Depth (ft)	0-5	0-5		
Soil Identification:	Dark yellowish brown (CL)s	Dark yellowish brown (CL)s		
Wet Weight of Soil + Container (g)	0.00	0.00		
Dry Weight of Soil + Container (g)	0.00	0.00		
Weight of Container (g)	1.00	1.00		
Moisture Content (%)	0.00	0.00		
Weight of Soaked Soil (g)	100.23	100.27		

SULFATE CONTENT, DOT California Test 417, Part II

Beaker No.	17	152		
Crucible No.	21	12		
Furnace Temperature (°C)	860	860		
Time In / Time Out	8:15/9:00	8:15/9:00		
Duration of Combustion (min)	45	45		
Wt. of Crucible + Residue (g)	22.1668	20.7479		
Wt. of Crucible (g)	22.1632	20.7422		
Wt. of Residue (g) (A)	0.0036	0.0057		
PPM of Sulfate (A) x 41150	148.14	234.56		
PPM of Sulfate, Dry Weight Basis	**148**	**235**		

CHLORIDE CONTENT, DOT California Test 422

ml of Extract For Titration (B)	15	15		
ml of AgNO3 Soln. Used in Titration (C)	0.6	1.4		
PPM of Chloride (C -0.2) * 100 * 30 / B	80	240		
PPM of Chloride, Dry Wt. Basis	**80**	**240**		

pH TEST, DOT California Test 643

pH Value	**8.14**	**8.50**		
Temperature °C	20.1	20.1		

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SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name:	SMMUSD MMHS Phase 1		Tested By :	G. Berdy	Date: 08/28/20
Project No. :	11382.016		Checked By:	J. Ward	Date: 09/15/20
Boring No.:	2020-LB-4		Depth (ft.) :	0-5	
Sample No. :	B-1				

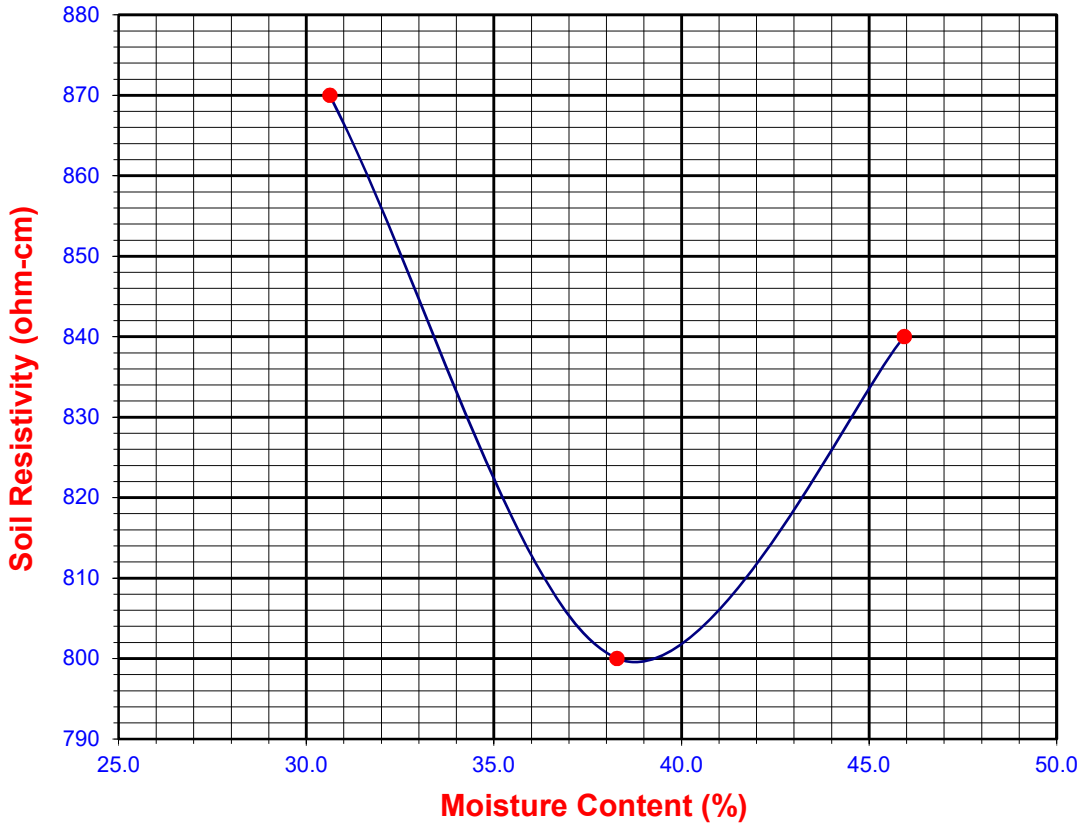
Soil Identification:* Dark yellowish brown (CL)s

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	40	30.63	870	870
2	50	38.28	800	800
3	60	45.94	840	840
4				
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	0.00
Dry Wt. of Soil + Cont. (g)	0.00
Wt. of Container (g)	1.00
Container No.	
Initial Soil Wt. (g) (Wt)	130.60
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
800	**38.8**	**148**	**80**	**8.14**	**20.1**



Leighton

SOIL RESISTIVITY TEST

DOT CA TEST 643

Project Name:	SMMUSD MMHS Phase 1		Tested By :	G. Berdy	Date: 08/28/20
Project No. :	11382.016		Checked By:	J. Ward	Date: 09/15/20
Boring No.:	2020-LB-6		Depth (ft.) :	0-5	
Sample No. :	B-1				

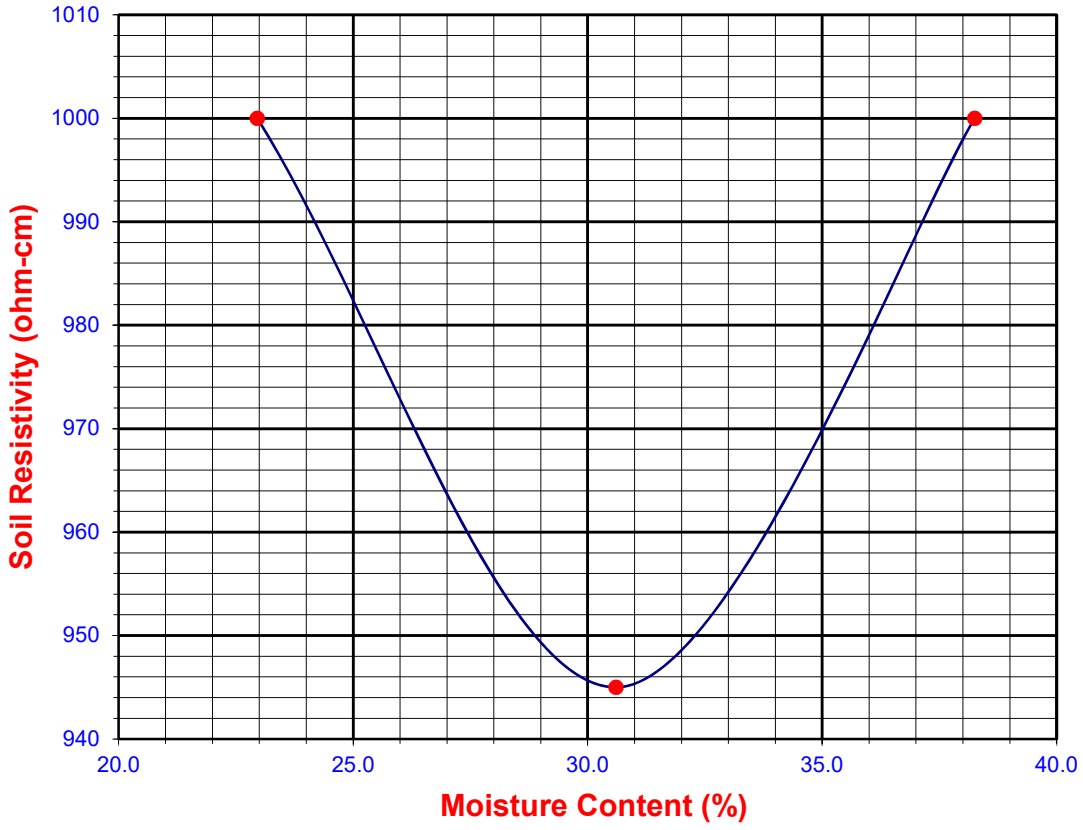
Soil Identification:* Dark yellowish brown (CL)s

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	30	22.95	1000	1000
2	40	30.60	945	945
3	50	38.26	1000	1000
4				
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	0.00
Dry Wt. of Soil + Cont. (g)	0.00
Wt. of Container (g)	1.00
Container No.	
Initial Soil Wt. (g) (Wt)	130.70
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100	

Min. Resistivity (ohm-cm)	Moisture Content (%)	Sulfate Content (ppm)	Chloride Content (ppm)	Soil pH	
				pH	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA Test 643	
945	**30.6**	**235**	**240**	**8.50**	**20.1**



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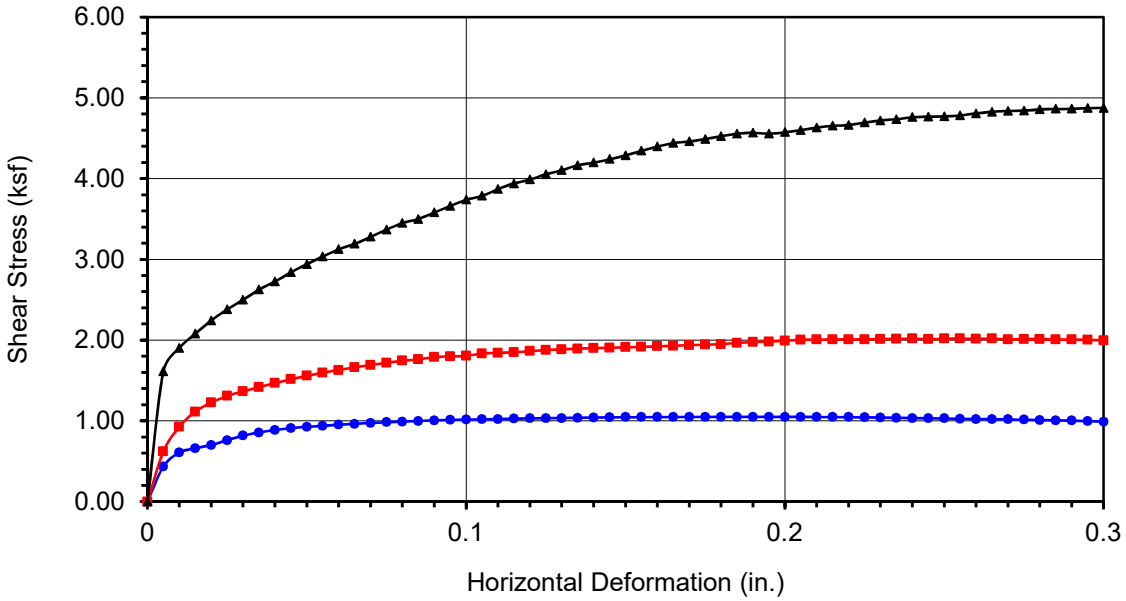
DIRECT SHEAR TEST

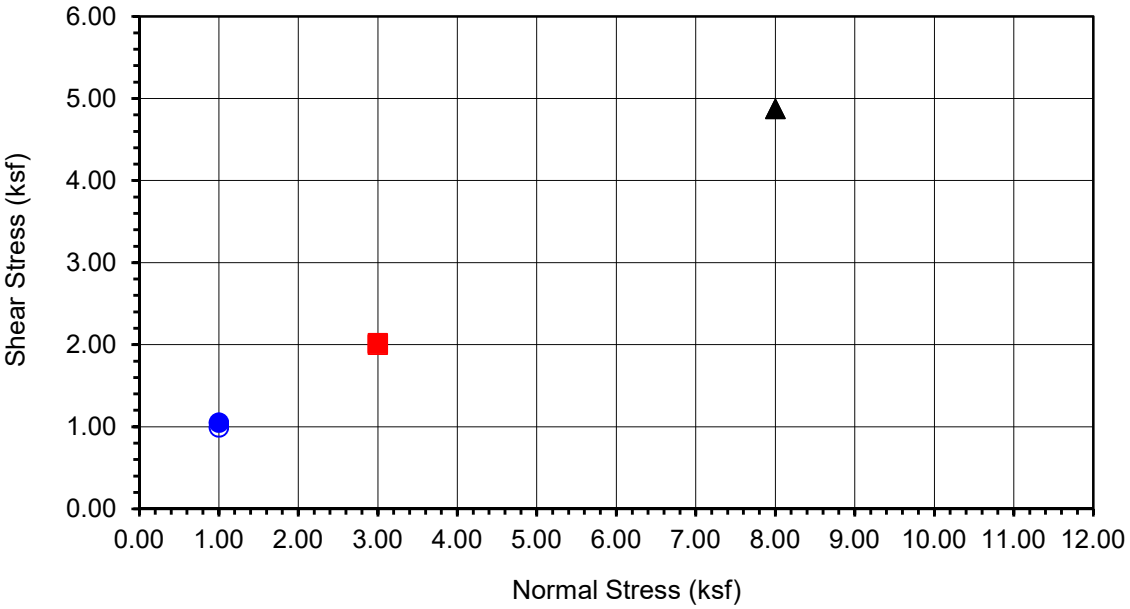
Consolidated Drained - ASTM D 3080

Project Name:	SMMUSD MMHS Phase 1	Tested By:	G. Bathala	Date:	08/27/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/15/20
Boring No.:	LB-4	Sample Type:	90% Remold		
Sample No.:	B-1	Depth (ft.):	0-5		

Soil Identification: Dark yellowish brown lean clay with sand (CL)s

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	178.05	178.28	178.27
Weight of Ring(gm):	45.82	45.78	45.72
Before Shearing			
Weight of Wet Sample+Cont.(gm):	189.90	189.90	189.90
Weight of Dry Sample+Cont.(gm):	176.18	176.18	176.18
Weight of Container(gm):	75.84	75.84	75.84
Vertical Rdg.(in): Initial	0.0000	0.2376	0.0000
Vertical Rdg.(in): Final	0.0216	0.2411	-0.0397
After Shearing			
Weight of Wet Sample+Cont.(gm):	221.00	200.89	196.21
Weight of Dry Sample+Cont.(gm):	187.23	172.91	171.01
Weight of Container(gm):	73.42	59.53	57.19
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-4**
Sample No.	**B-1**
Depth (ft)	**0-5**
Sample Type: 90% Remold	
Soil Identification: Dark yellowish brown lean clay with sand (CL)s	

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 1.050	■ 2.018	▲ 4.873
Shear Stress @ End of Test (ksf)	○ 0.990	□ 1.996	△ 4.873
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	13.67	13.67	13.67
Dry Density (pcf)	96.7	96.9	97.0
Saturation (%)	49.7	50.0	50.0
Soil Height Before Shearing (in.)	1.0216	0.9965	0.9603
Final Moisture Content (%)	29.7	24.7	22.1

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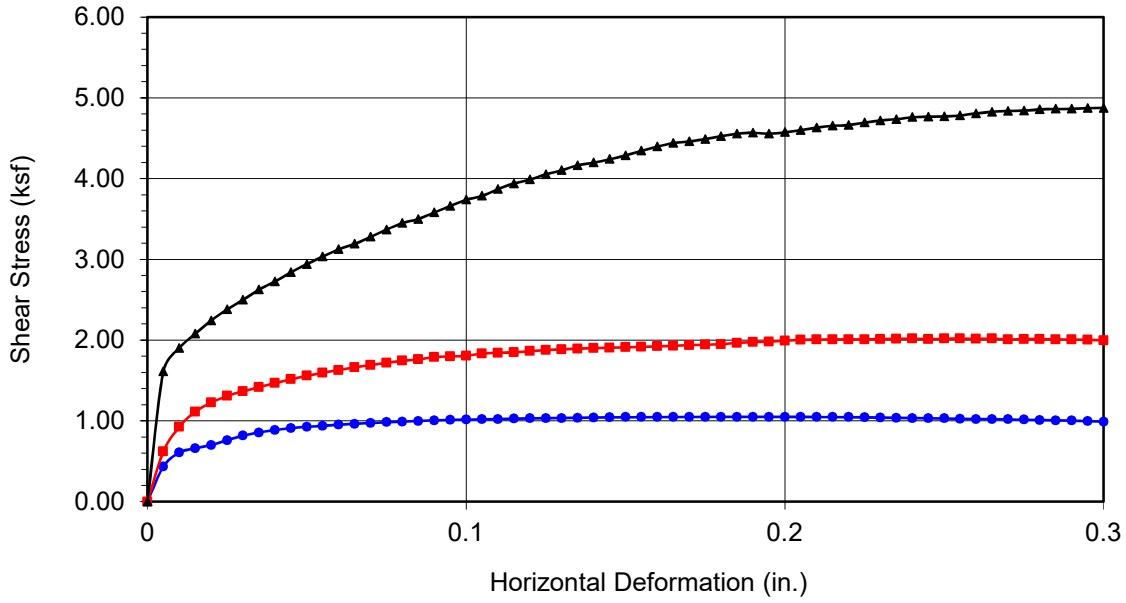
DIRECT SHEAR TEST RESULTS

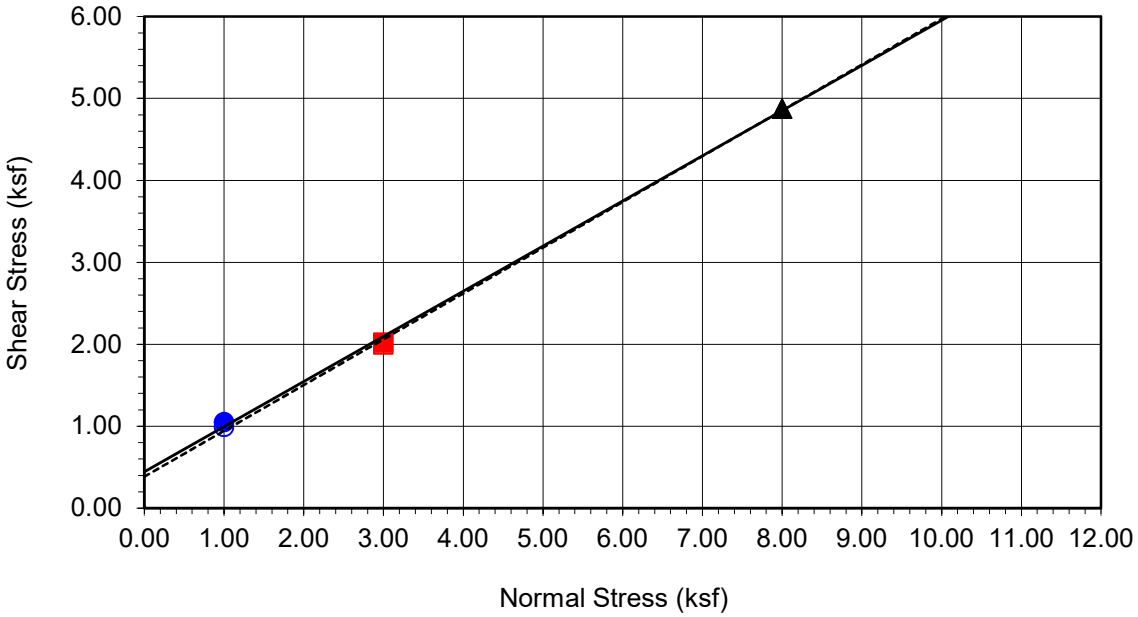
Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20





Boring No.	**LB-4**
Sample No.	**B-1**
Depth (ft)	**0-5**
Sample Type: 90% Remold	
Soil Identification: Dark yellowish brown lean clay with sand (CL)s	

Strength Parameters

	C (psf)	ϕ (°)
Peak	443	29
Ultimate	385	29

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 1.050	■ 2.018	▲ 4.873
Shear Stress @ End of Test (ksf)	○ 0.990	□ 1.996	△ 4.873
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	13.67	13.67	13.67
Dry Density (pcf)	96.7	96.9	97.0
Saturation (%)	49.7	50.0	50.0
Soil Height Before Shearing (in.)	1.0216	0.9965	0.9603
Final Moisture Content (%)	29.7	24.7	22.1

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20

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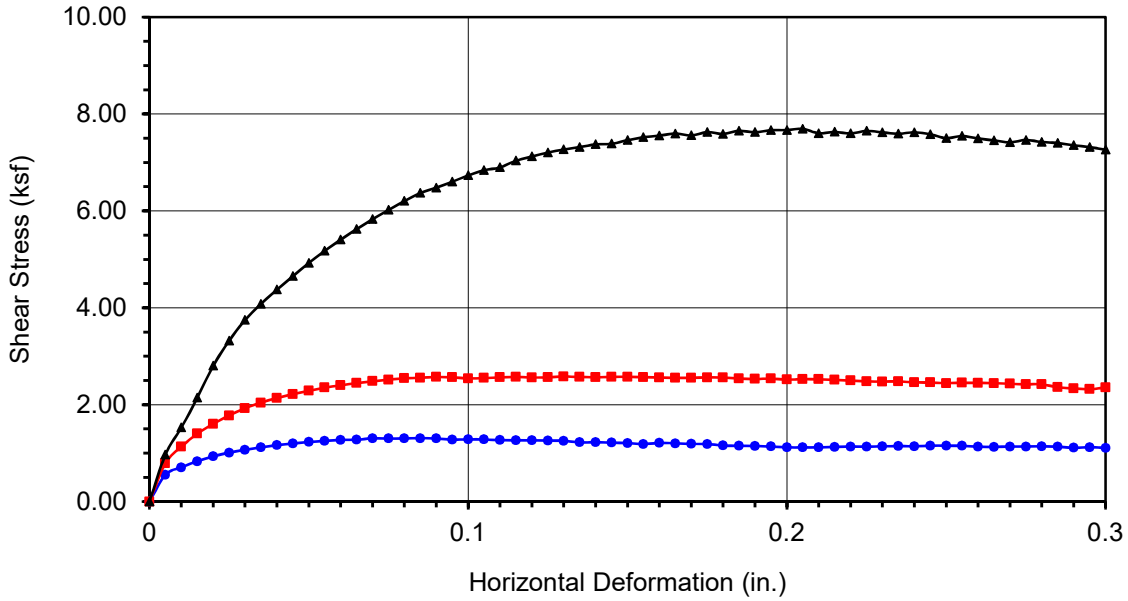
DIRECT SHEAR TEST

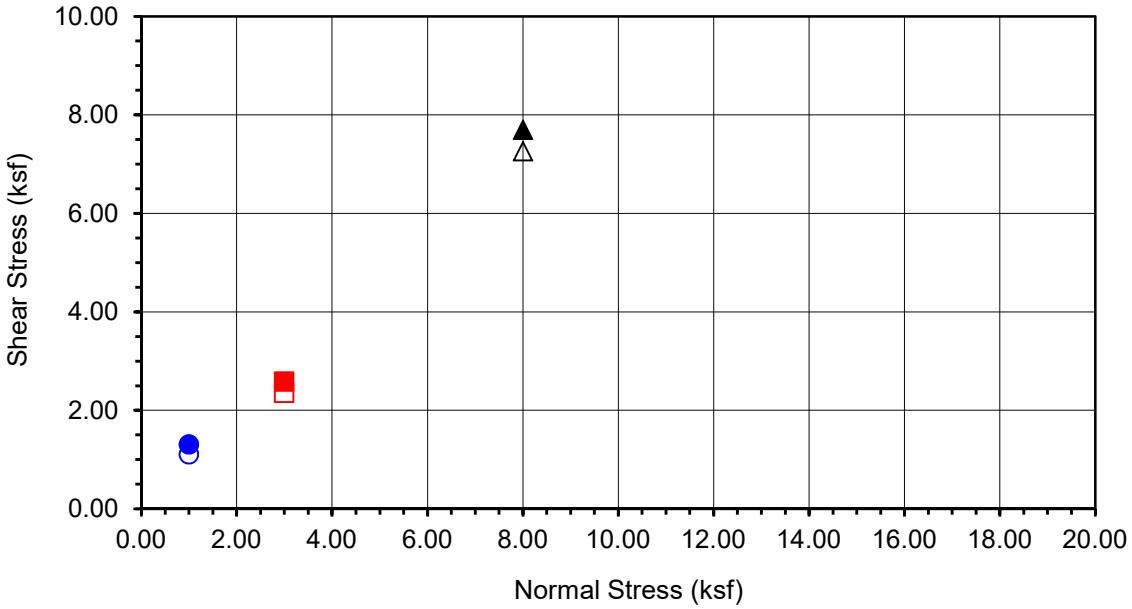
Consolidated Drained - ASTM D 3080

Project Name:	SMMUSD MMHS Phase 1	Tested By:	G. Bathala	Date:	08/24/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/14/20
Boring No.:	LB-4	Sample Type:	Ring		
Sample No.:	R-1	Depth (ft.):	5.0		

Soil Identification: Dark yellowish brown lean clay with sand (CL)s

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	193.26	198.28	197.95
Weight of Ring(gm):	42.89	45.84	45.43
Before Shearing			
Weight of Wet Sample+Cont.(gm):	181.04	181.04	181.04
Weight of Dry Sample+Cont.(gm):	162.59	162.59	162.59
Weight of Container(gm):	58.00	58.00	58.00
Vertical Rdg.(in): Initial	0.2272	0.0000	0.0000
Vertical Rdg.(in): Final	0.2329	-0.0168	-0.0285
After Shearing			
Weight of Wet Sample+Cont.(gm):	230.23	210.16	207.93
Weight of Dry Sample+Cont.(gm):	203.33	184.48	184.45
Weight of Container(gm):	77.79	58.64	58.53
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-4**
Sample No.	**R-1**
Depth (ft)	**5**
Sample Type:	
Ring	
Soil Identification:	
Dark yellowish brown lean clay with sand (CL)s	

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 1.308	■ 2.581	▲ 7.693
Shear Stress @ End of Test (ksf)	○ 1.107	□ 2.355	△ 7.262
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	17.64	17.64	17.64
Dry Density (pcf)	106.3	107.8	107.8
Saturation (%)	81.3	84.4	84.6
Soil Height Before Shearing (in.)	0.9943	0.9832	0.9715
Final Moisture Content (%)	21.4	20.4	18.6

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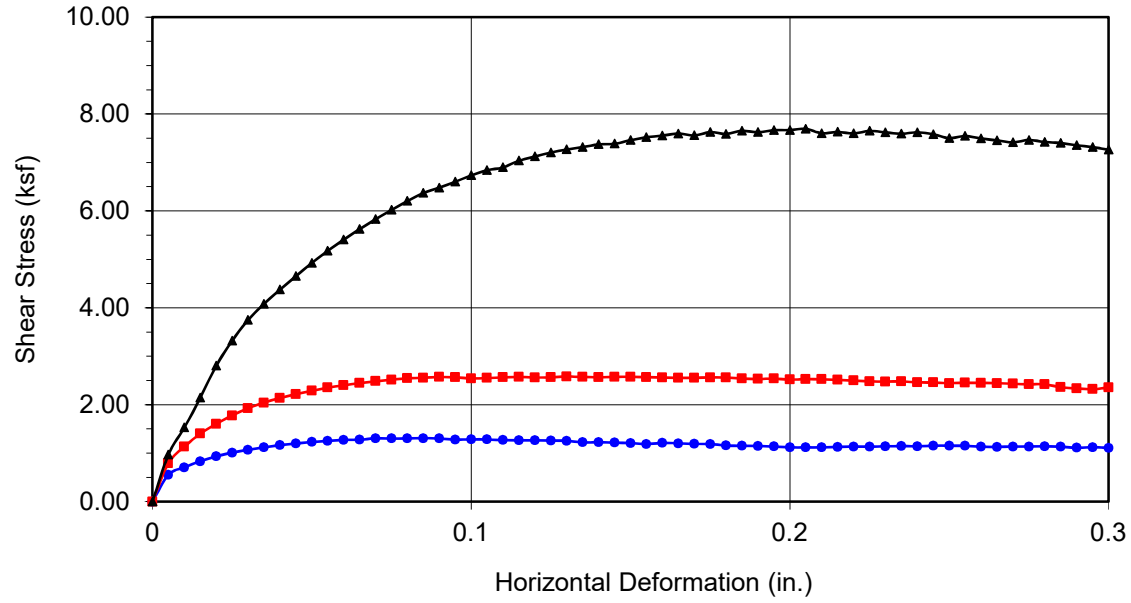
DIRECT SHEAR TEST RESULTS

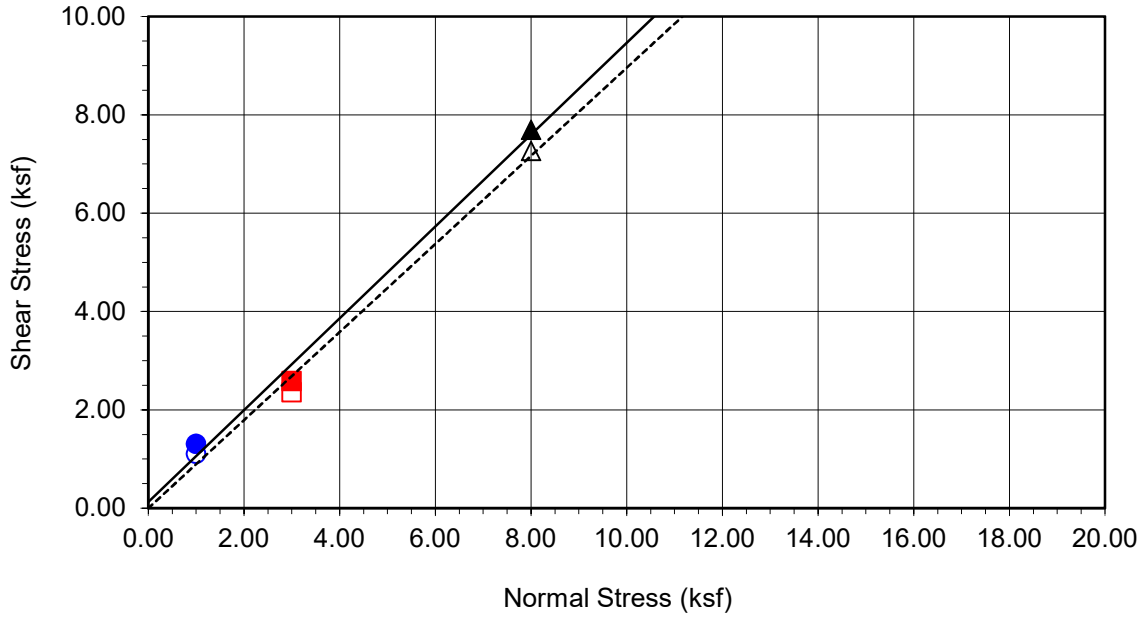
Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20





Boring No.	**LB-4**
Sample No.	**R-1**
Depth (ft)	**5**
Sample Type:	Ring
Soil Identification: Dark yellowish brown lean clay with sand (CL)s	

Strength Parameters

	C (psf)	ϕ (°)
Peak	127	43
Ultimate	0	42

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 1.308	■ 2.581	▲ 7.693
Shear Stress @ End of Test (ksf)	○ 1.107	□ 2.355	△ 7.262
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	17.64	17.64	17.64
Dry Density (pcf)	106.3	107.8	107.8
Saturation (%)	81.3	84.4	84.6
Soil Height Before Shearing (in.)	0.9943	0.9832	0.9715
Final Moisture Content (%)	21.4	20.4	18.6

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20

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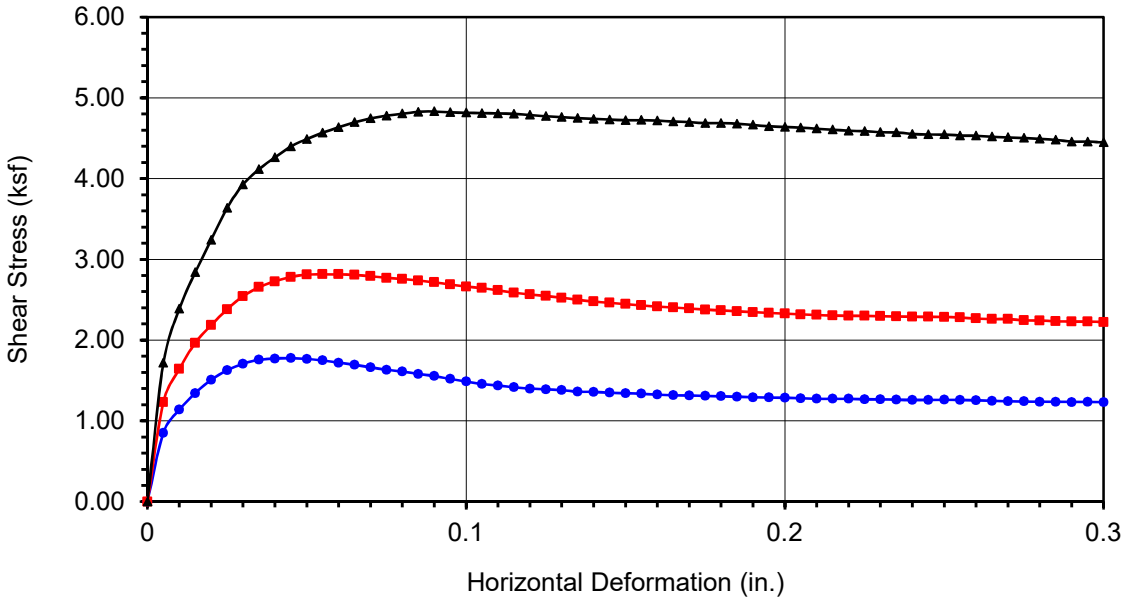
DIRECT SHEAR TEST

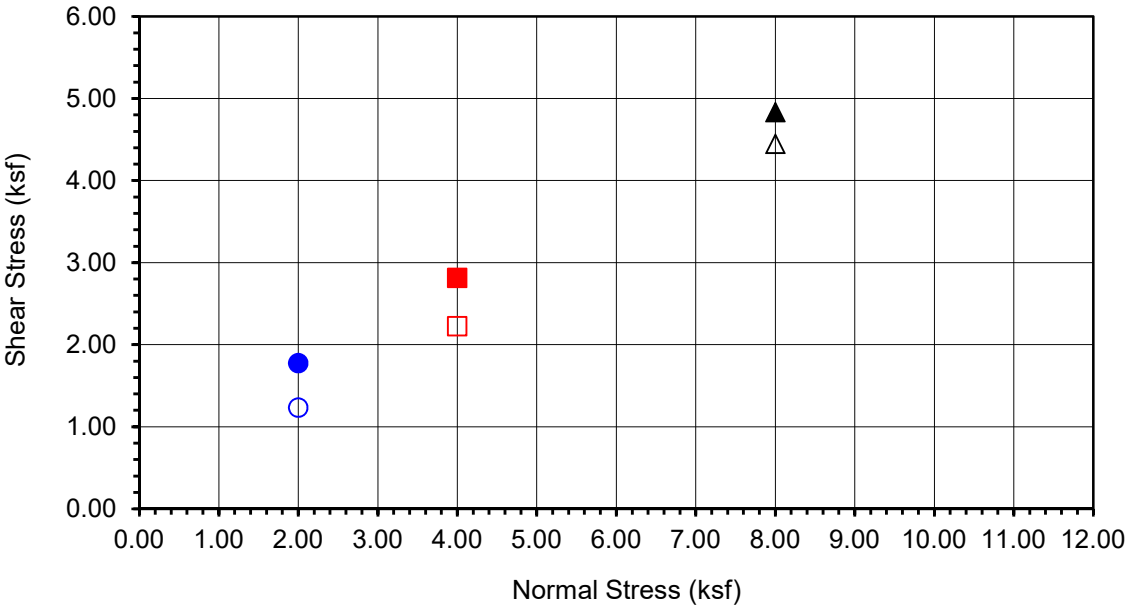
Consolidated Drained - ASTM D 3080

Project Name:	SMMUSD MMHS Phase 1	Tested By:	G. Bathala	Date:	08/24/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/14/20
Boring No.:	LB-4	Sample Type:	Ring		
Sample No.:	R-3	Depth (ft.):	10.0		

Soil Identification: Yellowish brown lean clay (CL), caliche noted

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	187.76	191.18	187.73
Weight of Ring(gm):	41.29	42.12	38.39
Before Shearing			
Weight of Wet Sample+Cont.(gm):	176.00	176.00	176.00
Weight of Dry Sample+Cont.(gm):	155.43	155.43	155.43
Weight of Container(gm):	35.70	35.70	35.70
Vertical Rdg.(in): Initial	0.0000	0.2460	0.2252
Vertical Rdg.(in): Final	-0.0104	0.2672	0.2435
After Shearing			
Weight of Wet Sample+Cont.(gm):	207.38	206.57	205.36
Weight of Dry Sample+Cont.(gm):	178.77	177.98	177.60
Weight of Container(gm):	59.07	57.41	57.19
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-4**
Sample No.	**R-3**
Depth (ft)	**10**
Sample Type: Ring	
Soil Identification: Yellowish brown lean clay (CL), caliche noted	

Normal Stress (kip/ft²)	2.000	4.000	8.000
Peak Shear Stress (kip/ft²)	● 1.776	■ 2.814	▲ 4.832
Shear Stress @ End of Test (ksf)	○ 1.232	□ 2.223	△ 4.448
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	17.18	17.18	17.18
Dry Density (pcf)	104.0	105.8	106.0
Saturation (%)	74.6	78.2	78.6
Soil Height Before Shearing (in.)	0.9896	0.9788	0.9817
Final Moisture Content (%)	23.9	23.7	23.1

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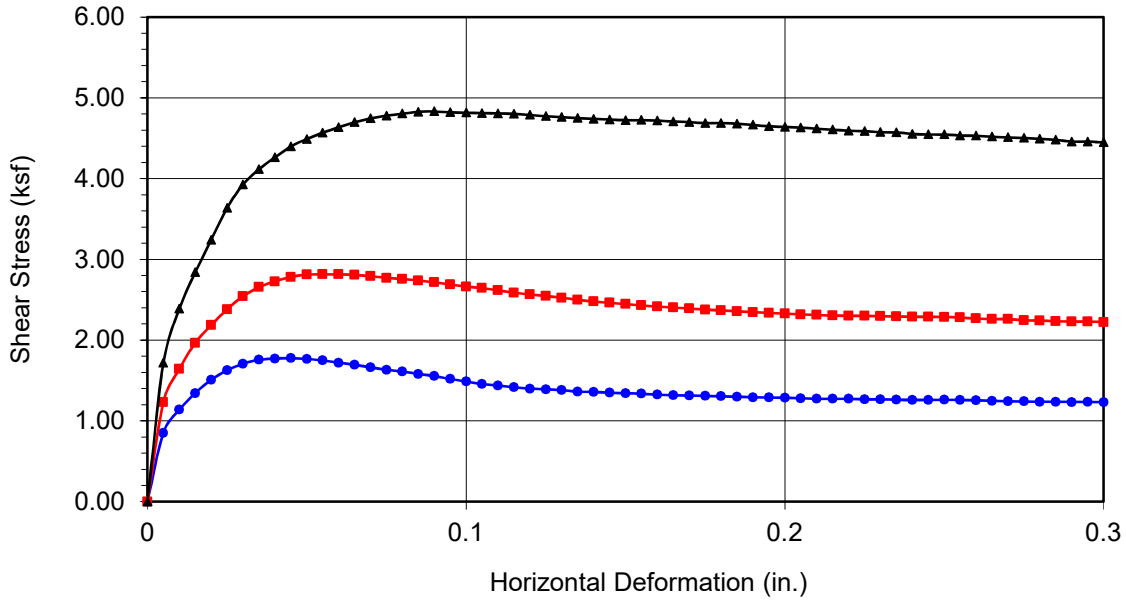
DIRECT SHEAR TEST RESULTS

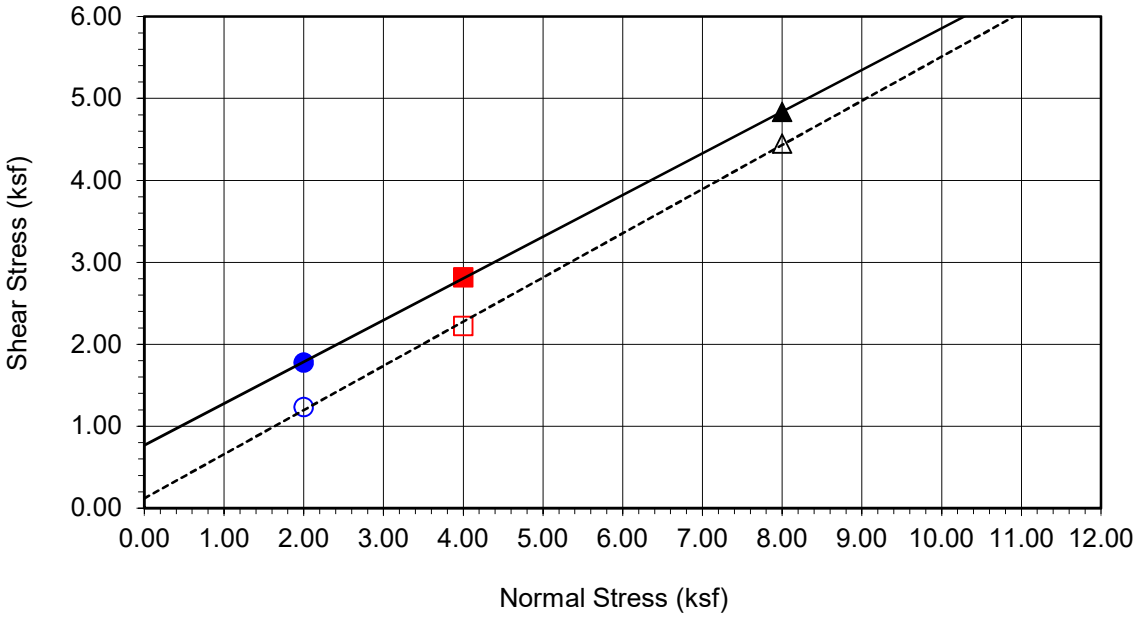
Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20





Boring No.	**LB-4**
Sample No.	**R-3**
Depth (ft)	**10**
Sample Type:	Ring
Soil Identification:	Yellowish brown lean clay (CL), caliche noted

Strength Parameters

	C (psf)	ϕ (°)
Peak	767	27
Ultimate	120	28

Normal Stress (kip/ft²)	2.000	4.000	8.000
Peak Shear Stress (kip/ft²)	● 1.776	■ 2.814	▲ 4.832
Shear Stress @ End of Test (ksf)	○ 1.232	□ 2.223	△ 4.448
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	17.18	17.18	17.18
Dry Density (pcf)	104.0	105.8	106.0
Saturation (%)	74.6	78.2	78.6
Soil Height Before Shearing (in.)	0.9896	0.9788	0.9817
Final Moisture Content (%)	23.9	23.7	23.1

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20

Leighton

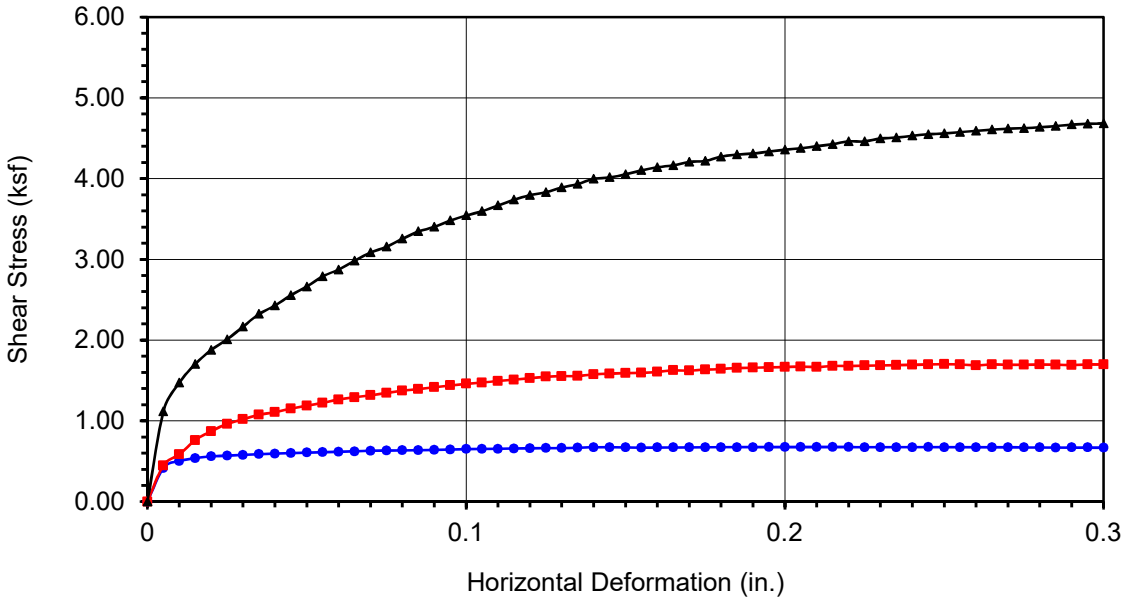
DIRECT SHEAR TEST

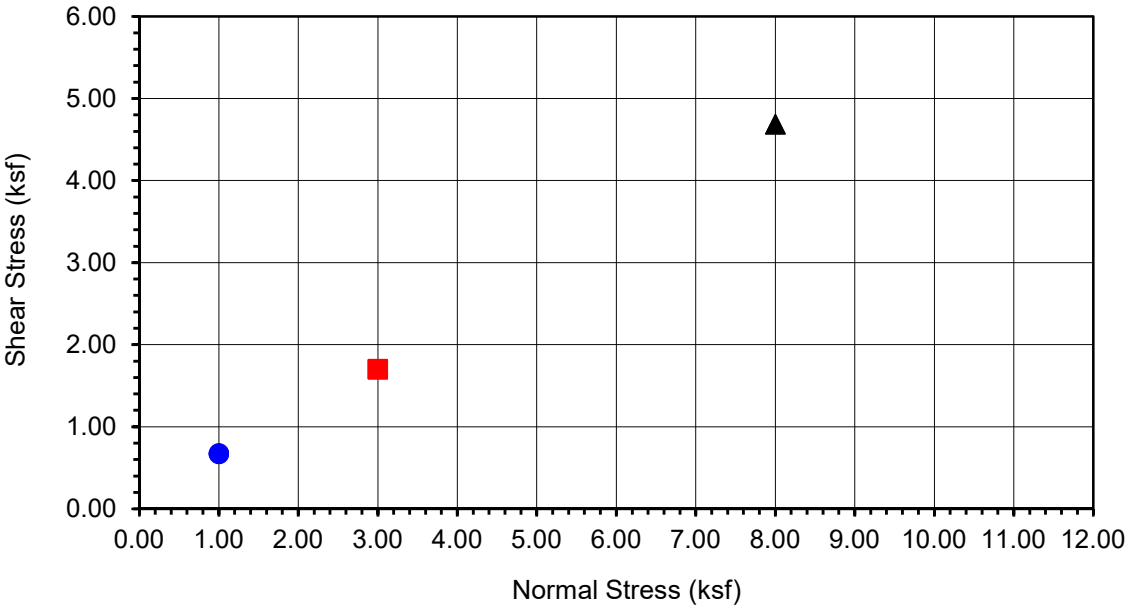
Consolidated Drained - ASTM D 3080

Project Name:	SMMUSD MMHS Phase 1	Tested By:	G. Bathala	Date:	08/26/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/15/20
Boring No.:	LB-6	Sample Type:	90% Remold		
Sample No.:	B-1	Depth (ft.):	0-5		

Soil Identification: Dark yellowish brown lean clay with sand (CL)s

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	178.21	178.92	179.13
Weight of Ring(gm):	45.72	45.77	45.83
Before Shearing			
Weight of Wet Sample+Cont.(gm):	214.82	214.82	214.82
Weight of Dry Sample+Cont.(gm):	200.37	200.37	200.37
Weight of Container(gm):	77.79	77.79	77.79
Vertical Rdg.(in): Initial	0.2253	0.0000	0.0000
Vertical Rdg.(in): Final	0.2081	-0.0173	-0.0634
After Shearing			
Weight of Wet Sample+Cont.(gm):	184.45	211.10	211.04
Weight of Dry Sample+Cont.(gm):	154.07	184.12	188.23
Weight of Container(gm):	36.76	65.78	70.37
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-6**
Sample No.	**B-1**
Depth (ft)	**0-5**
Sample Type: 90% Remold	
Soil Identification: Dark yellowish brown lean clay with sand (CL)s	

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 0.676	■ 1.701	▲ 4.684
Shear Stress @ End of Test (ksf)	○ 0.666	□ 1.698	△ 4.684
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	11.79	11.79	11.79
Dry Density (pcf)	98.6	99.1	99.2
Saturation (%)	44.8	45.4	45.5
Soil Height Before Shearing (in.)	1.0172	0.9827	0.9366
Final Moisture Content (%)	25.9	22.8	19.4

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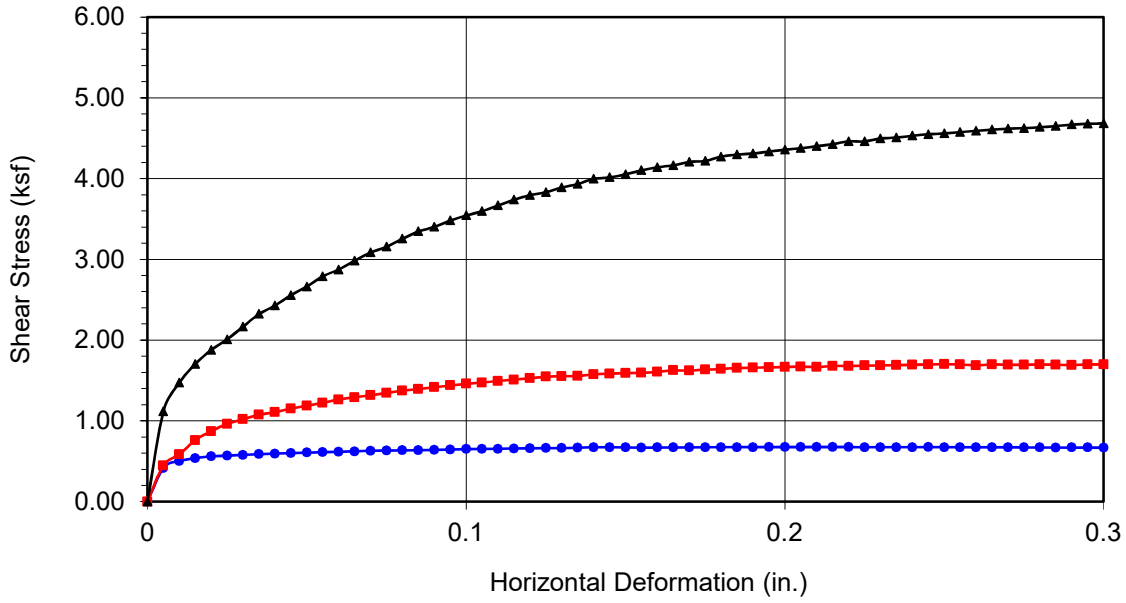
DIRECT SHEAR TEST RESULTS

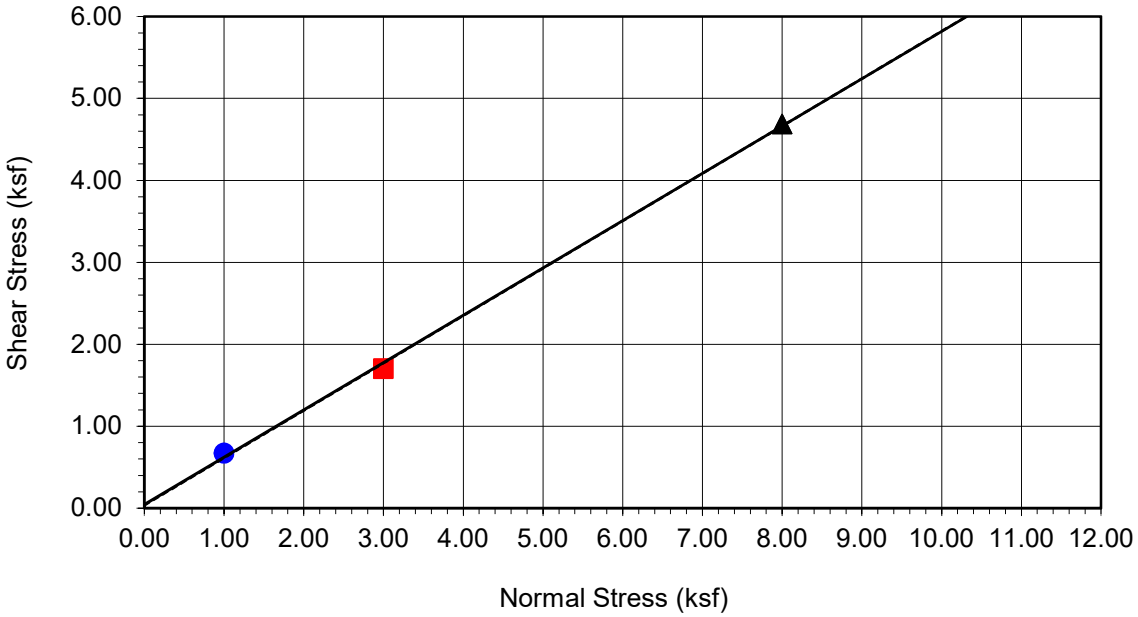
Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20





Boring No.	**LB-6**
Sample No.	**B-1**
Depth (ft)	**0-5**
Sample Type: 90% Remold	
Soil Identification: Dark yellowish brown lean clay with sand (CL)s	

Strength Parameters

	C (psf)	ϕ (°)
Peak	45	30
Ultimate	35	30

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 0.676	■ 1.701	▲ 4.684
Shear Stress @ End of Test (ksf)	○ 0.666	□ 1.698	△ 4.684
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	11.79	11.79	11.79
Dry Density (pcf)	98.6	99.1	99.2
Saturation (%)	44.8	45.4	45.5
Soil Height Before Shearing (in.)	1.0172	0.9827	0.9366
Final Moisture Content (%)	25.9	22.8	19.4

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20

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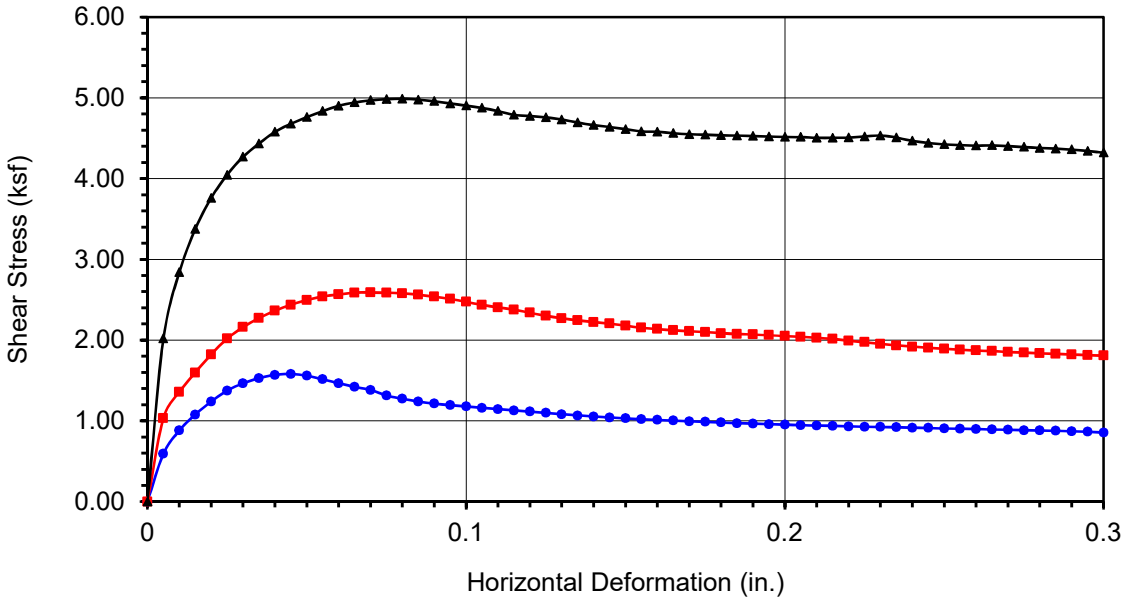
DIRECT SHEAR TEST

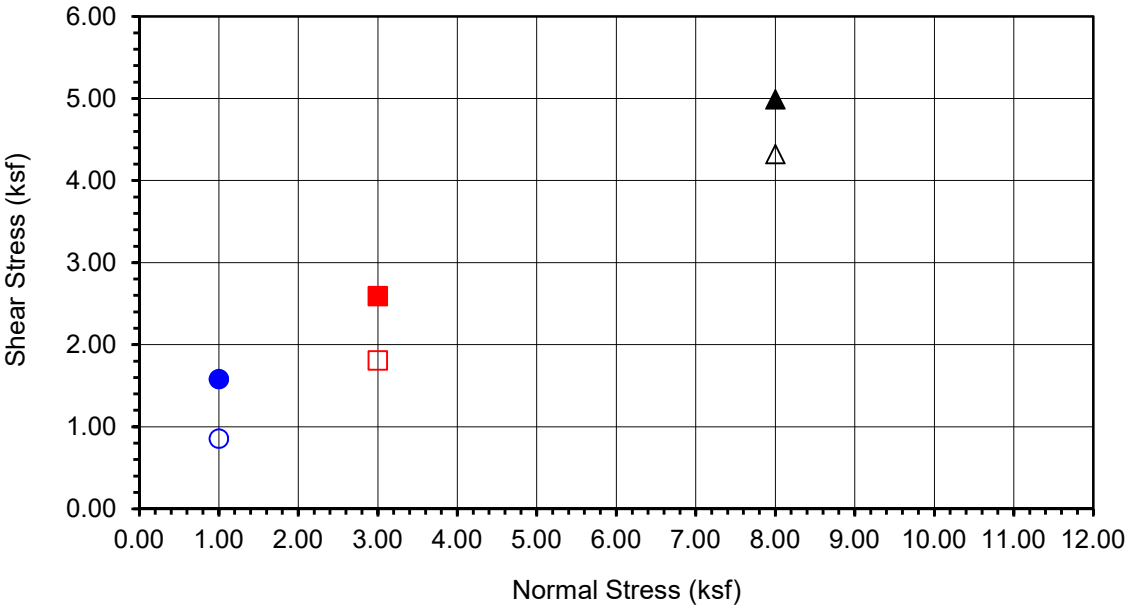
Consolidated Drained - ASTM D 3080

Project Name:	SMMUSD MMHS Phase 1	Tested By:	G. Bathala	Date:	08/25/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/14/20
Boring No.:	LB-6	Sample Type:	Ring		
Sample No.:	R-2	Depth (ft.):	7.0		

Soil Identification: Dark yellowish brown fat clay (CH), caliche noted

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	192.16	192.73	192.97
Weight of Ring(gm):	43.31	43.31	41.87
Before Shearing			
Weight of Wet Sample+Cont.(gm):	203.31	203.31	203.31
Weight of Dry Sample+Cont.(gm):	174.40	174.40	174.40
Weight of Container(gm):	57.27	57.27	57.27
Vertical Rdg.(in): Initial	0.0000	0.2626	0.2340
Vertical Rdg.(in): Final	-0.0009	0.2786	0.2631
After Shearing			
Weight of Wet Sample+Cont.(gm):	207.81	207.95	207.32
Weight of Dry Sample+Cont.(gm):	175.21	177.21	177.87
Weight of Container(gm):	57.42	58.53	57.18
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-6**
Sample No.	**R-2**
Depth (ft)	**7**
Sample Type:	
Ring	
Soil Identification:	
Dark yellowish brown fat clay (CH), caliche noted	

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 1.581	■ 2.590	▲ 4.989
Shear Stress @ End of Test (ksf)	○ 0.855	□ 1.808	△ 4.320
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	24.68	24.68	24.68
Dry Density (pcf)	99.3	99.7	100.8
Saturation (%)	95.5	96.4	99.1
Soil Height Before Shearing (in.)	0.9991	0.9840	0.9709
Final Moisture Content (%)	27.7	25.9	24.4

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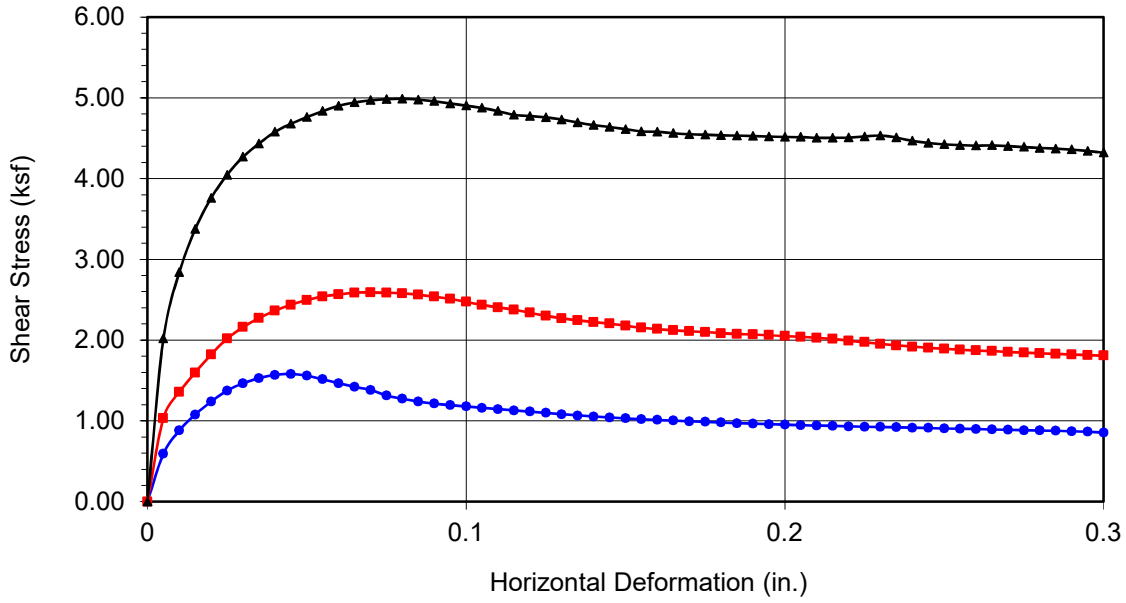
DIRECT SHEAR TEST RESULTS

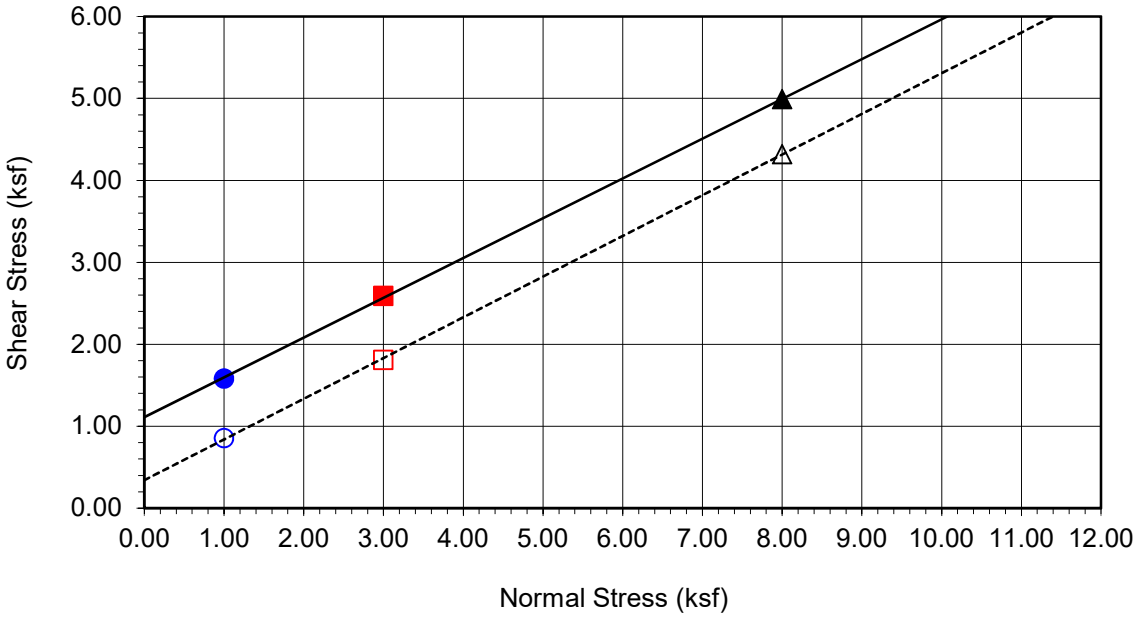
Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20





Boring No.	**LB-6**
Sample No.	**R-2**
Depth (ft)	**7**
Sample Type:	Ring
Soil Identification: Dark yellowish brown fat clay (CH), caliche noted	

Strength Parameters

	C (psf)	ϕ (°)
Peak	1111	26
Ultimate	342	26

Normal Stress (kip/ft²)	1.000	3.000	8.000
Peak Shear Stress (kip/ft²)	● 1.581	■ 2.590	▲ 4.989
Shear Stress @ End of Test (ksf)	○ 0.855	□ 1.808	△ 4.320
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	24.68	24.68	24.68
Dry Density (pcf)	99.3	99.7	100.8
Saturation (%)	95.5	96.4	99.1
Soil Height Before Shearing (in.)	0.9991	0.9840	0.9709
Final Moisture Content (%)	27.7	25.9	24.4

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20

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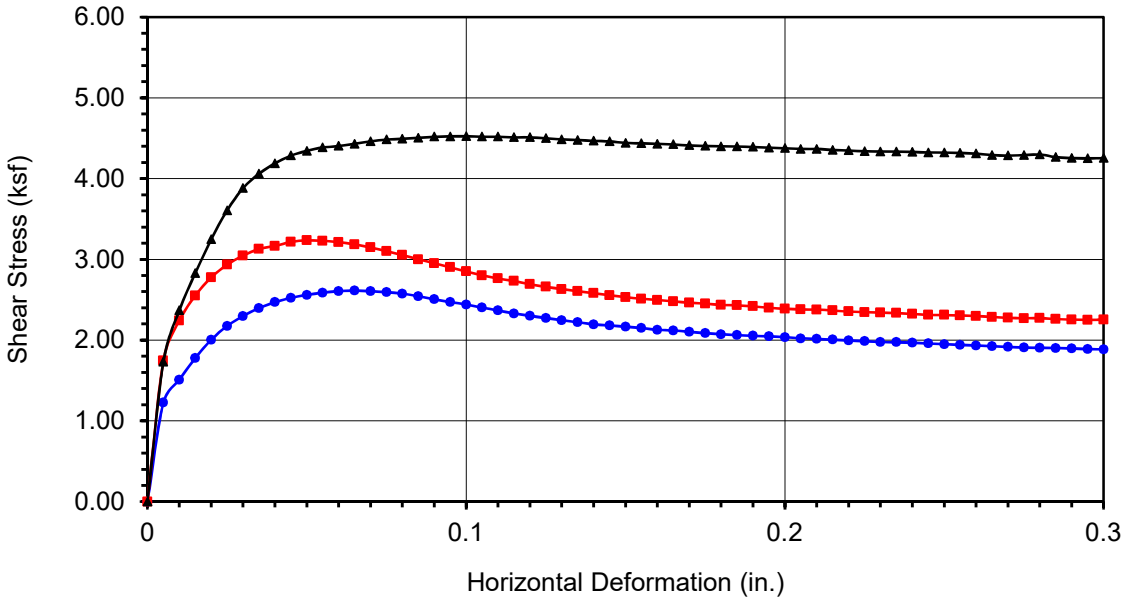
DIRECT SHEAR TEST

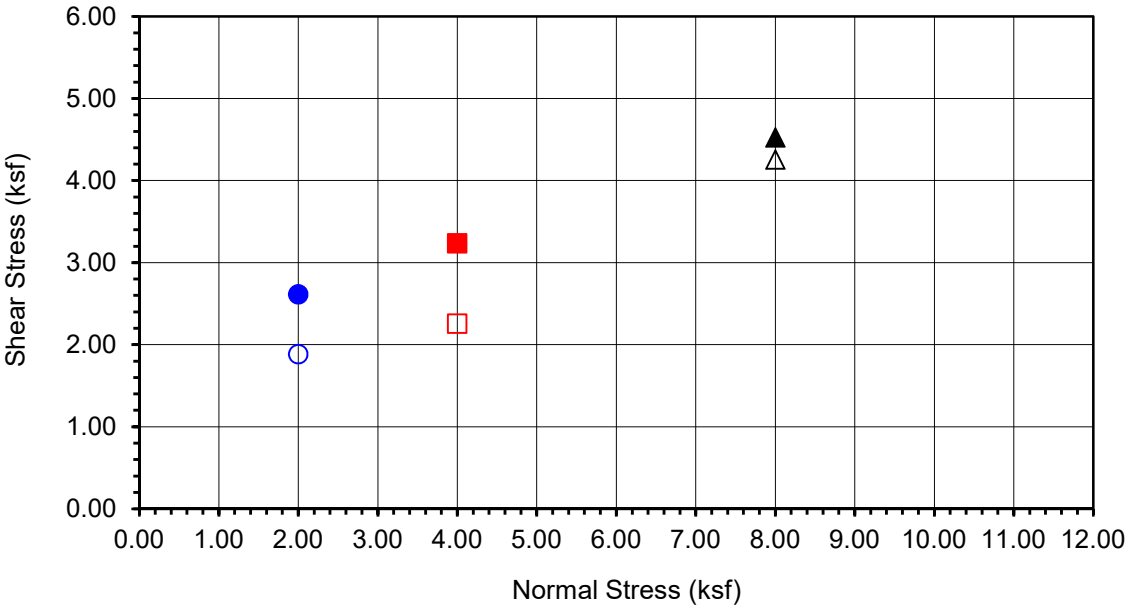
Consolidated Drained - ASTM D 3080

Project Name:	SMMUSD MMHS Phase 1	Tested By:	G. Bathala	Date:	08/25/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/14/20
Boring No.:	LB-6	Sample Type:	Ring		
Sample No.:	R-4	Depth (ft.):	15.0		

Soil Identification: Dark yellowish brown lean clay (CL), caliche noted

Sample Diameter(in):	2.415	2.415	2.415
Sample Thickness(in.):	1.000	1.000	1.000
Weight of Sample + ring(gm):	194.02	201.18	203.29
Weight of Ring(gm):	42.70	45.59	45.96
Before Shearing			
Weight of Wet Sample+Cont.(gm):	187.85	187.85	187.85
Weight of Dry Sample+Cont.(gm):	170.40	170.40	170.40
Weight of Container(gm):	61.85	61.85	61.85
Vertical Rdg.(in): Initial	0.0000	0.2576	0.0000
Vertical Rdg.(in): Final	-0.0138	0.2763	-0.0356
After Shearing			
Weight of Wet Sample+Cont.(gm):	215.84	214.15	215.39
Weight of Dry Sample+Cont.(gm):	186.71	187.37	189.48
Weight of Container(gm):	63.36	57.87	59.53
Specific Gravity (Assumed):	2.70	2.70	2.70
Water Density(pcf):	62.43	62.43	62.43





Boring No.	**LB-6**
Sample No.	**R-4**
Depth (ft)	**15**
Sample Type: Ring	
Soil Identification: Dark yellowish brown lean clay (CL), caliche noted	

Normal Stress (kip/ft²)	2.000	4.000	8.000
Peak Shear Stress (kip/ft²)	● 2.612	■ 3.235	▲ 4.524
Shear Stress @ End of Test (ksf)	○ 1.886	□ 2.254	△ 4.254
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	16.08	16.08	16.08
Dry Density (pcf)	108.4	111.5	112.7
Saturation (%)	78.2	84.8	87.6
Soil Height Before Shearing (in.)	0.9862	0.9813	0.9644
Final Moisture Content (%)	23.6	20.7	19.9

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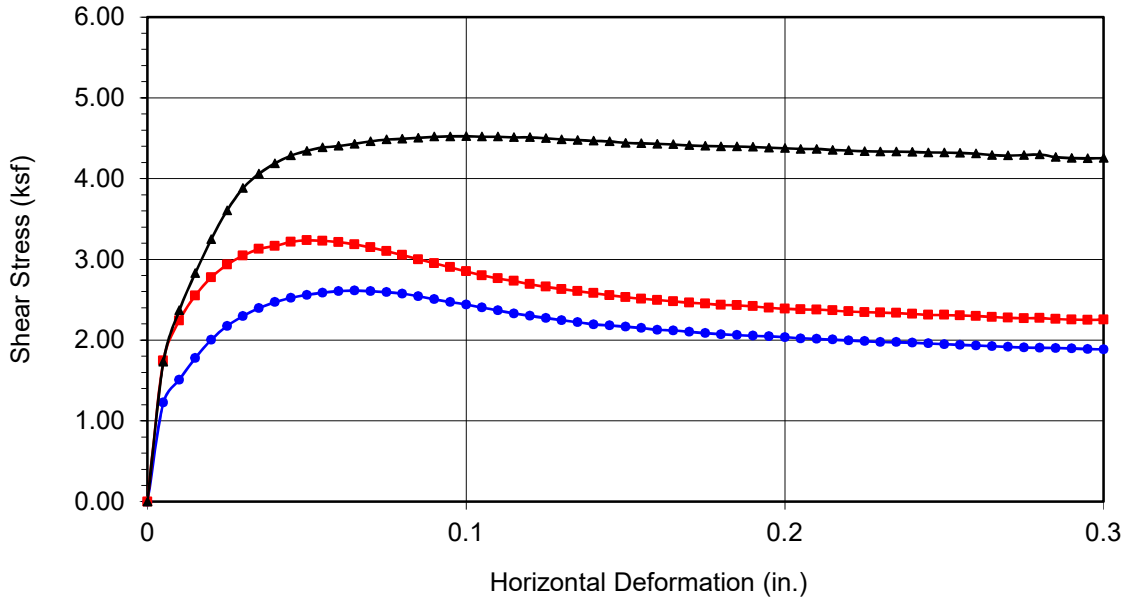
DIRECT SHEAR TEST RESULTS

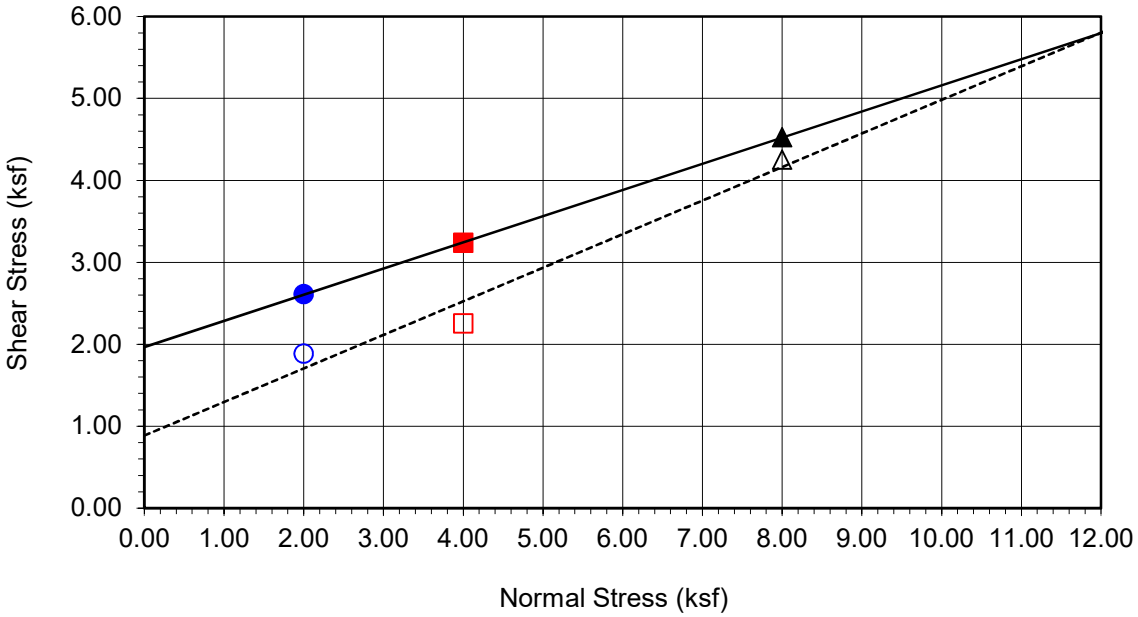
Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20





Boring No.	**LB-6**
Sample No.	**R-4**
Depth (ft)	**15**
Sample Type:	Ring
Soil Identification: Dark yellowish brown lean clay (CL), caliche noted	

Strength Parameters

	C (psf)	ϕ (°)
Peak	1968	18
Ultimate	886	22

Normal Stress (kip/ft²)	2.000	4.000	8.000
Peak Shear Stress (kip/ft²)	● 2.612	■ 3.235	▲ 4.524
Shear Stress @ End of Test (ksf)	○ 1.886	□ 2.254	△ 4.254
Deformation Rate (in./min.)	0.0017	0.0017	0.0017
Initial Sample Height (in.)	1.000	1.000	1.000
Diameter (in.)	2.415	2.415	2.415
Initial Moisture Content (%)	16.08	16.08	16.08
Dry Density (pcf)	108.4	111.5	112.7
Saturation (%)	78.2	84.8	87.6
Soil Height Before Shearing (in.)	0.9862	0.9813	0.9644
Final Moisture Content (%)	23.6	20.7	19.9

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DIRECT SHEAR TEST RESULTS

Consolidated Drained - ASTM D 3080

Project No.: 11382.016

SMMUSD MMHS Phase 1

08-20

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EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	SMMUSD MMHS Phase 1	Tested By:	SF/JG	Date:	09/01/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/15/20
Boring No.:	2020-LB-4	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s				

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.1335
Wt. Comp. Soil + Mold (g)	534.10	430.80
Wt. of Mold (g)	166.20	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	O	O
Wet Wt. of Soil + Cont. (g)	725.40	597.00
Dry Wt. of Soil + Cont. (g)	636.60	488.92
Wt. of Container (g)	0.00	166.20
Moisture Content (%)	13.95	33.49
Wet Density (pcf)	111.0	114.6
Dry Density (pcf)	97.4	85.9
Void Ratio	0.731	0.963
Total Porosity	0.422	0.491
Pore Volume (cc)	87.4	115.1
Degree of Saturation (%) [S_{meas}]	**51.5**	93.9

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
09/01/20	8:20	1.0	0	0.6375
09/01/20	8:30	1.0	10	0.6375
Add Distilled Water to the Specimen				
09/01/20	10:38	1.0	128	0.7050
09/02/20	7:15	1.0	1365	0.7710
09/02/20	8:34	1.0	1444	0.7710

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**134**

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EXPANSION INDEX of SOILS

ASTM D 4829

Project Name:	SMMUSD MMHS Phase 1	Tested By:	SF/JG	Date:	09/01/20
Project No.:	11382.016	Checked By:	J. Ward	Date:	09/15/20
Boring No.:	2020-LB-6	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s				

Dry Wt. of Soil + Cont.	(g)	1000.00
Wt. of Container No.	(g)	0.00
Dry Wt. of Soil	(g)	1000.00
Weight Soil Retained on #4 Sieve		0.00
Percent Passing # 4		100.00

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4.01	4.01
Specimen Height (in.)	1.0000	1.1160
Wt. Comp. Soil + Mold (g)	537.50	432.60
Wt. of Mold (g)	163.50	0.00
Specific Gravity (Assumed)	2.70	2.70
Container No.	O	O
Wet Wt. of Soil + Cont. (g)	759.30	596.10
Dry Wt. of Soil + Cont. (g)	678.00	497.43
Wt. of Container (g)	0.00	163.50
Moisture Content (%)	11.99	29.55
Wet Density (pcf)	112.8	116.9
Dry Density (pcf)	100.7	90.3
Void Ratio	0.674	0.868
Total Porosity	0.402	0.465
Pore Volume (cc)	83.3	107.3
Degree of Saturation (%) [S_{meas}]	**48.1**	91.9

SPECIMEN INUNDATION in distilled water for the period of 24 h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Readings (in.)
09/01/20	9:17	1.0	0	0.5915
09/01/20	9:27	1.0	10	0.5915
Add Distilled Water to the Specimen				
09/01/20	10:35	1.0	68	0.6425
09/02/20	7:15	1.0	1308	0.7075
09/02/20	8:30	1.0	1383	0.7075

Expansion Index (EI_{meas}) = ((Final Rdg - Initial Rdg) / Initial Thick.) x 1000	**116**

MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	SMMUSD MMHS Phase 1	Tested By:	J. Gonzalez	Date:	08/25/20
Project No.:	11382.016	Checked By:	A. Santos	Date:	08/26/20
Boring No.:	2020-LB-4	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s				

Preparation Method: [X] Moist [ ] Dry — [X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03330 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3530	3678	3710	3670		
Weight of Mold (g)	1868	1868	1868	1868		
Net Weight of Soil (g)	1662	1810	1842	1802		
Wet Weight of Soil + Cont. (g)	315.3	381.5	354.3	450.0		
Dry Weight of Soil + Cont. (g)	289.8	343.4	313.8	390.2		
Weight of Container (g)	41.3	39.3	39.3	40.1		
Moisture Content (%)	10.26	12.53	14.75	17.08		
Wet Density (pcf)	110.0	119.8	121.9	119.3		
Dry Density (pcf)	99.8	106.5	106.3	101.9		

Maximum Dry Density (pcf) **107.1** **Optimum Moisture Content (%)** **13.5**

PROCEDURE USED

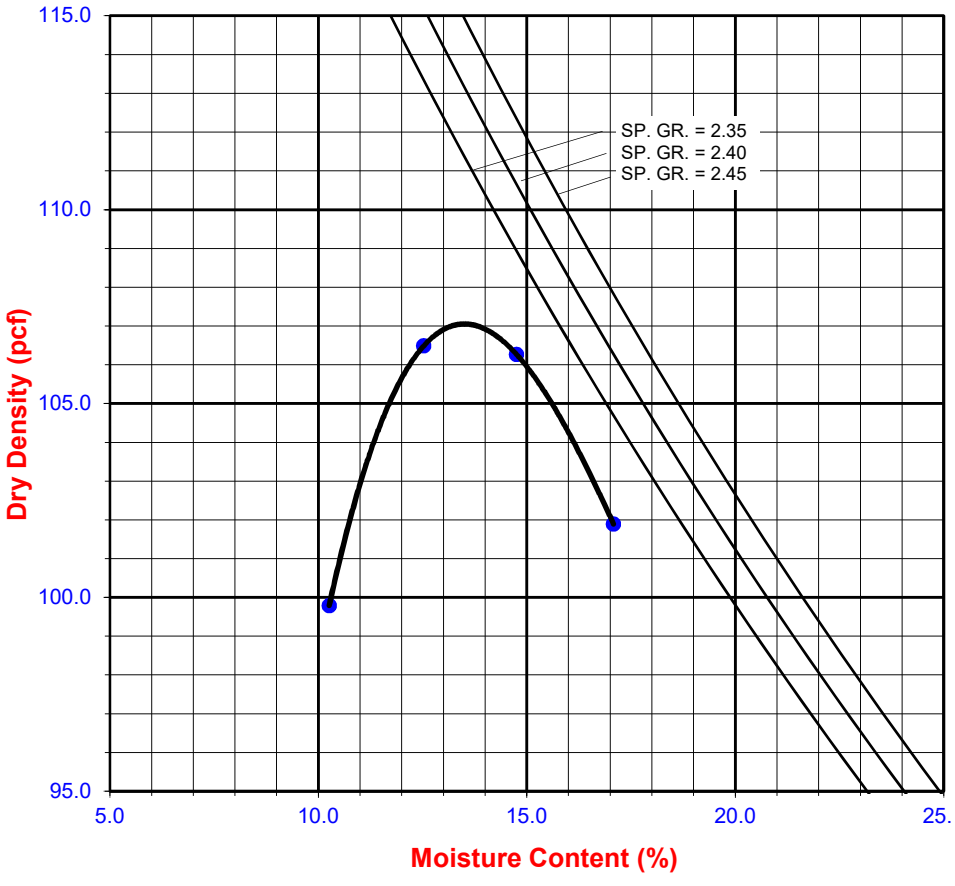
[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:
GR:SA:FI

Atterberg Limits:
LL,PL,PI



MODIFIED PROCTOR COMPACTION TEST

ASTM D 1557

Project Name:	SMMUSD MMHS Phase 1	Tested By:	J. Gonzalez	Date:	08/24/20
Project No.:	11382.016	Checked By:	A. Santos	Date:	08/25/20
Boring No.:	2020-LB-6	Depth (ft.):	0-5		
Sample No.:	B-1				
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s				

Preparation Method: [X] Moist [ ] Dry

[X] Mechanical Ram [ ] Manual Ram

Mold Volume (ft³) 0.03330 *Ram Weight = 10 lb.; Drop = 18 in.*

TEST NO.	1	2	3	4	5	6
Wt. Compacted Soil + Mold (g)	3598	3691	3709			
Weight of Mold (g)	1868	1868	1868			
Net Weight of Soil (g)	1730	1823	1841			
Wet Weight of Soil + Cont. (g)	362.9	346.6	322.4			
Dry Weight of Soil + Cont. (g)	339.0	317.2	284.7			
Weight of Container (g)	39.7	39.9	38.9			
Moisture Content (%)	7.99	10.60	15.34			
Wet Density (pcf)	114.5	120.7	121.9			
Dry Density (pcf)	106.1	109.1	105.7			

Maximum Dry Density (pcf) **109.4** **Optimum Moisture Content (%)** **11.6**

PROCEDURE USED

[X] **Procedure A**
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if +#4 is 20% or less

[ ] **Procedure B**
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if +#4 is >20% and +3/8 in. is 20% or less

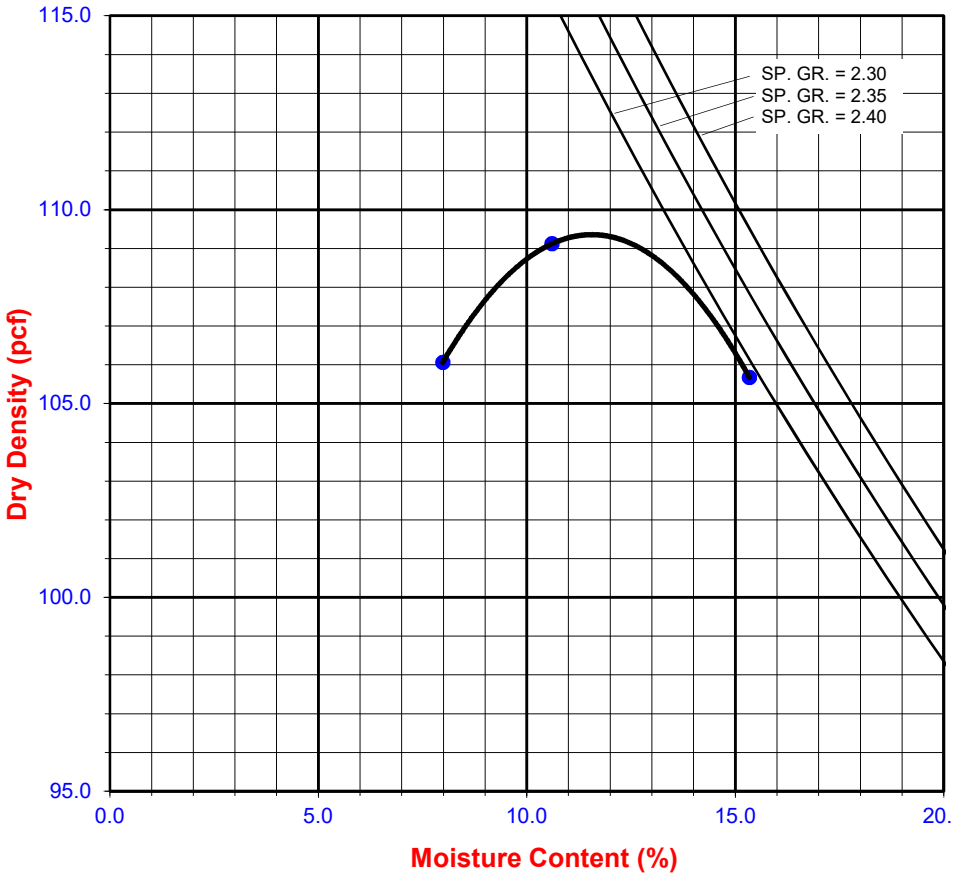
[ ] **Procedure C**
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if +3/8 in. is >20% and +¾ in. is <30%

Particle-Size Distribution:

GR:SA:FI

Atterberg Limits:

LL,PL,PI



MX 2020-LB-6, B-1 @ 0-5

ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	08/28/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	08/30/20
Boring No.:	2020-LB-4	Checked By:	J. Ward		
Sample No.:	R-1	Depth (ft.)	5.0		
Soil Identification:	Dark yellowish brown lean clay with sand (CL)s				

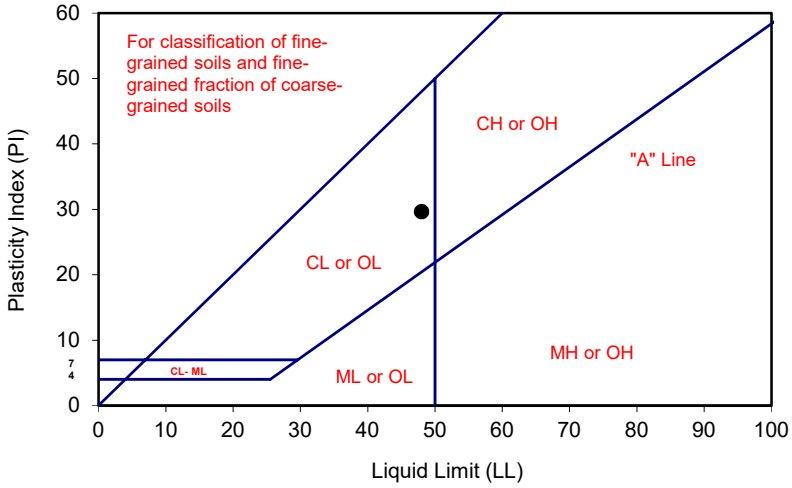
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			31	23	16	
Wet Wt. of Soil + Cont. (g)	8.91	8.82	20.23	20.50	21.09	
Dry Wt. of Soil + Cont. (g)	7.70	7.60	14.08	14.17	14.45	
Wt. of Container (g)	1.01	1.05	1.01	1.05	1.05	
Moisture Content (%) [Wn]	18.09	18.63	47.05	48.25	49.55	

Liquid Limit	**48**
Plastic Limit	**18**
Plasticity Index	**30**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 20.44

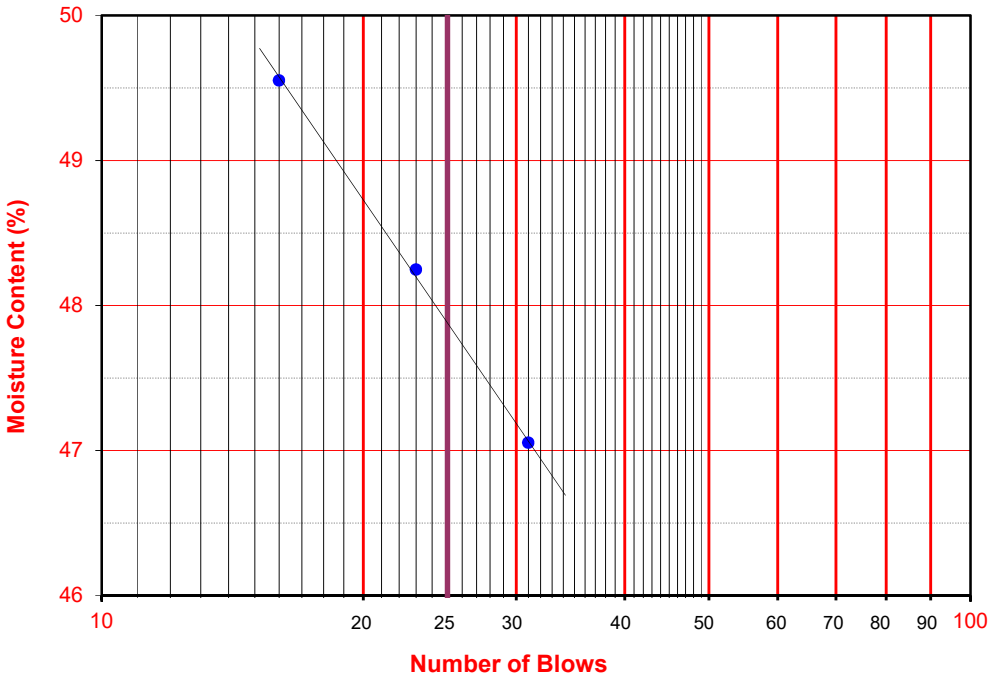
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	S. Felter	Date:	08/31/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/02/20
Boring No.:	2020-LB-4	Checked By:	J. Ward		
Sample No.:	R-2B	Depth (ft.)	7.0		
Soil Identification:	Brown lean clay (CL)				

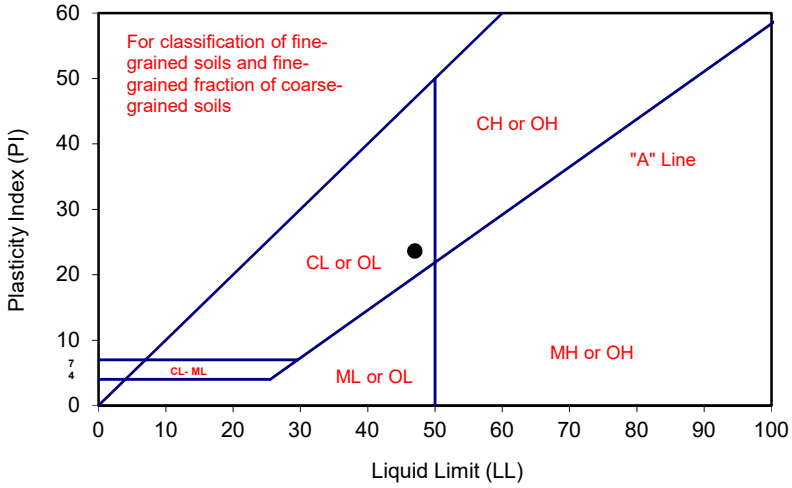
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			35	27	19	
Wet Wt. of Soil + Cont. (g)	8.62	8.61	20.78	20.78	20.10	
Dry Wt. of Soil + Cont. (g)	7.21	7.17	14.78	14.43	13.86	
Wt. of Container (g)	1.10	1.08	1.01	1.05	1.02	
Moisture Content (%) [Wn]	23.08	23.65	43.57	47.46	48.60	

Liquid Limit	**47**
Plastic Limit	**23**
Plasticity Index	**24**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 19.71

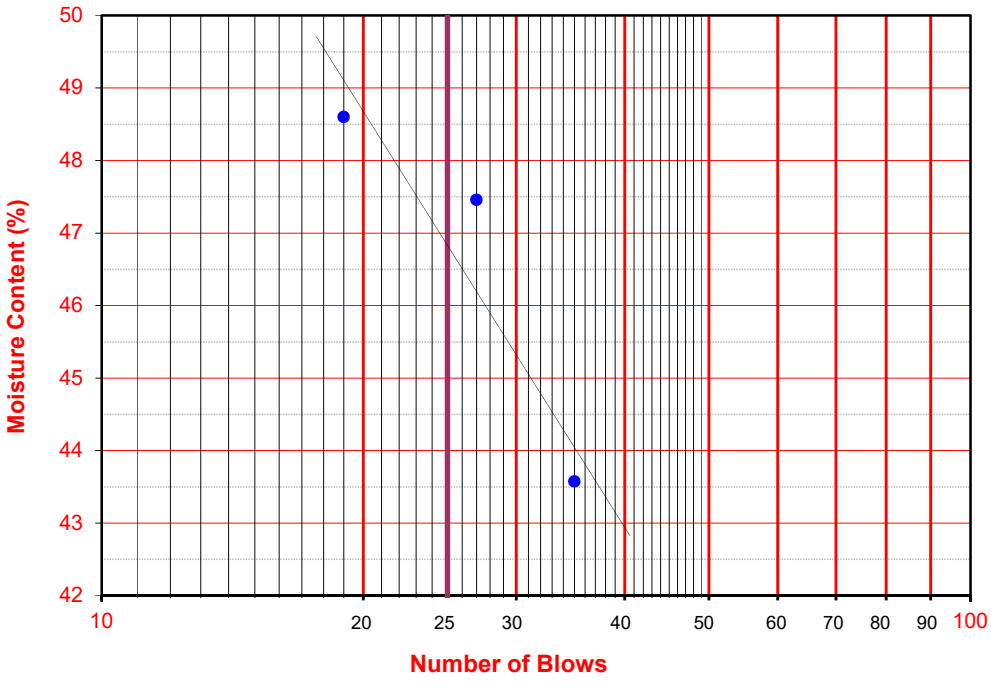
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	08/27/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	08/30/20
Boring No.:	2020-LB-4	Checked By:	J. Ward		
Sample No.:	R-3	Depth (ft.)	10.0		
Soil Identification:	Yellowish brown lean clay (CL), caliche noted				

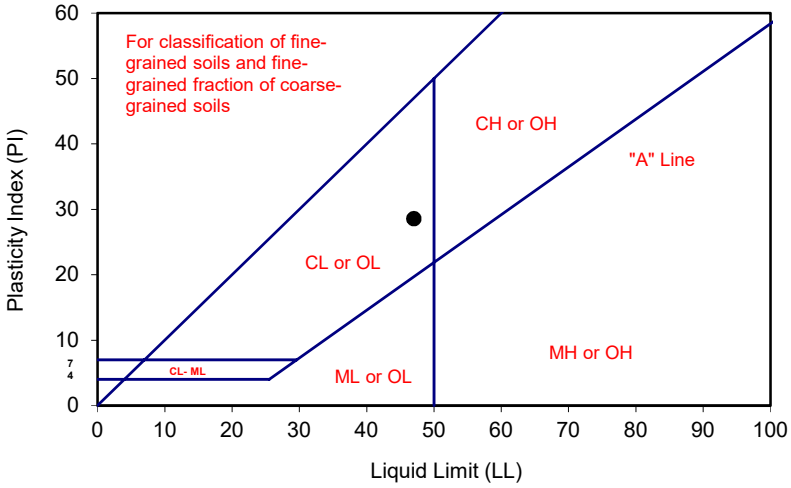
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			28	23	18	
Wet Wt. of Soil + Cont. (g)	9.36	9.27	19.90	20.70	23.39	
Dry Wt. of Soil + Cont. (g)	8.06	7.99	13.88	14.32	16.06	
Wt. of Container (g)	1.02	1.02	1.04	1.00	1.02	
Moisture Content (%) [Wn]	18.47	18.36	46.88	47.90	48.74	

Liquid Limit	**47**
Plastic Limit	**18**
Plasticity Index	**29**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 19.71

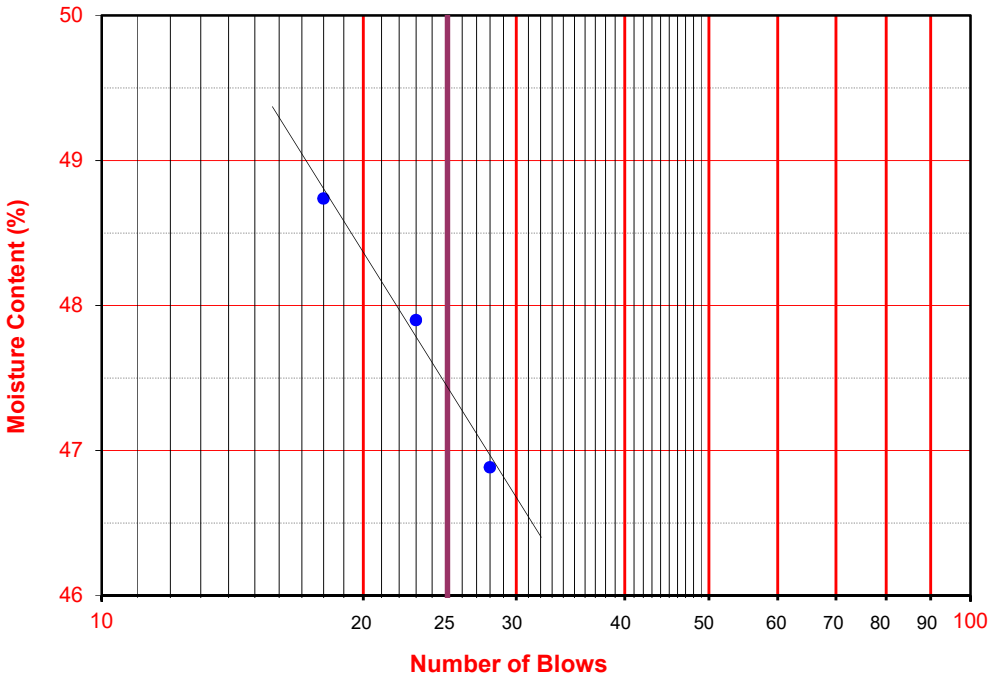
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/02/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/03/20
Boring No.:	2020-LB-4	Checked By:	J. Ward		
Sample No.:	R-4	Depth (ft.)	15.0		
Soil Identification:	Yellowish brown lean clay (CL)				

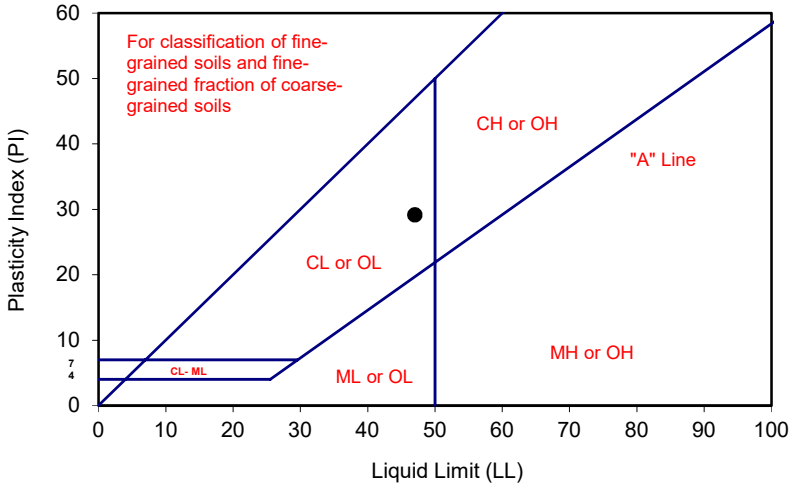
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			31	26	21	
Wet Wt. of Soil + Cont. (g)	9.49	9.56	20.55	20.60	20.79	
Dry Wt. of Soil + Cont. (g)	8.22	8.27	14.52	14.45	14.38	
Wt. of Container (g)	1.07	1.08	1.06	1.10	1.07	
Moisture Content (%) [Wn]	17.76	17.94	44.80	46.07	48.16	

Liquid Limit	**47**
Plastic Limit	**18**
Plasticity Index	**29**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 19.71

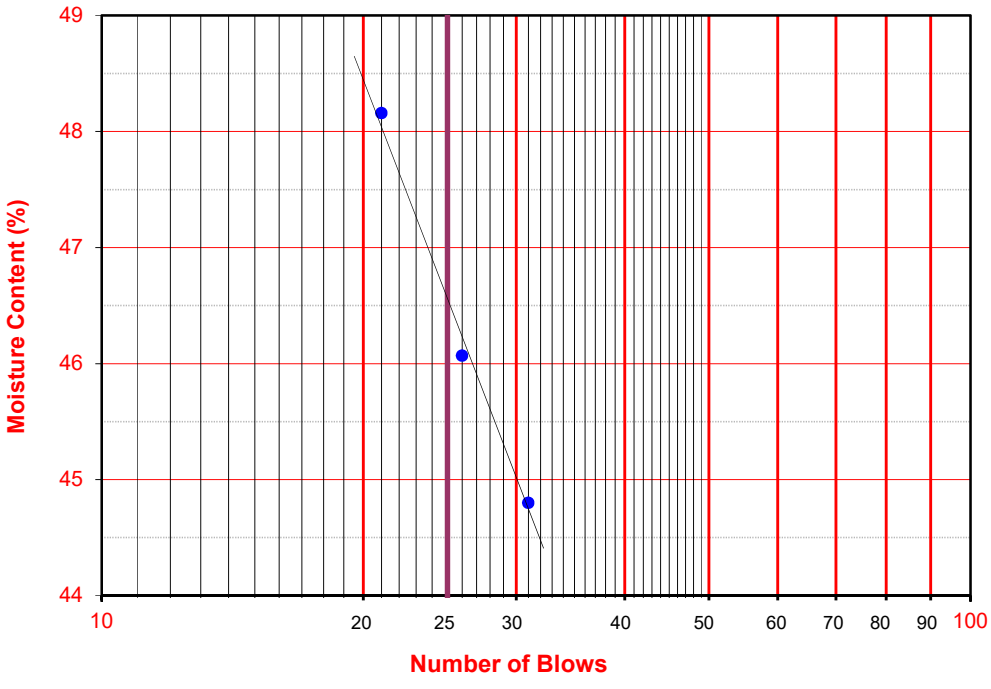
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/03/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/04/20
Boring No.:	2020-LB-4	Checked By:	J. Ward		
Sample No.:	R-6	Depth (ft.)	25.0		
Soil Identification:	Yellowish brown fat clay (CH)				

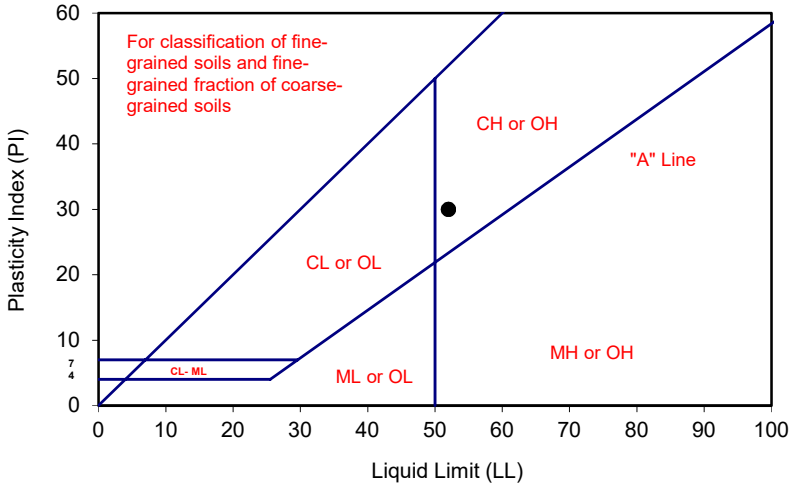
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			29	22	15	
Wet Wt. of Soil + Cont. (g)	10.20	10.27	20.67	20.83	20.40	
Dry Wt. of Soil + Cont. (g)	8.54	8.61	14.08	13.99	13.51	
Wt. of Container (g)	1.05	1.02	1.10	1.05	1.06	
Moisture Content (%) [Wn]	22.16	21.87	50.77	52.86	55.34	

Liquid Limit	**52**
Plastic Limit	**22**
Plasticity Index	**30**
Classification	**CH**

PI at "A" - Line = 0.73(LL-20) 23.36

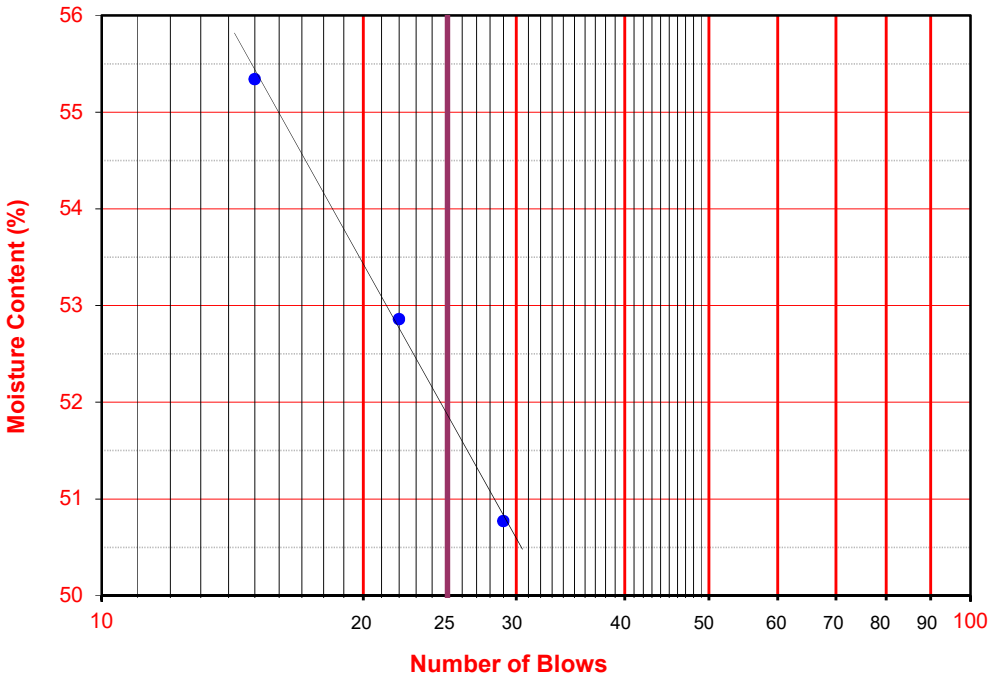
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/04/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/08/20
Boring No.:	2020-LB-4	Checked By:	J. Ward		
Sample No.:	S-5	Depth (ft.)	20.0		
Soil Identification:	Brown fat clay (CH)				

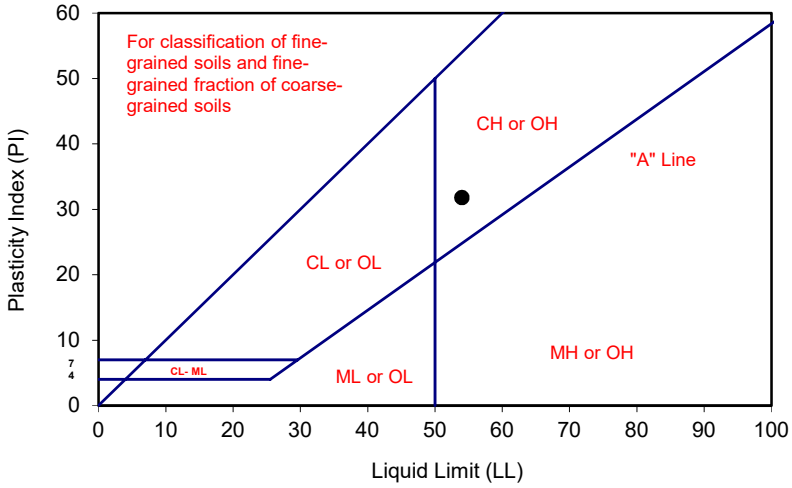
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			29	23	16	
Wet Wt. of Soil + Cont. (g)	10.15	10.22	21.59	21.29	20.70	
Dry Wt. of Soil + Cont. (g)	8.50	8.54	14.50	14.12	13.58	
Wt. of Container (g)	1.01	1.03	1.03	1.01	1.03	
Moisture Content (%) [Wn]	22.03	22.37	52.64	54.69	56.73	

Liquid Limit	**54**
Plastic Limit	**22**
Plasticity Index	**32**
Classification	**CH**

PI at "A" - Line = 0.73(LL-20) 24.82

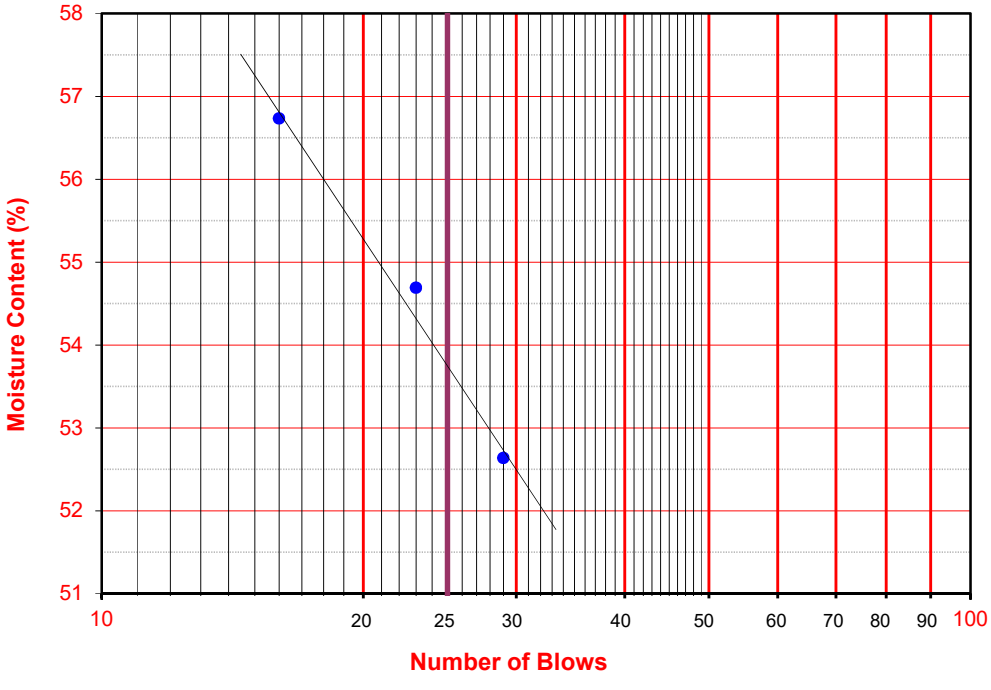
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/03/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/08/20
Boring No.:	2020-LB-6	Checked By:	J. Ward		
Sample No.:	R-1	Depth (ft.)	5.0		
Soil Identification:	Yellowish brown fat clay (CH)				

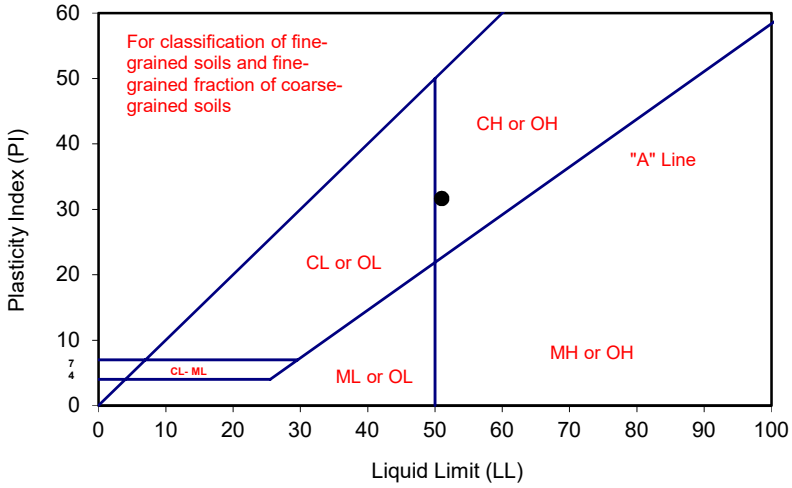
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			30	22	15	
Wet Wt. of Soil + Cont. (g)	10.11	10.17	21.40	20.68	20.32	
Dry Wt. of Soil + Cont. (g)	8.63	8.70	14.59	14.03	13.69	
Wt. of Container (g)	1.01	1.06	1.00	1.03	1.08	
Moisture Content (%) [Wn]	19.42	19.24	50.11	51.15	52.58	

Liquid Limit	**51**
Plastic Limit	**19**
Plasticity Index	**32**
Classification	**CH**

PI at "A" - Line = 0.73(LL-20) 22.63

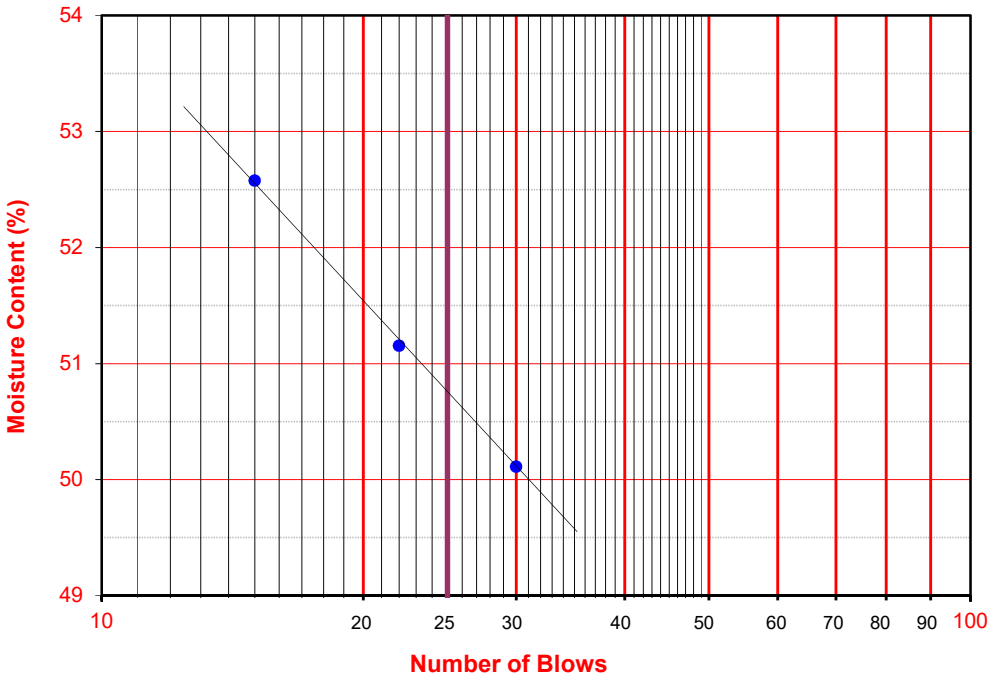
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	08/29/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/03/20
Boring No.:	2020-LB-6	Checked By:	J. Ward		
Sample No.:	R-2	Depth (ft.)	7.0		
Soil Identification:	Dark yellowish brown fat clay (CH), caliche noted				

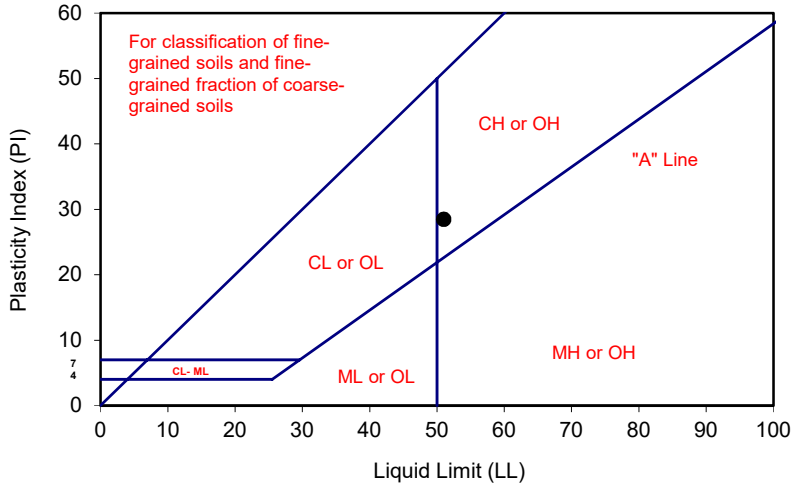
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			28	22	15	
Wet Wt. of Soil + Cont. (g)	10.25	10.29	19.68	22.05	20.69	
Dry Wt. of Soil + Cont. (g)	8.58	8.58	13.47	14.92	13.84	
Wt. of Container (g)	1.08	1.08	1.04	1.00	1.05	
Moisture Content (%) [Wn]	22.27	22.80	49.96	51.22	53.56	

Liquid Limit	**51**
Plastic Limit	**23**
Plasticity Index	**28**
Classification	**CH**

PI at "A" - Line = 0.73(LL-20) 22.63

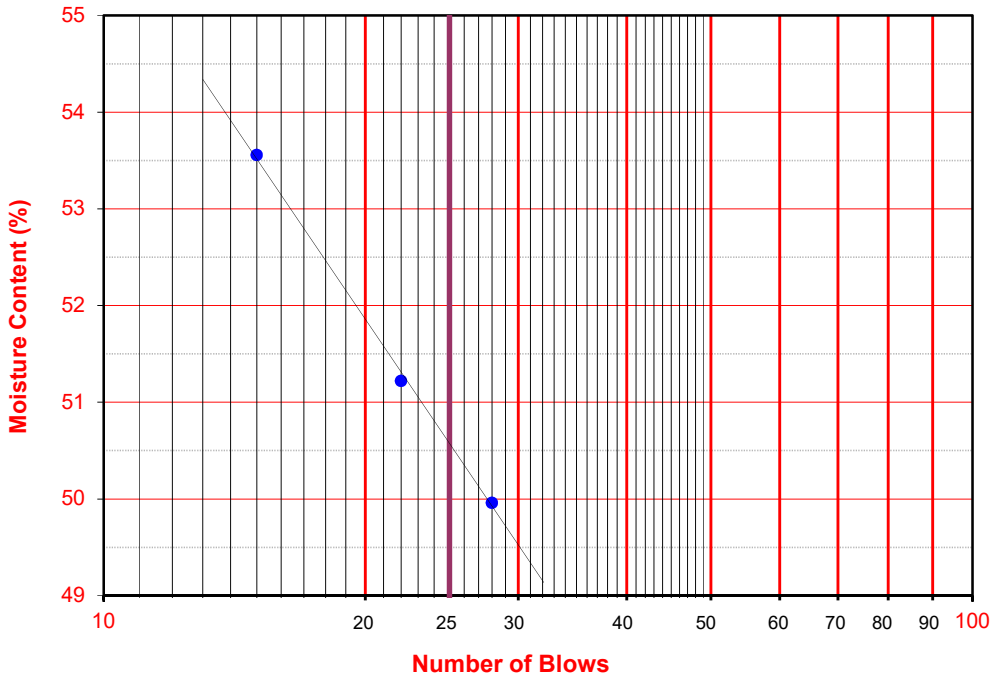
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/02/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/03/20
Boring No.:	2020-LB-6	Checked By:	J. Ward		
Sample No.:	R-3	Depth (ft.)	10.0		
Soil Identification:	Yellowish brown fat clay (CH)				

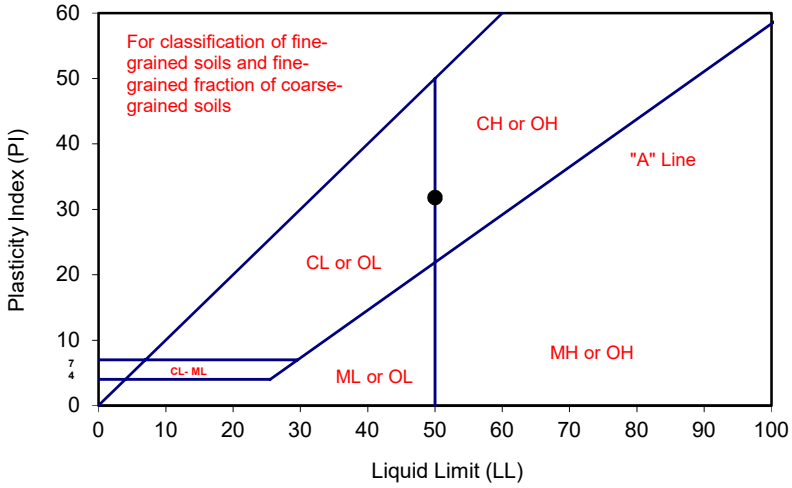
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			29	24	19	
Wet Wt. of Soil + Cont. (g)	9.92	10.08	20.20	19.60	19.14	
Dry Wt. of Soil + Cont. (g)	8.57	8.68	13.87	13.36	12.95	
Wt. of Container (g)	1.06	1.07	1.07	0.99	1.08	
Moisture Content (%) [Wn]	17.98	18.40	49.45	50.44	52.15	

Liquid Limit	**50**
Plastic Limit	**18**
Plasticity Index	**32**
Classification	**CH**

PI at "A" - Line = 0.73(LL-20) 21.9

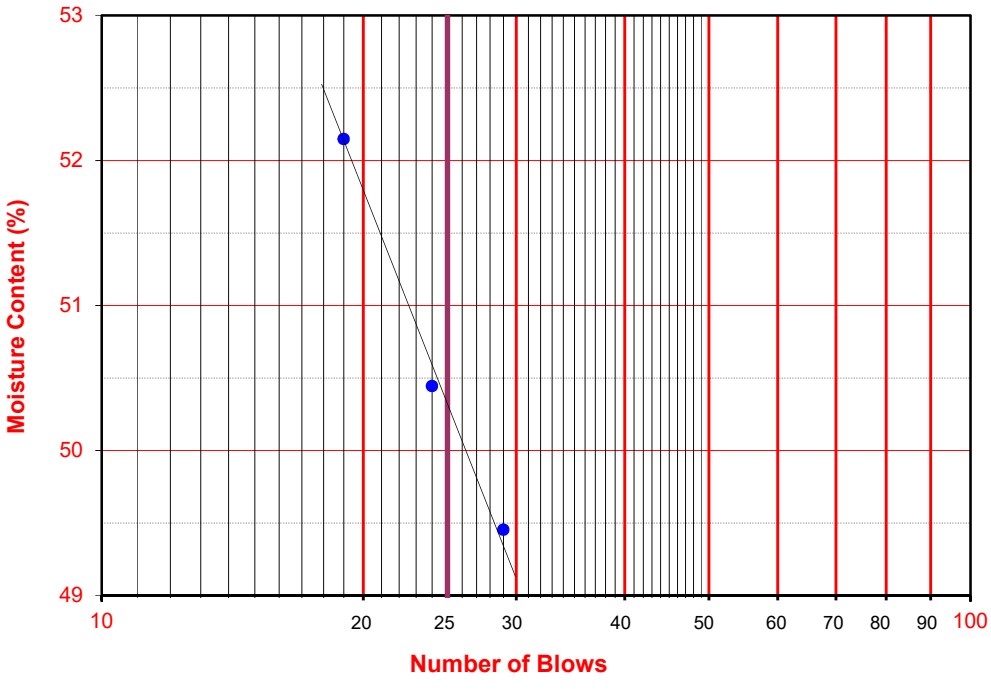
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/02/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/03/20
Boring No.:	2020-LB-6	Checked By:	J. Ward		
Sample No.:	R-4	Depth (ft.)	15.0		
Soil Identification:	Dark yellowish brown lean clay (CL), caliche noted				

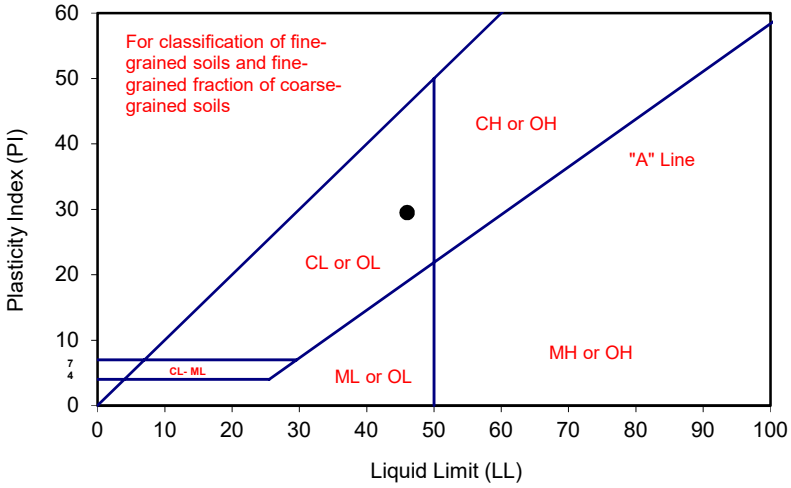
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			32	26	19	
Wet Wt. of Soil + Cont. (g)	8.87	8.94	21.90	20.20	20.90	
Dry Wt. of Soil + Cont. (g)	7.77	7.81	15.45	14.18	14.55	
Wt. of Container (g)	1.05	1.00	1.08	1.04	1.10	
Moisture Content (%) [Wn]	16.37	16.59	44.89	45.81	47.21	

Liquid Limit	**46**
Plastic Limit	**16**
Plasticity Index	**30**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 18.98

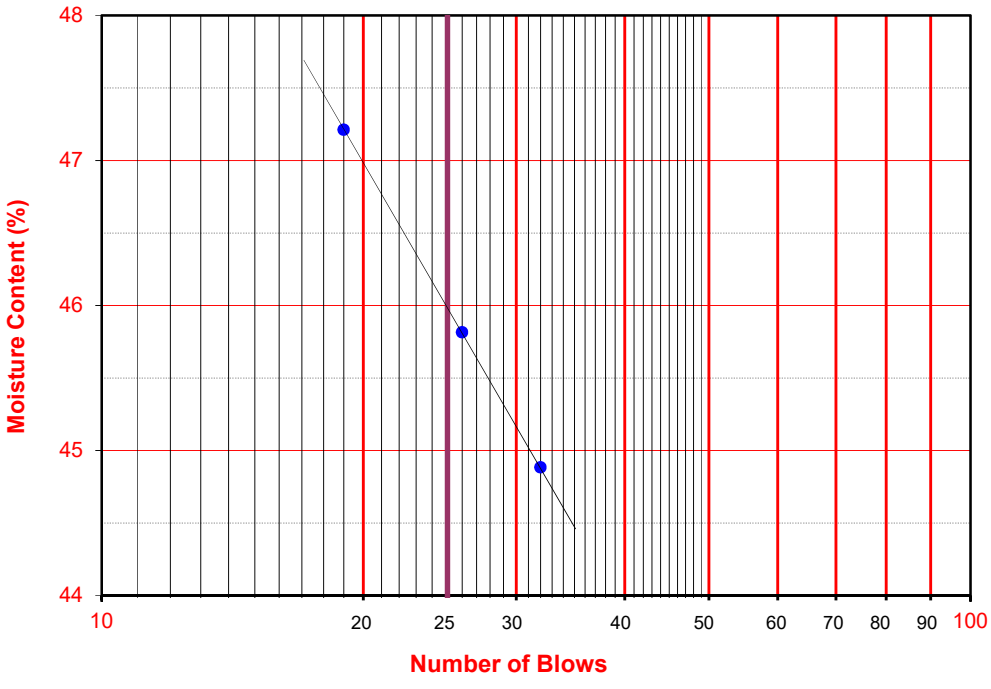
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/02/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/04/20
Boring No.:	2020-LB-6	Checked By:	J. Ward		
Sample No.:	R-6	Depth (ft.)	25.0		
Soil Identification:	Brown lean clay (CL)				

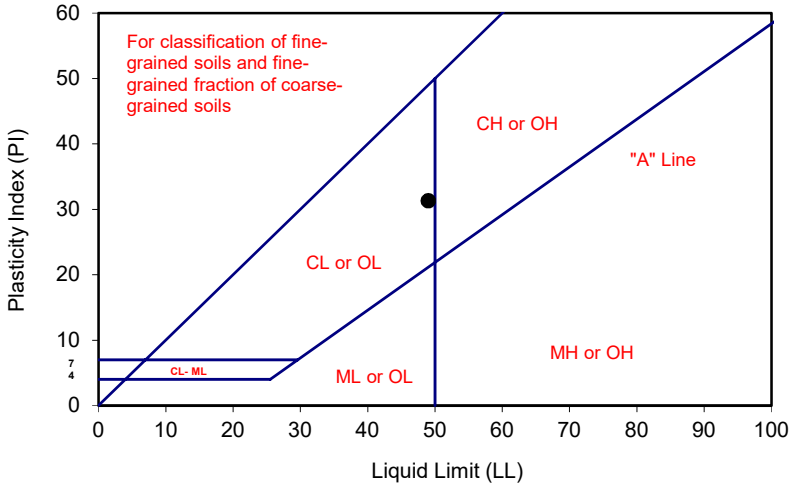
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			32	25	17	
Wet Wt. of Soil + Cont. (g)	21.46	21.13	33.05	33.93	33.56	
Dry Wt. of Soil + Cont. (g)	19.91	19.62	26.72	27.17	26.69	
Wt. of Container (g)	11.15	11.09	13.45	13.34	13.11	
Moisture Content (%) [Wn]	17.69	17.70	47.70	48.88	50.59	

Liquid Limit	**49**
Plastic Limit	**18**
Plasticity Index	**31**
Classification	**CL**

PI at "A" - Line = 0.73(LL-20) 21.17

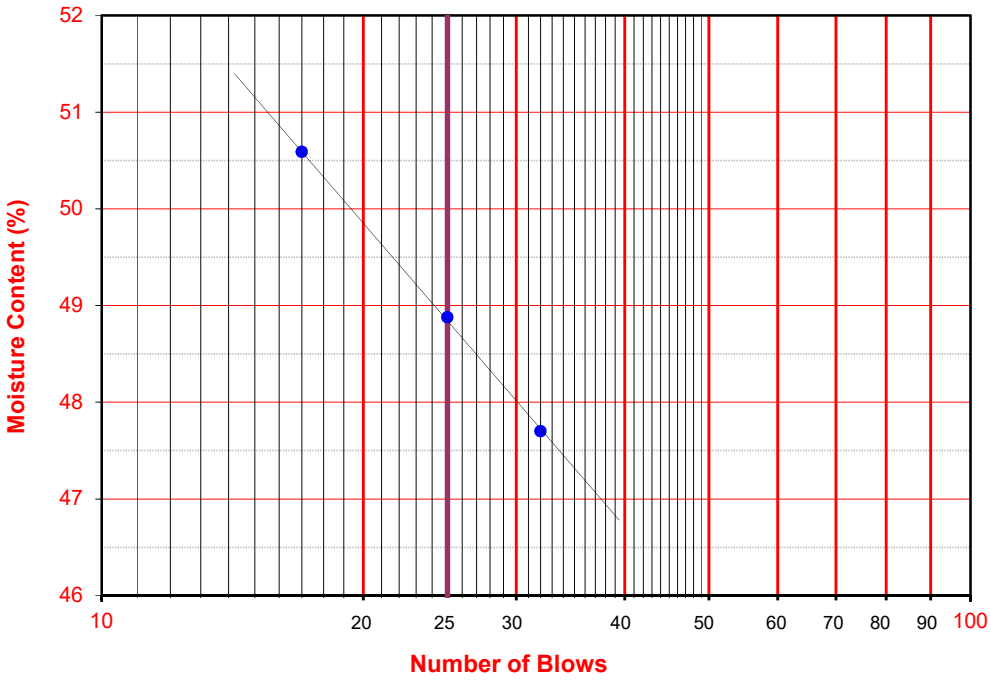
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



ATTERBERG LIMITS

ASTM D 4318

Project Name:	SMMUSD MMHS Phase 1	Tested By:	Y. Nguyen	Date:	09/03/20
Project No. :	11382.016	Input By:	G. Bathala	Date:	09/04/20
Boring No.:	2020-LB-6	Checked By:	J. Ward		
Sample No.:	S-5	Depth (ft.)	20.0		
Soil Identification:	Strong brown fat clay (CH)				

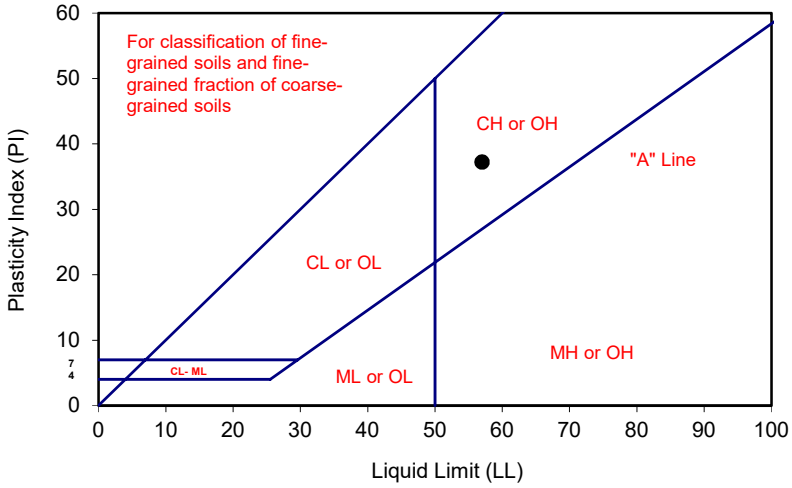
TEST	PLASTIC LIMIT		LIQUID LIMIT			
NO.	1	2	1	2	3	4
Number of Blows [N]			28	21	15	
Wet Wt. of Soil + Cont. (g)	9.62	9.54	20.54	19.61	20.44	
Dry Wt. of Soil + Cont. (g)	8.20	8.15	13.48	12.83	13.26	
Wt. of Container (g)	1.01	1.11	1.02	1.09	1.07	
Moisture Content (%) [Wn]	19.75	19.74	56.66	57.75	58.90	

Liquid Limit	**57**
Plastic Limit	**20**
Plasticity Index	**37**
Classification	**CH**

PI at "A" - Line = 0.73(LL-20) 27.01

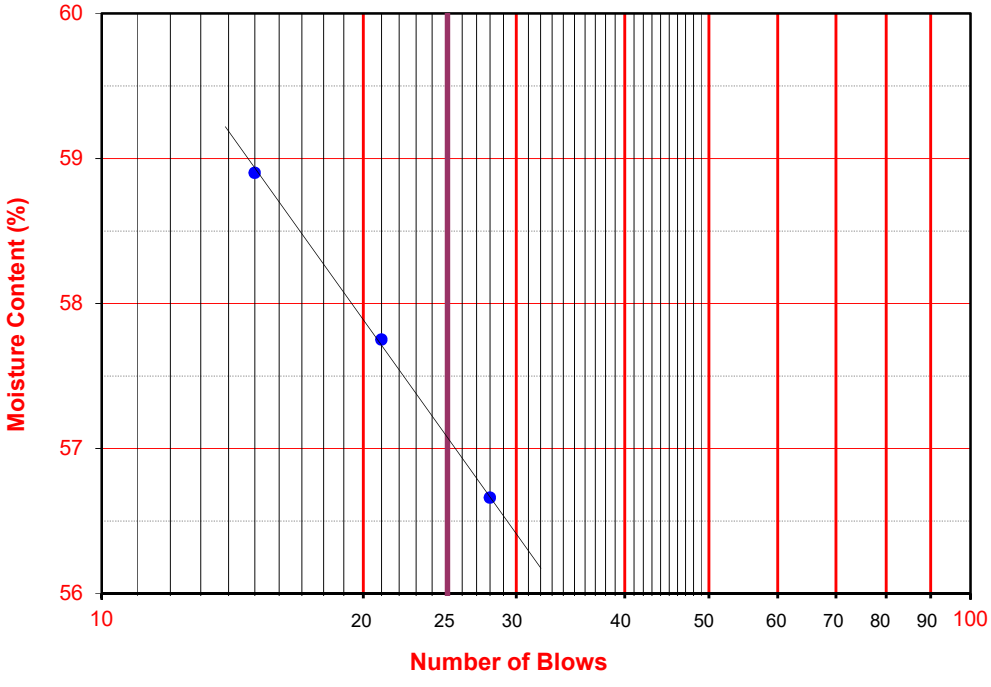
One - Point Liquid Limit Calculation

$LL = Wn(N/25)^{0.121}$



PROCEDURES USED

- [ ] Wet Preparation
  Multipoint - Wet
- [X] Dry Preparation
  Multipoint - Dry
- [X] Procedure A
  Multipoint Test
- [ ] Procedure B
  One-point Test



Leighton

R-VALUE TEST RESULTS

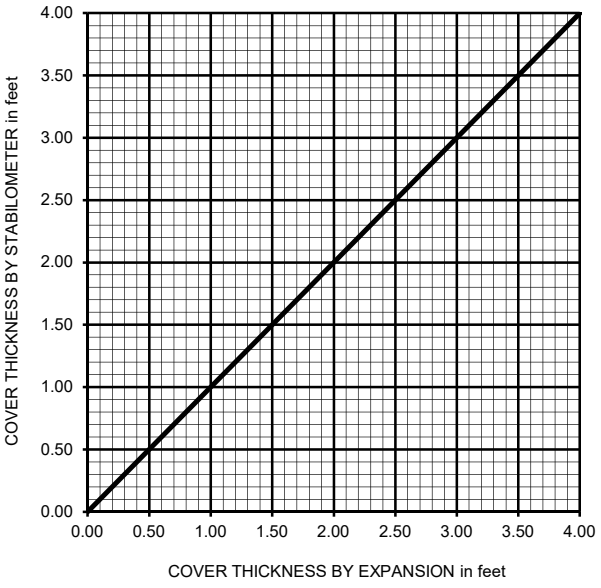
DOT CA Test 301

PROJECT NAME:	SMMUSD MMHS Phase 1	PROJECT NUMBER:	11382.016
BORING NUMBER:	2020-LB-4	DEPTH (FT.):	0-5
SAMPLE NUMBER:	B-1	TECHNICIAN:	O. Figueroa
SAMPLE DESCRIPTION:	Dark yellowish brown (CL)s	DATE COMPLETED:	8/29/2020

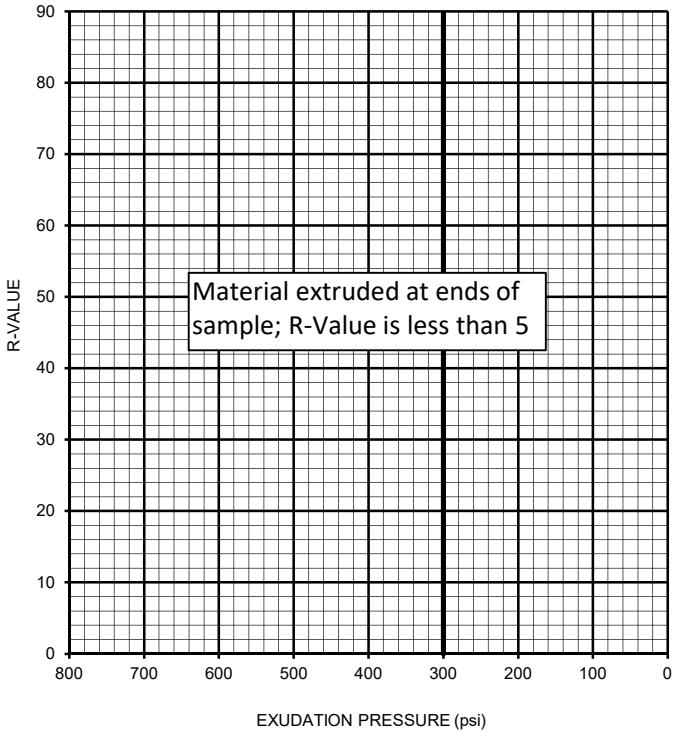
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %			
HEIGHT OF SAMPLE, Inches			
DRY DENSITY, pcf			
COMPACTOR PRESSURE, psi			
EXUDATION PRESSURE, psi			
EXPANSION, Inches x 10exp-4			
STABILITY Ph 2,000 lbs (160 psi)			
TURNS DISPLACEMENT			
R-VALUE UNCORRECTED	N/A	N/A	N/A
R-VALUE CORRECTED	N/A	N/A	N/A

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	N/A	N/A	N/A
EXPANSION PRESSURE THICKNESS, ft.	N/A	N/A	N/A

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION:	N/A
R-VALUE BY EXUDATION:	N/A
EQUILIBRIUM R-VALUE:	< 5

Leighton

R-VALUE TEST RESULTS

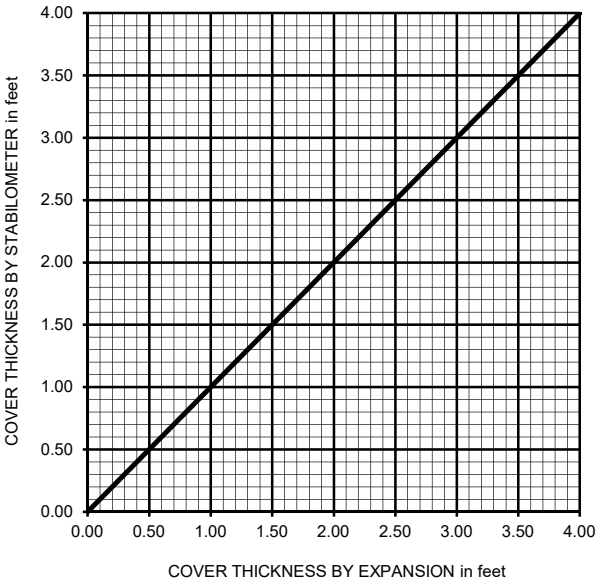
DOT CA Test 301

PROJECT NAME:	SMMUSD MMHS Phase 1	PROJECT NUMBER:	11382.016
BORING NUMBER:	2020-LB-6	DEPTH (FT.):	0-5
SAMPLE NUMBER:	B-1	TECHNICIAN:	O. Figueroa
SAMPLE DESCRIPTION:	Dark yellowish brown (CL)s	DATE COMPLETED:	8/29/2020

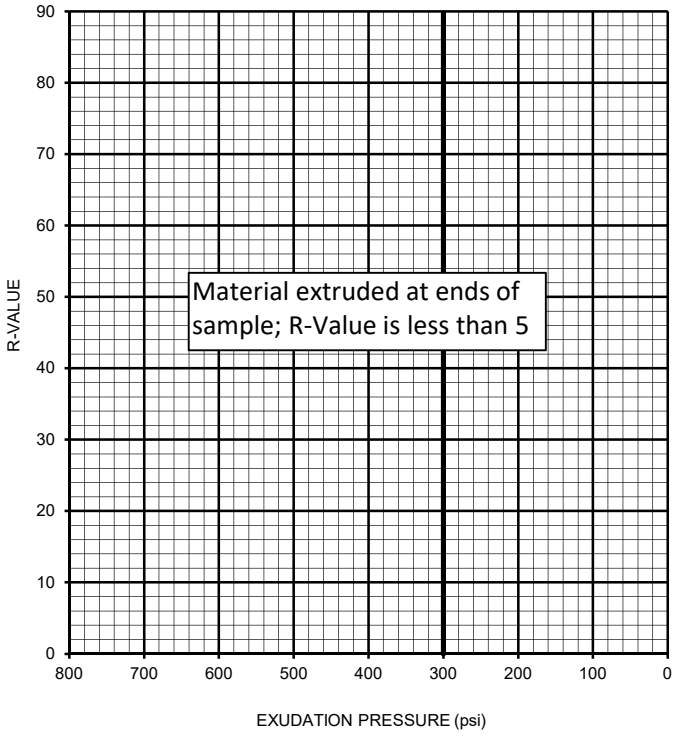
TEST SPECIMEN	a	b	c
MOISTURE AT COMPACTION %			
HEIGHT OF SAMPLE, Inches			
DRY DENSITY, pcf			
COMPACTOR PRESSURE, psi			
EXUDATION PRESSURE, psi			
EXPANSION, Inches x 10exp-4			
STABILITY Ph 2,000 lbs (160 psi)			
TURNS DISPLACEMENT			
R-VALUE UNCORRECTED	N/A	N/A	N/A
R-VALUE CORRECTED	N/A	N/A	N/A

DESIGN CALCULATION DATA	a	b	c
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	N/A	N/A	N/A
EXPANSION PRESSURE THICKNESS, ft.	N/A	N/A	N/A

EXPANSION PRESSURE CHART



EXUDATION PRESSURE CHART



R-VALUE BY EXPANSION:	N/A
R-VALUE BY EXUDATION:	N/A
EQUILIBRIUM R-VALUE:	< 5

APPENDIX D

SEISMICITY DATA

Leighton

Appendix D - Seismic Design

Code-based seismic design parameters derived from the USGS online tool are appended at the end of this appendix.

Leighton performed a site-specific ground motion study using the computer program Hazard Spectrum Application (OpenSHA, 2020), in accordance with the requirements of the 2019 California Building Code (CBC) and ASCE 7-16. A site-specific seismic hazard analysis was performed and the results processed in accordance with the procedures of ASCE 7-16.

D.1 Attenuation Relationships

Attenuation relationships (Ground Motion Prediction Equations or GMPEs) describe the relation of ground motion levels with earthquake magnitude and distance (distance between the site and seismic source), site geology, and subsurface characterization. These relationships can be used to describe the variation of peak ground acceleration and response spectral acceleration with earthquake magnitude and distance, and to also incorporate the local geological conditions and near-source effects.

We used four GMPEs: Abrahamson et.al. (2014) NGA West 2, Boore et. al. (2014) NGA West 2, Campbell and Bozorgnia (2014) NGA West 2, and Chiou and Youngs (2014) NGA West 2. These GMPEs are based on the median rotated direction (RotD50) of horizontal ground motion. Site Class D and an average shear wave velocity in the upper 30 meters equal to 330 meters per second based on the results of our exploration at the site were used with the selected GMPEs.

D.2 Design Criteria

The earthquake ground motions considered include the Risk-Targeted Maximum Considered Earthquake (MCE_R) and the Design Earthquake (DE). The MCE_R is defined as the maximum component of horizontal ground motion with a 2% probability of exceedance in 50 years (2,475-year average return interval) adjusted for targeted risk (ASCE 7-16). The DE ground motions are defined as 2/3 of MCE_R ground motions (ASCE 7-16).

D.3 Methodology

The 2019 CBC requires the procedures of Chapter 21, Site-Specific Ground Motion Procedures for Seismic Design, of ASCE 7-16 be used to determine site-specific seismic

response spectra and design parameters. We performed both deterministic and probabilistic seismic hazard analyses (DSHA and PSHA) and process the results in accordance with the procedures in Chapter 21 of ASCE 7-16.

D.4 Probabilistic Seismic Hazard Analysis

A PSHA is a mathematical process based on probability and statistics that is used to estimate the mean number of events per year in which the level of some ground motion parameter, Z (peak ground acceleration and/or spectral response acceleration in this study), exceeds a specified value z at the project site. This mean number of events per year, also referred to as "annual frequency of exceedance," is designated as "v(Z≥z)." The inverse of this number is called the "average return period (ARP)," which is expressed in terms of years. Having the annual frequency of exceedance of a certain level of acceleration or spectral response acceleration, v(Z≥z), the probability of exceeding that level Pr(Z≥z), within any time period of interest, t, is then obtained assuming a Poisson Distribution as follows:

$$\Pr(Z \geq z) = 1 - e^{-\upsilon(Z \geq z)t}$$

PSHA procedures require the specification of probability functions to describe the uncertainty in both the time and location of future earthquake occurrences and the uncertainty in the ground motion level that will be produced at the site.

The basic key elements of a PSHA are:

- Defining the location, geometry, and characteristics of earthquake sources relative the site;
- Specifying an earthquake recurrence relationship for various magnitudes on each source up to the maximum magnitude;
- Selecting appropriate attenuation relationships, which relate the variation of the earthquake ground motion parameter with earthquake distance, directivity, magnitude, site geology, and subsurface characterization; and
- Determining the probability of exceedance of peak ground accelerations and/or response spectral levels (i.e., seismic hazards) utilizing the above input parameters.

The frequencies of exceedance of peak ground accelerations and spectral response accelerations at the site were calculated by evaluating the following:

- The annual frequency of earthquakes of various magnitudes on a fault obtained from the fault recurrence relationships;

- Given an earthquake of a certain magnitude on a certain fault, the probability distribution of the location of the earthquake on the fault was obtained using the selected rupture area versus magnitude relationship and assuming equal likelihood of rupture along the length and some prescribed probabilities along the depth of the fault; and

- Given an earthquake of a certain magnitude occurring at a certain distance from the site, the probability distribution of ground motion at the site was obtained from the selected attenuation relationships.

The above process is repeated a sufficient number of times to cover all the sources, then summed to obtain the total seismic hazard at the site. This process results in a relationship between ground motion level and the probability of being exceeded.

The computer program Hazard Spectrum Application (OpenSHA, 2020) was used to perform the seismic hazard analysis.

D.5 Deterministic Seismic Hazard Analysis

The DSHA consists of a four-step process (Reiter, 1990):

- Defining the location, geometry, and characteristics of earthquake sources relative to the site;

- Determination of the site-to-source distance for each earthquake source defined relative to the site;

- Selection of the controlling earthquake relative to the site as defined by some ground motion parameter. The controlling earthquake is defined by the seismic scenario based on the above two steps that produces the largest magnitude of the ground motion parameter being used;

- Using the controlling earthquake, the deterministic ground motions at the site is obtained from the selected attenuation relationships; and

- Deterministic ground motions represent the 84th percentile average horizontal component and modified using Shahi and Baker (2014) to represent the maximum component horizontal ground motions.

The NGA-West2 deterministic spreadsheet by the Pacific Earthquake Engineering Research Center (PEER, 2015) was used for the DSHA.

The faults and characteristic magnitudes used to develop the deterministic MCE spectrum are included in the following table. The distances used are based on the deaggregation results obtained from the USGS Unified Hazard Tool website (https://earthquake.usgs.gov/hazards/interactive/).

Fault	Moment of Magnitude (Mw)	Distance (km)
Malibu Coast alt 1	6.63	1.7
Malibu Coast alt 2	7.37	2.4
Ancapa-Dume alt 1	7.26	5.8
Ancapa-Dume alt 2	7.32	5.3
San Pedro Basin	6.77	10.0

The fault magnitudes used in the deterministic analysis were based on the Building Seismic Safety Council (BSSC) 2014 scenario catalog website (https://earthquake.usgs.gov/scenarios/catalog/bssc2014/). The input used in the NGA-West2 deterministic spreadsheet is attached at the end of this appendix.

D.6 Code-Based General Seismic Response Spectra and Design Parameters

Seismic response spectra and design parameters were computed as determined by Chapter 11 of ASCE 7-16. These values are used to process the site-specific design response spectrum to ensure the site-specific DE and MCE_R response spectra meet or exceed minimum requirements. The code-based seismic design parameters were derived by using the SEAOC/OSHPD Seismic Design Maps Tool (https://seismicmaps.org/) to obtain the design values from the United States Geological Survey (USGS).

The code-based parameters determined from the referenced online are attached at the end of this addendum.

D.7 Site-Specific Response Spectra

The site-specific MCE_R and DE response spectra were developed per the methodology prescribed in Chapter 21 of ASCE 7-16. Site-specific response spectra for MCE_R and

DE were computed for a structural damping ratio of 5 percent of critical damping. Targeted risk coefficients were determined from mapped values in ASCE 7-16 to calculate MCE_R.

We used the Shahi and Baker (2014) SaRotD100/SaRotD50 factors to develop the maximum component of horizontal ground motion as required in the definition of ground motion in the current building codes (2019 CBC and ASCE 7-16). These factors enabled us to estimate the maximum horizontal component of ground motion.

Figure D.1 presents a graph and table with ordinates of the RotD50 and the maximum component MCE response spectra from the PSHA. The maximum component (MC) factors from Shahi and Baker (2014) are also presented on Figure D.1.

Figure D.2 presents plots and tables with ordinates of the MCE_R response spectra from the DSHA.

Per Chapter 21.2.3 of ASCE 7-16, the deterministic and probabilistic spectra were compared to establish site-specific maximum component MCE spectra. This step is shown on Figure D.3.

Figure D.4 shows a comparison of site-specific vs. general code-based spectra for the MCE_R spectrum.

The DE spectrum is shown on Figure D.5, which also includes the 80% of the general code-based spectrum floor stipulated in Chapter 21.3 of ASCE 7-16.

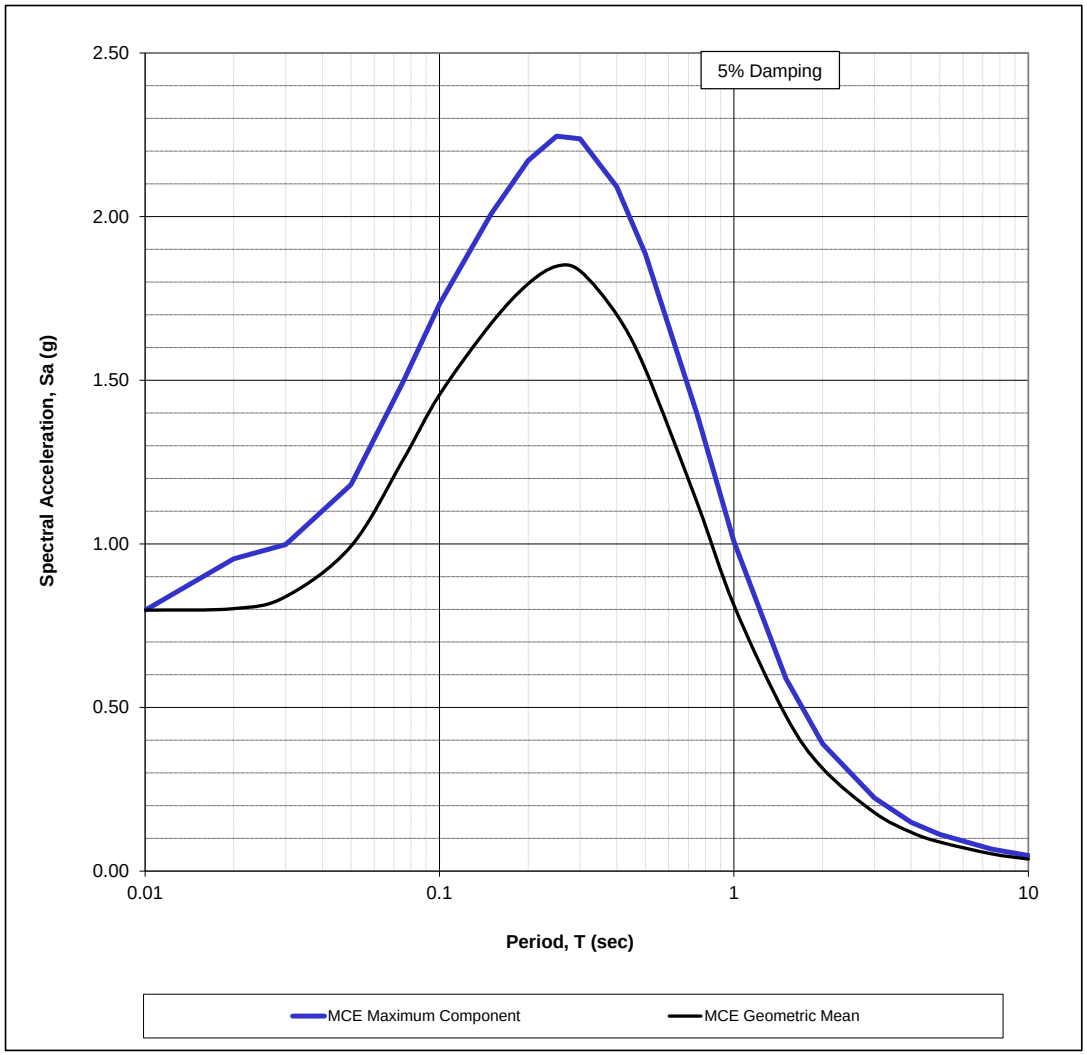
MCE SPECTRA (2,475-YEAR AVERAGE RETURN INTERVAL)

Project: MMHS Phase I High School Core Project

Project Number: 11382.016

Location: 30237 Morning View Drive, Malibu, California

Deaggregated Probabilistic PGA Magnitude
Mw = 7.0

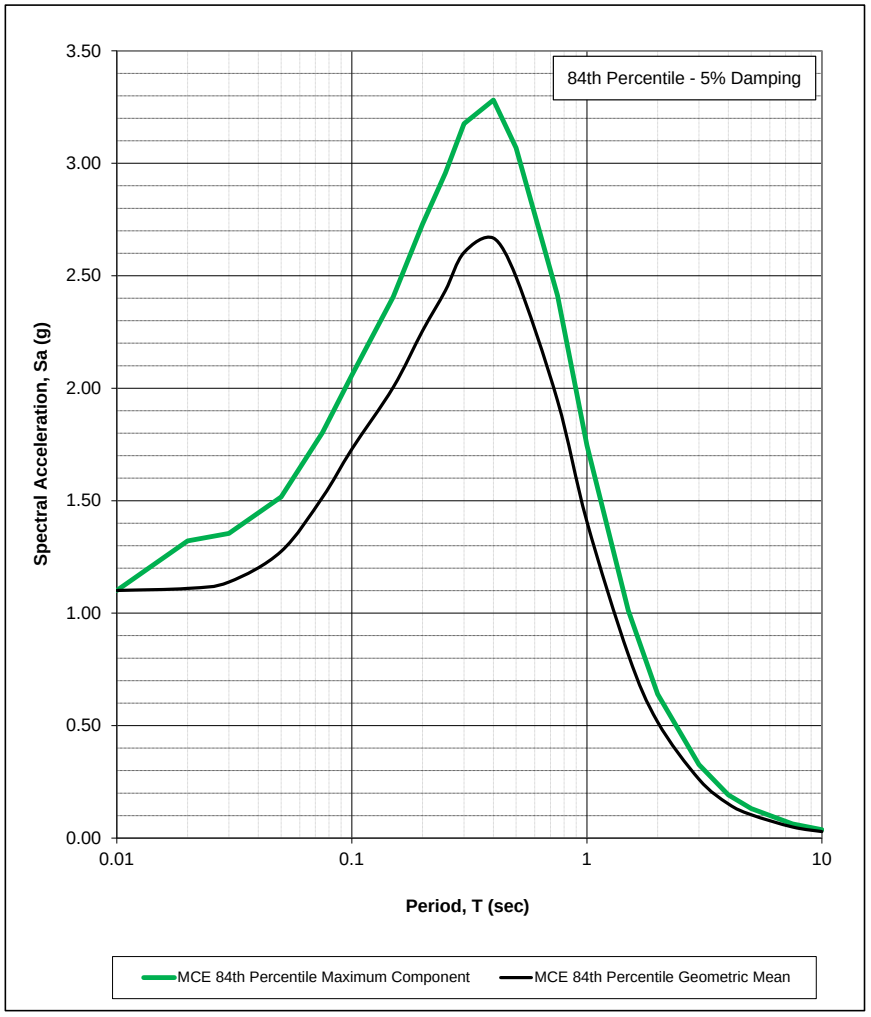


Period T (s)	MCE GEOMEAN Sa (g)	Maximum Component Factor	MCE MAX COMP Site-Specific Sa (g)
0.01	0.797	1.00	0.797
0.02	0.802	1.19	0.954
0.03	0.839	1.19	0.998
0.05	0.993	1.19	1.181
0.075	1.255	1.19	1.493
0.10	1.456	1.19	1.733
0.15	1.674	1.20	2.009
0.20	1.795	1.21	2.172
0.25	1.849	1.22	2.246
0.30	1.834	1.22	2.238
0.40	1.700	1.23	2.091
0.50	1.534	1.23	1.886
0.75	1.125	1.24	1.395
1.00	0.812	1.24	1.007
1.50	0.475	1.24	0.589
2.00	0.314	1.24	0.389
3.00	0.179	1.25	0.224
4.00	0.119	1.26	0.149
5.00	0.089	1.26	0.112
7.50	0.053	1.28	0.068
10.00	0.037	1.29	0.048

Figure D.1

MCE DETERMINISTIC SPECTRA

Project: MMHS Phase I High School Core Project
Project Number: 11382.016
Location: 30237 Morning View Drive, Malibu, California



DETERMINISTIC PGA MAGNITUDE				
MC FACTOR			DSHA - 84TH PERCENTILE	
Period T (s)	Maximum Component Factor		Period T (s)	MCE GEOMEAN Sa (g)	DETERMINISTIC MCE_R Sa (g)
0.01	1.00		0.01	1.101	1.101
0.02	1.19		0.02	1.110	1.321
0.03	1.19		0.03	1.138	1.355
0.05	1.19		0.05	1.274	1.516
0.075	1.19		0.075	1.515	1.803
0.10	1.19		0.10	1.729	2.058
0.15	1.20		0.15	2.004	2.405
0.20	1.21		0.20	2.256	2.729
0.25	1.22		0.25	2.434	2.957
0.30	1.22		0.30	2.603	3.176
0.40	1.23		0.40	2.668	3.281
0.50	1.23		0.50	2.494	3.068
0.75	1.24		0.75	1.945	2.412
1.00	1.24		1.00	1.408	1.746
1.50	1.24		1.50	0.816	1.012
2.00	1.24		2.00	0.516	0.640
3.00	1.25		3.00	0.261	0.327
4.00	1.26		4.00	0.152	0.192
5.00	1.26		5.00	0.104	0.131
7.50	1.28		7.50	0.049	0.063
10.00	1.29		10.00	0.029	0.037

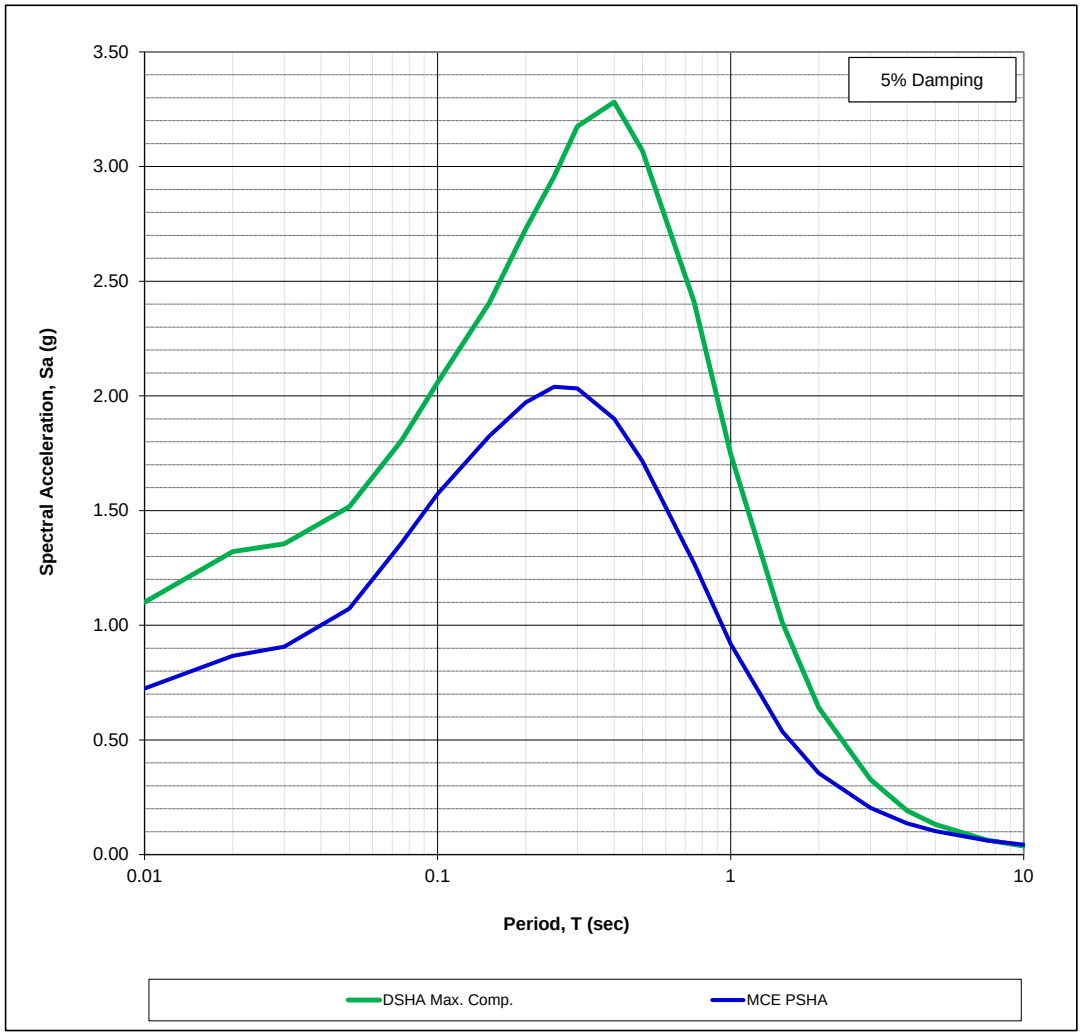
Figure D.2

MCE DETERMINISTIC SPECTRA COMPARISON - MAXIMUM HORIZONTAL COMPONENT

Project: MMHS Phase I High School Core Project

Project Number: 11382.016

Location: 30237 Morning View Drive, Malibu, California



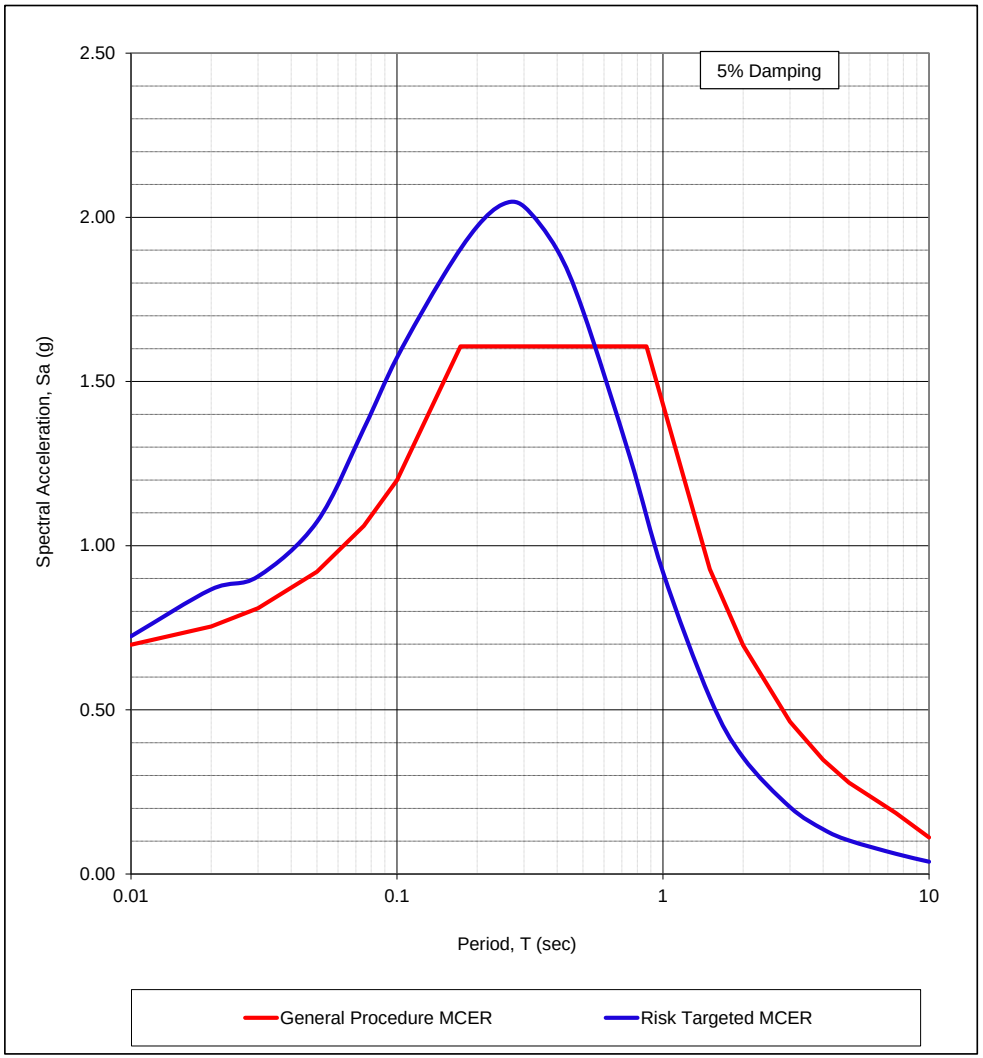
DSHA		PSHA			
Period T (s)	MCE_R Sa (g)	Period T (s)	MCE MAX COMP. Sa (g)	Site Risk Coefficient (C_R)	MCE_R Sa (g)
0.01	1.101	0.01	0.797	0.908	0.724
0.02	1.321	0.02	0.954	0.908	0.867
0.03	1.355	0.03	0.998	0.908	0.906
0.05	1.516	0.05	1.181	0.908	1.073
0.075	1.803	0.075	1.493	0.908	1.356
0.10	2.058	0.10	1.733	0.908	1.573
0.15	2.405	0.15	2.009	0.908	1.824
0.20	2.729	0.20	2.172	0.908	1.972
0.25	2.957	0.25	2.246	0.908	2.040
0.30	3.176	0.30	2.238	0.909	2.033
0.40	3.281	0.40	2.091	0.909	1.901
0.50	3.068	0.50	1.886	0.910	1.716
0.75	2.412	0.75	1.395	0.911	1.271
1.00	1.746	1.00	1.007	0.912	0.919
1.50	1.012	1.50	0.589	0.912	0.537
2.00	0.640	2.00	0.389	0.912	0.355
3.00	0.327	3.00	0.224	0.912	0.204
4.00	0.192	4.00	0.149	0.912	0.136
5.00	0.131	5.00	0.112	0.912	0.102
7.50	0.063	7.50	0.068	0.912	0.062
10.00	0.037	10.00	0.048	0.912	0.043

Figure D.3

RISK TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) RESPONSE SPECTRUM

Project: MMHS Phase I High School Core Project
Project Number: 11382.016
Location: 30237 Morning View Drive, Malibu, California

SITE-SPECIFIC vs. GENERAL CODE-BASED SPECTRA

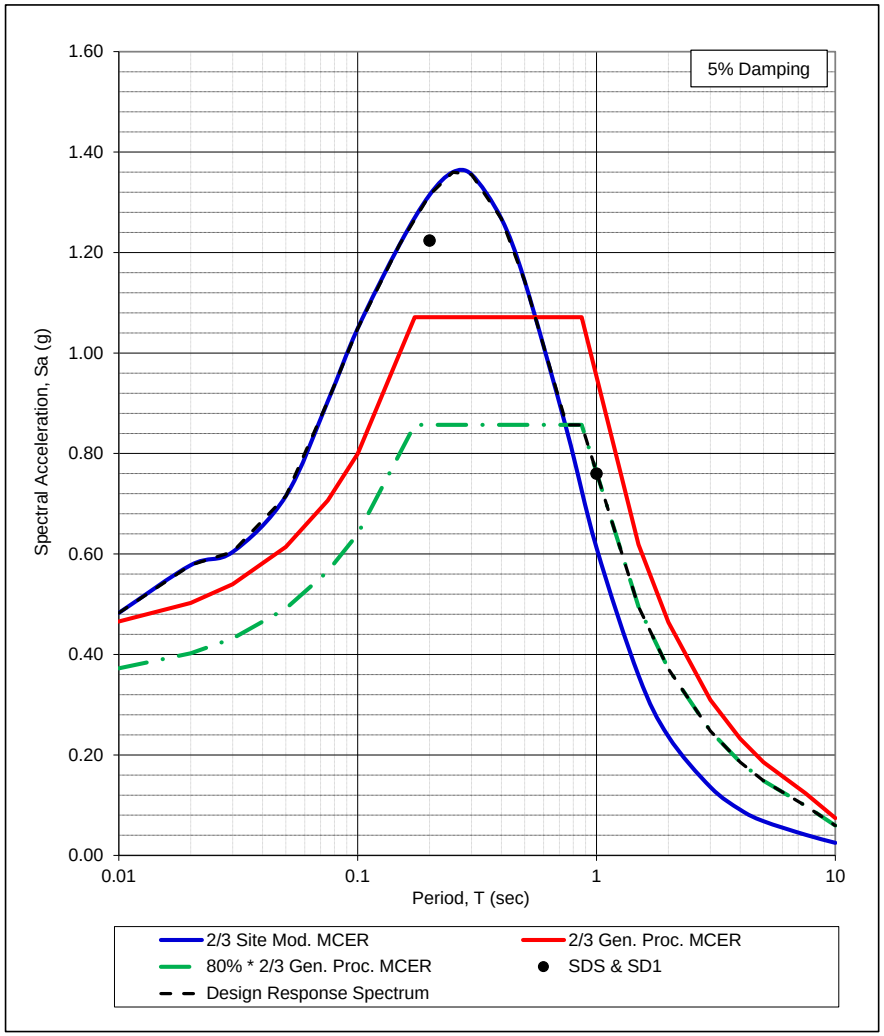


Period T (s)	DETERM. MCE_R Sa (g)	PROB. MCE_R Sa (g)	**Risk TGT MCE_R Sa (g)**	General Procedure MCE_R Sa (g)
0.01	1.101	0.724	**0.724**	0.698
0.02	1.321	0.867	**0.867**	0.754
0.03	1.355	0.906	**0.906**	0.810
0.05	1.516	1.073	**1.073**	0.921
0.075	1.803	1.356	**1.356**	1.060
0.10	2.058	1.573	**1.573**	1.199
0.15	2.405	1.824	**1.824**	1.477
0.20	2.729	1.972	**1.972**	1.607
0.25	2.957	2.040	**2.040**	1.607
0.30	3.176	2.033	**2.033**	1.607
0.40	3.281	1.901	**1.901**	1.607
0.50	3.068	1.716	**1.716**	1.607
0.75	2.412	1.271	**1.271**	1.607
1.00	1.746	0.919	**0.919**	1.425
1.50	1.012	0.537	**0.537**	0.928
2.00	0.640	0.355	**0.355**	0.696
3.00	0.327	0.204	**0.204**	0.464
4.00	0.192	0.136	**0.136**	0.348
5.00	0.131	0.102	**0.102**	0.279
7.50	0.063	0.062	**0.062**	0.186
10.00	0.037	0.043	**0.037**	0.111

Figure D.4

ASCE 7-16 DESIGN RESPONSE SPECTRUM AND SITE-SPECIFIC S_{DS} AND S_{D1}

Project: MMHS Phase I High School Core Project
Project Number: 11382.016
Location: 30237 Morning View Drive, Malibu, California



	CODE BASED GENERAL PROCEDURE SPECTRUM			RISK TGT SPECTRUM	DESIGN RESPONSE SPECTRUM
Period T (s)	GENERAL PROC. MCER CURVE Sa (g)	2/3 GENERAL PROC. MCER CURVE Sa (g)	80% * 2/3 GENERAL PROC. MCER CURVE Sa (g)	2/3*MCE_R CURVE Sa (g)	MAX of 2/3 MCE_R and 80% * 2/3 GENERAL PROC. MCER Sa (g)
0.01	0.698	0.466	0.372	0.483	**0.483**
0.02	0.754	0.503	0.402	0.578	**0.578**
0.03	0.810	0.540	0.432	0.604	**0.604**
0.05	0.921	0.614	0.491	0.715	**0.715**
0.075	1.060	0.707	0.565	0.904	**0.904**
0.10	1.199	0.799	0.640	1.049	**1.049**
0.15	1.477	0.985	0.788	1.216	**1.216**
0.20	1.607	1.071	0.857	1.315	**1.315**
0.25	1.607	1.071	0.857	1.360	**1.360**
0.30	1.607	1.071	0.857	1.355	**1.355**
0.40	1.607	1.071	0.857	1.267	**1.267**
0.50	1.607	1.071	0.857	1.144	**1.144**
0.75	1.607	1.071	0.857	0.847	**0.857**
1.00	1.425	0.950	0.760	0.613	**0.760**
1.50	0.928	0.619	0.495	0.358	**0.495**
2.00	0.696	0.464	0.371	0.237	**0.371**
3.00	0.464	0.309	0.248	0.136	**0.248**
4.00	0.348	0.232	0.186	0.091	**0.186**
5.00	0.279	0.186	0.149	0.068	**0.149**
7.50	0.186	0.124	0.099	0.041	**0.099**
10.00	0.111	0.074	0.059	0.025	**0.059**

S_{DS} = 1.224 g
S_{D1} = 0.760 g

Note: Based on ASCE 7-16 Section 21.4, the parameter S_{DS} shall be taken as 90% of the maximum spectral acceleration, Sa, obtained from the site-specific spectrum, at any period within the range from 0.2 to 5 s, inclusive. The parameter S_{D1} shall be taken as the maximum value of the product, TSa, for periods from 1 to 2 s for sites with Vs_{30} > 1,200 ft/s (Vs_{30} > 365.76 m/s) and for periods from 1 to 5 s for sites with Vs_{30} ≤ 1,200 ft/s (Vs_{30} ≤ 365.76 m/s). The design Sa shall not be less than 80% of 2/3 of the general procedure (Sec 11.4.6)

Figure D.5

11382.016

Latitude, Longitude: 34.0251, -118.8286

Date	11/17/2020, 1:52:27 PM
Design Code Reference Document	ASCE7-16
Risk Category	IV
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.607	MCE_R ground motion. (for 0.2 second period)
S_1	0.557	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.607	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.071	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.695	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.764	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.607	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.77	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.678	Factored deterministic acceleration value. (0.2 second)
S1RT	0.557	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.611	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.883	Factored deterministic acceleration value. (1.0 second)
PGAd	1.085	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.908	Mapped value of the risk coefficient at short periods
C_{R1}	0.912	Mapped value of the risk coefficient at a period of 1 s

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U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2014 (u…

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

34.0251

Time Horizon

Return period in years

2475

Longitude

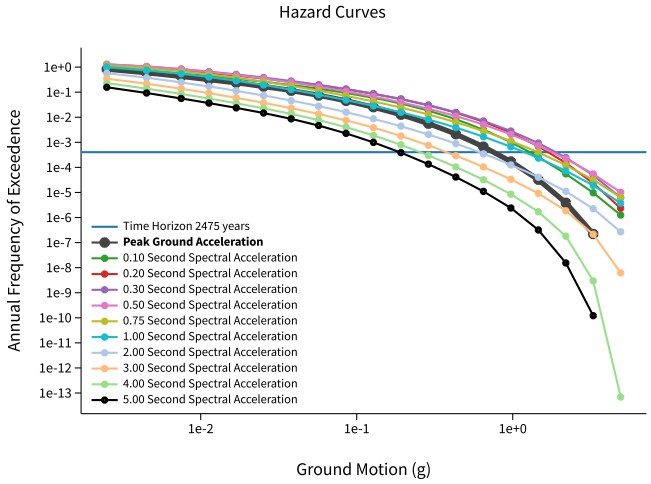
Decimal degrees, negative values for western longitudes

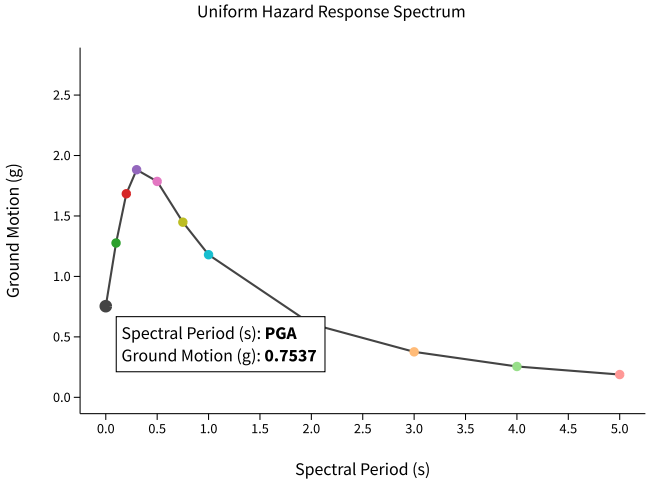
-118.8286

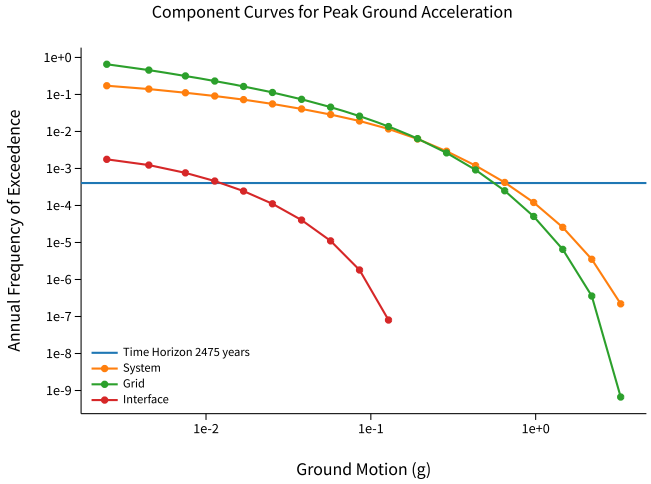
Site Class

259 m/s (Site class D)

Hazard Curve





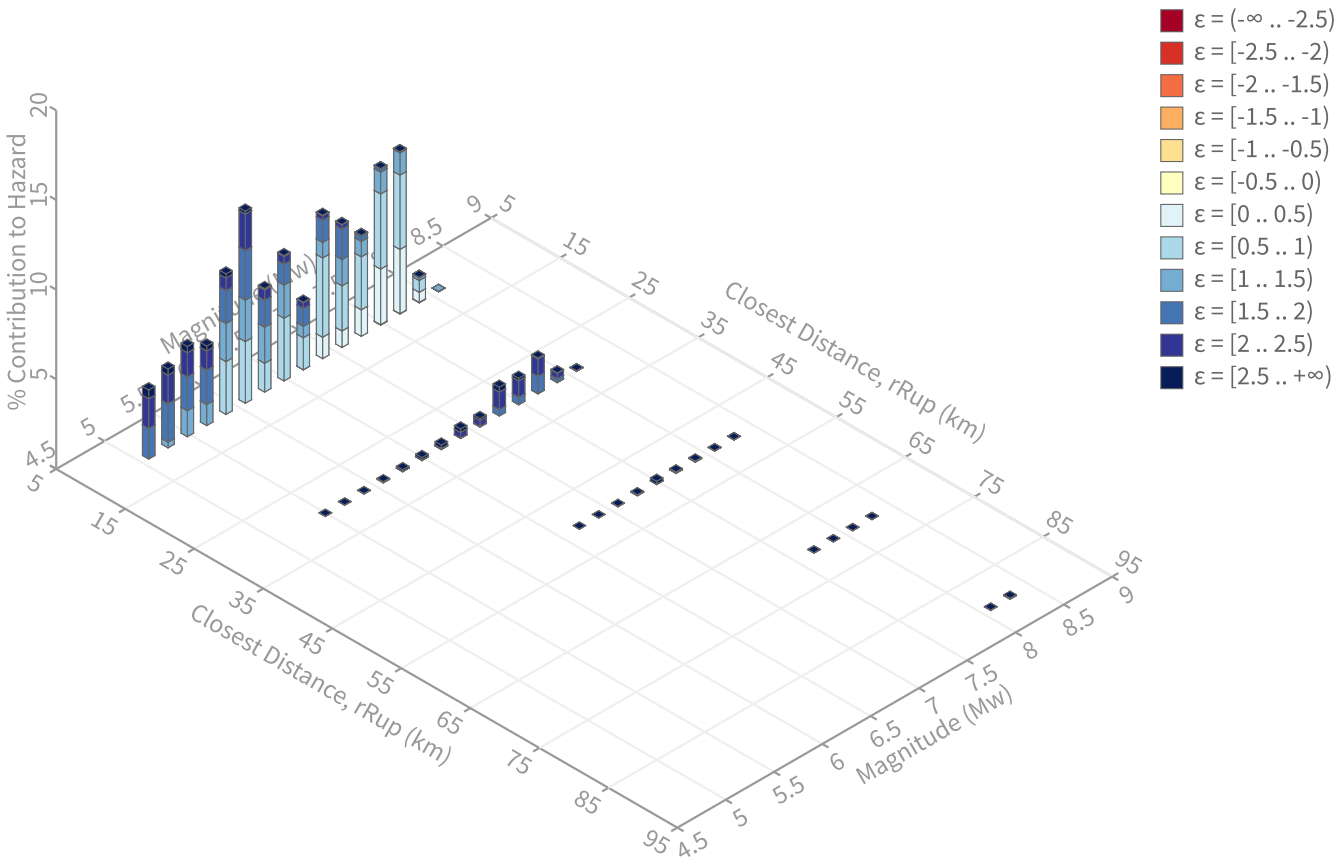


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.75371658 g

Recovered targets

Return period: 2874.2589 yrs
Exceedance rate: 0.00034791577 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.07 %

Mean (over all sources)

m: 6.62
r: 7.89 km
ε_0: 1.27 σ

Mode (largest m-r bin)

m: 6.12
r: 6.37 km
ε_0: 1.43 σ
Contribution: 10.71 %

Mode (largest m-r-ε_0 bin)

m: 6.9
r: 4.58 km
ε_0: 0.73 σ
Contribution: 4.42 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31	System							37.37
Malibu Coast alt 1 [7]		1.67	6.63	0.81	118.831°W	34.038°N	351.30	17.71
Anacapa-Dume alt 1 [1]		5.30	7.32	0.60	118.814°W	33.973°N	166.59	6.71
San Pedro Basin [11]		9.99	6.72	1.69	118.797°W	33.941°N	162.67	4.60
Malibu Coast alt 1 [6]		2.20	6.32	0.97	118.811°W	34.036°N	53.40	1.90
UC33brAvg_FM32	System							29.59
Anacapa-Dume alt 2 [3]		5.81	7.26	0.58	118.816°W	33.969°N	169.75	10.91
Malibu Coast alt 2 [3]		2.40	7.37	0.62	118.831°W	34.041°N	353.11	8.94
San Pedro Basin [11]		9.99	6.77	1.67	118.797°W	33.941°N	162.67	3.57
Anacapa-Dume alt 2 [2]		6.76	6.94	0.90	118.778°W	33.977°N	139.23	1.35
UC33brAvg_FM32 (opt)	Grid							16.70
PointSourceFinite: -118.829, 34.057		6.26	5.59	1.50	118.829°W	34.057°N	0.00	3.39
PointSourceFinite: -118.829, 34.057		6.26	5.59	1.50	118.829°W	34.057°N	0.00	3.39
PointSourceFinite: -118.829, 34.093		8.86	5.66	1.87	118.829°W	34.093°N	0.00	1.60
PointSourceFinite: -118.829, 34.093		8.86	5.66	1.87	118.829°W	34.093°N	0.00	1.60
PointSourceFinite: -118.829, 34.102		9.05	5.90	1.80	118.829°W	34.102°N	0.00	1.05
PointSourceFinite: -118.829, 34.102		9.05	5.90	1.80	118.829°W	34.102°N	0.00	1.05
UC33brAvg_FM31 (opt)	Grid							16.33
PointSourceFinite: -118.829, 34.057		6.22	5.61	1.50	118.829°W	34.057°N	0.00	3.38
PointSourceFinite: -118.829, 34.057		6.22	5.61	1.50	118.829°W	34.057°N	0.00	3.38
PointSourceFinite: -118.829, 34.093		8.77	5.69	1.85	118.829°W	34.093°N	0.00	1.39
PointSourceFinite: -118.829, 34.093		8.77	5.69	1.85	118.829°W	34.093°N	0.00	1.39
PointSourceFinite: -118.829, 34.102		9.10	5.87	1.82	118.829°W	34.102°N	0.00	1.09
PointSourceFinite: -118.829, 34.102		9.10	5.87	1.82	118.829°W	34.102°N	0.00	1.09

Anacapa-Dume Alt 1 [1] Fault

PACIFIC EARTHQUAKE ENGINEERING RESEARCH CENTER

WEIGHTED AVERAGE of 2014 NGA WEST-2 GMPEs

Last updated: 04 14 15

by Emel Seyhan, PhD, PEER & UCLA -- email: emel.seyhan@gmail.com, peer_center@berkeley.edu

This excel file will be updated as necessary on the PEER website to fix any typos or other errors. Please check the website frequently for new versions at: http://peer.berkeley.edu/ngawest2/databases/

Legend	Pre-defined option	Main input variable	Calculated variable	Input var. flag	Internal variable

GMPE averaging	Geometric

Weighted average of the natural logarithm of the spectral values

GMPEs	ASK14	BSSA14	CB14	CY14	I14
Weight	0.25	0.25	0.25	0.25	0

# of std. dev.	1
Damping ratio (%)	5

Modification factors are calculated in Sheet DSF

ASK14 Abrahamson & Silva & Kamai 2014 NGA West-2 Model
BSSA14 Boore & Stewart & Seyhan & Atkinson 2014 NGA West-2 Model
CB14 Campbell & Bozorgnia 2014 NGA West-2 Model
CY14 Chiou & Youngs 2014 NGA West-2 Model
I14 Idriss 2014 NGA West-2 Model

Input variables **Errors and warnings**

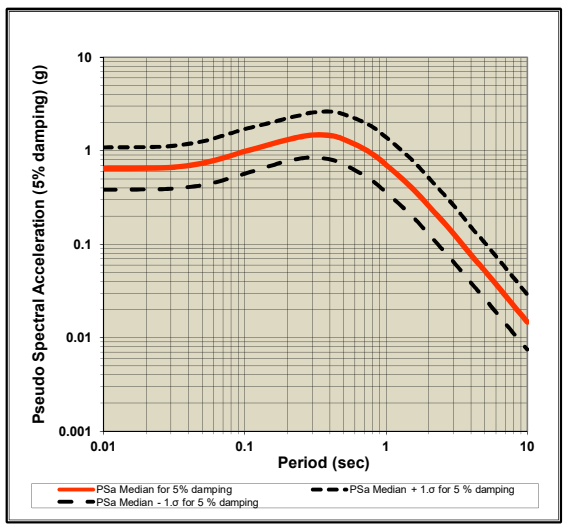
M_w	7.2
R_{RUP} (km)	5.3
R_{JB} (km)	0
R_X (km)	5.91
Ry0 (km)	999 *If unknown use 999*
V_{S30} (m/sec)	330
U (BSSA13)	0 *1: Unspecified fault mech.*
F_{RV}	1 *1: reverse fault*
F_{NM}	0 *1: normal fault*
F_{HW}	1 *1: hanging wall side*
Dip (deg)	41
Z_{TOR} (km)	999 *If unknown use 999*
Z_{HYP} (km)	999 *If unknown use 999*
$Z_{1.0}$ (km)	0.05 *If unknown use 999*
$Z_{2.5}$ (km)	0.2 *If unknown use 999*
W (km)	19.73 *If unknown use 999*
Vs30Flag	measured *Choose options for V_{s30} from the list*
F_{AS}	no *Aftershock effect is not applicable.*
Region	California *Choose region from the list*

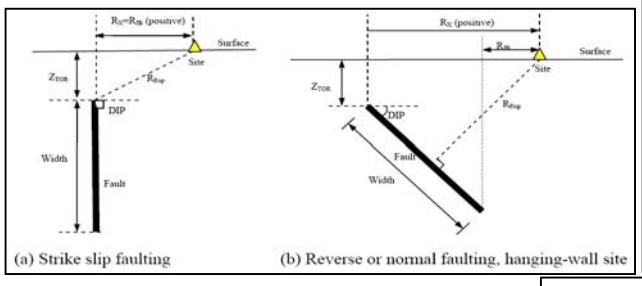
Calculated Variables/Flags

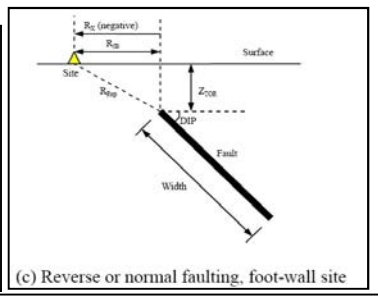
ΔDPP	0 *Always 0 for median calcs.*
PGA_r (g)	0.457
Z_{BOT} (km) (CB14)	15 *Enter for default W calcs*
SS	0 *auto calculated*
$V_{s30Flag}$	1 *measured*
F_{AS}	0 *Aftershock effect is not applicable.*
Region	0 *California*
Option for Sa value	1 *Weighted average of the natural logarithm of the spectral values*

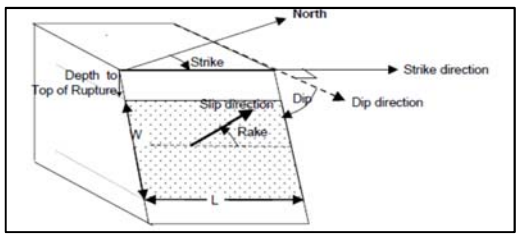
RotD50 Horizontal Component of PGA, PGV and *IMs*

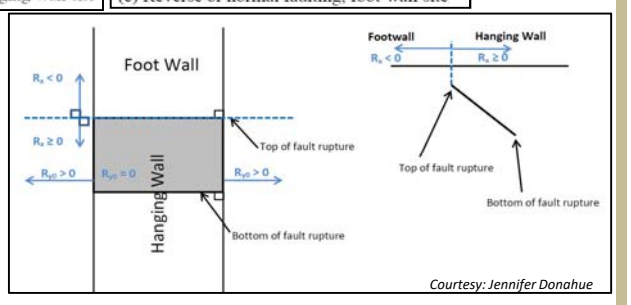
GMP	T (s)	Baseline: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5% damping	PSa Median - 1.σ for 5% damping	S_d Median for 5% damping	User defined: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5 % damping	PSa Median - 1.σ for 5 % damping	Sd Median for 5 % damping
PSa (g), S_d (cm)	0.01	0.64465	1.08507	0.38300	0.00160	0.64465	1.08507	0.38300	0.00160
	0.02	0.65008	1.09470	0.38605	0.00645	0.65008	1.09470	0.38605	0.00645
	0.03	0.66419	1.12333	0.39272	0.01484	0.66353	1.12220	0.39232	0.01482
	0.05	0.73329	1.25644	0.42796	0.04551	0.73329	1.25644	0.42796	0.04551
	0.075	0.86059	1.49343	0.49591	0.12017	0.86231	1.49641	0.49691	0.12041
	0.1	0.98288	1.70328	0.56718	0.24399	0.98583	1.70839	0.56888	0.24472
	0.15	1.16276	1.97851	0.68335	0.64944	1.16509	1.98247	0.68472	0.65074
	0.2	1.31259	2.22105	0.77572	1.30334	1.31522	2.22549	0.77727	1.30594
	0.25	1.40567	2.39722	0.82425	2.18087	1.41129	2.40681	0.82755	2.18959
	0.3	1.47065	2.55975	0.84493	3.28562	1.47212	2.56231	0.84578	3.28891
	0.4	1.45474	2.62195	0.80714	5.77793	1.45620	2.62457	0.80795	5.78371
	0.5	1.32524	2.45368	0.71577	8.22432	1.32656	2.45613	0.71648	8.23255
	0.75	0.98689	1.90838	0.51035	13.78021	0.98689	1.90838	0.51035	13.78021
	1	0.70726	1.39340	0.35899	17.55689	0.70656	1.39201	0.35863	17.53933
	1.5	0.40915	0.81633	0.20507	22.85214	0.40955	0.81714	0.20527	22.87499
	2	0.25767	0.51643	0.12857	25.58575	0.25716	0.51540	0.12831	25.53458
	3	0.13025	0.26145	0.06489	29.09948	0.13012	0.26119	0.06482	29.07038
	4	0.07654	0.15214	0.03851	30.40079	0.07647	0.15199	0.03847	30.37039
	5	0.05222	0.10402	0.02622	32.40876	0.05207	0.10371	0.02614	32.31154
	7.5	0.02484	0.04935	0.01251	34.69047	0.02479	0.04925	0.01248	34.62109
	10	0.01477	0.02906	0.00750	36.66052	0.01471	0.02895	0.00747	36.51387
PGA (g)	0	0.64099	1.07809	0.38111	0.00159	0.64099	1.07809	0.38111	0.00159
PGV (cm/s)	-1	72.26921	129.96965	40.18507	0.17940	NA	NA	NA	NA











Definition of Parameters

Damping ratio = Viscous damping ratio (%) See Sanaz et al. (2012) PEER Report
PSA = Pseudo-absolute acceleration response spectrum (g)
PGA = Peak ground acceleration (g)
PGV = Peak ground velocity (cm/s)
S_d = Relative displacement response spectrum (cm)
M_w = Moment magnitude
R_{RUP} = Closest distance to coseismic rupture (km), used in ASK13, CB13 and CY13. See Figures a, b and c for illustation
R_{JB} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustation
R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km). See Figures a, b and c for illustation
R_{y0} = The horizontal distance off the end of the rupture measured parallel to strike (km)
V_{S30} = The average shear-wave velocity (m/s) over a subsurface depth of 30 m
U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise
F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
F_{NM} = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise
Dip = Average dip of rupture plane (degrees)
Z_{TOR} = Depth to top of coseismic rupture (km)
Z_{HYP} = Hypocentral depth from the earthquake
$Z_{1.0}$ = Depth to Vs=1 km/sec
$Z_{2.5}$ = Depth to Vs=2.5 km/sec
W = Fault rupture width (km)
$V_{s30flag}$ = 1 for measured, 0 for inferred Vs30
F_{AS} = 0 for mainshock; 1 for aftershock
Region = Specific regions considered in the models, Click on Region to see codes
ΔDPP = Directivity term, direct point parameter; uses 0 for median predictions
PGA_r (g) = Peak ground acceleration on rock (g), this specific cell is updated in the cell for BSSA14 and CB14, for others it is taken account for in the macros
Z_{BOT} (km) = The depth to the bottom of the seismogenic crust
Z_{BOR} (km) = The depth to the bottom of the rupture plane
SS = 1 for strike slip, automatically updated in the cell

Input variables with defaults (If entered 999 as input):

Red colored value: The value is used in the code when input is unknown

DEFAULTs	USER defined	ASK14	BSSA14	CB14	CY14	I14
W (km)	19.73			21.191		
$Z_{1.0}$ (km)	0.050	0.050			0.433	
$\delta Z_{1.0}$ (km)	-0.383		-0.383			
$Z_{2.5}$ (V_{S30}=1100)(km)	0.200			0.398		
$Z_{2.5}$ (V_{S30})(km)	0.200			1.576		
Z_{hyp} (km)	999.00			11.324		
Z_{tor} (km)	999.00			1.098	1.098	
Z_{BOR} (km)	-			15.000		

ACKNOWLEDGEMENTS

Nick Gregor, Bechtel
Silvia Mazzoni, Consultant

All NGA West-2 participants are acknowledged for their constructive comments and feedback.

Anacapa-Dume Alt 2 [3] Fault

PACIFIC EARTHQUAKE ENGINEERING RESEARCH CENTER

WEIGHTED AVERAGE of 2014 NGA WEST-2 GMPEs

Last updated: 04 14 15

by Emel Seyhan, PhD, PEER & UCLA -- email: emel.seyhan@gmail.com, peer_center@berkeley.edu

This excel file will be updated as necessary on the PEER website to fix any typos or other errors. Please check the website frequently for new versions at: http://peer.berkeley.edu/ngawest2/databases/

Legend	Pre-defined option	Main input variable	Calculated variable	Input var. flag	Internal variable

GMPE averaging	Geometric

Weighted average of the natural logarithm of the spectral values

GMPEs	ASK14	BSSA14	CB14	CY14	I14
Weight	0.25	0.25	0.25	0.25	0

# of std. dev.	1
Damping ratio (%)	5

Modification factors are calculated in Sheet DSF

ASK14 Abrahamson & Silva & Kamai 2014 NGA West-2 Model
BSSA14 Boore & Stewart & Seyhan & Atkinson 2014 NGA West-2 Model
CB14 Campbell & Bozorgnia 2014 NGA West-2 Model
CY14 Chiou & Youngs 2014 NGA West-2 Model
I14 Idriss 2014 NGA West-2 Model

Input variables **Errors and warnings**

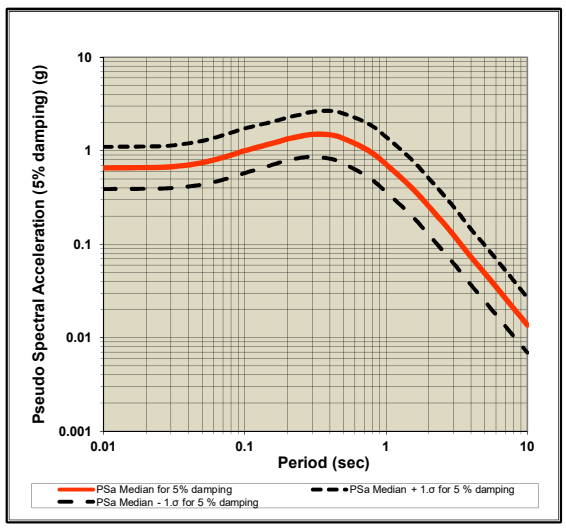
M_w	
7.16	
R_{RUP} (km)	
5.81	
R_{JB} (km)	
0	
R_X (km)	
6.28	
Ry0 (km)	*If unknown use 999*
999	
V_{S30} (m/sec)	
330	
U (BSSA13)	*1: Unspecified fault mech.*
0	
F_{RV}	*1: reverse fault*
1	
F_{NM}	*1: normal fault*
0	
F_{HW}	*1: hanging wall side*
1	
Dip (deg)	
41	
Z_{TOR} (km)	*If unknown use 999*
999	
Z_{HYP} (km)	*If unknown use 999*
999	
$Z_{1.0}$ (km)	*If unknown use 999*
0.05	
$Z_{2.5}$ (km)	*If unknown use 999*
0.2	
W (km)	*If unknown use 999*
13.99	
Vs30Flag	
measured	*Choose options for V_{s30} from the list*
F_{AS}	
no	*Aftershock effect is not applicable.*
Region	
California	*Choose region from the list*

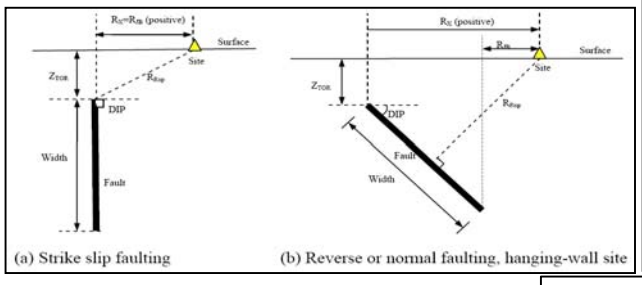
Calculated Variables/Flags

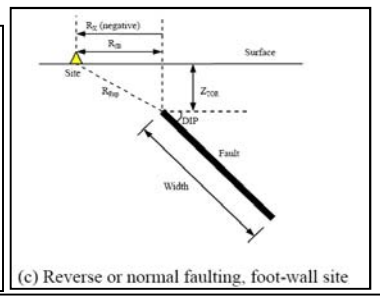
ΔDPP	*Always 0 for median calcs.*
0	
PGA_r (g)	
0.454	
Z_{BOT} (km) (CB14)	*Enter for default W calcs*
15	
SS	
0	*auto calculated*
$V_{s30Flag}$	
1	*measured*
F_{AS}	
0	*Aftershock effect is not applicable.*
Region	
0	*California*
Option for Sa value	
1	*Weighted average of the natural logarithm of the spectral values*

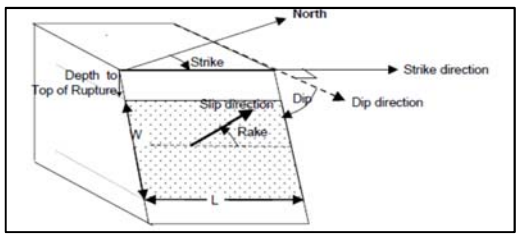
RotD50 Horizontal Component of PGA, PGV and *IMs*

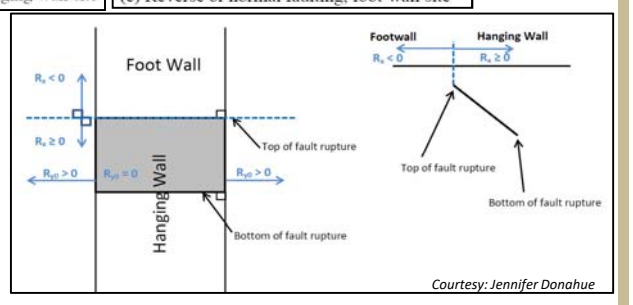
GMP	T (s)	Baseline: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5% damping	PSa Median - 1.σ for 5% damping	S_d Median for 5% damping	User defined: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5 % damping	PSa Median - 1.σ for 5 % damping	Sd Median for 5 % damping
PSa (g), S_d (cm)	0.01	0.65462	1.10094	0.38923	0.00163	0.65462	1.10094	0.38923	0.00163
	0.02	0.65976	1.11008	0.39212	0.00655	0.65976	1.11008	0.39212	0.00655
	0.03	0.67362	1.13841	0.39859	0.01505	0.67294	1.13728	0.39819	0.01503
	0.05	0.74405	1.27431	0.43444	0.04618	0.74405	1.27431	0.43444	0.04618
	0.075	0.87311	1.51491	0.50321	0.12191	0.87485	1.51794	0.50421	0.12216
	0.1	0.99793	1.72920	0.57590	0.24772	1.00092	1.73439	0.57763	0.24847
	0.15	1.17808	2.00406	0.69253	0.65800	1.18043	2.00807	0.69391	0.65931
	0.2	1.33367	2.25558	0.78857	1.32427	1.33634	2.26009	0.79015	1.32692
	0.25	1.42811	2.43380	0.83799	2.21568	1.43239	2.44110	0.84050	2.22233
	0.3	1.49665	2.60307	0.86051	3.34372	1.49815	2.60567	0.86137	3.34707
	0.4	1.48073	2.66759	0.82193	5.88116	1.48221	2.67026	0.82275	5.88704
	0.5	1.34756	2.49435	0.72801	8.36284	1.34891	2.49685	0.72874	8.37120
	0.75	1.00580	1.94479	0.52018	14.04438	1.00580	1.94479	0.52018	14.04438
	1	0.71465	1.40789	0.36276	17.74017	0.71393	1.40648	0.36239	17.72243
	1.5	0.40879	0.81560	0.20489	22.83202	0.40919	0.81642	0.20509	22.85485
	2	0.25503	0.51114	0.12725	25.32329	0.25452	0.51012	0.12699	25.27264
	3	0.12587	0.25267	0.06271	28.12213	0.12575	0.25242	0.06265	28.09401
	4	0.07260	0.14431	0.03653	28.83585	0.07253	0.14416	0.03649	28.80701
	5	0.04907	0.09775	0.02464	30.45519	0.04893	0.09745	0.02456	30.36382
	7.5	0.02325	0.04618	0.01170	32.46239	0.02320	0.04609	0.01168	32.39746
	10	0.01373	0.02703	0.00698	34.09285	0.01368	0.02692	0.00695	33.95648
PGA (g)	0	0.65095	1.09396	0.38735	0.00162	0.65095	1.09396	0.38735	0.00162
PGV (cm/s)	-1	70.79512	127.30319	39.37017	0.17574	NA	NA	NA	NA











Definition of Parameters

Damping ratio = Viscous damping ratio (%) See Sanaz et al. (2012) PEER Report
PSA = Pseudo-absolute acceleration response spectrum (g)
PGA = Peak ground acceleration (g)
PGV = Peak ground velocity (cm/s)
S_d = Relative displacement response spectrum (cm)
M_w = Moment magnitude
R_{RUP} = Closest distance to coseismic rupture (km), used in ASK13, CB13 and CY13. See Figures a, b and c for illustation
R_{JB} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustation
R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km). See Figures a, b and c for illustation
R_{y0} = The horizontal distance off the end of the rupture measured parallel to strike (km)
V_{S30} = The average shear-wave velocity (m/s) over a subsurface depth of 30 m
U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise
F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
F_{NM} = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise
Dip = Average dip of rupture plane (degrees)
Z_{TOR} = Depth to top of coseismic rupture (km)
Z_{HYP} = Hypocentral depth from the earthquake
$Z_{1.0}$ = Depth to Vs=1 km/sec
$Z_{2.5}$ = Depth to Vs=2.5 km/sec
W = Fault rupture width (km)
$V_{s30flag}$ = 1 for measured, 0 for inferred Vs30
F_{AS} = 0 for mainshock; 1 for aftershock
Region = Specific regions considered in the models, Click on Region to see codes
ΔDPP = Directivity term, direct point parameter; uses 0 for median predictions
PGA_r (g) = Peak ground acceleration on rock (g), this specific cell is updated in the cell for BSSA14 and CB14, for others it is taken account for in the macros
Z_{BOT} (km) = The depth to the bottom of the seismogenic crust
Z_{BOR} (km) = The depth to the bottom of the rupture plane
SS = 1 for strike slip, automatically updated in the cell

Input variables with defaults (If entered 999 as input):

Red colored value: The value is used in the code when input is unknown

DEFAULTs	USER defined	ASK14	BSSA14	CB14	CY14	I14
W (km)	13.99			21.030		
$Z_{1.0}$ (km)	0.050	0.050			0.433	
$\delta Z_{1.0}$ (km)	-0.383		-0.383			
$Z_{2.5}$ (V_{S30}=1100)(km)	0.200			0.398		
$Z_{2.5}$ (V_{S30})(km)	0.200			1.576		
Z_{hyp} (km)	999.00			11.429		
Z_{tor} (km)	999.00			1.203	1.203	
Z_{BOR} (km)	-			15.000		

ACKNOWLEDGEMENTS

Nick Gregor, Bechtel
Silvia Mazzoni, Consultant

All NGA West-2 participants are acknowledged for their constructive comments and feedback.

Malibu Coast Alt 1 [7] Fault

PACIFIC EARTHQUAKE ENGINEERING RESEARCH CENTER

WEIGHTED AVERAGE of 2014 NGA WEST-2 GMPEs

Last updated: 04 14 15

by Emel Seyhan, PhD, PEER & UCLA -- email: emel.seyhan@gmail.com, peer_center@berkeley.edu

This excel file will be updated as necessary on the PEER website to fix any typos or other errors. Please check the website frequently for new versions at: http://peer.berkeley.edu/ngawest2/databases/

Legend	Pre-defined option	Main input variable	Calculated variable	Input var. flag	Internal variable

GMPE averaging	Geometric

Weighted average of the natural logarithm of the spectral values

GMPEs	ASK14	BSSA14	CB14	CY14	I14
Weight	0.25	0.25	0.25	0.25	0

# of std. dev.	1
Damping ratio (%)	5

Modification factors are calculated in Sheet DSF

ASK14 Abrahamson & Silva & Kamai 2014 NGA West-2 Model
BSSA14 Boore & Stewart & Seyhan & Atkinson 2014 NGA West-2 Model
CB14 Campbell & Bozorgnia 2014 NGA West-2 Model
CY14 Chiou & Youngs 2014 NGA West-2 Model
I14 Idriss 2014 NGA West-2 Model

Input variables **Errors and warnings**

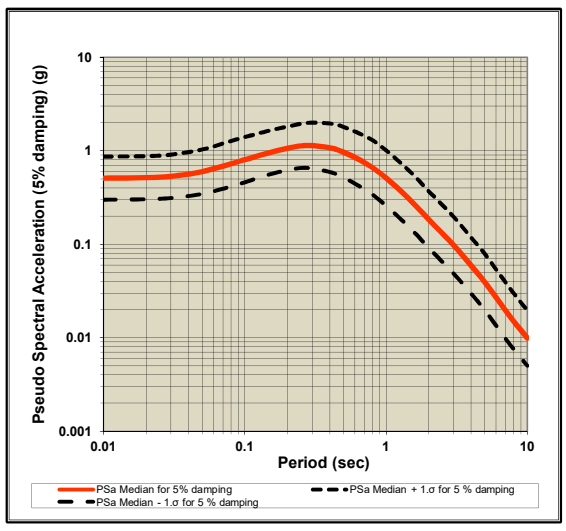
M_w	6.64
R_{RUP} (km)	1.67
R_{JB} (km)	1.47
R_X (km)	-1.42
Ry0 (km)	999 *If unknown use 999*
V_{S30} (m/sec)	330
U (BSSA13)	0 *1: Unspecified fault mech.*
F_{RV}	0 *1: reverse fault*
F_{NM}	0 *1: normal fault*
F_{HW}	0 *1: hanging wall side*
Dip (deg)	75
Z_{TOR} (km)	999 *If unknown use 999*
Z_{HYP} (km)	999 *If unknown use 999*
$Z_{1.0}$ (km)	0.05 *If unknown use 999*
$Z_{2.5}$ (km)	0.2 *If unknown use 999*
W (km)	7.27 *If unknown use 999*
Vs30Flag	measured *Choose options for V_{s30} from the list*
F_{AS}	no *Aftershock effect is not applicable.*
Region	California *Choose region from the list*

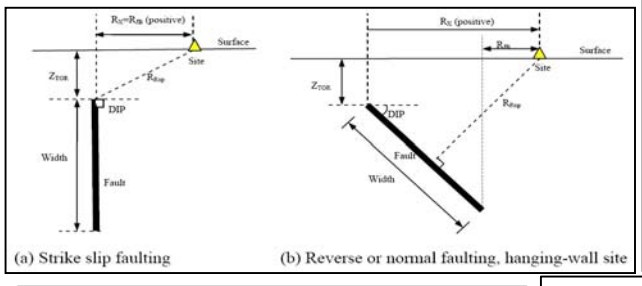
Calculated Variables/Flags

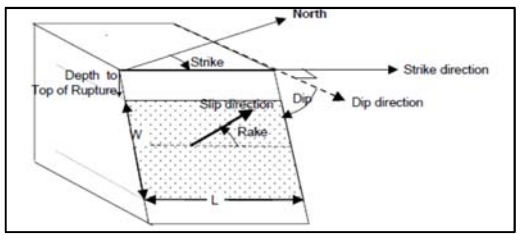
ΔDPP	0 *Always 0 for median calcs.*
PGA_r (g)	0.423
Z_{BOT} (km) (CB14)	15 *Enter for default W calcs*
SS	1 *auto calculated*
$V_{s30Flag}$	1 *measured*
F_{AS}	0 *Aftershock effect is not applicable.*
Region	0 *California*
Option for Sa value	1 *Weighted average of the natural logarithm of the spectral values*

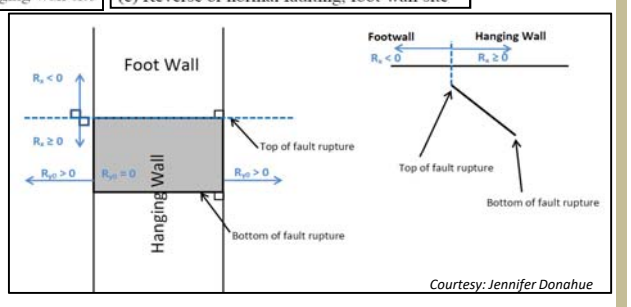
RotD50 Horizontal Component of PGA, PGV and *IMs*

GMP	T (s)	Baseline: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5% damping	PSa Median - 1.σ for 5% damping	S_d Median for 5% damping	User defined: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5 % damping	PSa Median - 1.σ for 5 % damping	Sd Median for 5 % damping
PSa (g), S_d (cm)	0.01	0.50869	0.86443	0.29935	0.00126	0.50869	0.86443	0.29935	0.00126
	0.02	0.51523	0.87596	0.30305	0.00512	0.51523	0.87596	0.30305	0.00512
	0.03	0.53239	0.90886	0.31186	0.01189	0.53239	0.90886	0.31186	0.01189
	0.05	0.59756	1.03211	0.34596	0.03708	0.59696	1.03108	0.34562	0.03705
	0.075	0.70469	1.23121	0.40334	0.09840	0.70610	1.23367	0.40415	0.09860
	0.1	0.80111	1.39768	0.45917	0.19886	0.80271	1.40047	0.46009	0.19926
	0.15	0.95677	1.64133	0.55773	0.53439	0.95869	1.64461	0.55884	0.53546
	0.2	1.05934	1.81002	0.61999	1.05187	1.06040	1.81183	0.62061	1.05292
	0.25	1.12230	1.93474	0.65102	1.74122	1.12791	1.94442	0.65427	1.74993
	0.3	1.13396	1.99543	0.64441	2.53342	1.13396	1.99543	0.64441	2.53342
	0.4	1.07421	1.95251	0.59099	4.26653	1.07528	1.95447	0.59159	4.27080
	0.5	0.96295	1.79489	0.51662	5.97598	0.96391	1.79669	0.51713	5.98195
	0.75	0.70701	1.37359	0.36391	9.87216	0.70630	1.37221	0.36354	9.86229
	1	0.51171	1.01211	0.25872	12.70264	0.51069	1.01008	0.25820	12.67723
	1.5	0.29190	0.58428	0.14583	16.30341	0.29190	0.58428	0.14583	16.30341
	2	0.18468	0.37118	0.09188	18.33733	0.18431	0.37044	0.09170	18.30066
	3	0.09829	0.19783	0.04884	21.95972	0.09810	0.19744	0.04874	21.91580
	4	0.05915	0.11789	0.02968	23.49216	0.05909	0.11777	0.02965	23.46866
	5	0.03950	0.07889	0.01978	24.51293	0.03934	0.07857	0.01970	24.41488
	7.5	0.01702	0.03391	0.00855	23.77153	0.01704	0.03394	0.00856	23.79530
	10	0.00995	0.01962	0.00504	24.69027	0.00992	0.01957	0.00503	24.61619
PGA (g)	0	0.50576	0.85880	0.29785	0.00126	0.50576	0.85880	0.29785	0.00126
PGV (cm/s)	-1	59.78684	107.65648	33.20251	0.14841	NA	NA	NA	NA









Courtesy: Jennifer Donahue

Definition of Parameters

Damping ratio = Viscous damping ratio (%) See Sanaz et al. (2012) PEER Report
PSA = Pseudo-absolute acceleration response spectrum (g)
PGA = Peak ground acceleration (g)
PGV = Peak ground velocity (cm/s)
S_d = Relative displacement response spectrum (cm)
M_w = Moment magnitude
R_{RUP} = Closest distance to coseismic rupture (km), used in ASK13, CB13 and CY13. See Figures a, b and c for illustation
R_{JB} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustation
R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km). See Figures a, b and c for illustation
R_{y0} = The horizontal distance off the end of the rupture measured parallel to strike (km)
V_{S30} = The average shear-wave velocity (m/s) over a subsurface depth of 30 m
U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise
F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
F_{NM} = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise
Dip = Average dip of rupture plane (degrees)
Z_{TOR} = Depth to top of coseismic rupture (km)
Z_{HYP} = Hypocentral depth from the earthquake
$Z_{1.0}$ = Depth to Vs=1 km/sec
$Z_{2.5}$ = Depth to Vs=2.5 km/sec
W = Fault rupture width (km)
$V_{s30flag}$ = 1 for measured, 0 for inferred Vs30
F_{AS} = 0 for mainshock; 1 for aftershock
Region = Specific regions considered in the models, Click on Region to see codes
ΔDPP = Directivity term, direct point parameter; uses 0 for median predictions
PGA_r (g) = Peak ground acceleration on rock (g), this specific cell is updated in the cell for BSSA14 and CB14, for others it is taken account for in the macros
Z_{BOT} (km) = The depth to the bottom of the seismogenic crust
Z_{BOR} (km) = The depth to the bottom of the rupture plane
SS = 1 for strike slip, automatically updated in the cell

Input variables with defaults (If entered 999 as input):

Red colored value: The value is used in the code when input is unknown

DEFAULTs	USER defined	ASK14	BSSA14	CB14	CY14	I14
W (km)	7.27			14.906		
$Z_{1.0}$ (km)	0.050	0.050			0.433	
$\delta Z_{1.0}$ (km)	-0.383		-0.383			
$Z_{2.5}$ (V_{S30}=1100)(km)	0.200			0.398		
$Z_{2.5}$ (V_{S30})(km)	0.200			1.576		
Z_{hyp} (km)	999.00			9.780		
Z_{tor} (km)	999.00			0.602	0.602	
Z_{BOR} (km)	-			15.000		

ACKNOWLEDGEMENTS

Nick Gregor, Bechtel
Silvia Mazzoni, Consultant

All NGA West-2 participants are acknowledged for their constructive comments and feedback.

Malibu Coast Alt 2 [3] Fault

PACIFIC EARTHQUAKE ENGINEERING RESEARCH CENTER

WEIGHTED AVERAGE of 2014 NGA WEST-2 GMPEs

Last updated: 04 14 15

by Emel Seyhan, PhD, PEER & UCLA -- email: emel.seyhan@gmail.com, peer_center@berkeley.edu

This excel file will be updated as necessary on the PEER website to fix any typos or other errors. Please check the website frequently for new versions at: http://peer.berkeley.edu/ngawest2/databases/

Legend	Pre-defined option	Main input variable	Calculated variable	Input var. flag	Internal variable

GMPE averaging	Geometric

Weighted average of the natural logarithm of the spectral values

GMPEs	ASK14	BSSA14	CB14	CY14	I14
Weight	0.25	0.25	0.25	0.25	0

# of std. dev.	1
Damping ratio (%)	5

Modification factors are calculated in Sheet DSF

ASK14 Abrahamson & Silva & Kamai 2014 NGA West-2 Model
BSSA14 Boore & Stewart & Seyhan & Atkinson 2014 NGA West-2 Model
CB14 Campbell & Bozorgnia 2014 NGA West-2 Model
CY14 Chiou & Youngs 2014 NGA West-2 Model
I14 Idriss 2014 NGA West-2 Model

Input variables **Errors and warnings**

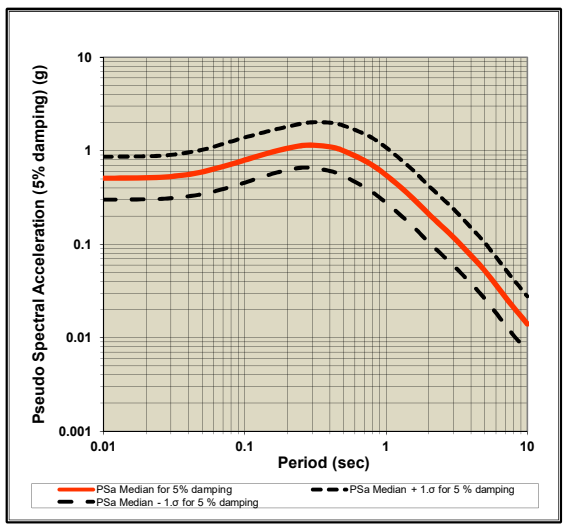
M_w	6.97
R_{RUP} (km)	2.4
R_{JB} (km)	1.73
R_X (km)	-1.68
Ry0 (km)	999 *If unknown use 999*
V_{S30} (m/sec)	330
U (BSSA13)	0 *1: Unspecified fault mech.*
F_{RV}	0 *1: reverse fault*
F_{NM}	0 *1: normal fault*
F_{HW}	0 *1: hanging wall side*
Dip (deg)	74
Z_{TOR} (km)	999 *If unknown use 999*
Z_{HYP} (km)	999 *If unknown use 999*
$Z_{1.0}$ (km)	0.05 *If unknown use 999*
$Z_{2.5}$ (km)	0.2 *If unknown use 999*
W (km)	15.54 *If unknown use 999*
Vs30Flag	measured *Choose options for V_{s30} from the list*
F_{AS}	no *Aftershock effect is not applicable.*
Region	California *Choose region from the list*

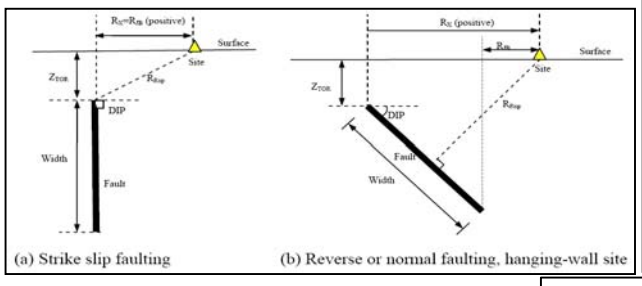
Calculated Variables/Flags

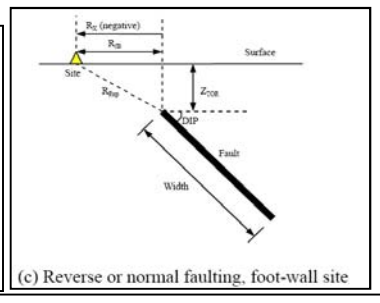
ΔDPP	0 *Always 0 for median calcs.*
PGA_r (g)	0.437
Z_{BOT} (km) (CB14)	15 *Enter for default W calcs*
SS	1 *auto calculated*
$V_{s30Flag}$	1 *measured*
F_{AS}	0 *Aftershock effect is not applicable.*
Region	0 *California*
Option for Sa value	1 *Weighted average of the natural logarithm of the spectral values*

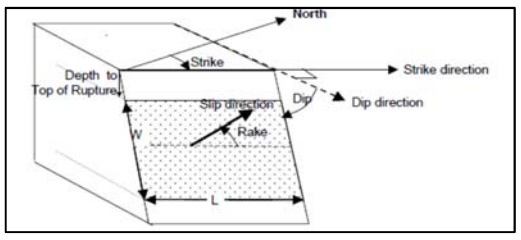
RotD50 Horizontal Component of PGA, PGV and *IMs*

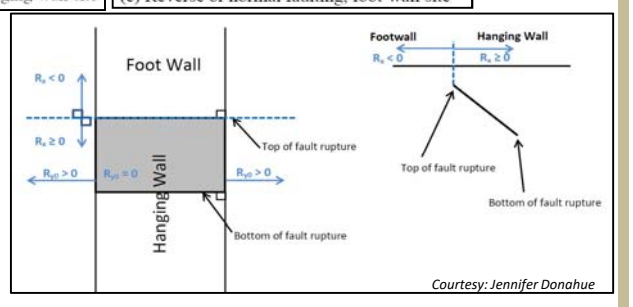
GMP	T (s)	Baseline: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5% damping	PSa Median - 1.σ for 5% damping	S_d Median for 5% damping	User defined: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5 % damping	PSa Median - 1.σ for 5 % damping	Sd Median for 5 % damping
PSa (g), S_d (cm)	0.01	0.50801	0.86201	0.29938	0.00126	0.50801	0.86201	0.29938	0.00126
	0.02	0.51390	0.87248	0.30269	0.00510	0.51390	0.87248	0.30269	0.00510
	0.03	0.53025	0.90413	0.31098	0.01185	0.52972	0.90322	0.31066	0.01183
	0.05	0.59259	1.02256	0.34342	0.03678	0.59259	1.02256	0.34342	0.03678
	0.075	0.69796	1.21838	0.39983	0.09746	0.69935	1.22082	0.40063	0.09765
	0.1	0.79410	1.38435	0.45552	0.19713	0.79569	1.38712	0.45643	0.19752
	0.15	0.95187	1.63162	0.55532	0.53165	0.95378	1.63488	0.55643	0.53272
	0.2	1.05882	1.80718	0.62035	1.05135	1.05987	1.80899	0.62097	1.05240
	0.25	1.12646	1.93895	0.65443	1.74768	1.13209	1.94864	0.65771	1.75642
	0.3	1.14570	2.01206	0.65238	2.55965	1.14685	2.01408	0.65303	2.56221
	0.4	1.10046	1.99529	0.60693	4.37079	1.10156	1.99729	0.60754	4.37517
	0.5	0.99795	1.85537	0.53677	6.19320	0.99895	1.85723	0.53731	6.19940
	0.75	0.74458	1.44289	0.38423	10.39680	0.74383	1.44145	0.38384	10.38641
	1	0.54875	1.08263	0.27814	13.62196	0.54765	1.08046	0.27759	13.59471
	1.5	0.32473	0.64838	0.16263	18.13718	0.32473	0.64838	0.16263	18.13718
	2	0.21112	0.42330	0.10530	20.96356	0.21070	0.42245	0.10509	20.92163
	3	0.11891	0.23874	0.05923	26.56648	0.11867	0.23827	0.05911	26.51335
	4	0.07536	0.14983	0.03791	29.93339	0.07529	0.14968	0.03787	29.90345
	5	0.05222	0.10404	0.02621	32.40862	0.05201	0.10362	0.02611	32.27898
	7.5	0.02376	0.04720	0.01196	33.17490	0.02376	0.04720	0.01196	33.17490
	10	0.01412	0.02780	0.00718	35.06014	0.01408	0.02772	0.00715	34.95496
PGA (g)	0	0.50510	0.85643	0.29790	0.00125	0.50510	0.85643	0.29790	0.00125
PGV (cm/s)	-1	65.34986	117.67446	36.29169	0.16222	NA	NA	NA	NA











Courtesy: Jennifer Donahue

Definition of Parameters

Damping ratio = Viscous damping ratio (%) See Sanaz et al. (2012) PEER Report
PSA = Pseudo-absolute acceleration response spectrum (g)
PGA = Peak ground acceleration (g)
PGV = Peak ground velocity (cm/s)
S_d = Relative displacement response spectrum (cm)
M_w = Moment magnitude
R_{RUP} = Closest distance to coseismic rupture (km), used in ASK13, CB13 and CY13. See Figures a, b and c for illustation
R_{JB} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustation
R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km). See Figures a, b and c for illustation
R_{y0} = The horizontal distance off the end of the rupture measured parallel to strike (km)
V_{S30} = The average shear-wave velocity (m/s) over a subsurface depth of 30 m
U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise
F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
F_{NM} = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise
Dip = Average dip of rupture plane (degrees)
Z_{TOR} = Depth to top of coseismic rupture (km)
Z_{HYP} = Hypocentral depth from the earthquake
$Z_{1.0}$ = Depth to Vs=1 km/sec
$Z_{2.5}$ = Depth to Vs=2.5 km/sec
W = Fault rupture width (km)
$V_{s30flag}$ = 1 for measured, 0 for inferred Vs30
F_{AS} = 0 for mainshock; 1 for aftershock
Region = Specific regions considered in the models, Click on Region to see codes
ΔDPP = Directivity term, direct point parameter; uses 0 for median predictions
PGA_r (g) = Peak ground acceleration on rock (g), this specific cell is updated in the cell for BSSA14 and CB14, for others it is taken account for in the macros
Z_{BOT} (km) = The depth to the bottom of the seismogenic crust
Z_{BOR} (km) = The depth to the bottom of the rupture plane
SS = 1 for strike slip, automatically updated in the cell

Input variables with defaults (If entered 999 as input):

Red colored value: The value is used in the code when input is unknown

DEFAULTs	USER defined	ASK14	BSSA14	CB14	CY14	I14
W (km)	15.54			15.437		
$Z_{1.0}$ (km)	0.050	0.050			0.433	
$\delta Z_{1.0}$ (km)	-0.383		-0.383			
$Z_{2.5}$ (V_{S30}=1100)(km)	0.200			0.398		
$Z_{2.5}$ (V_{S30})(km)	0.200			1.576		
Z_{hyp} (km)	999.00			10.387		
Z_{tor} (km)	999.00			0.161	0.161	
Z_{BOR} (km)	-			15.000		

ACKNOWLEDGEMENTS

Nick Gregor, Bechtel
Silvia Mazzoni, Consultant

All NGA West-2 participants are acknowledged for their constructive comments and feedback.

San Pedro Basin [11] Fault

PACIFIC EARTHQUAKE ENGINEERING RESEARCH CENTER

WEIGHTED AVERAGE of 2014 NGA WEST-2 GMPEs

Last updated: 04 14 15

by Emel Seyhan, PhD, PEER & UCLA -- email: emel.seyhan@gmail.com, peer_center@berkeley.edu

This excel file will be updated as necessary on the PEER website to fix any typos or other errors. Please check the website frequently for new versions at: http://peer.berkeley.edu/ngawest2/databases/

Legend	Pre-defined option	Main input variable	Calculated variable	Input var. flag	Internal variable

GMPE averaging	Geometric

Weighted average of the natural logarithm of the spectral values

GMPEs	ASK14	BSSA14	CB14	CY14	I14
Weight	0.25	0.25	0.25	0.25	0

# of std. dev.	1
Damping ratio (%)	5

Modification factors are calculated in Sheet DSF

ASK14 Abrahamson & Silva & Kamai 2014 NGA West-2 Model
BSSA14 Boore & Stewart & Seyhan & Atkinson 2014 NGA West-2 Model
CB14 Campbell & Bozorgnia 2014 NGA West-2 Model
CY14 Chiou & Youngs 2014 NGA West-2 Model
I14 Idriss 2014 NGA West-2 Model

Input variables **Errors and warnings**

M_w: 7.07

R_{RUP} (km): 9.99

R_{JB} (km): 9.66

R_X (km): 6.84

Ry0 (km): 999 — *If unknown use 999*

V_{S30} (m/sec): 330

U (BSSA13): 0 — *1: Unspecified fault mech.*

F_{RV}: 0 — *1: reverse fault*

F_{NM}: 0 — *1: normal fault*

F_{HW}: 1 — *1: hanging wall side*

Dip (deg): 88

Z_{TOR} (km): 999 — *If unknown use 999*

Z_{HYP} (km): 999 — *If unknown use 999*

$Z_{1.0}$ (km): 0.05 — *If unknown use 999*

$Z_{2.5}$ (km): 0.2 — *If unknown use 999*

W (km): 10.36 — *If unknown use 999*

Vs30Flag: measured — *Choose options for V_{s30} from the list*

F_{AS}: no — *Aftershock effect is not applicable.*

Region: California — *Choose region from the list*

Calculated Variables/Flags

ΔDPP: 0 — *Always 0 for median calcs.*

PGA_r (g): 0.254

Z_{BOT} (km) (CB14): 15 — *Enter for default W calcs*

SS: 1 — *auto calculated*

$V_{s30Flag}$: 1 — *measured*

F_{AS}: 0 — *Aftershock effect is not applicable.*

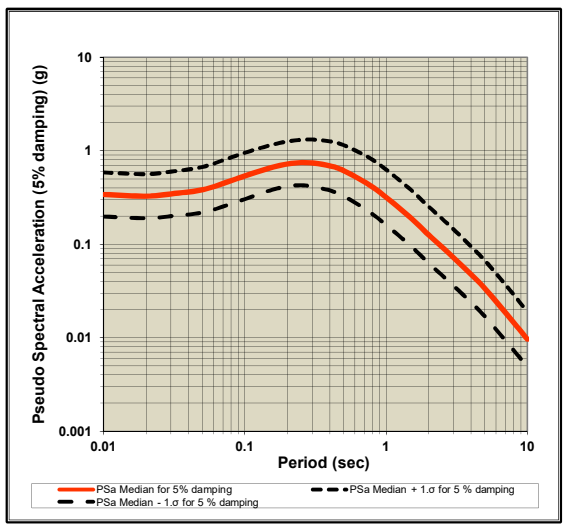
Region: 0 — *California*

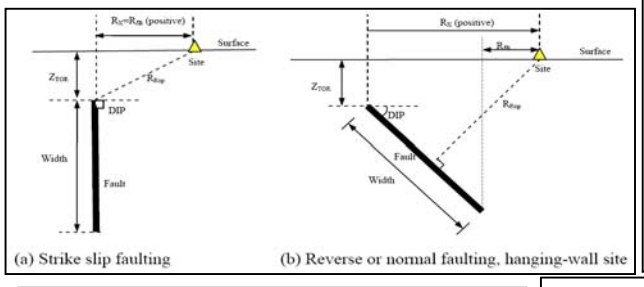
Option for Sa value

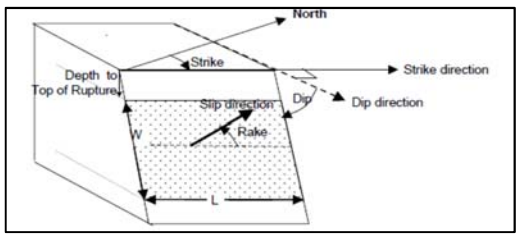
1 — *Weighted average of the natural logarithm of the spectral values*

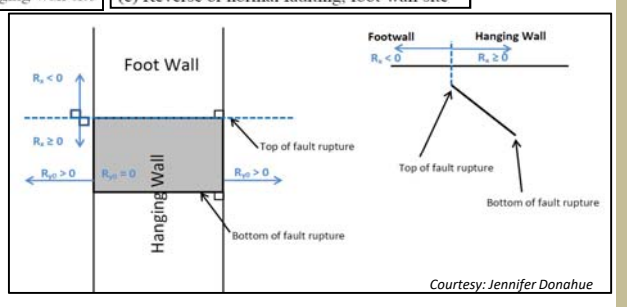
RotD50 Horizontal Component of PGA, PGV and *IMs*

GMP	T (s)	Baseline: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5% damping	PSa Median - 1.σ for 5% damping	S_d Median for 5% damping	User defined: 5% Damping: PSa Median for 5% damping	PSa Median + 1.σ for 5 % damping	PSa Median - 1.σ for 5 % damping	Sd Median for 5 % damping
PSa (g), S_d (cm)	0.01	0.33998	0.58487	0.19763	0.00084	0.33998	0.58487	0.19763	0.00084
	0.02	0.32659	0.56235	0.18968	0.00324	0.32659	0.56235	0.18968	0.00324
	0.03	0.34564	0.59828	0.19969	0.00772	0.34564	0.59828	0.19969	0.00772
	0.05	0.38203	0.66942	0.21802	0.02371	0.38203	0.66942	0.21802	0.02371
	0.075	0.46205	0.81860	0.26079	0.06452	0.46297	0.82024	0.26132	0.06465
	0.1	0.53588	0.94860	0.30272	0.13302	0.53748	0.95145	0.30363	0.13342
	0.15	0.65283	1.13847	0.37435	0.36463	0.65414	1.14075	0.37510	0.36536
	0.2	0.72197	1.25442	0.41552	0.71687	0.72341	1.25693	0.41635	0.71831
	0.25	0.74581	1.30549	0.42608	1.15711	0.74730	1.30810	0.42693	1.15943
	0.3	0.73842	1.31581	0.41439	1.64973	0.73916	1.31713	0.41481	1.65138
	0.4	0.68780	1.25855	0.37589	2.73181	0.68849	1.25981	0.37626	2.73454
	0.5	0.61337	1.14770	0.32781	3.80656	0.61399	1.14884	0.32814	3.81036
	0.75	0.43790	0.85144	0.22522	6.11459	0.43790	0.85144	0.22522	6.11459
	1	0.31826	0.62922	0.16097	7.90032	0.31826	0.62922	0.16097	7.90032
	1.5	0.19052	0.38077	0.09532	10.64091	0.19071	0.38115	0.09542	10.65155
	2	0.12641	0.25354	0.06303	12.55194	0.12616	0.25303	0.06290	12.52684
	3	0.07221	0.14496	0.03597	16.13269	0.07214	0.14482	0.03593	16.11656
	4	0.04746	0.09433	0.02388	18.84873	0.04741	0.09423	0.02385	18.82988
	5	0.03376	0.06724	0.01695	20.95074	0.03366	0.06704	0.01690	20.88789
	7.5	0.01644	0.03266	0.00828	22.95797	0.01639	0.03256	0.00825	22.88910
	10	0.00969	0.01907	0.00493	24.06138	0.00965	0.01900	0.00491	23.96513
PGA (g)	0	0.32121	0.55215	0.18686	0.00080	0.32121	0.55215	0.18686	0.00080
PGV (cm/s)	-1	37.23317	67.20106	20.62927	0.09243	NA	NA	NA	NA









Courtesy: Jennifer Donahue

Definition of Parameters

Damping ratio = Viscous damping ratio (%) See Sanaz et al. (2012) PEER Report
PSA = Pseudo-absolute acceleration response spectrum (g)
PGA = Peak ground acceleration (g)
PGV = Peak ground velocity (cm/s)
S_d = Relative displacement response spectrum (cm)
M_w = Moment magnitude
R_{RUP} = Closest distance to coseismic rupture (km), used in ASK13, CB13 and CY13. See Figures a, b and c for illustation
R_{JB} = Closest distance to surface projection of coseismic rupture (km). See Figures a, b and c for illustation
R_X = Horizontal distance from top of rupture measured perpendicular to fault strike (km). See Figures a, b and c for illustation
R_{y0} = The horizontal distance off the end of the rupture measured parallel to strike (km)
V_{S30} = The average shear-wave velocity (m/s) over a subsurface depth of 30 m
U = Unspecified-mechanism factor: 1 for unspecified; 0 otherwise
F_{RV} = Reverse-faulting factor: 0 for strike slip, normal, normal-oblique; 1 for reverse, reverse-oblique and thrust
F_{NM} = Normal-faulting factor: 0 for strike slip, reverse, reverse-oblique, thrust and normal-oblique; 1 for normal
F_{HW} = Hanging-wall factor: 1 for site on down-dip side of top of rupture; 0 otherwise
Dip = Average dip of rupture plane (degrees)
Z_{TOR} = Depth to top of coseismic rupture (km)
Z_{HYP} = Hypocentral depth from the earthquake
$Z_{1.0}$ = Depth to Vs=1 km/sec
$Z_{2.5}$ = Depth to Vs=2.5 km/sec
W = Fault rupture width (km)
$V_{s30flag}$ = 1 for measured, 0 for inferred Vs30
F_{AS} = 0 for mainshock; 1 for aftershock
Region = Specific regions considered in the models, Click on Region to see codes
ΔDPP = Directivity term, direct point parameter; uses 0 for median predictions
PGA_r (g) = Peak ground acceleration on rock (g), this specific cell is updated in the cell for BSSA14 and CB14, for others it is taken account for in the macros
Z_{BOT} (km) = The depth to the bottom of the seismogenic crust
Z_{BOR} (km) = The depth to the bottom of the rupture plane
SS = 1 for strike slip, automatically updated in the cell

Input variables with defaults (If entered 999 as input):

Red colored value: The value is used in the code when input is unknown

DEFAULTs	USER defined	ASK14	BSSA14	CB14	CY14	I14
W (km)	10.36			14.926		
$Z_{1.0}$ (km)	0.050	0.050			0.433	
$\delta Z_{1.0}$ (km)	-0.383		-0.383			
$Z_{2.5}$ (V_{S30}=1100)(km)	0.200			0.398		
$Z_{2.5}$ (V_{S30})(km)	0.200			1.576		
Z_{hyp} (km)	999.00			10.309		
Z_{tor} (km)	999.00			0.083	0.083	
Z_{BOR} (km)	-			15.000		

ACKNOWLEDGEMENTS

Nick Gregor, Bechtel
Silvia Mazzoni, Consultant

All NGA West-2 participants are acknowledged for their constructive comments and feedback.

APPENDIX E

LIQUEFACTION AND SEISMIC SETTLEMENT

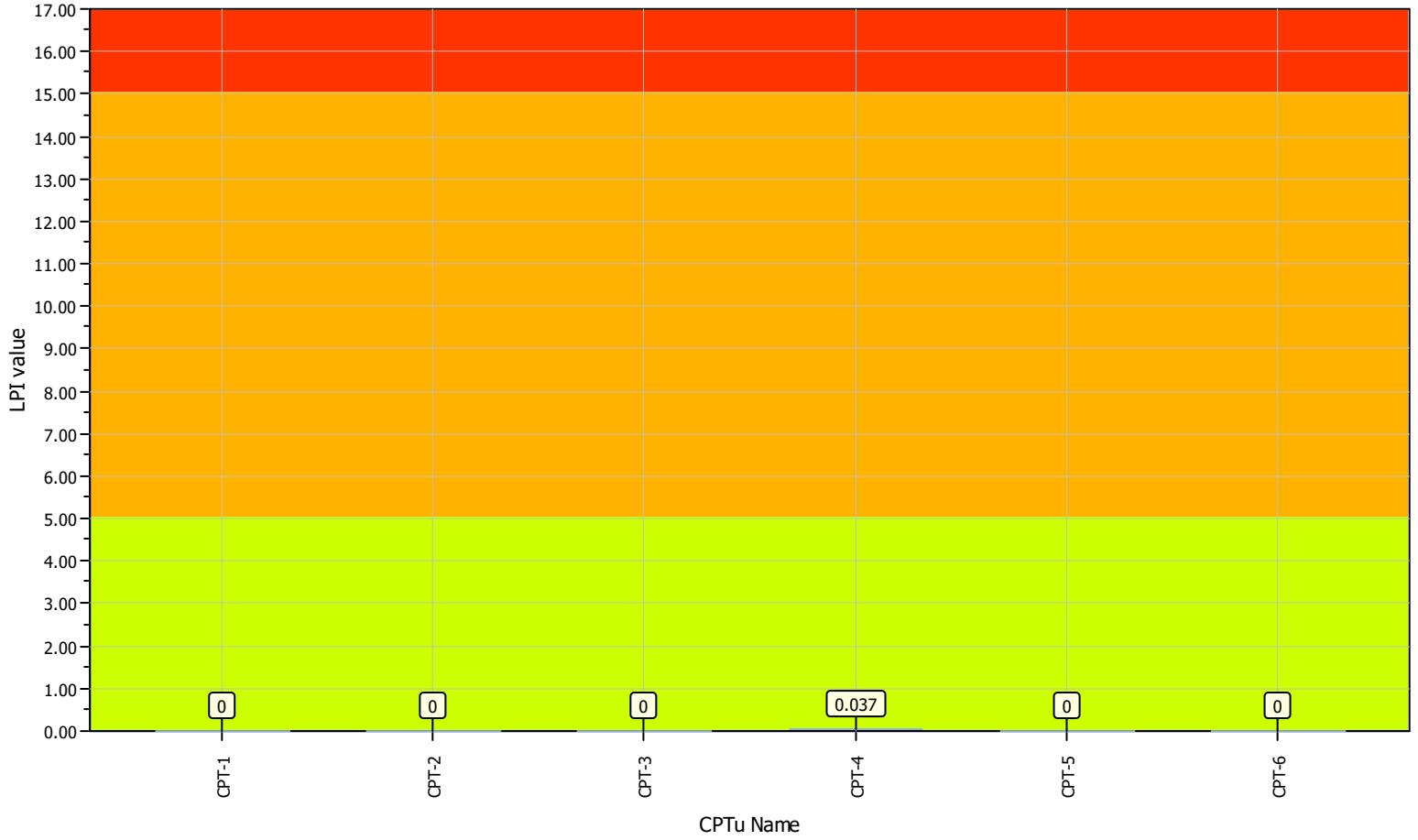
Leighton

Leighton Consulting, Inc.
17781 Cowan
Irvine, CA 92614
http://www.leightongeo.com

Project title : mmhs

Location : morningside drive, malibu, CA

Overall Liquefaction Potential Index report



LPI color scheme

- Very high risk
- High risk
- Low risk

Basic statistics

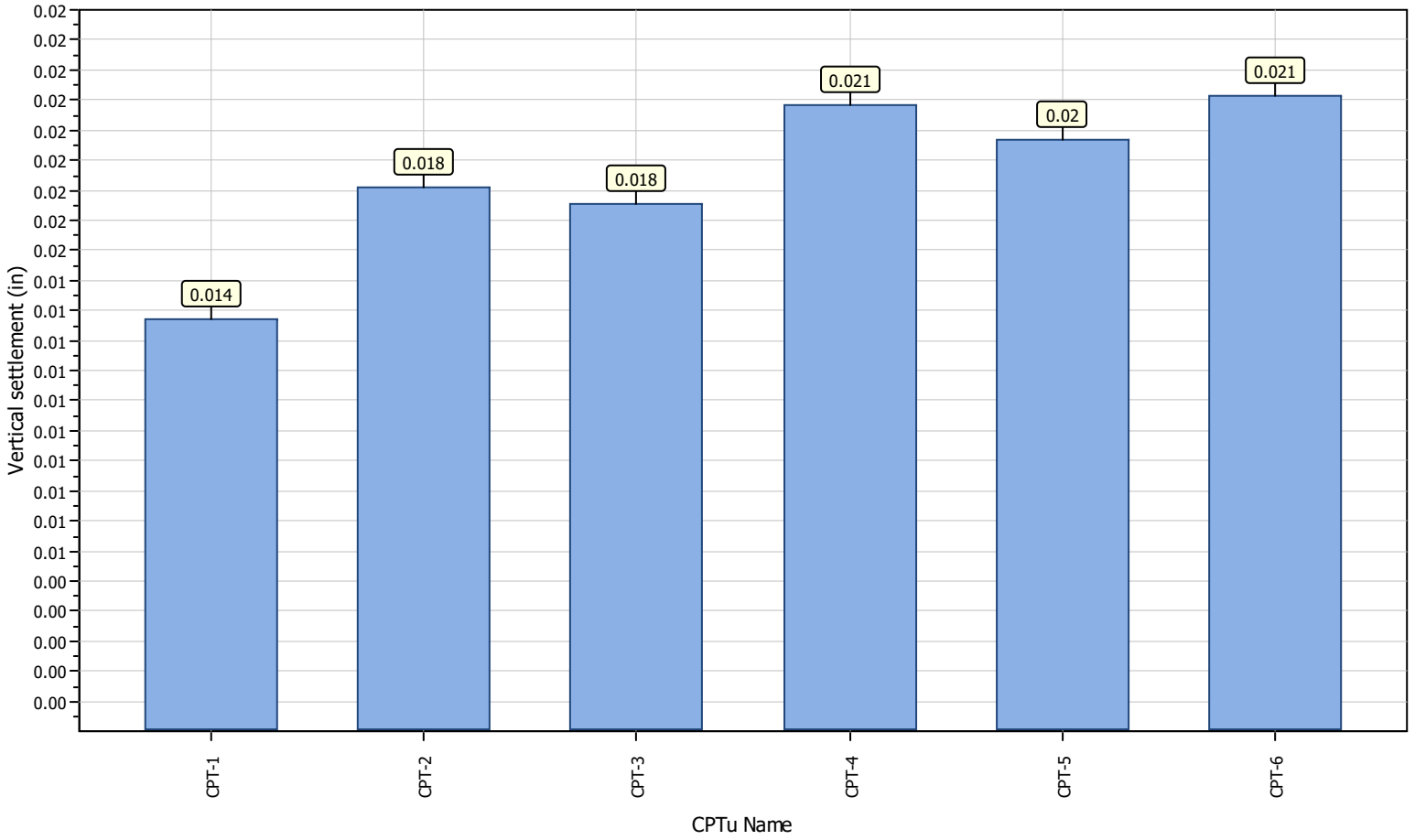
Total CPT number: 6
100% low risk
0% high risk
0% very high risk

Leighton Consulting, Inc.
17781 Cowan
Irvine, CA 92614
http://www.leightongeo.com

Project title : mmhs

Location : morningside drive, malibu, CA

Overall vertical settlements report



Leighton Consulting, Inc.
17781 Cowan
Irvine, CA 92614
http://www.leightongeo.com

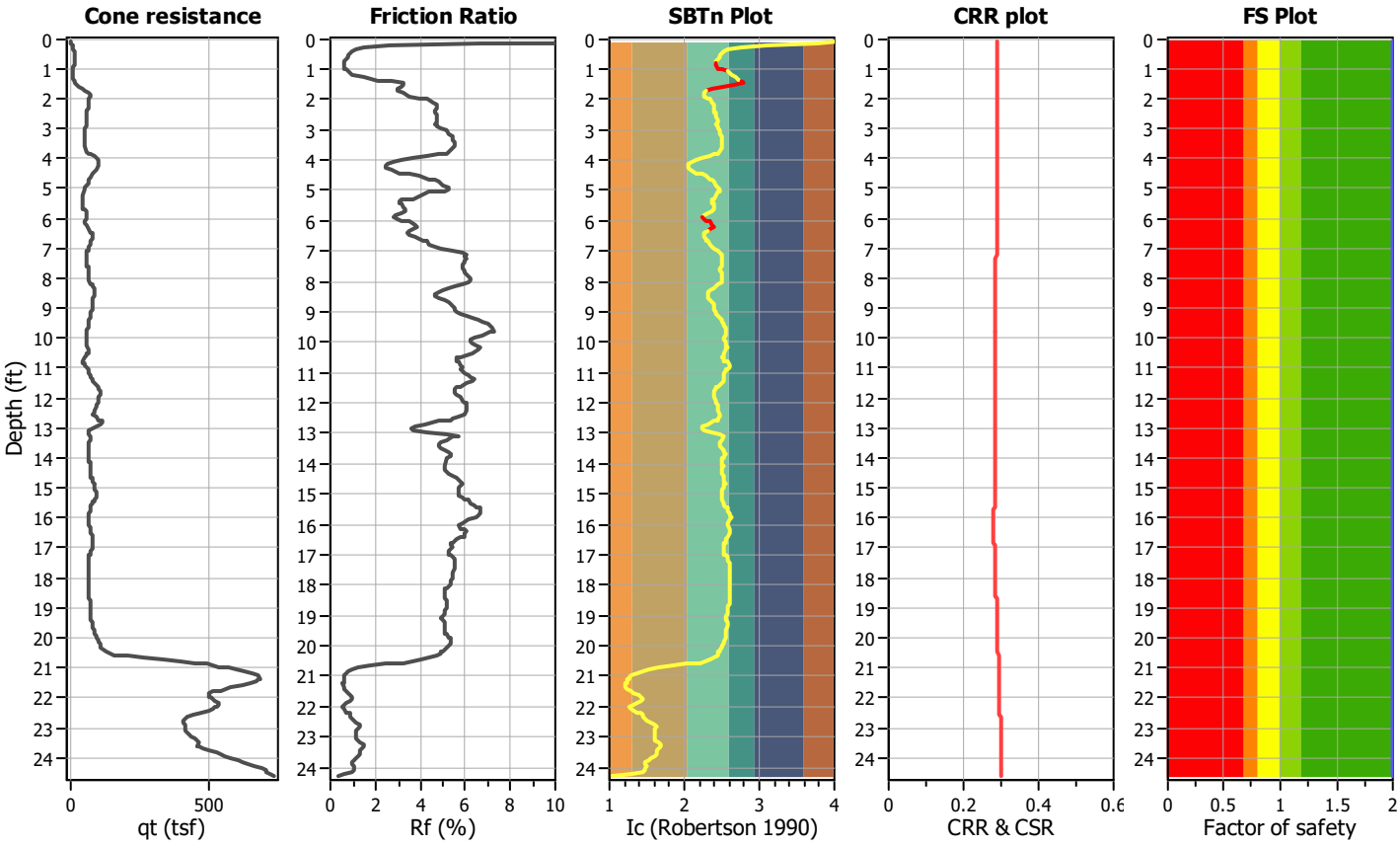
LIQUEFACTION ANALYSIS REPORT

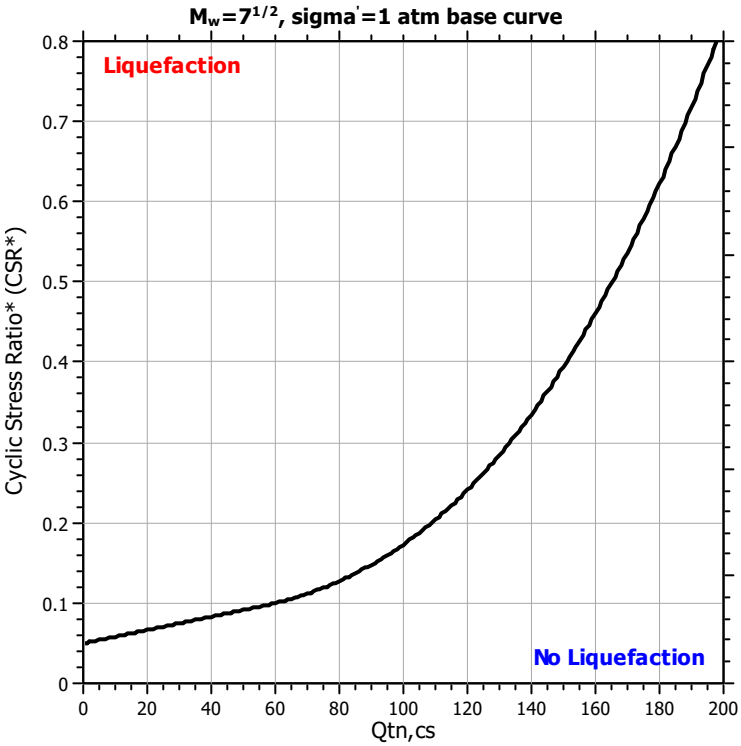
Project title : mmhs **Location : morningside drive, malibu, CA**

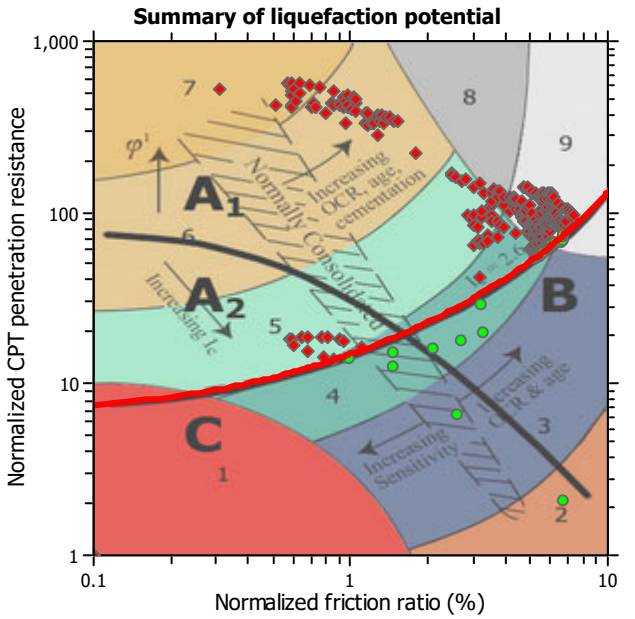
CPT file : CPT-1

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	45.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	45.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.76	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

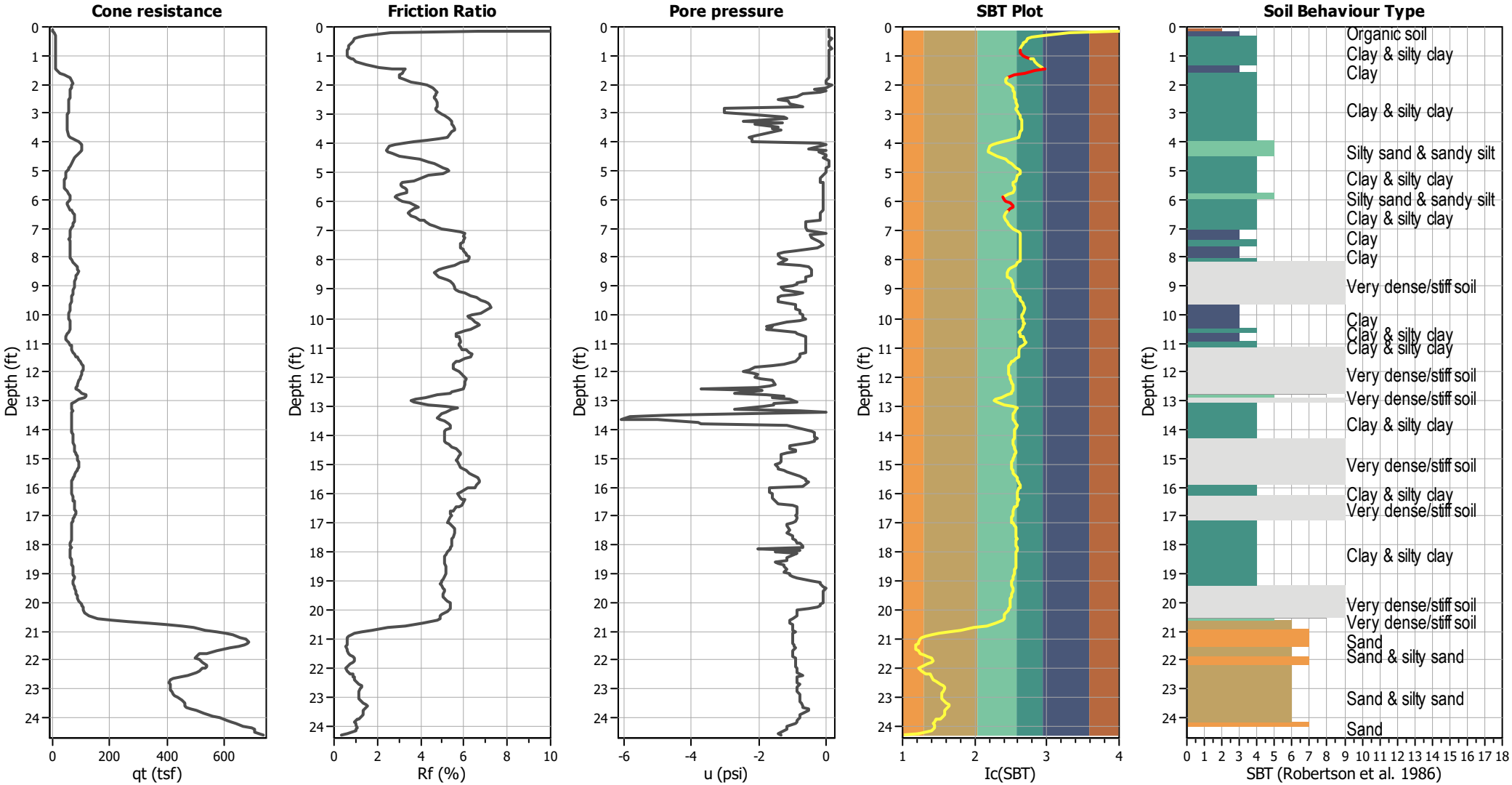






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



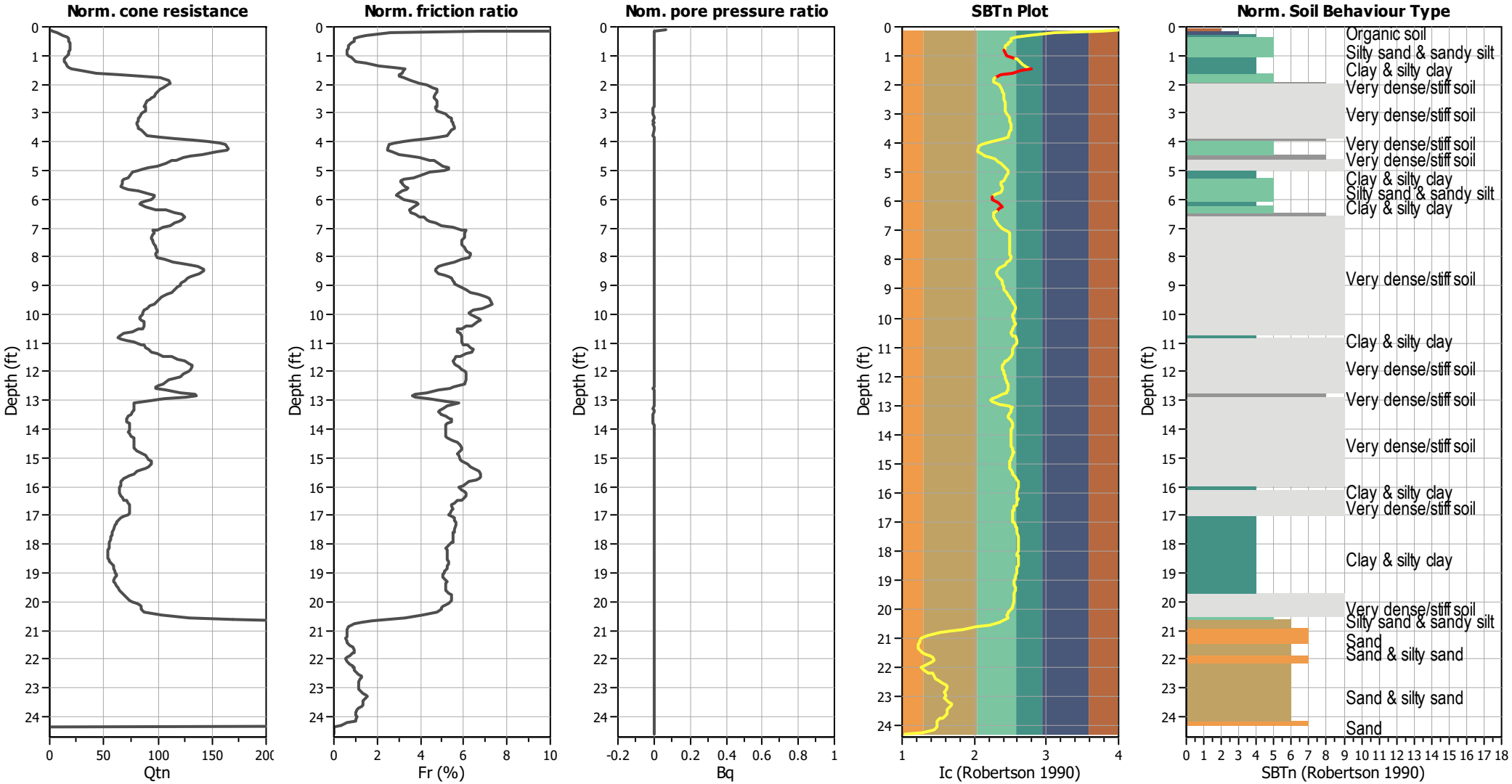
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



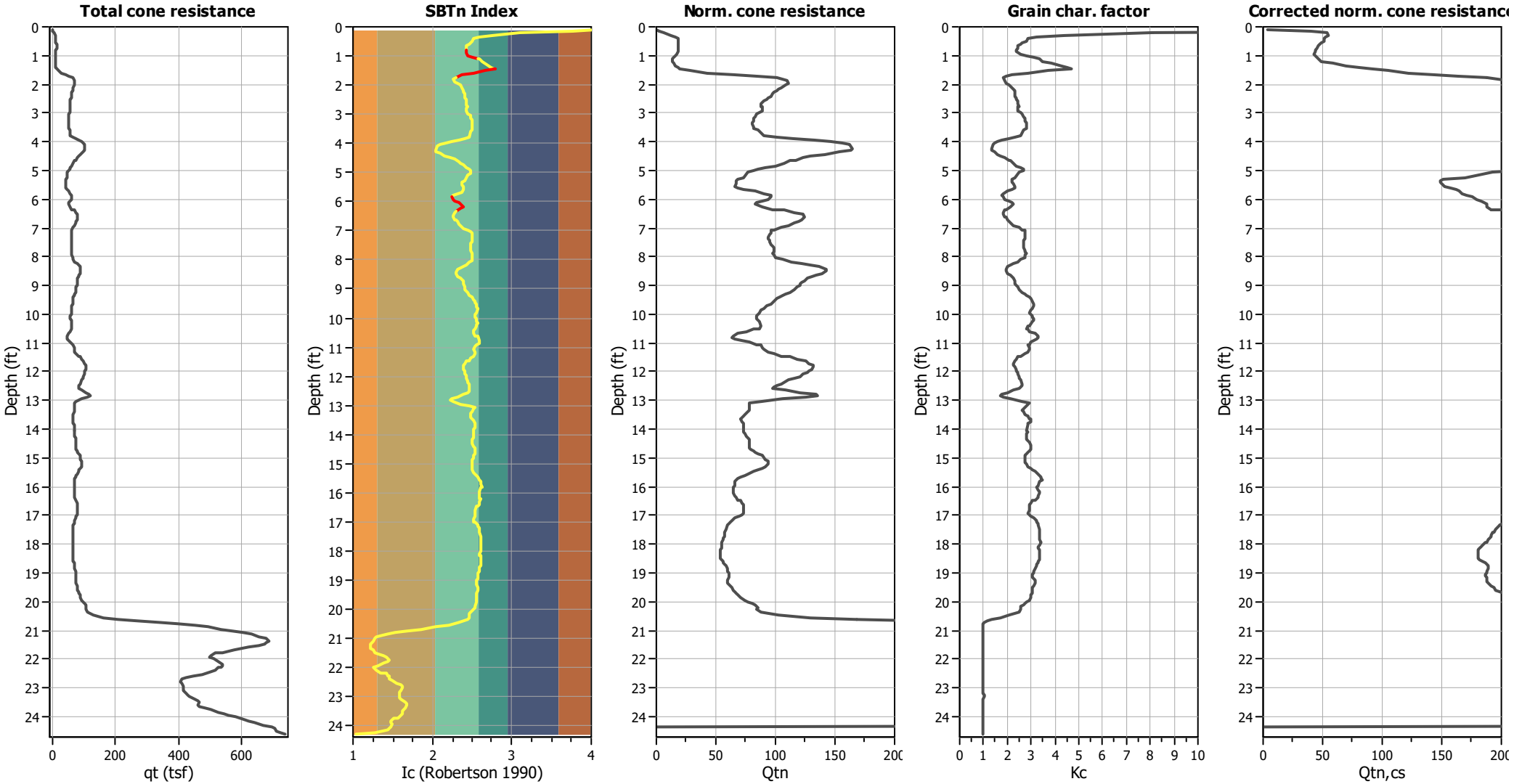
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

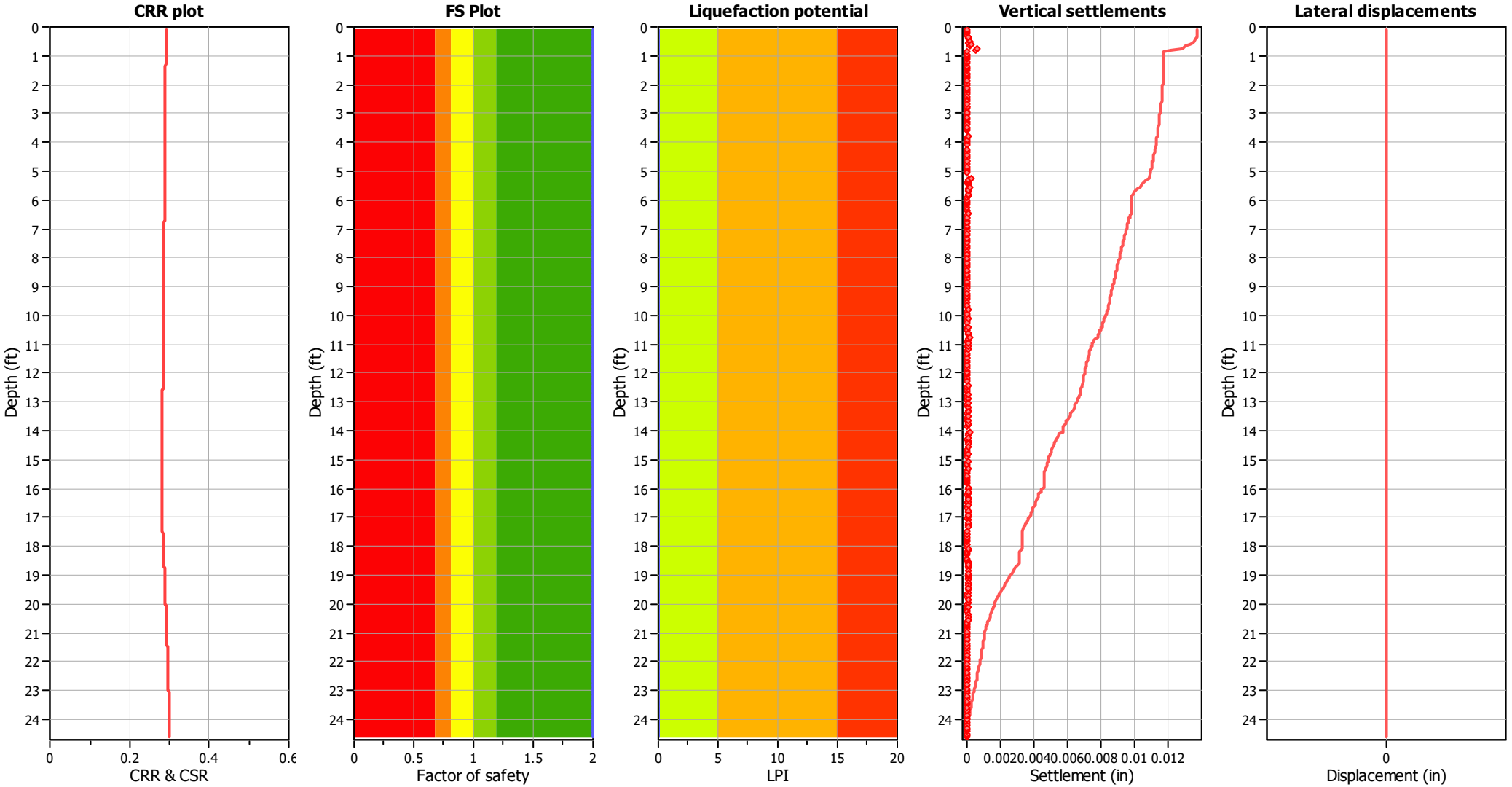
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

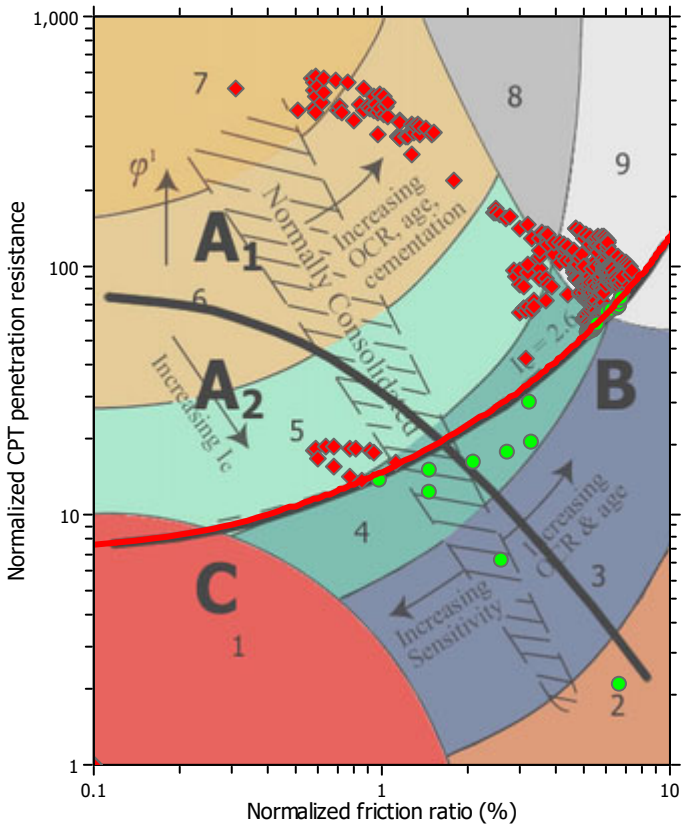
F.S. color scheme

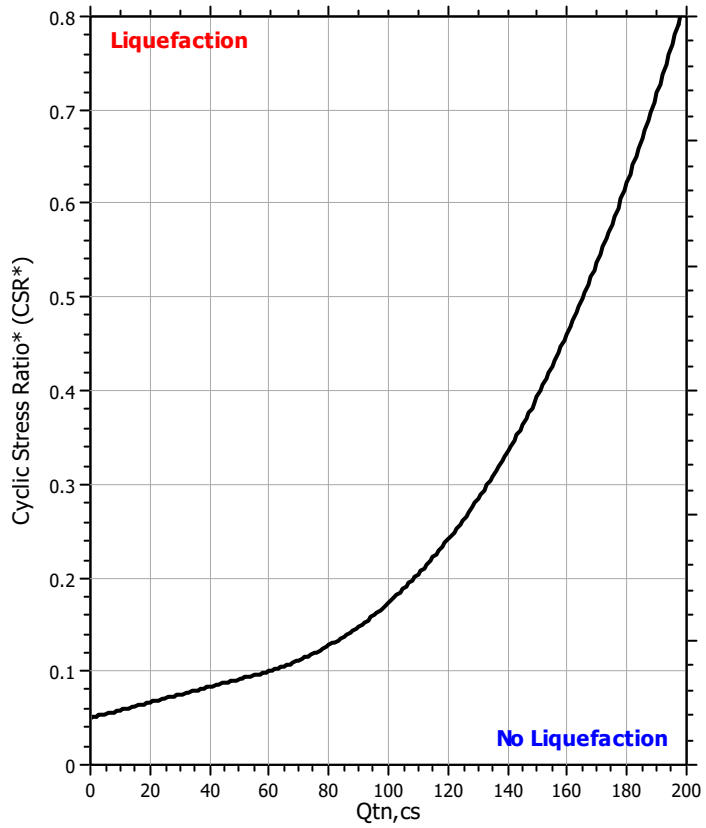
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

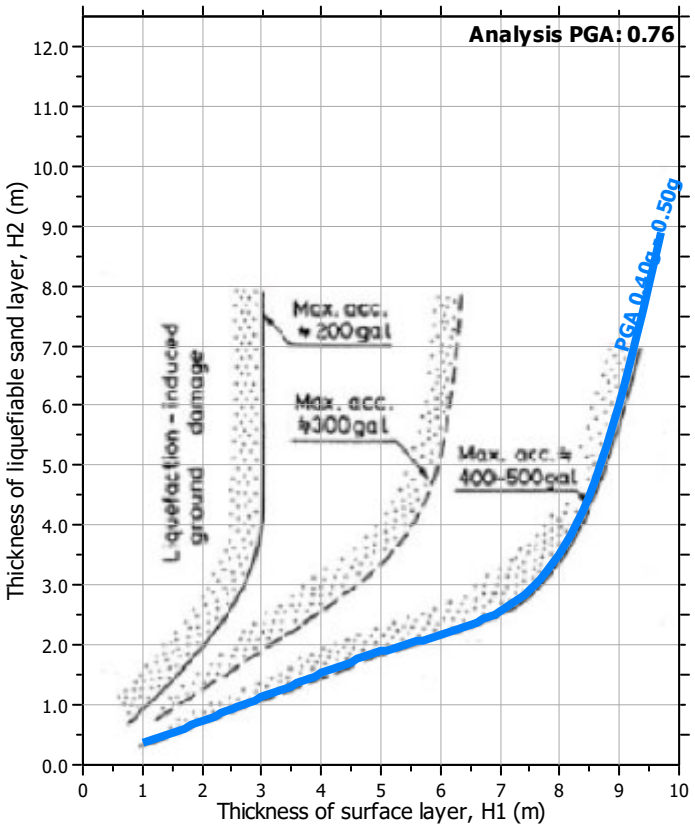
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



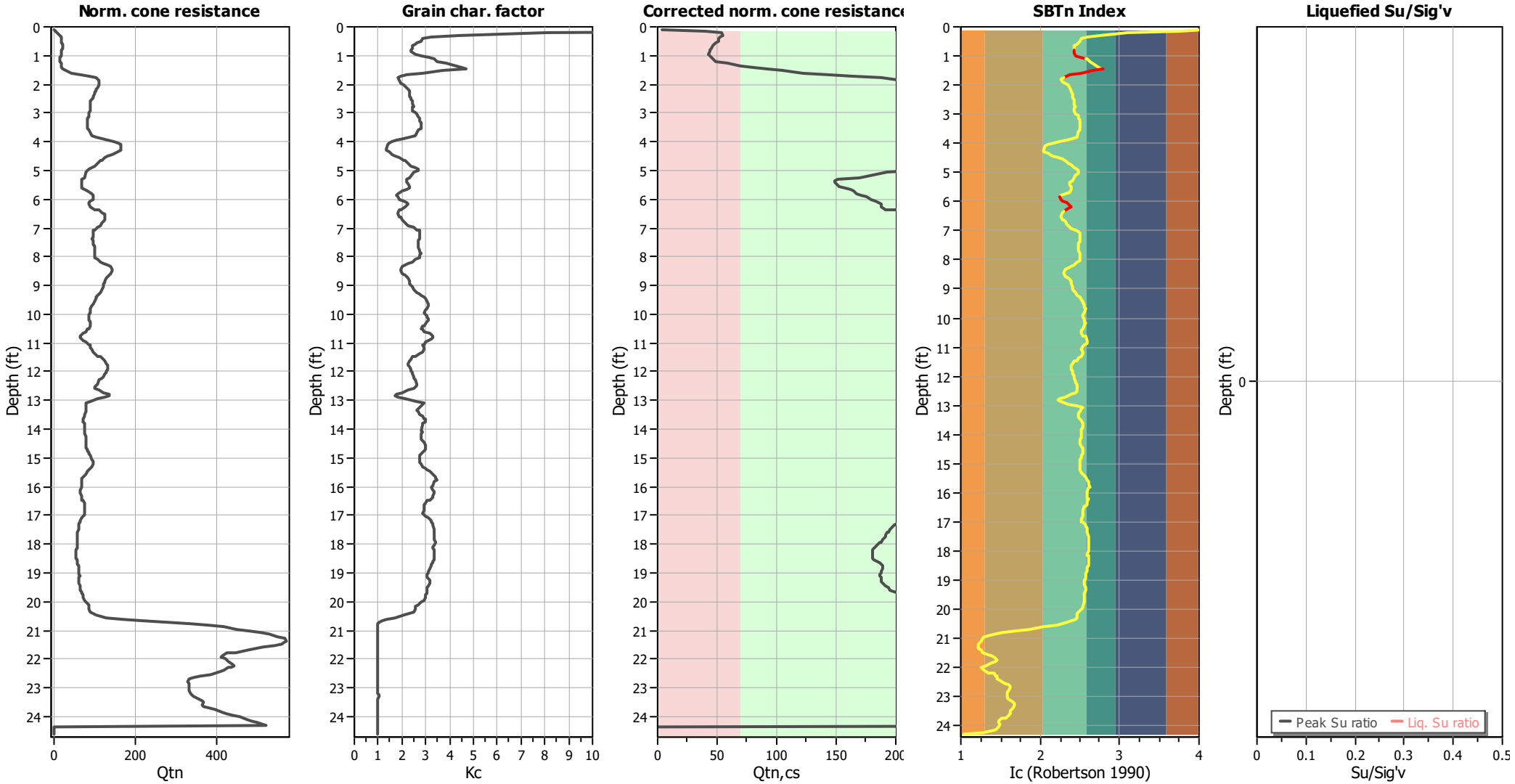




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

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17781 Cowan
Irvine, CA 92614
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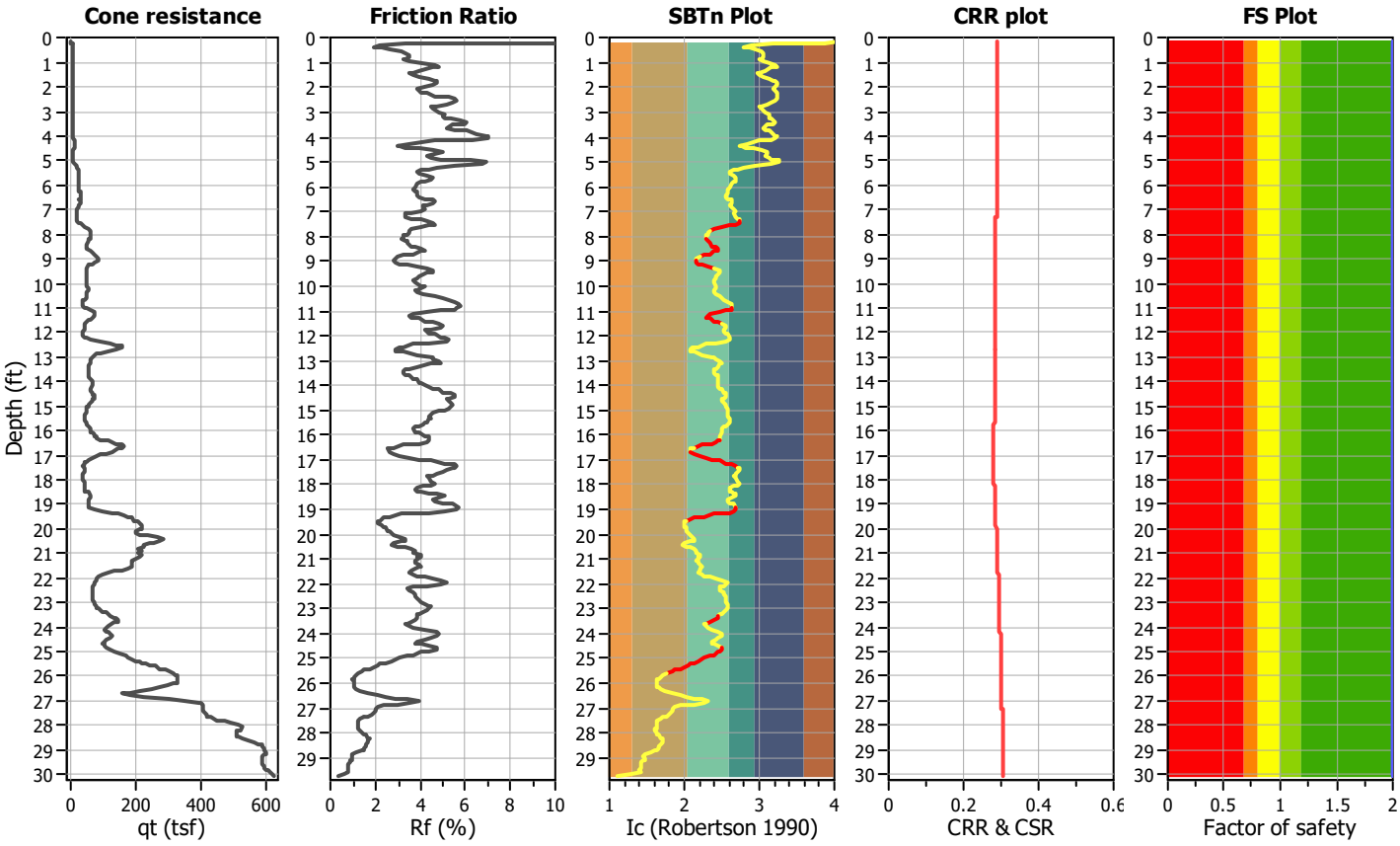
LIQUEFACTION ANALYSIS REPORT

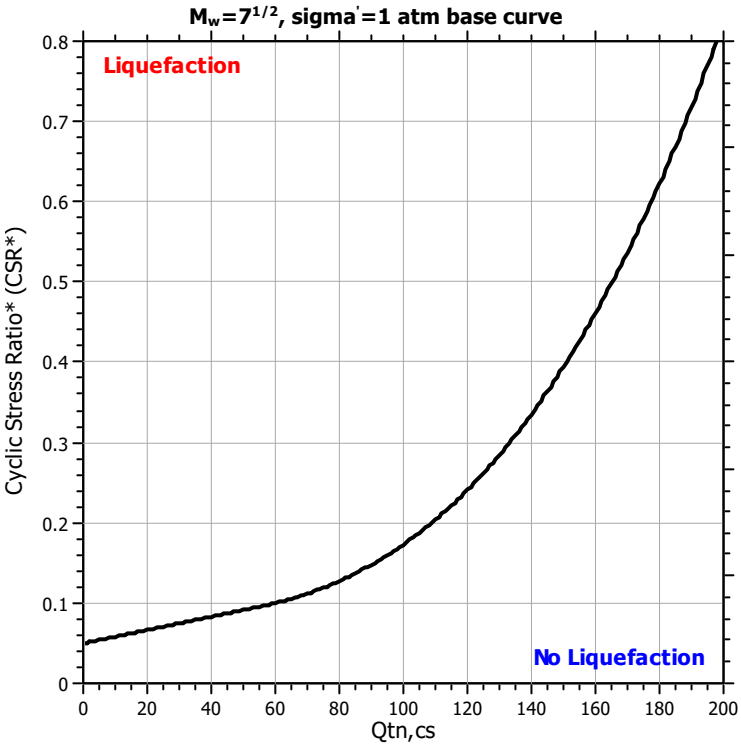
Project title : mmhs **Location : morningside drive, malibu, CA**

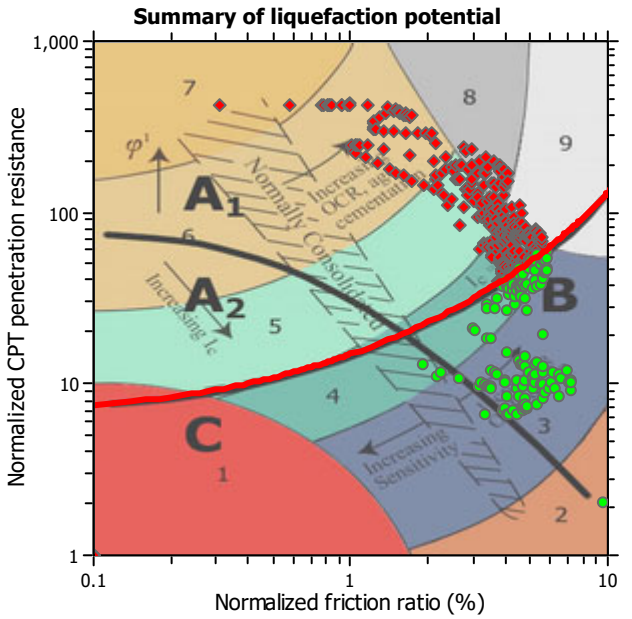
CPT file : CPT-2

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	45.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	45.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.76	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

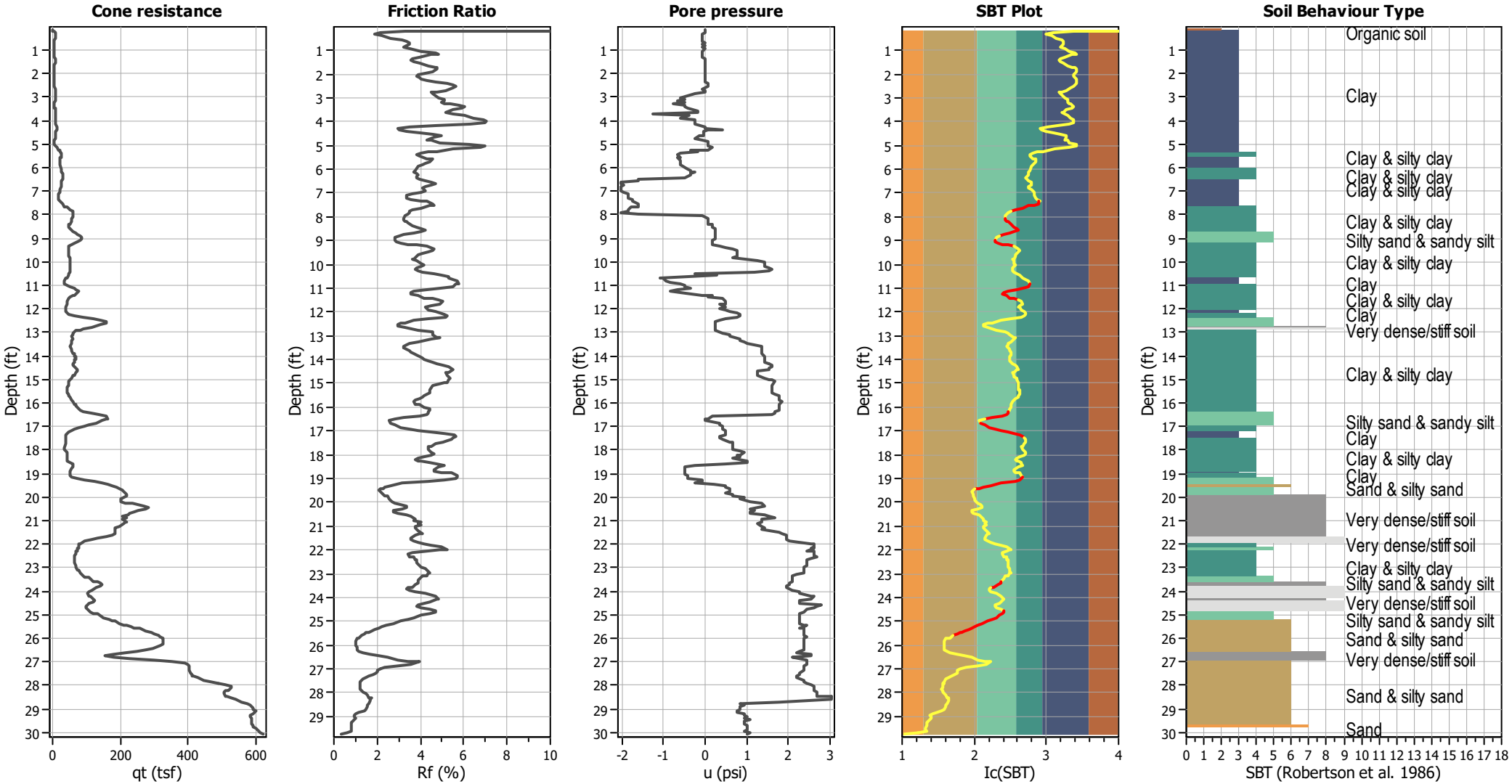






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



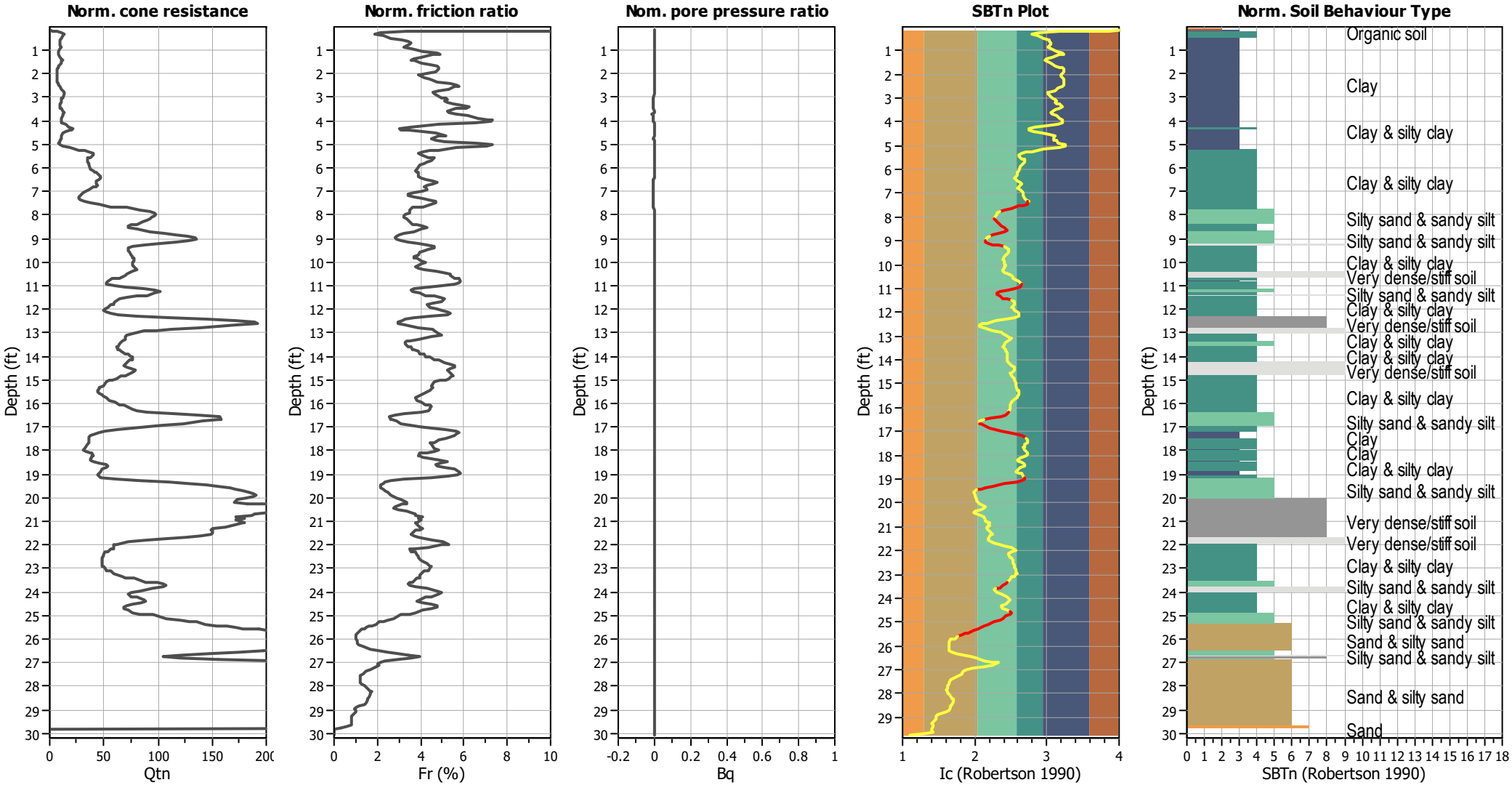
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



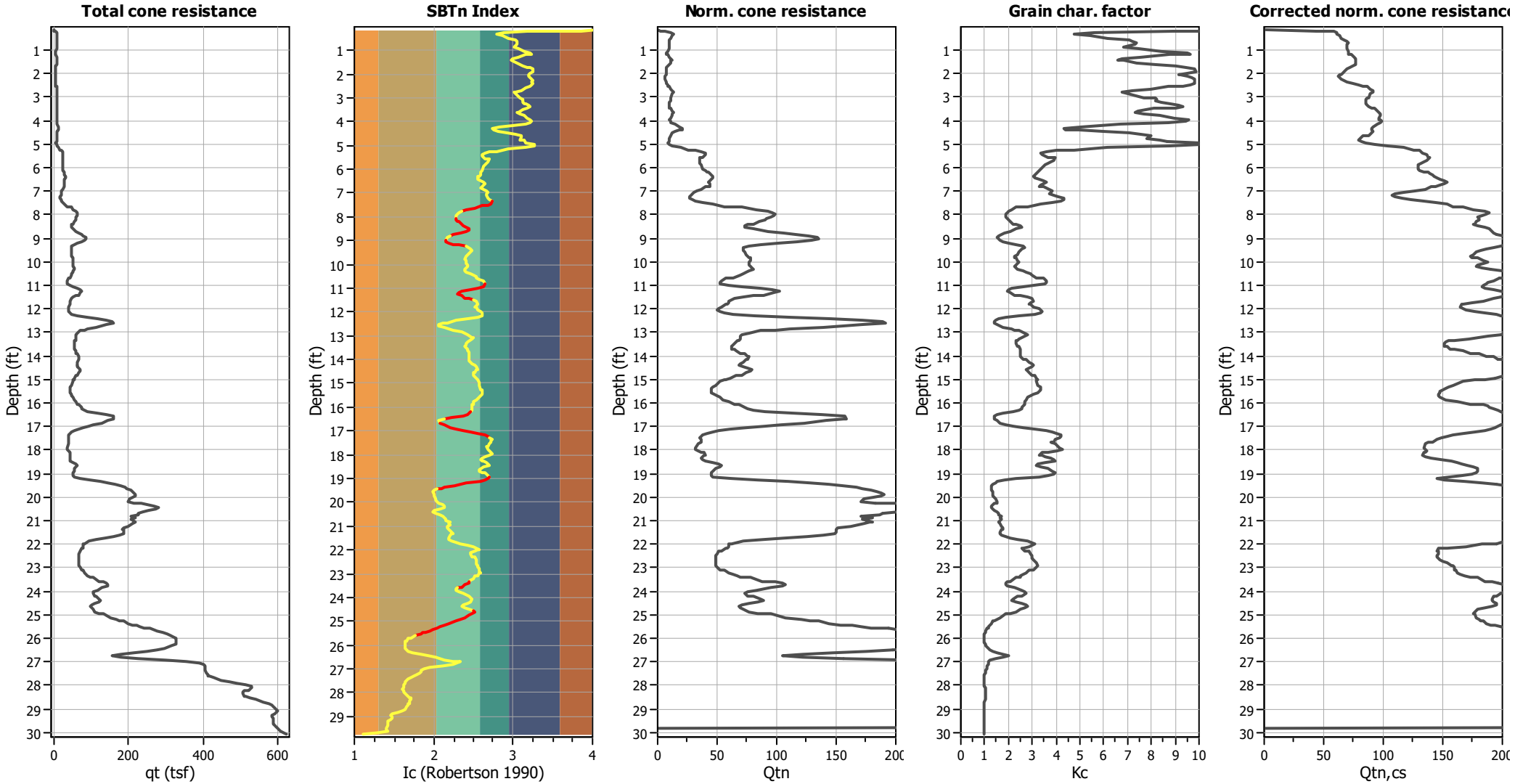
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

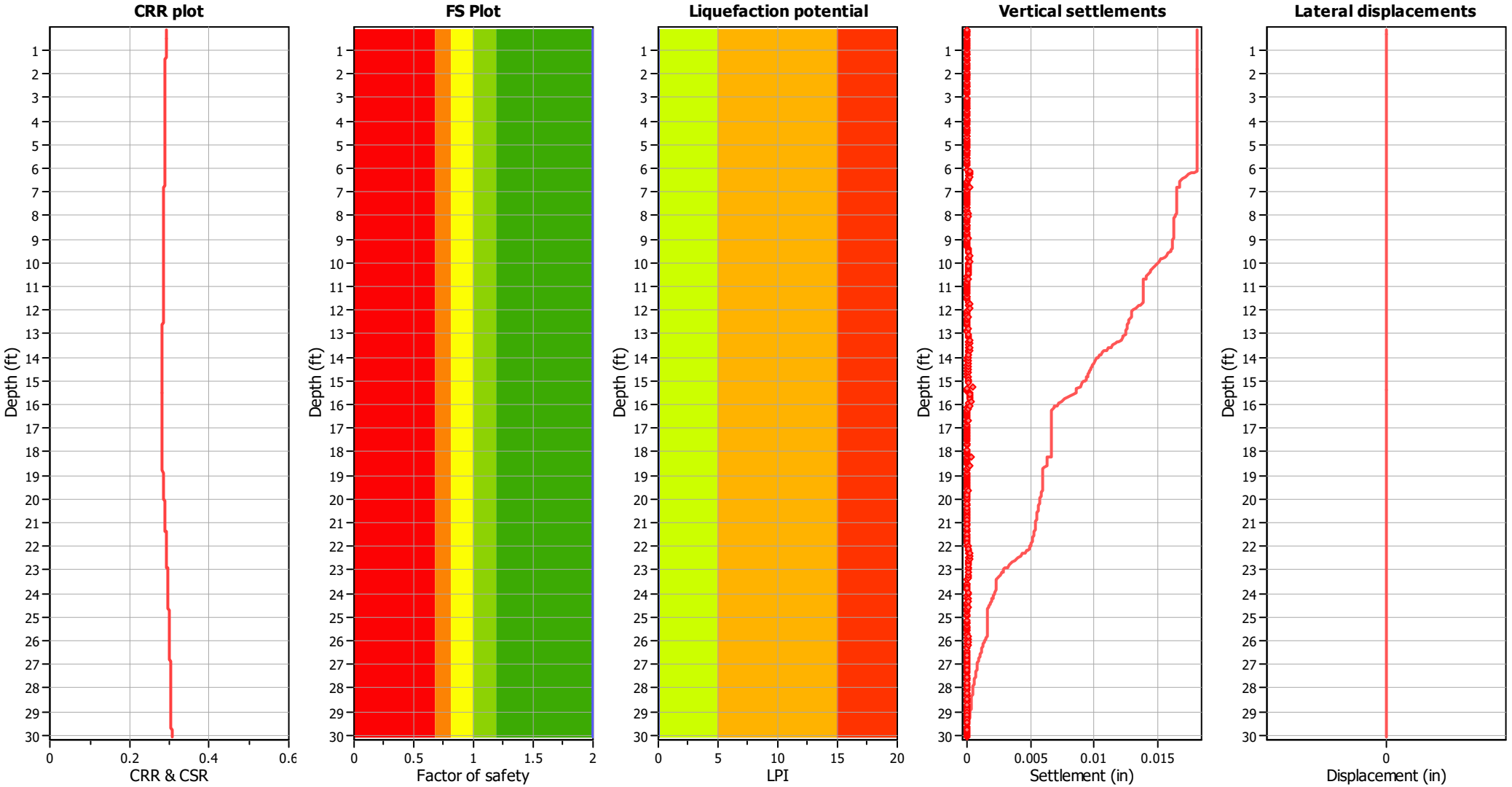
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

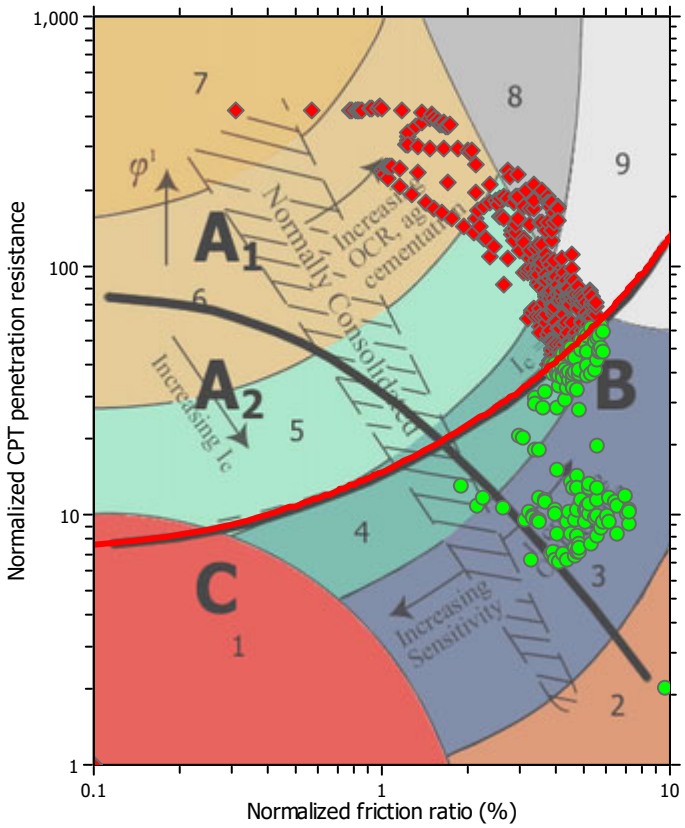
F.S. color scheme

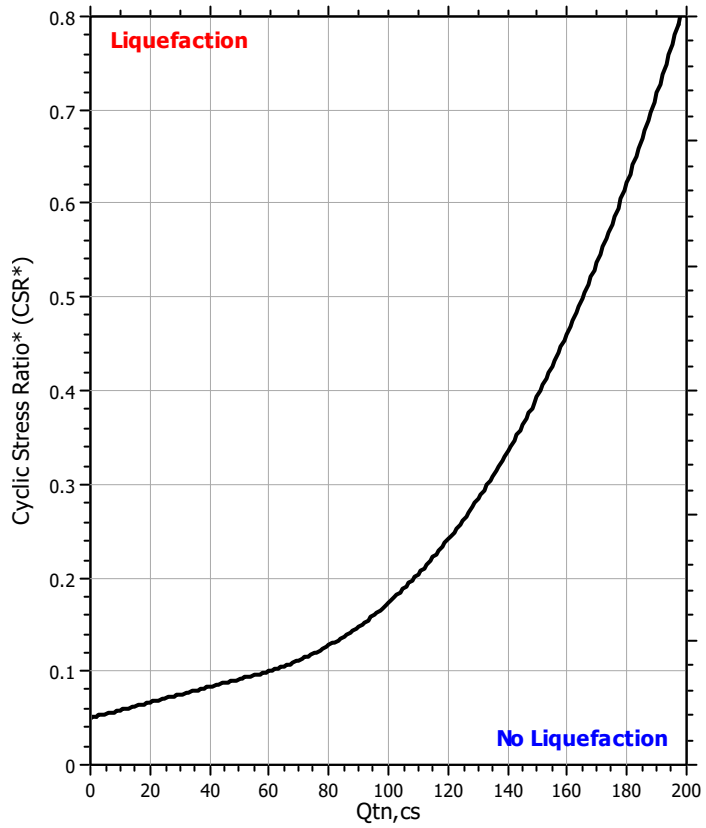
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

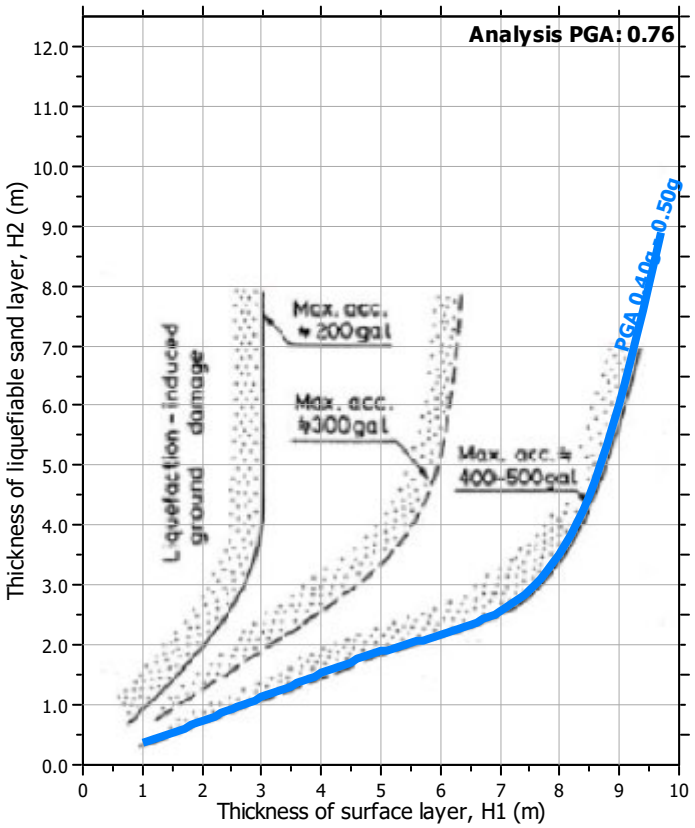
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



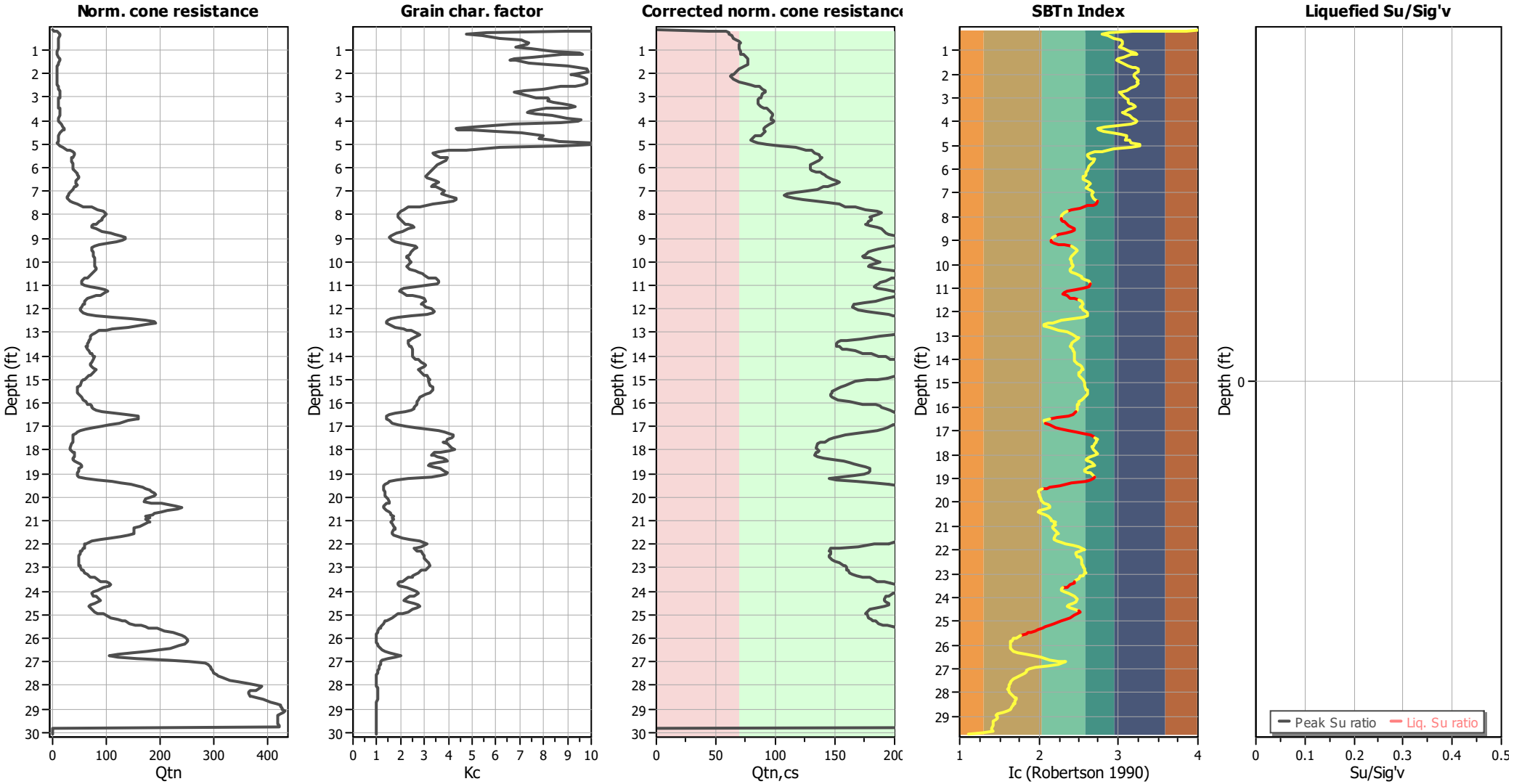




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

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17781 Cowan
Irvine, CA 92614
http://www.leightongeo.com

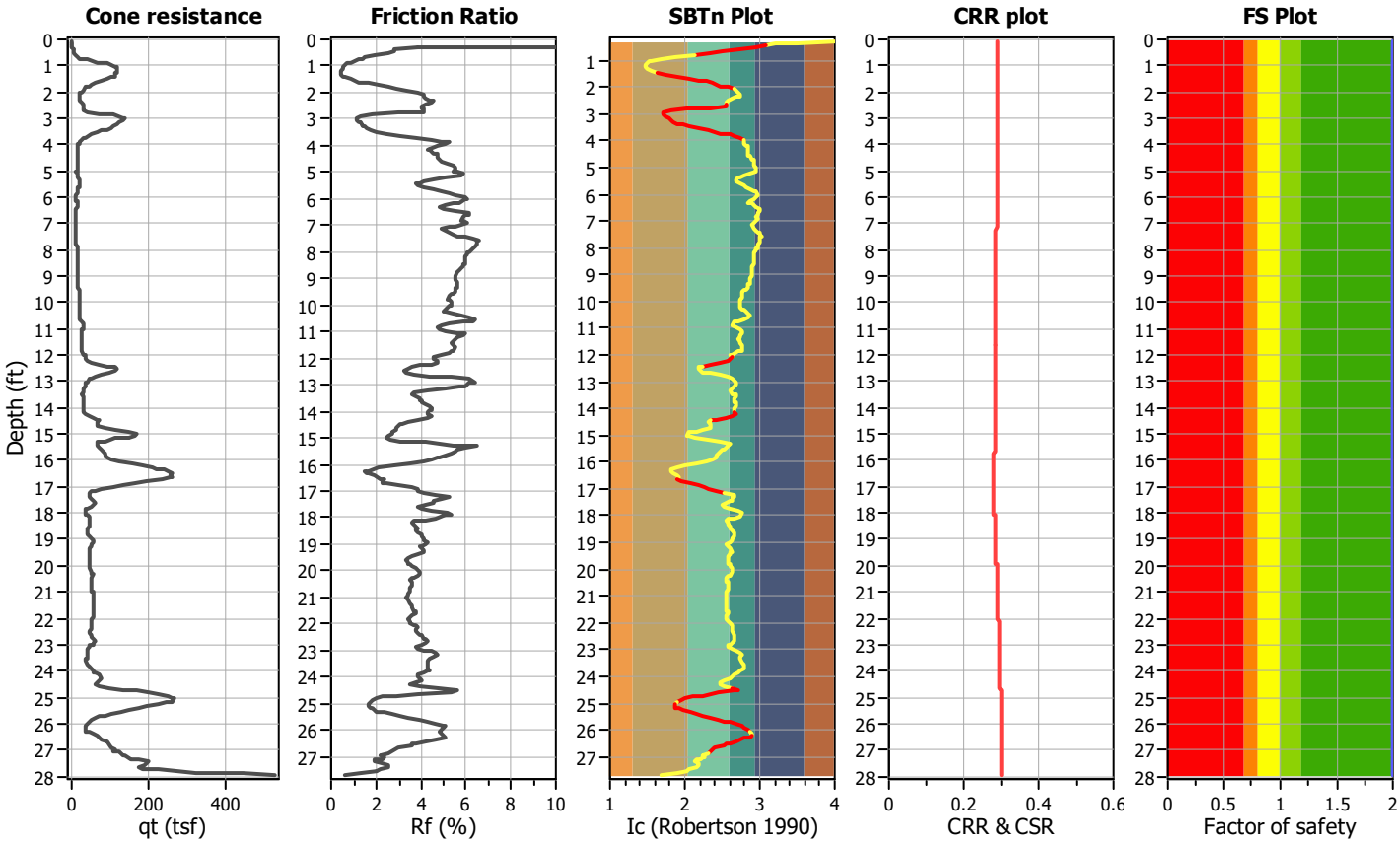
LIQUEFACTION ANALYSIS REPORT

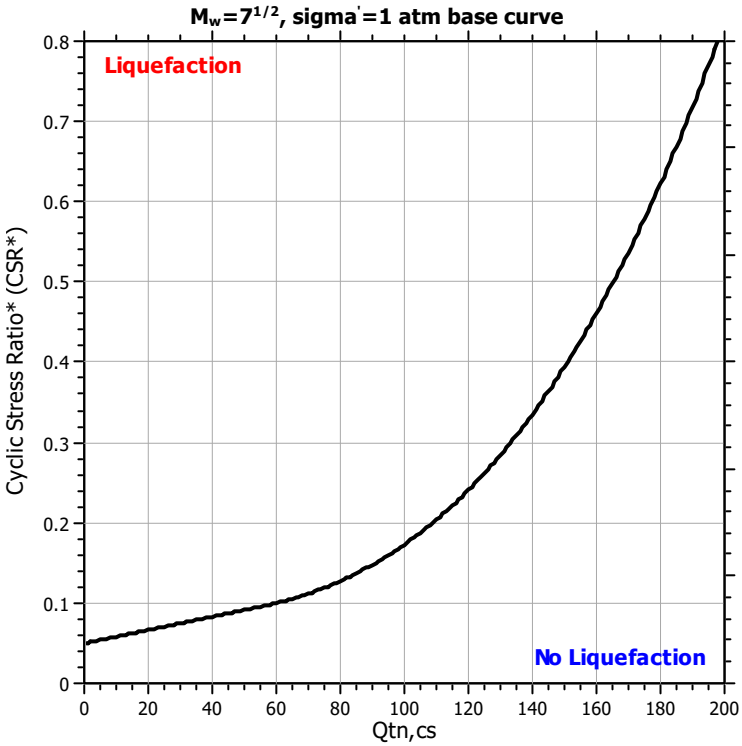
Project title : mmhs **Location : morningside drive, malibu, CA**

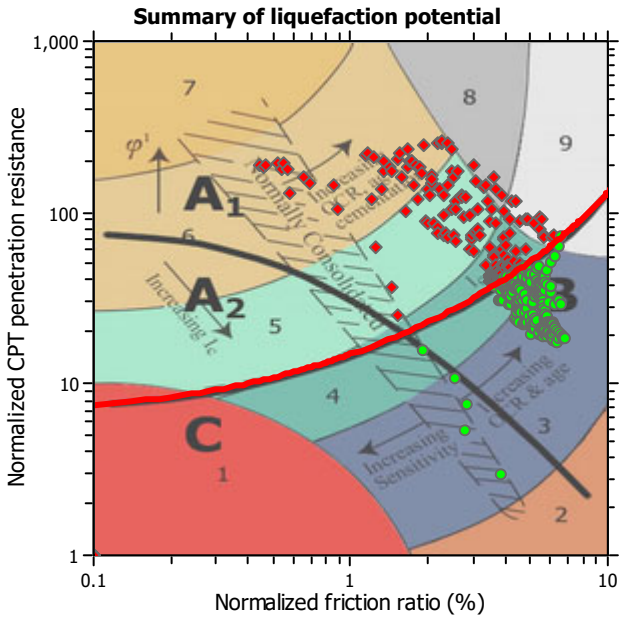
CPT file : CPT-3

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	45.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	45.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.76	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

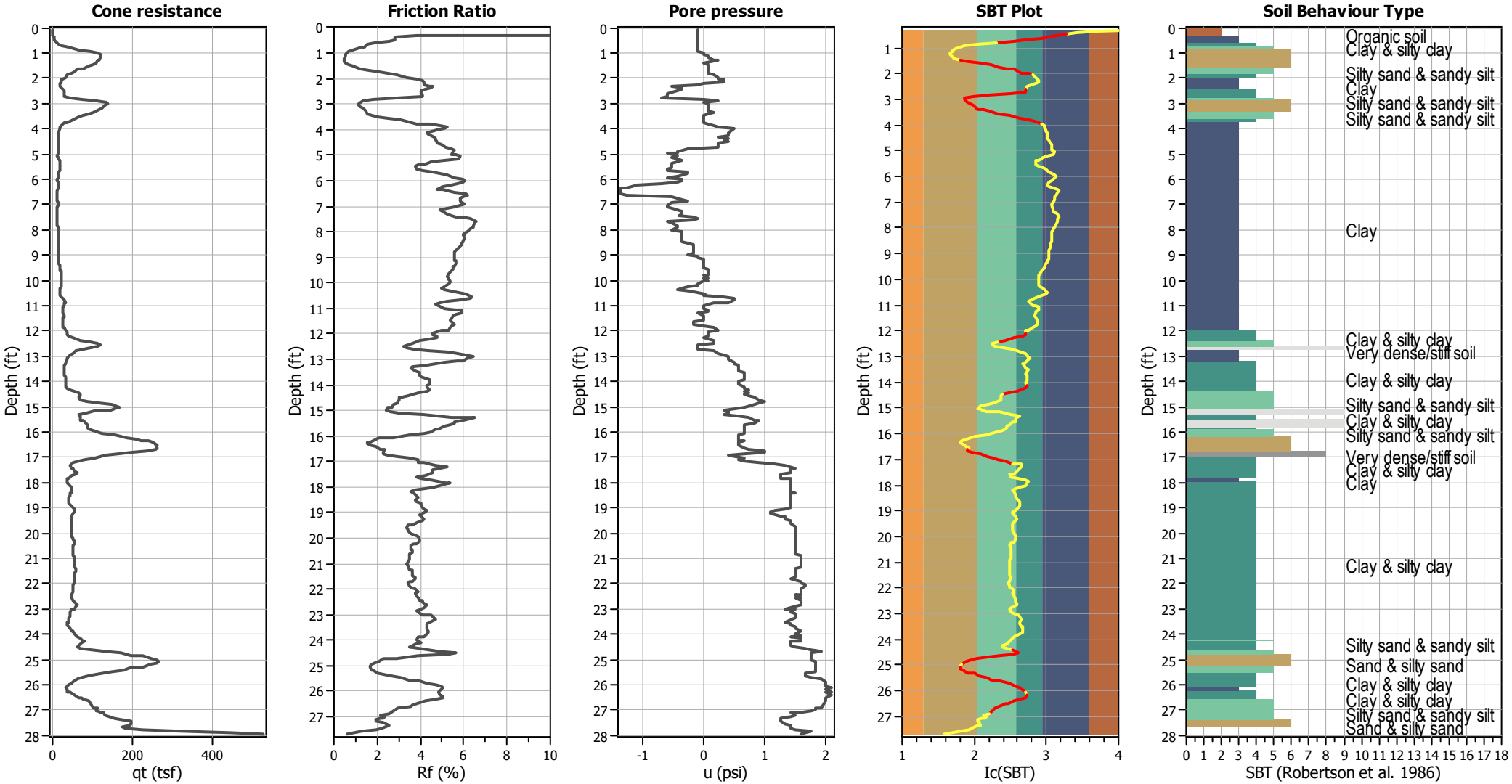






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



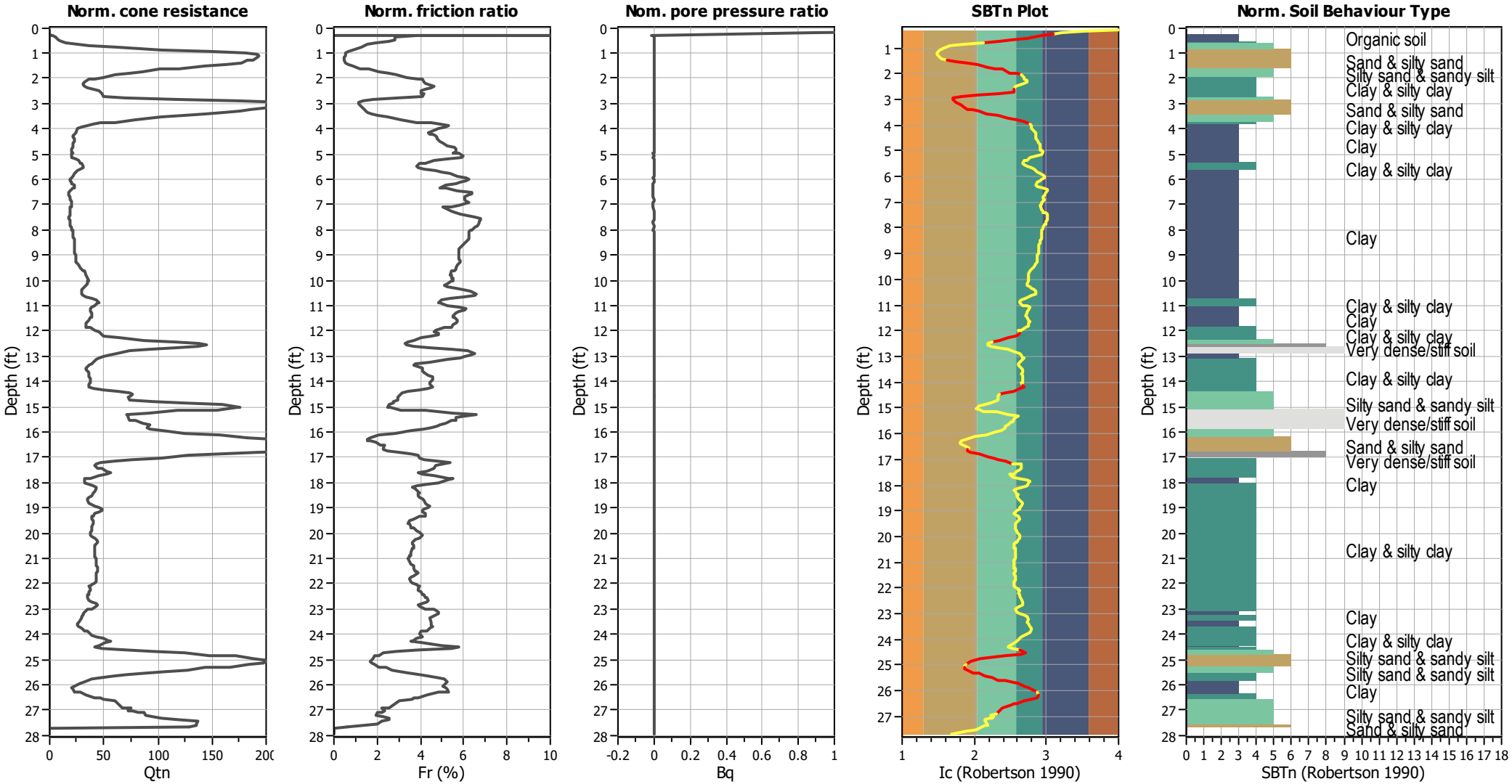
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



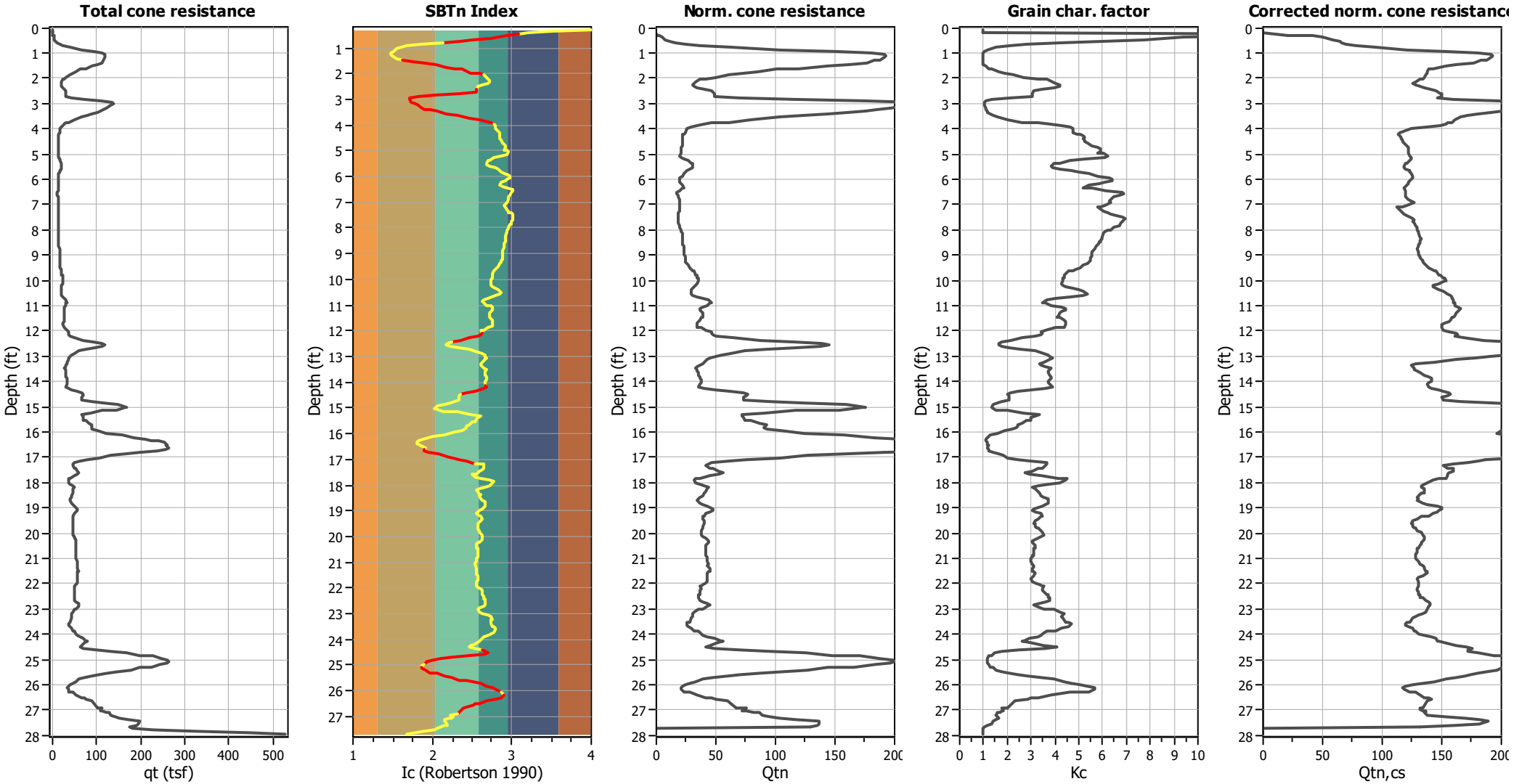
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

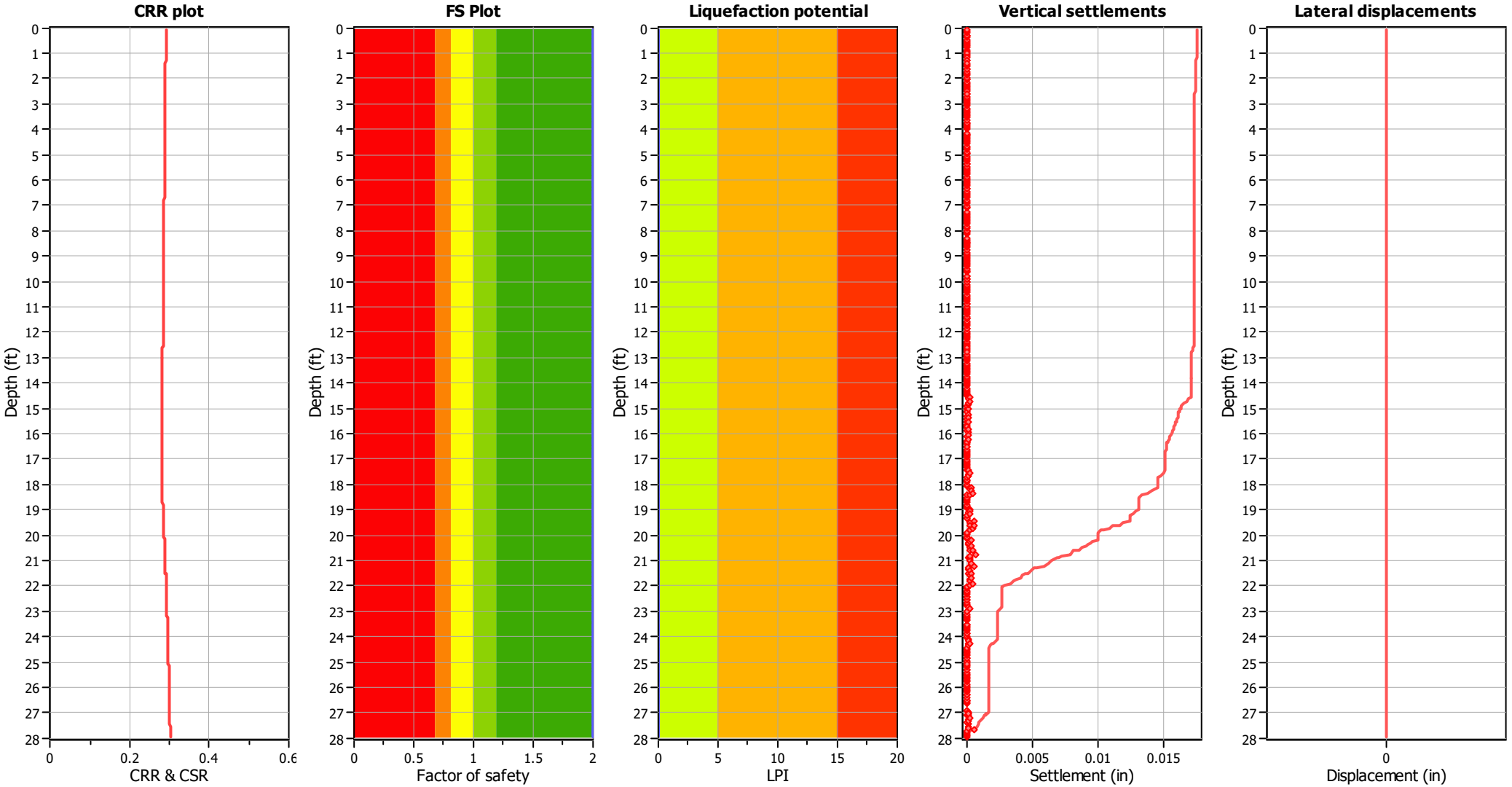
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

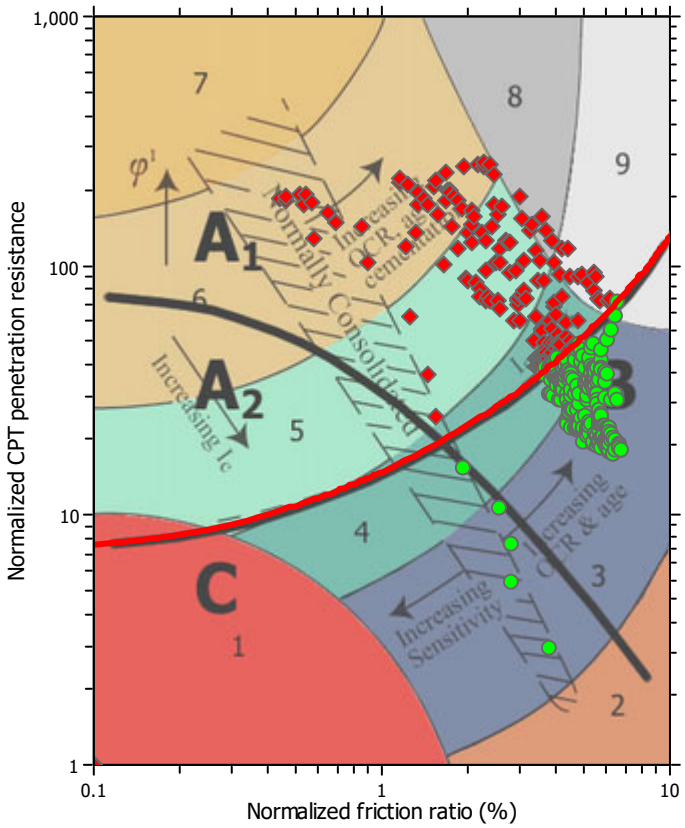
F.S. color scheme

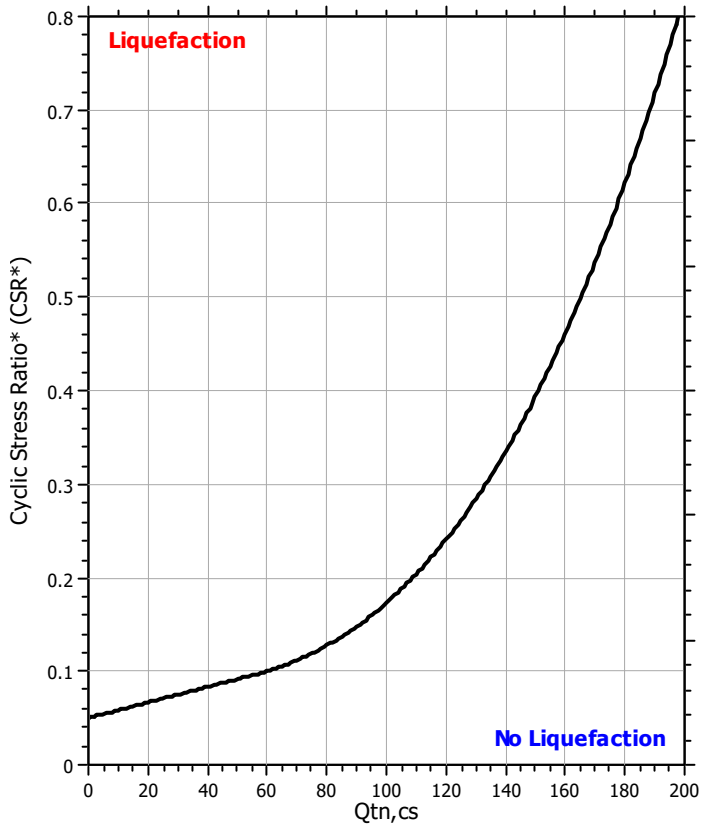
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

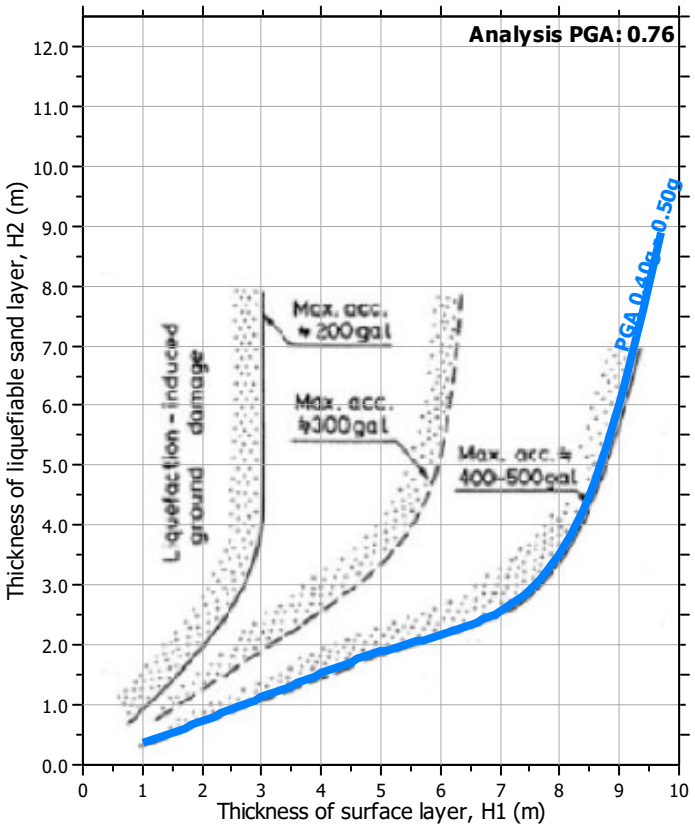
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



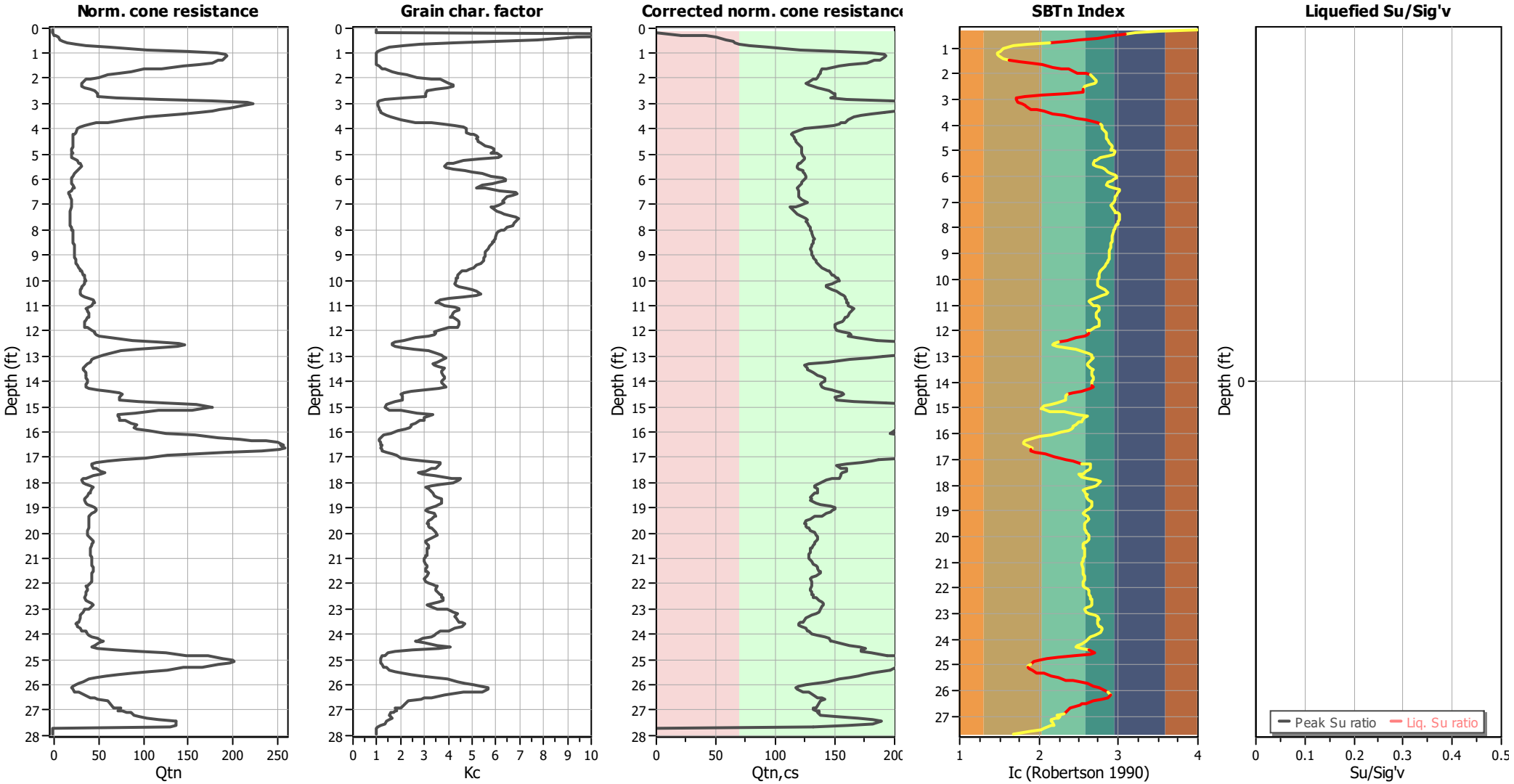




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

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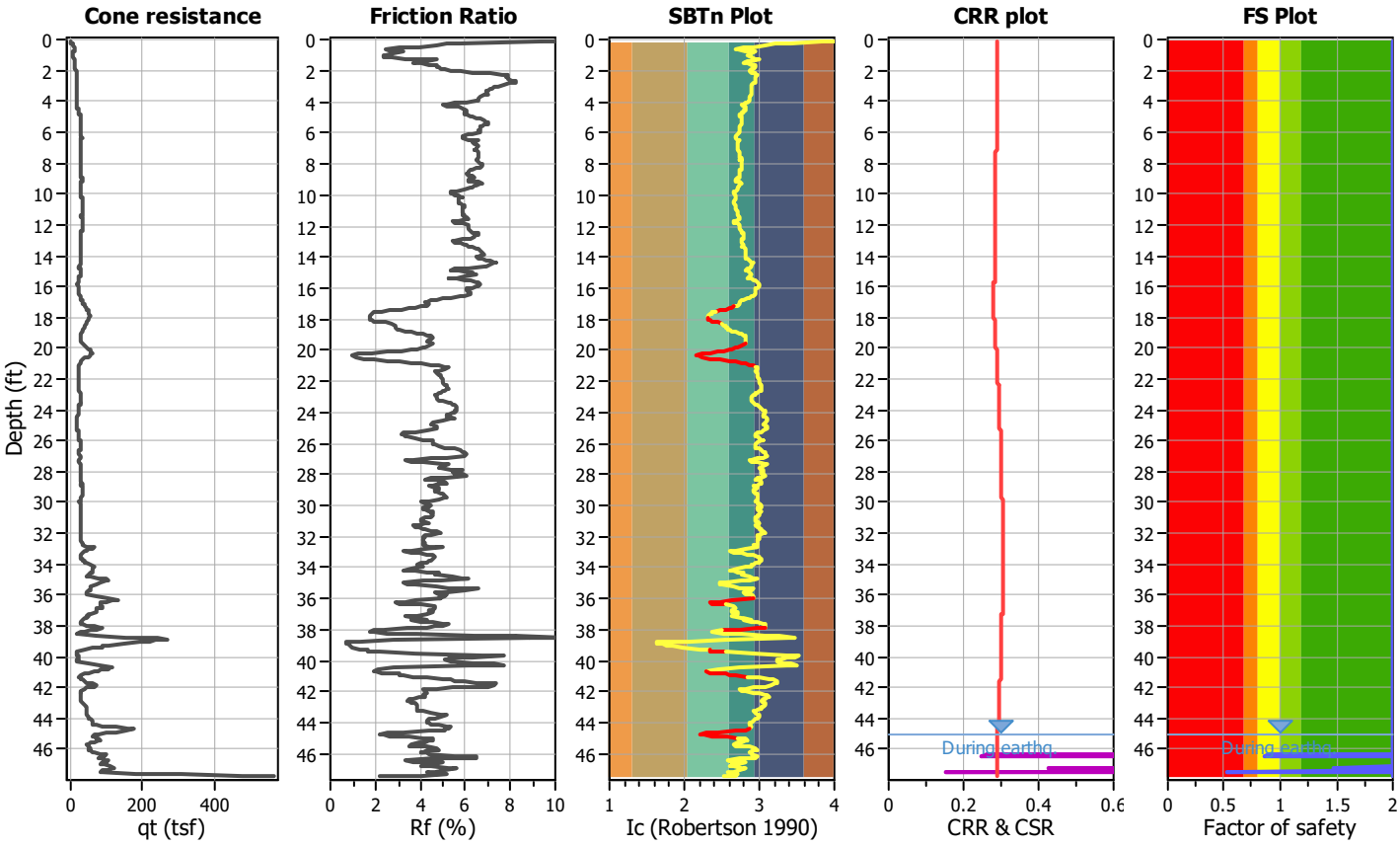
LIQUEFACTION ANALYSIS REPORT

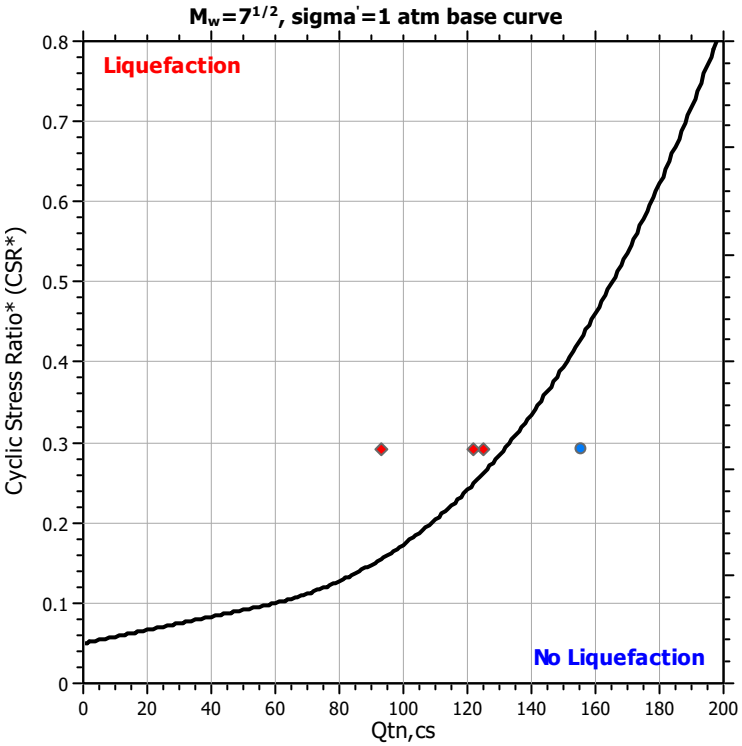
Project title : mmhs **Location : morningside drive, malibu, CA**

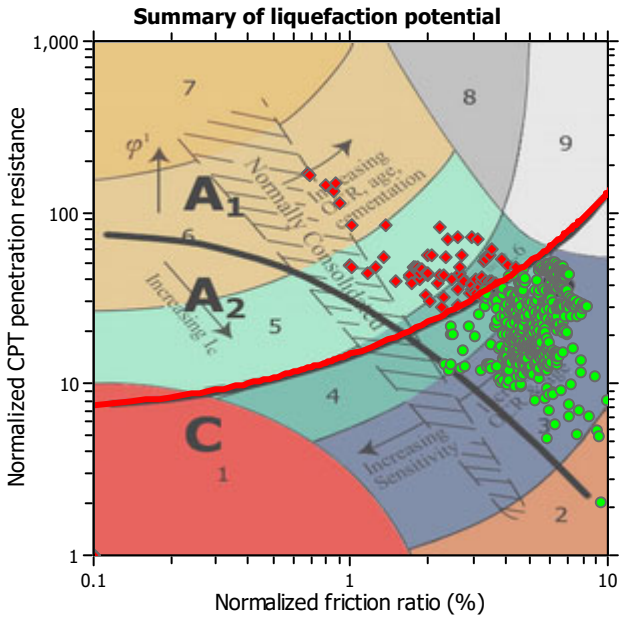
CPT file : CPT-4

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	45.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	45.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.76	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

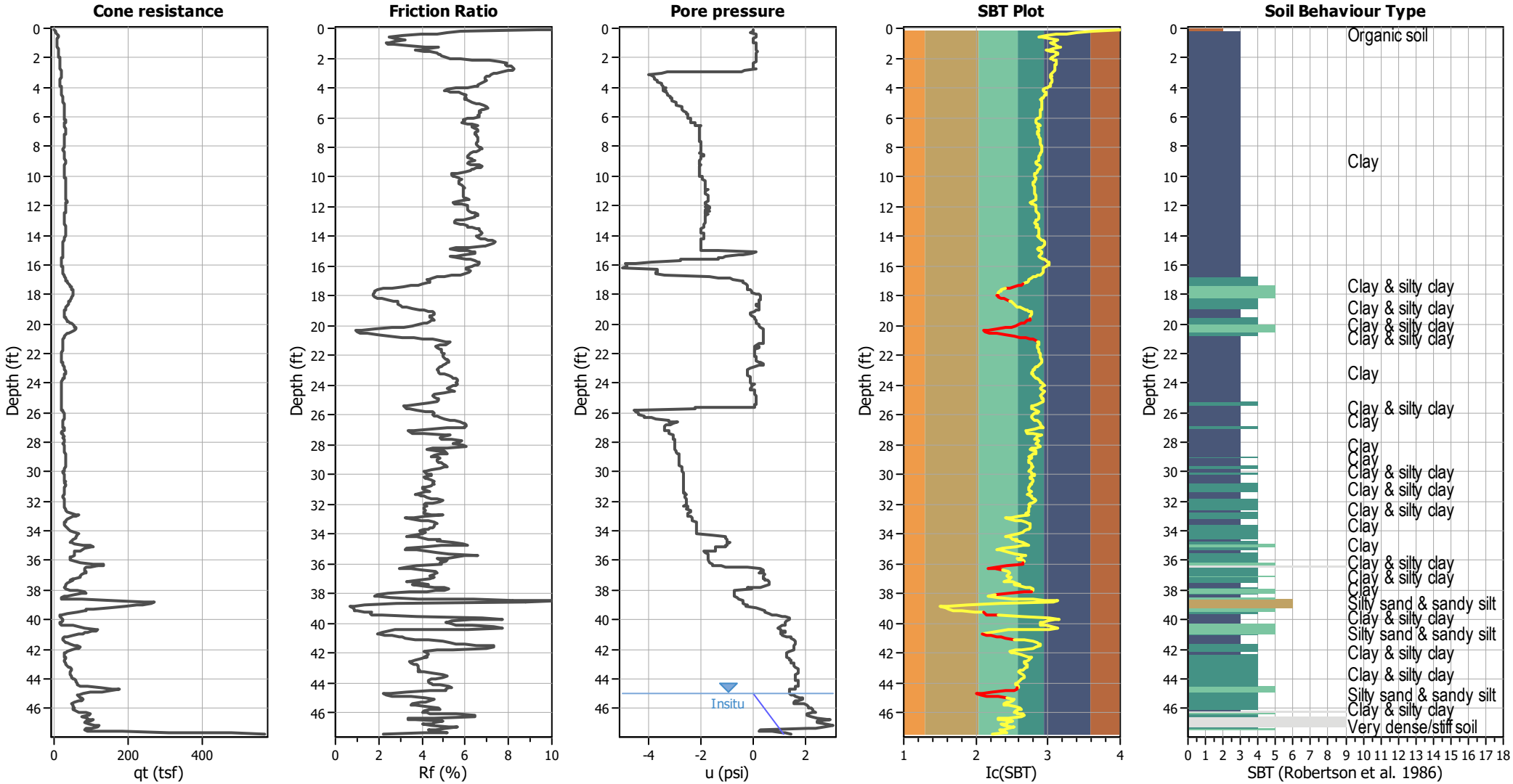






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



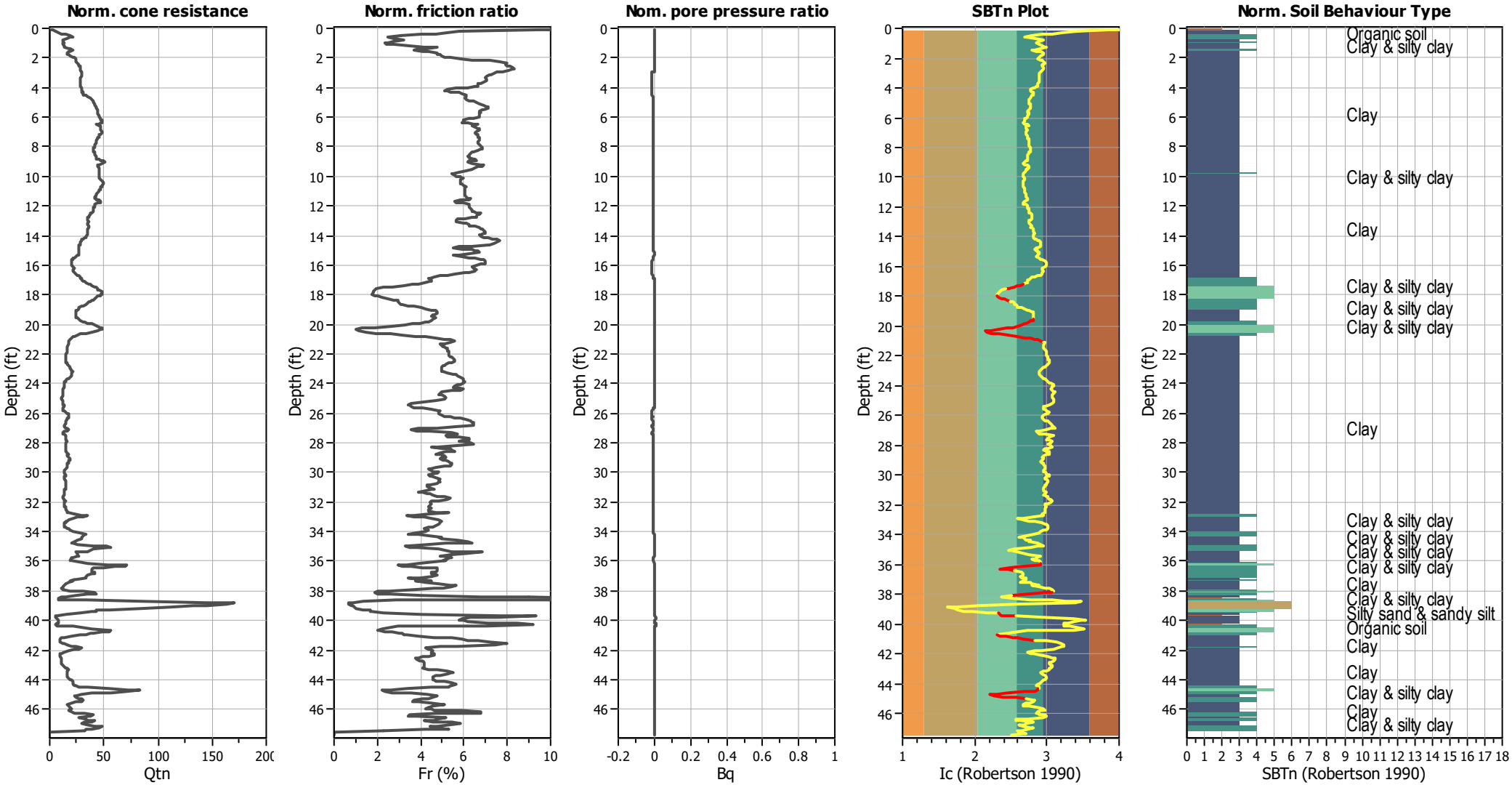
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



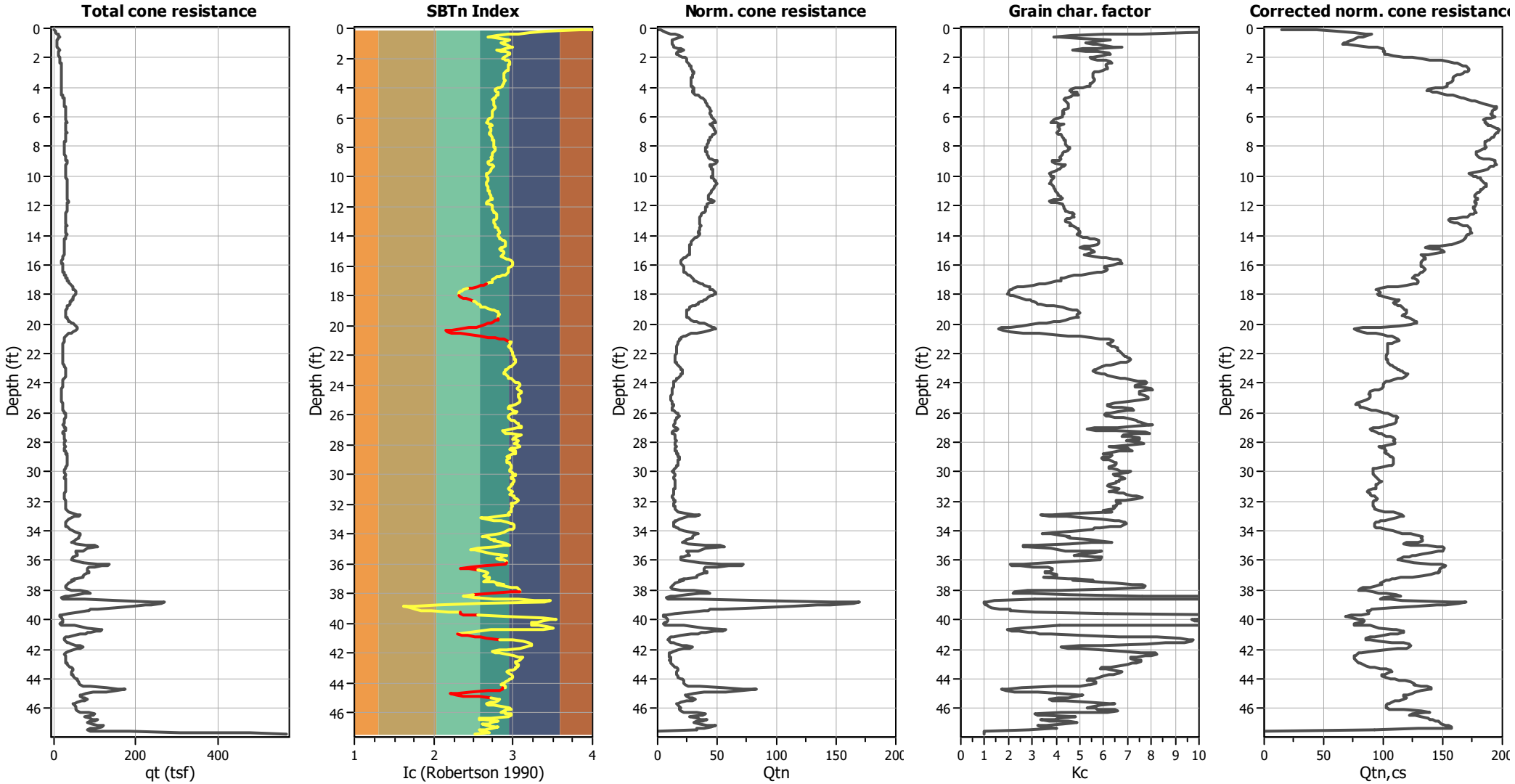
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

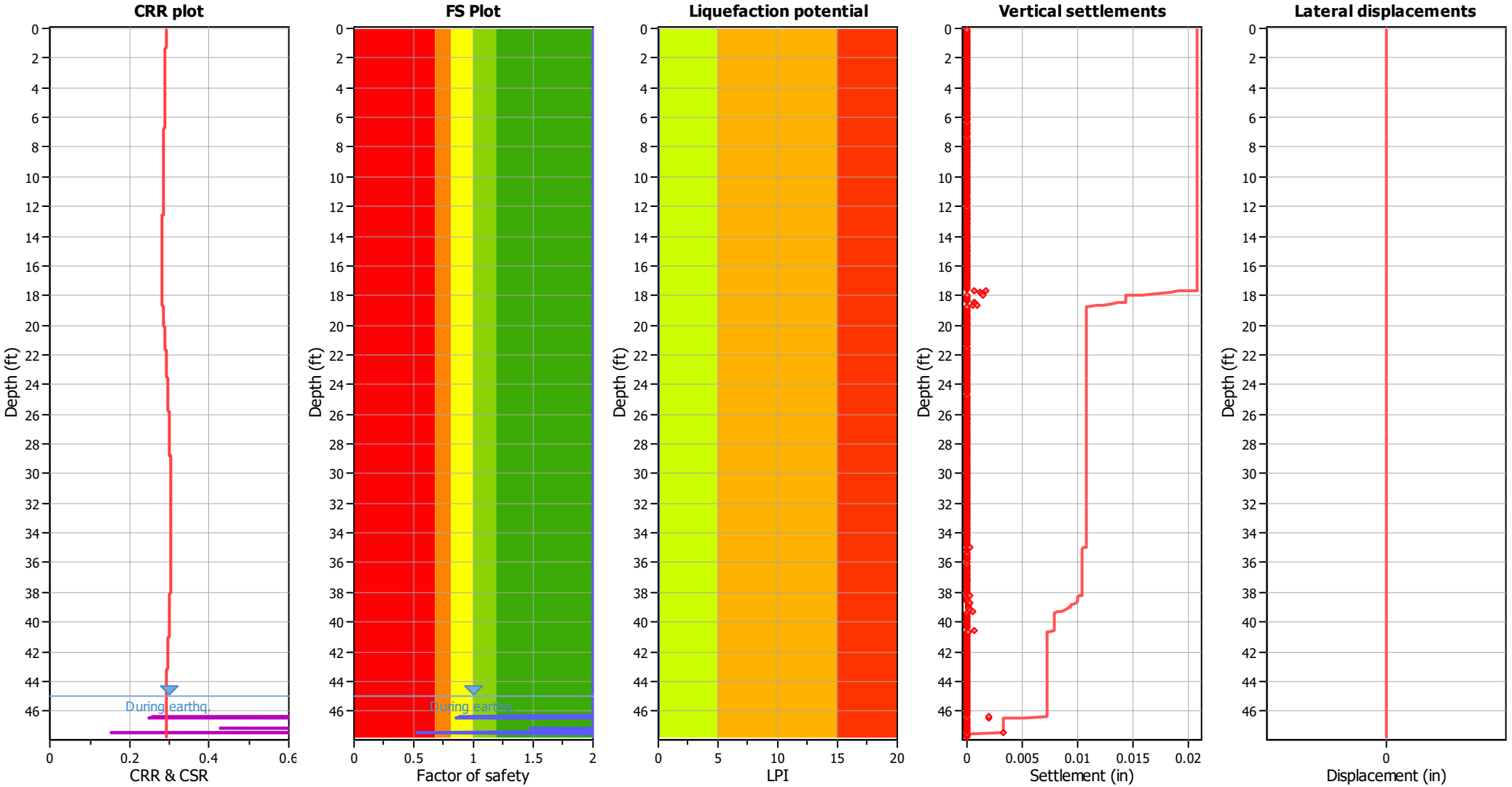
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

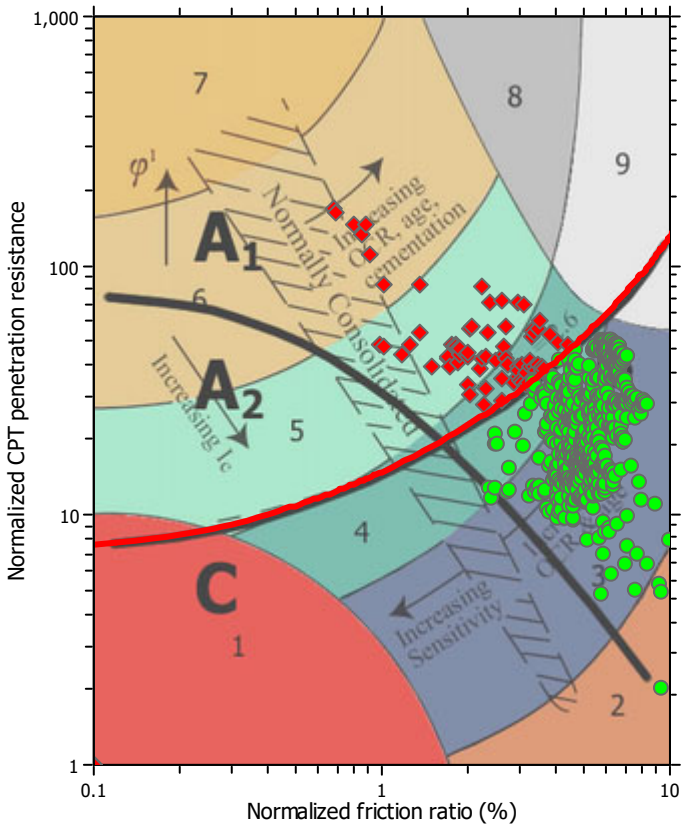
F.S. color scheme

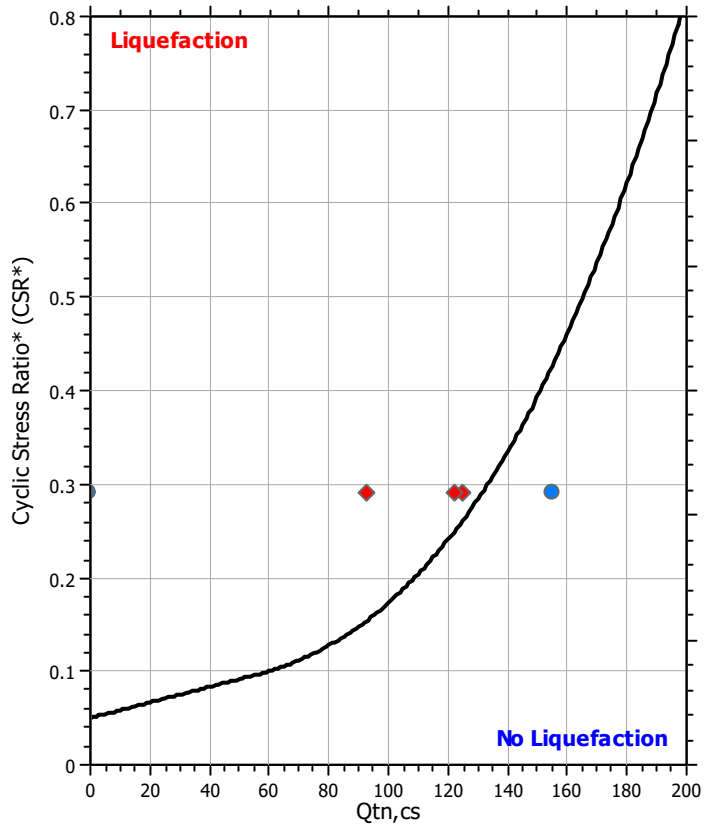
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

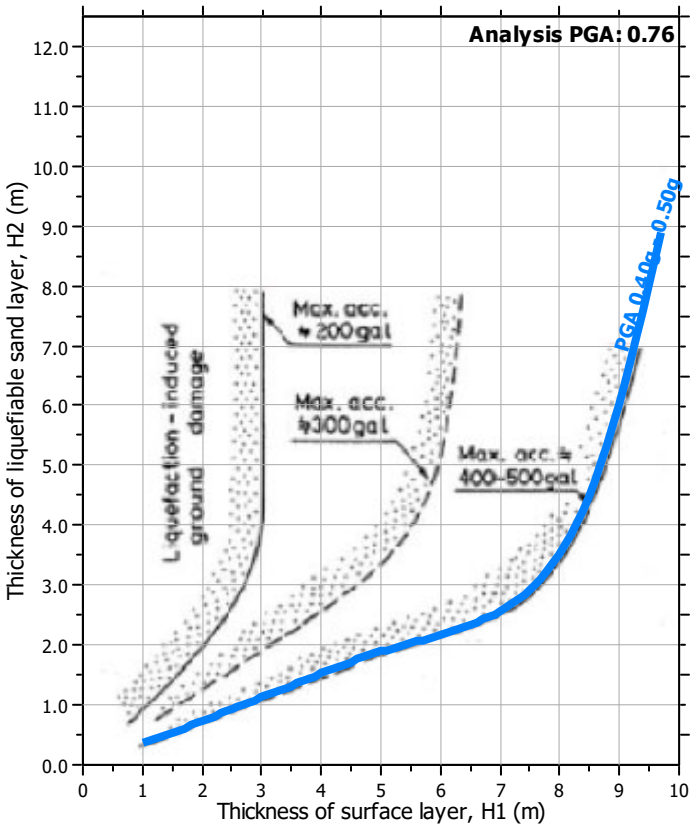
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



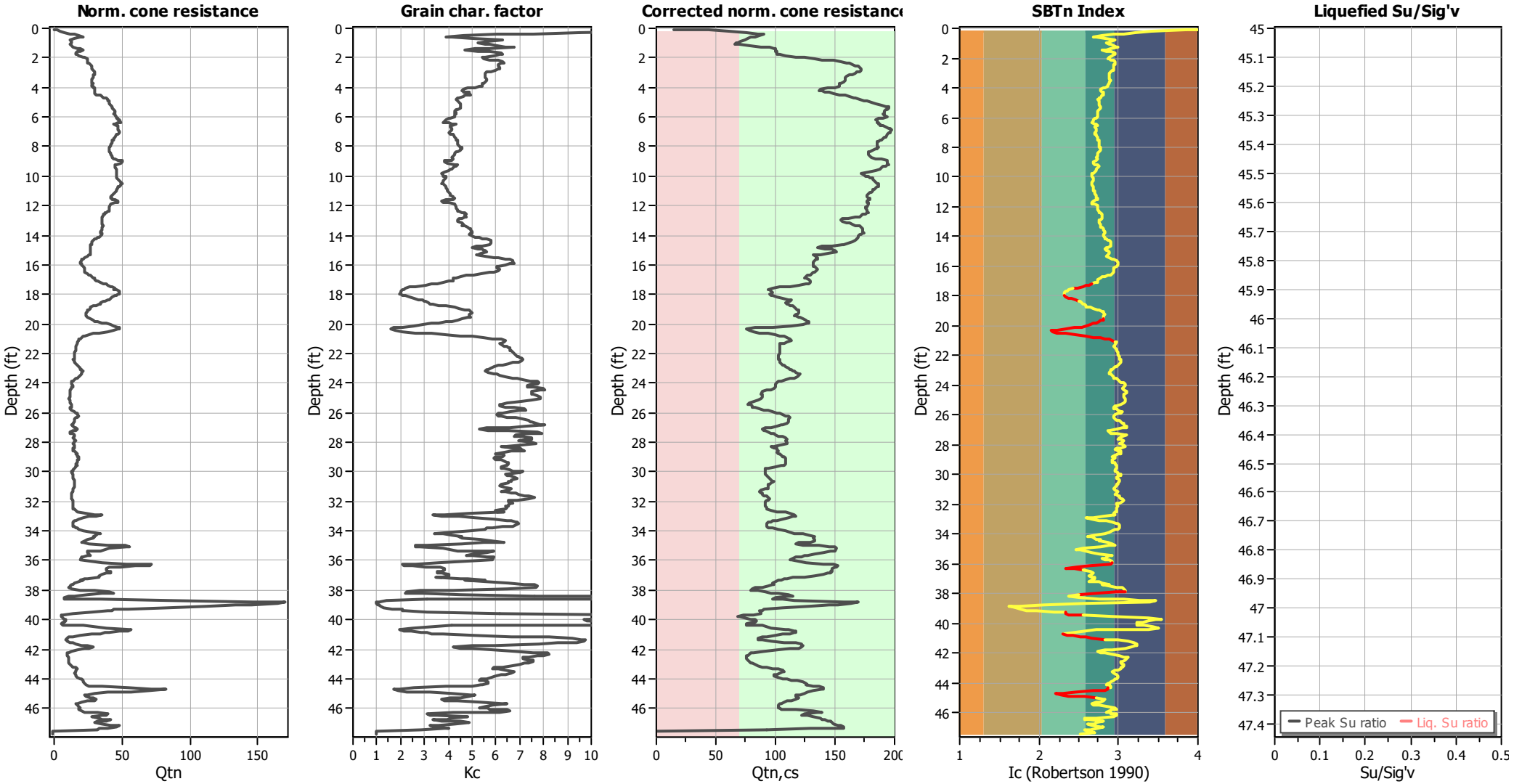




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

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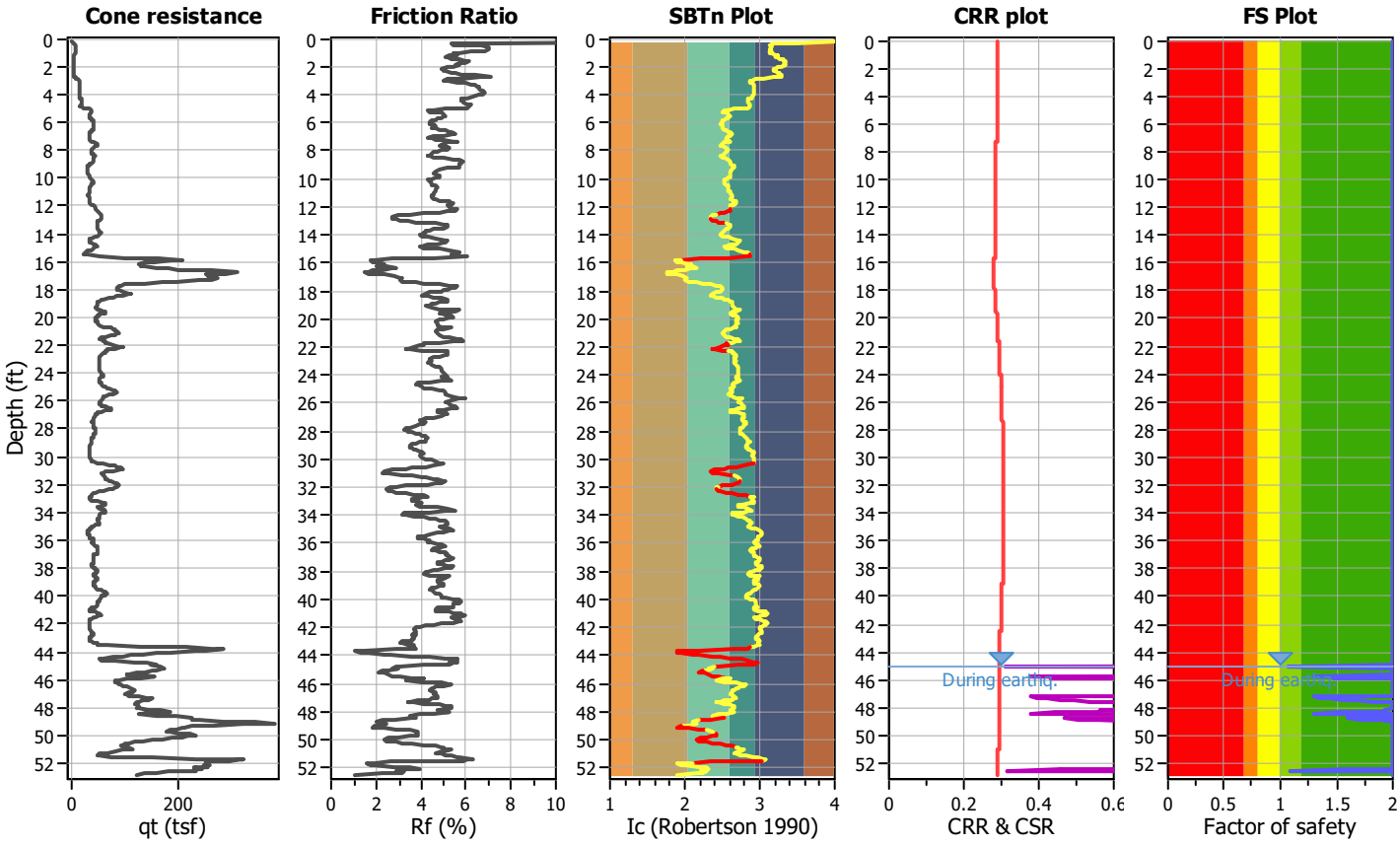
LIQUEFACTION ANALYSIS REPORT

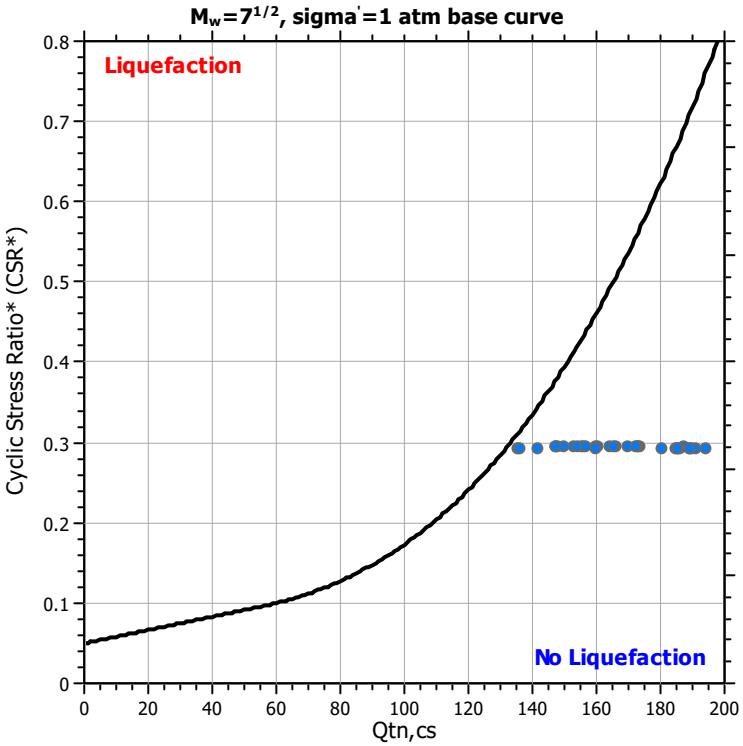
Project title : mmhs **Location : morningside drive, malibu, CA**

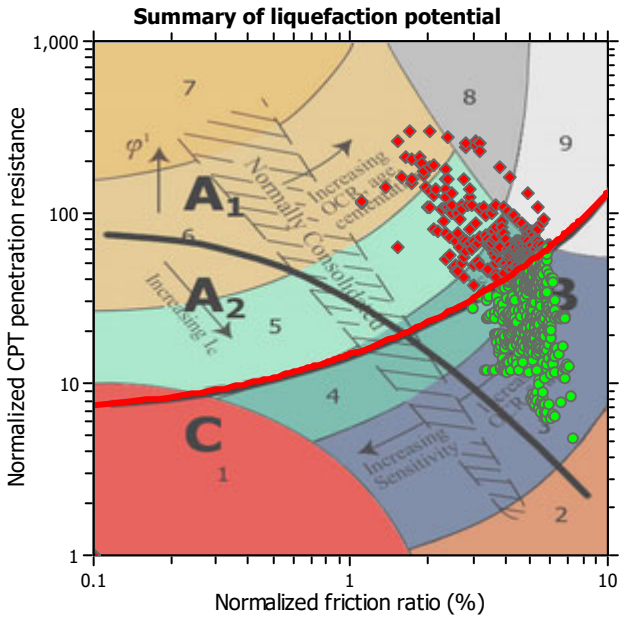
CPT file : CPT-5

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	45.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	45.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.76	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

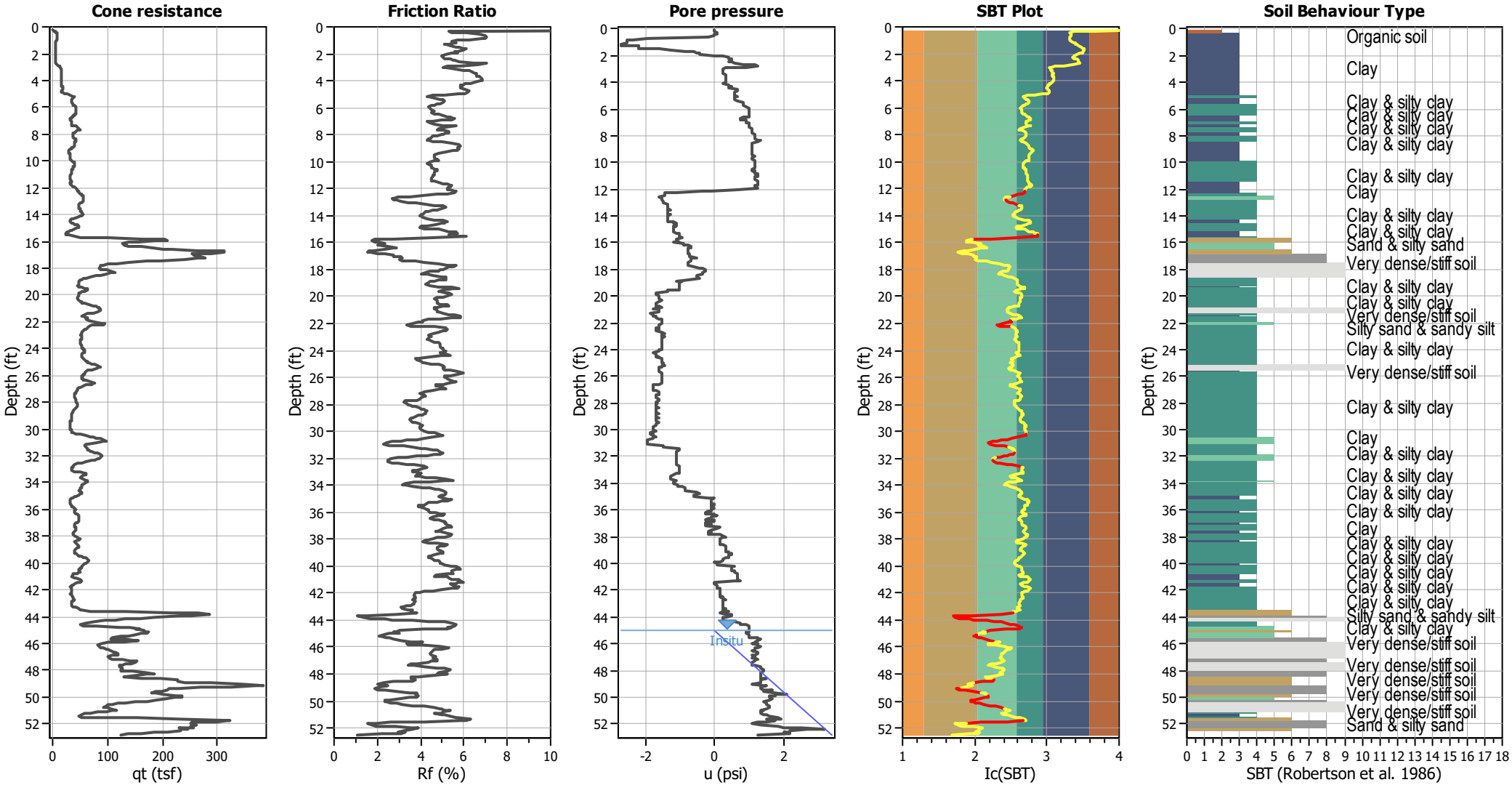






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



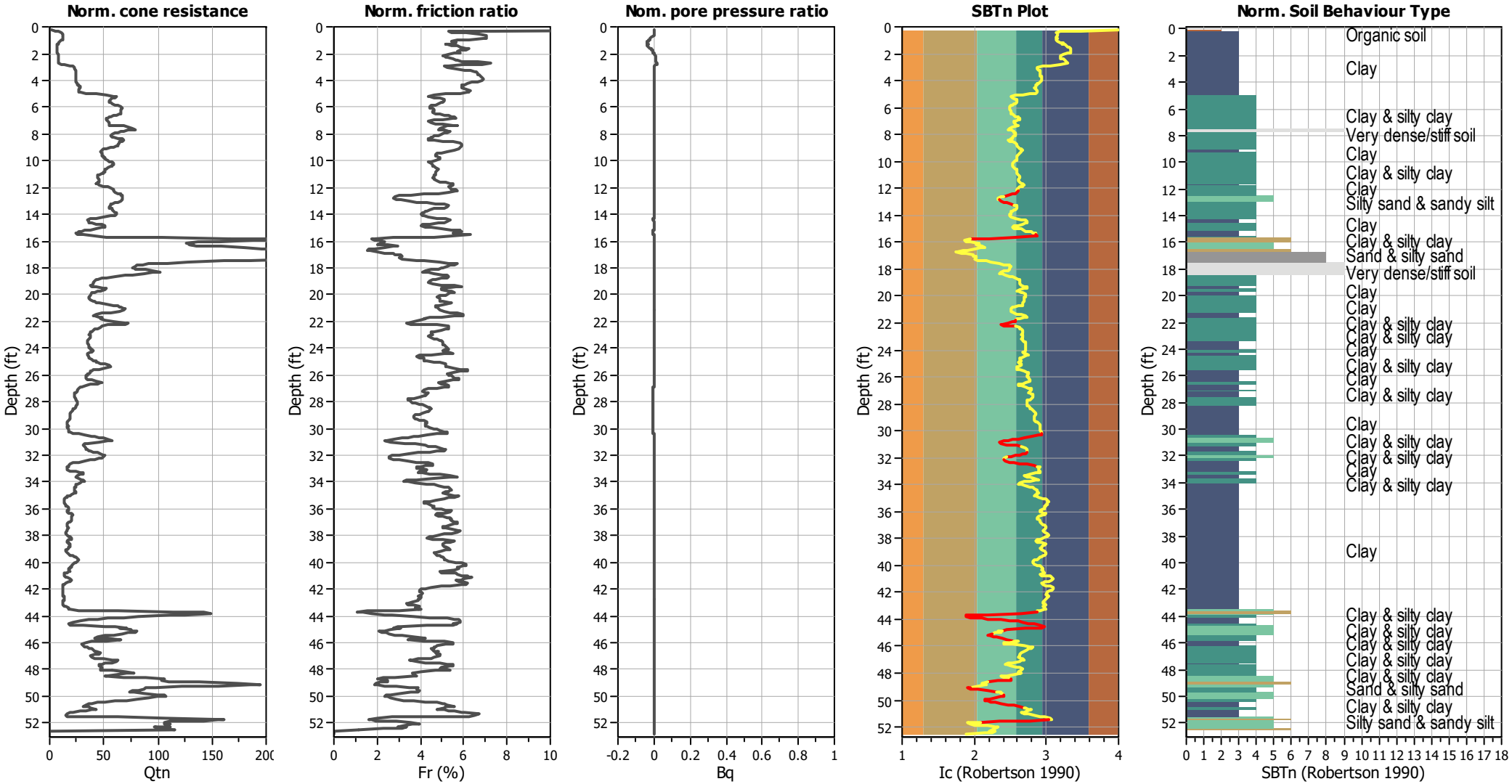
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



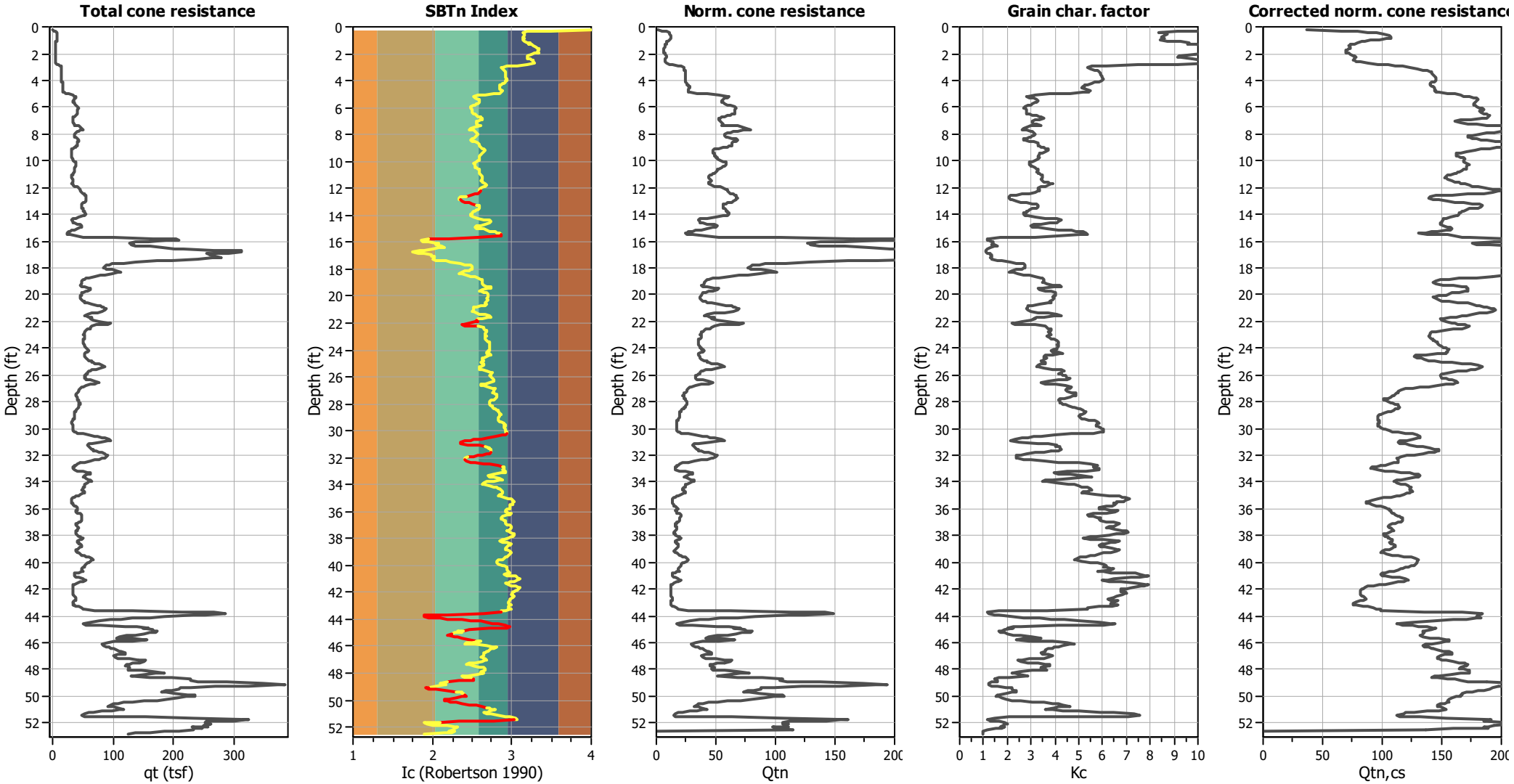
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

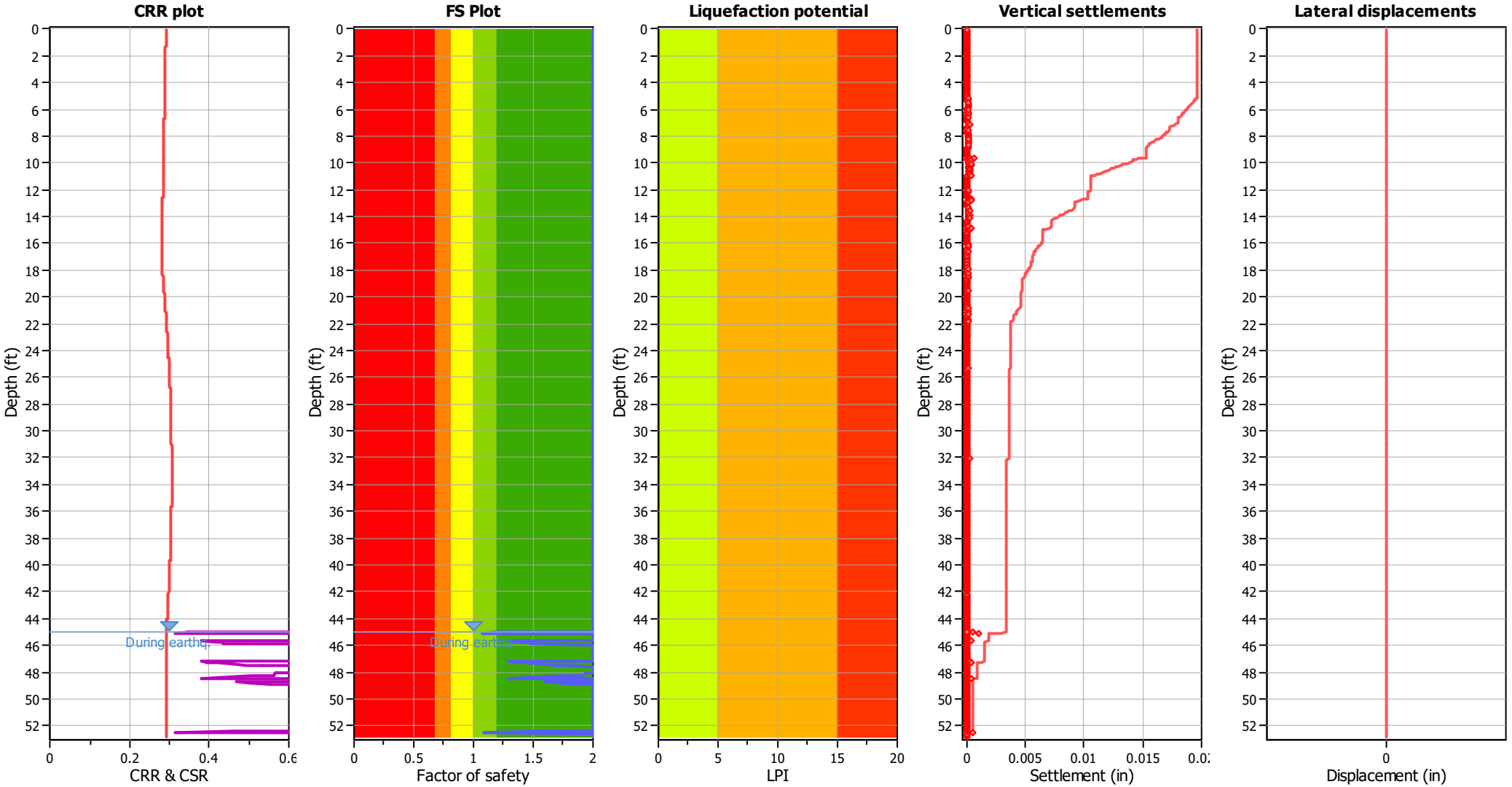
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

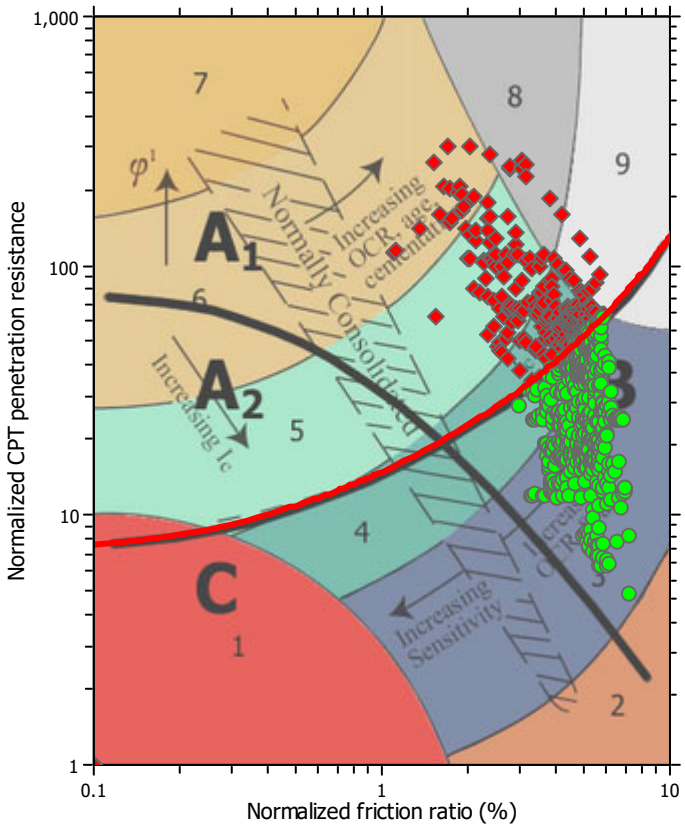
F.S. color scheme

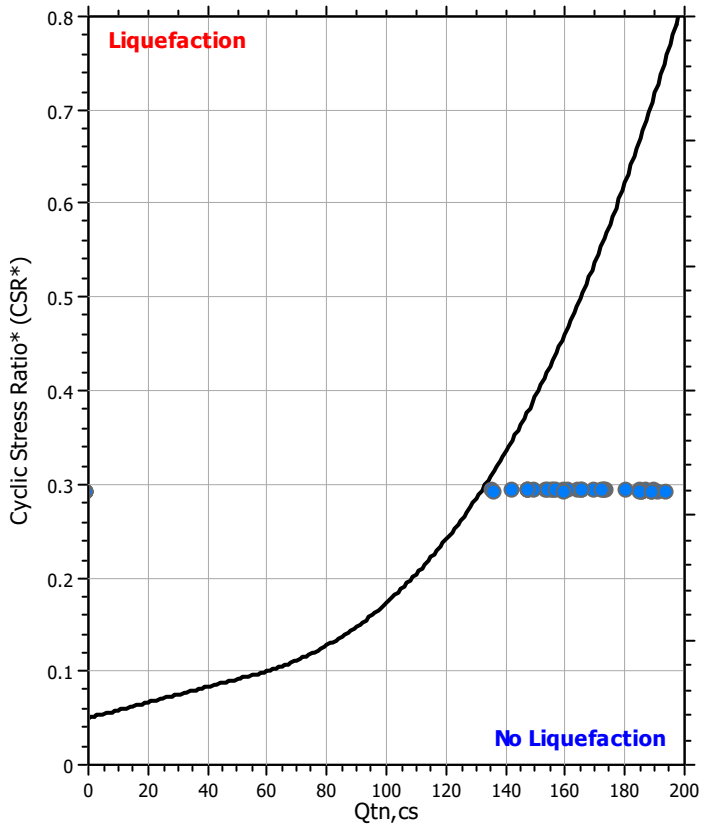
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

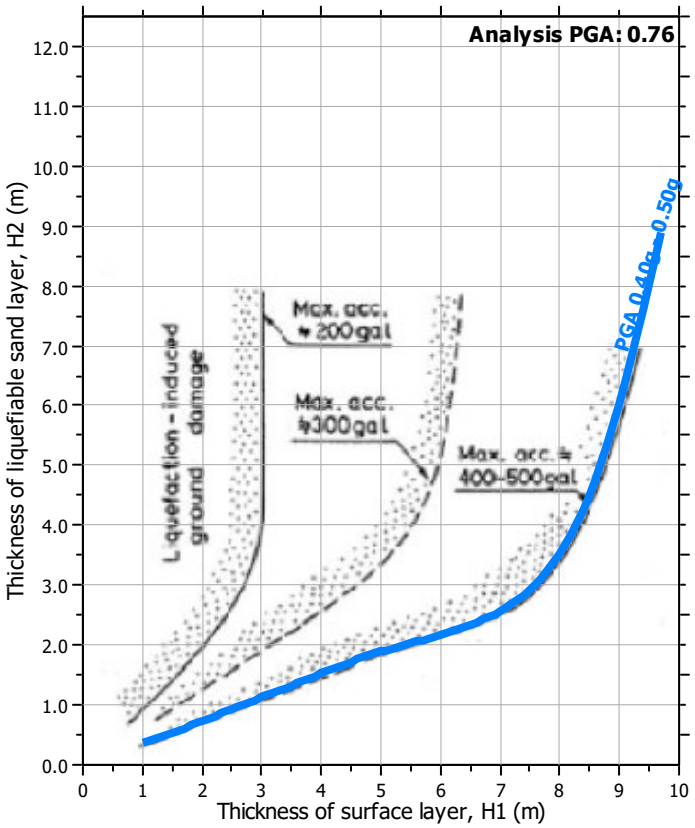
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



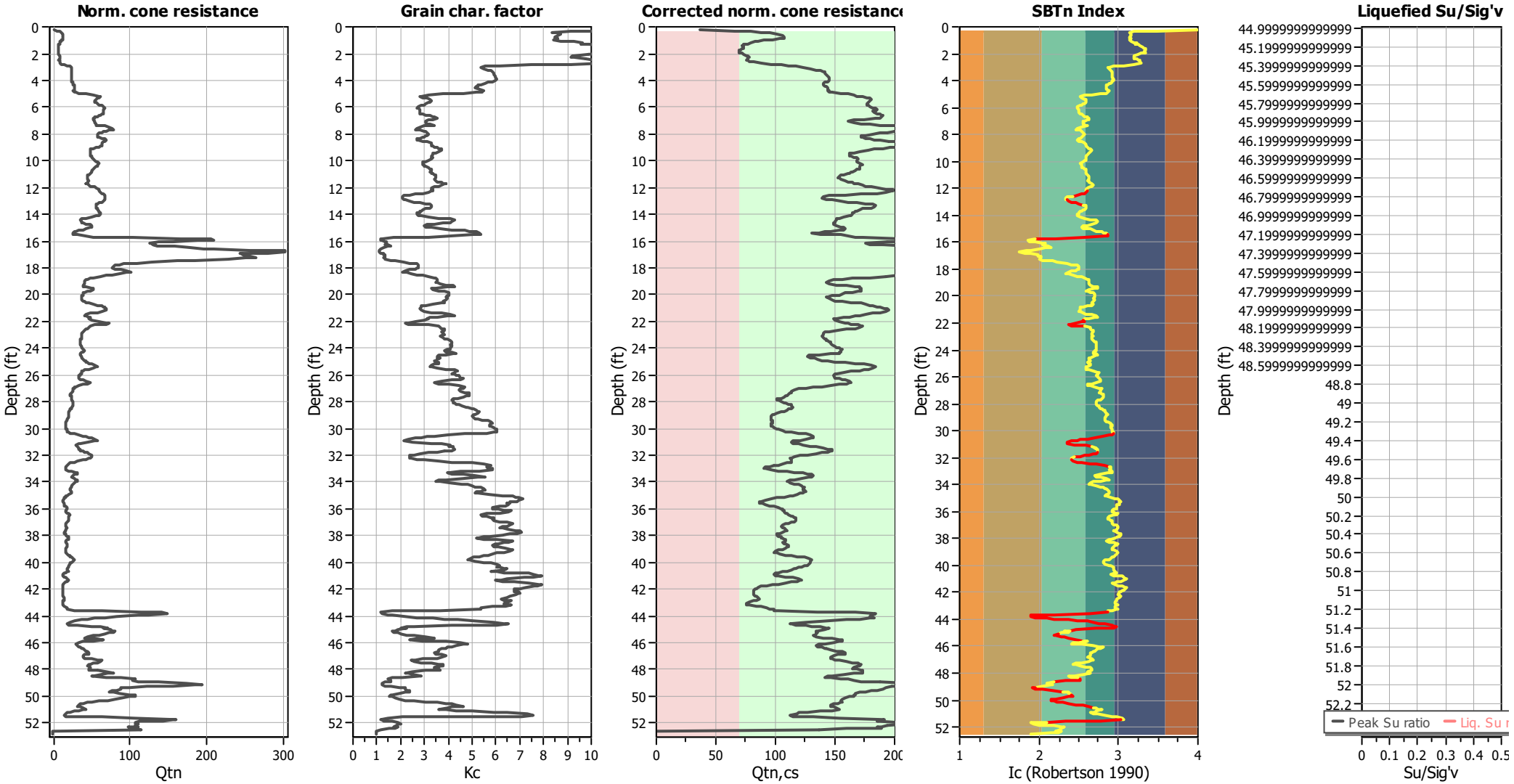




Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

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Irvine, CA 92614
http://www.leightongeo.com

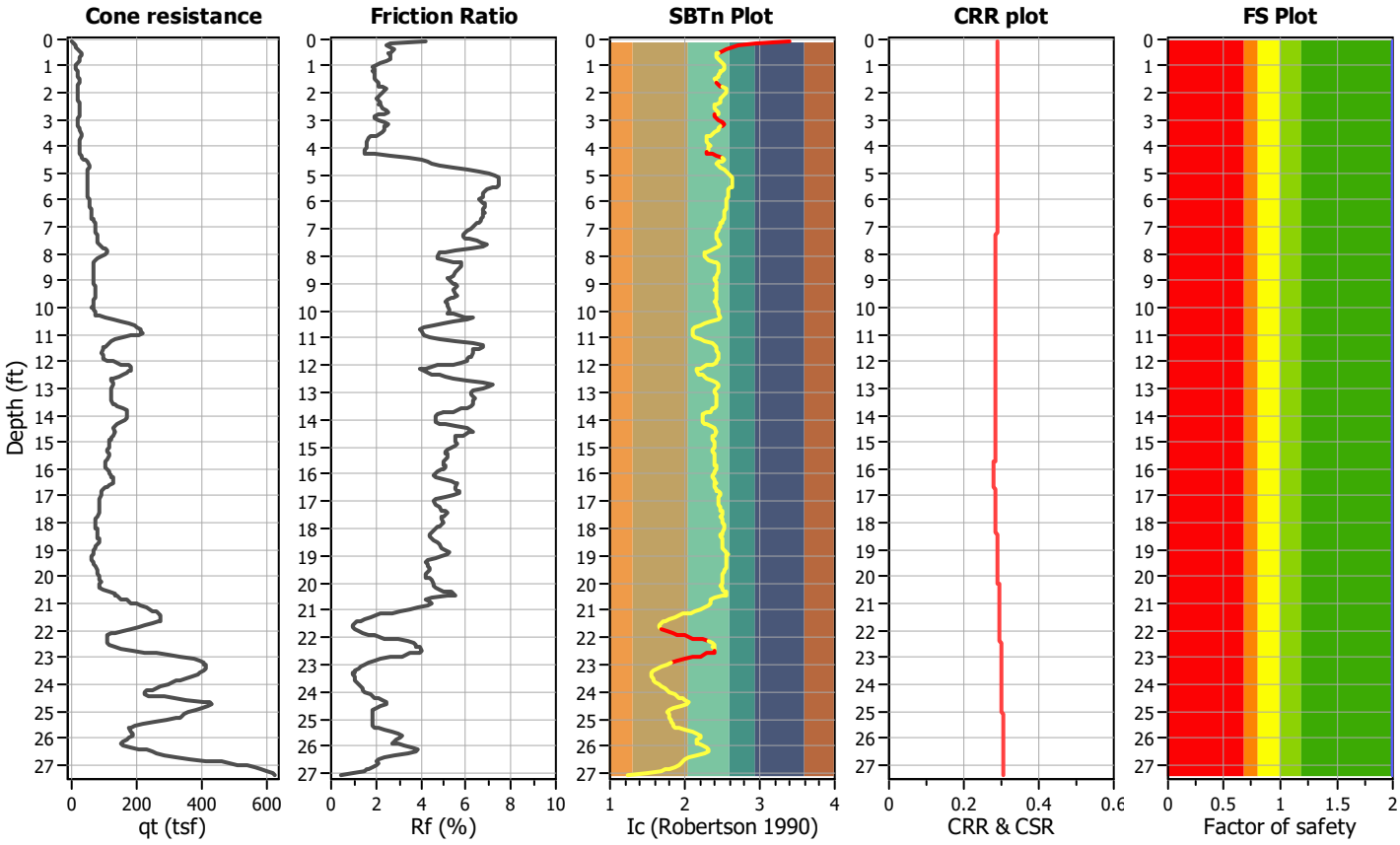
LIQUEFACTION ANALYSIS REPORT

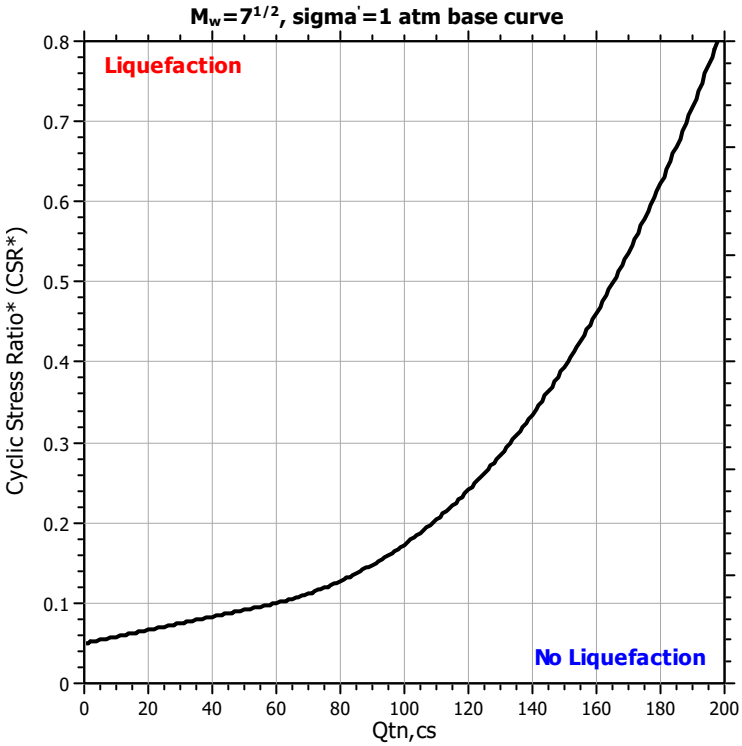
Project title : mmhs **Location : morningside drive, malibu, CA**

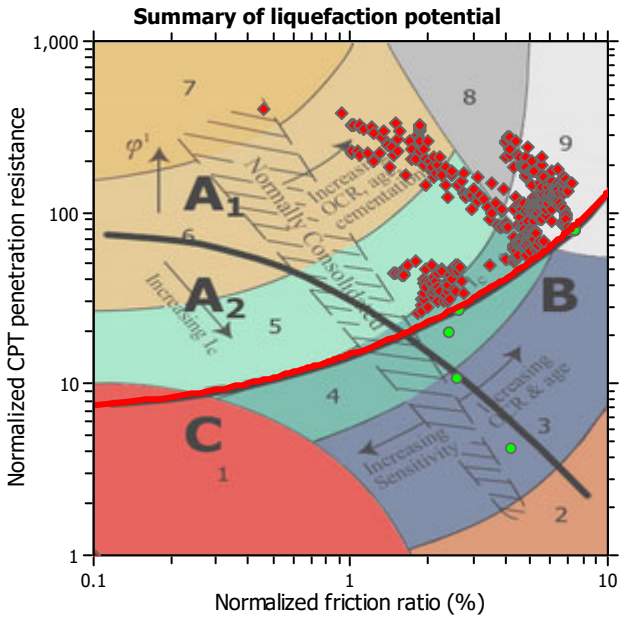
CPT file : CPT-6

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	45.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	45.00 ft	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	6.10	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.76	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

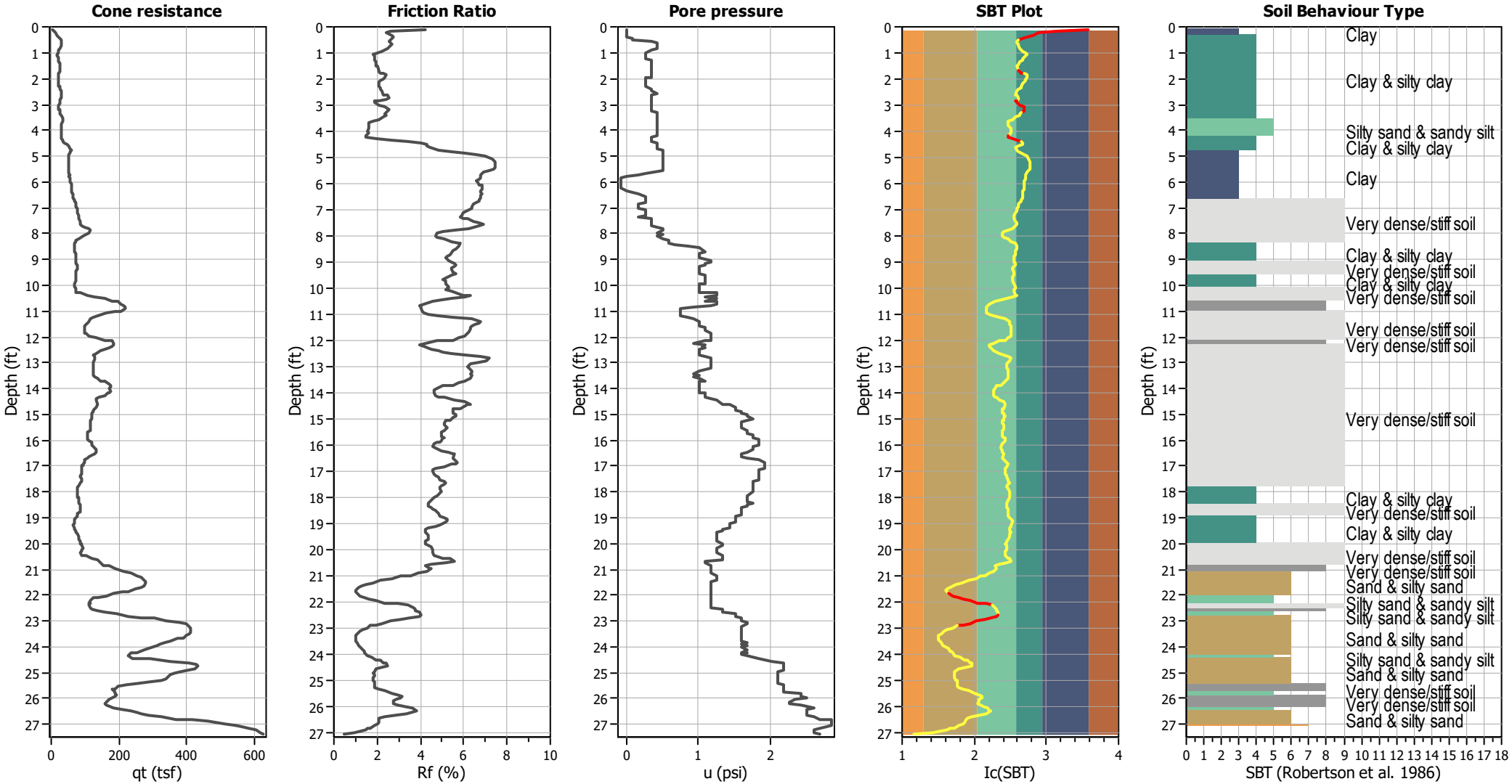






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



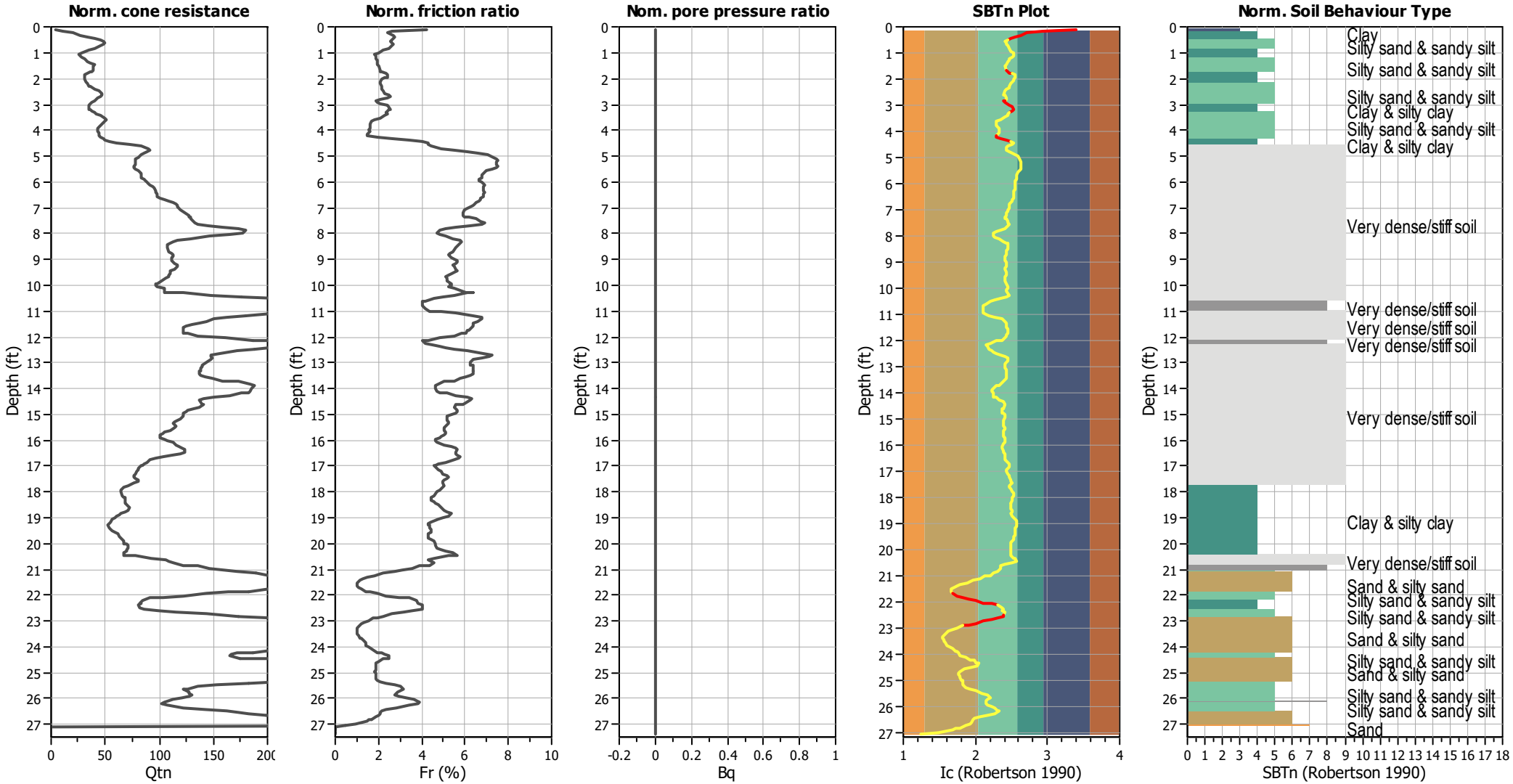
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



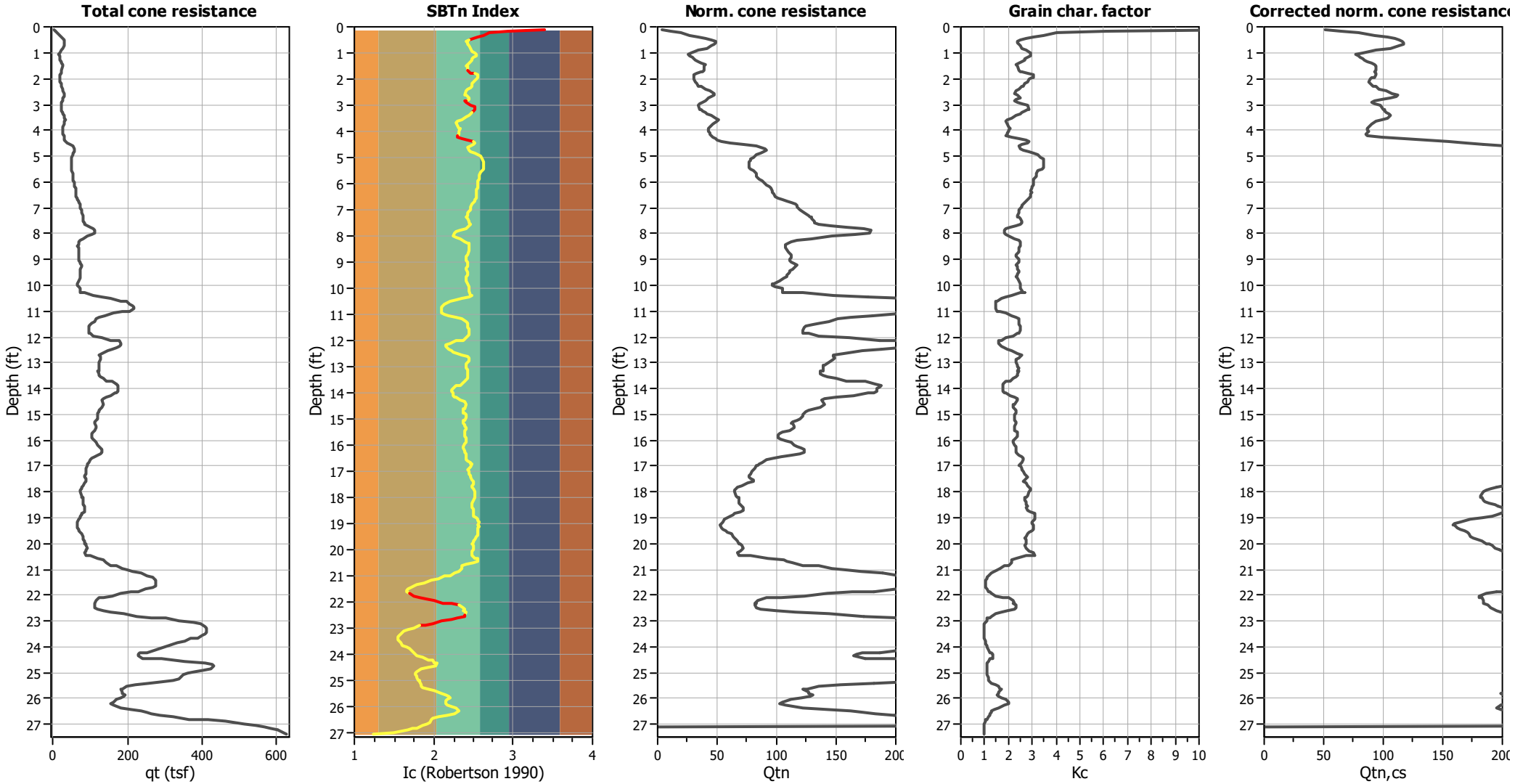
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

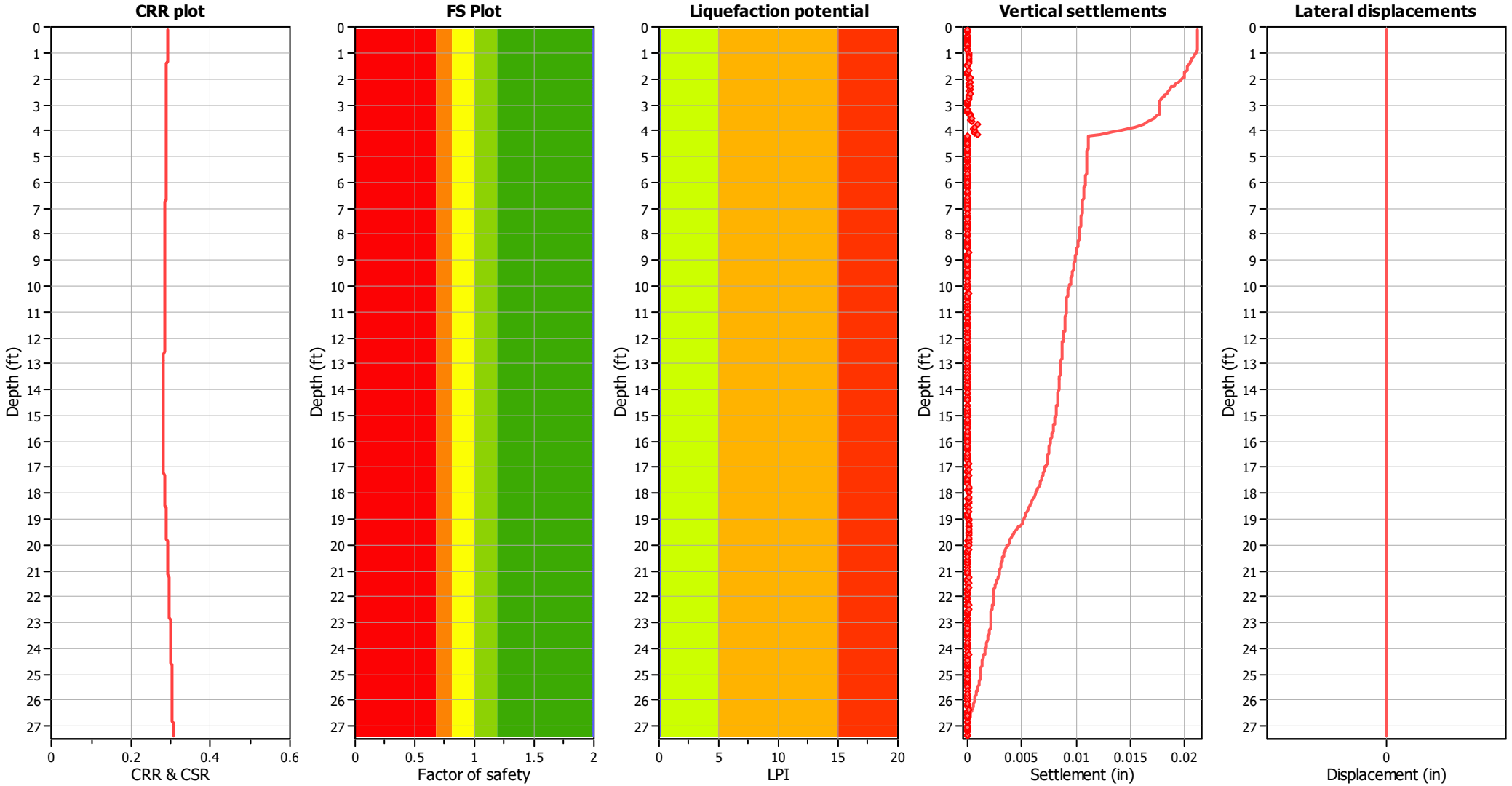
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.10	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
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Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

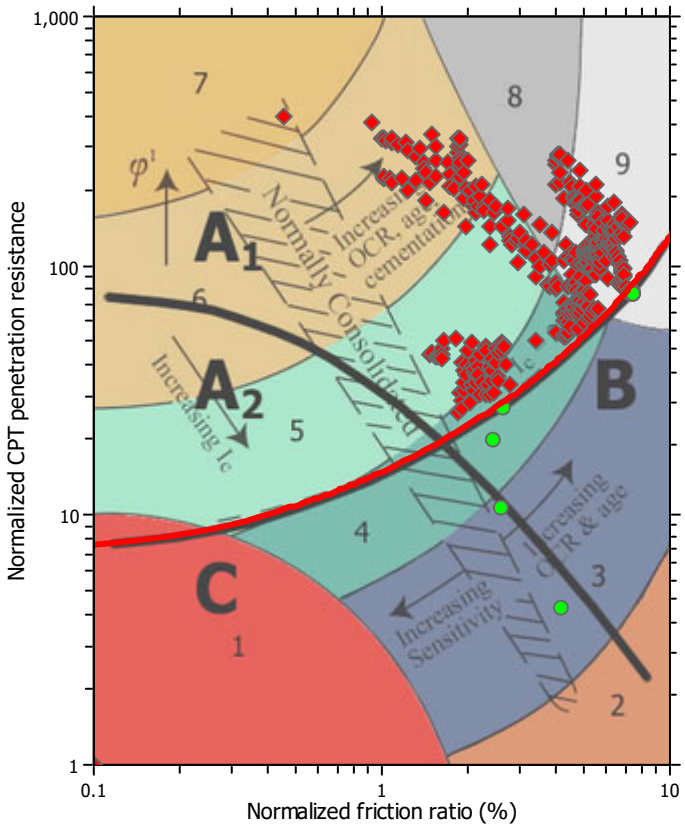
F.S. color scheme

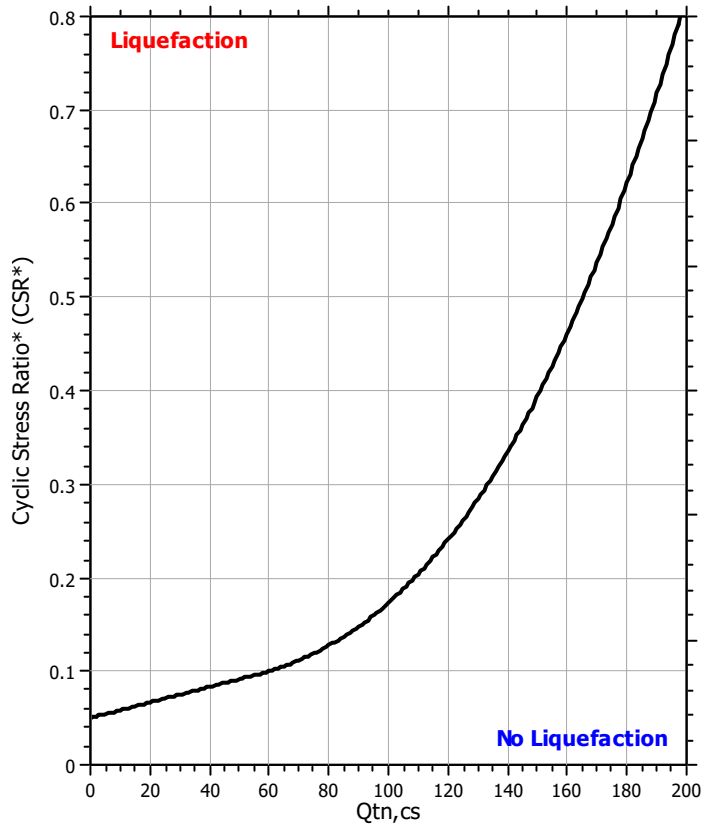
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

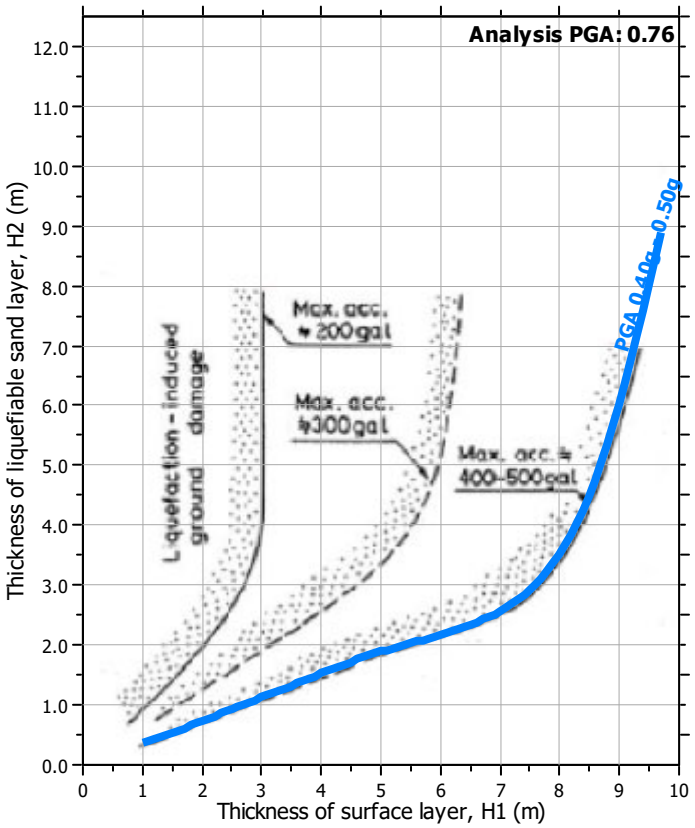
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots







Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
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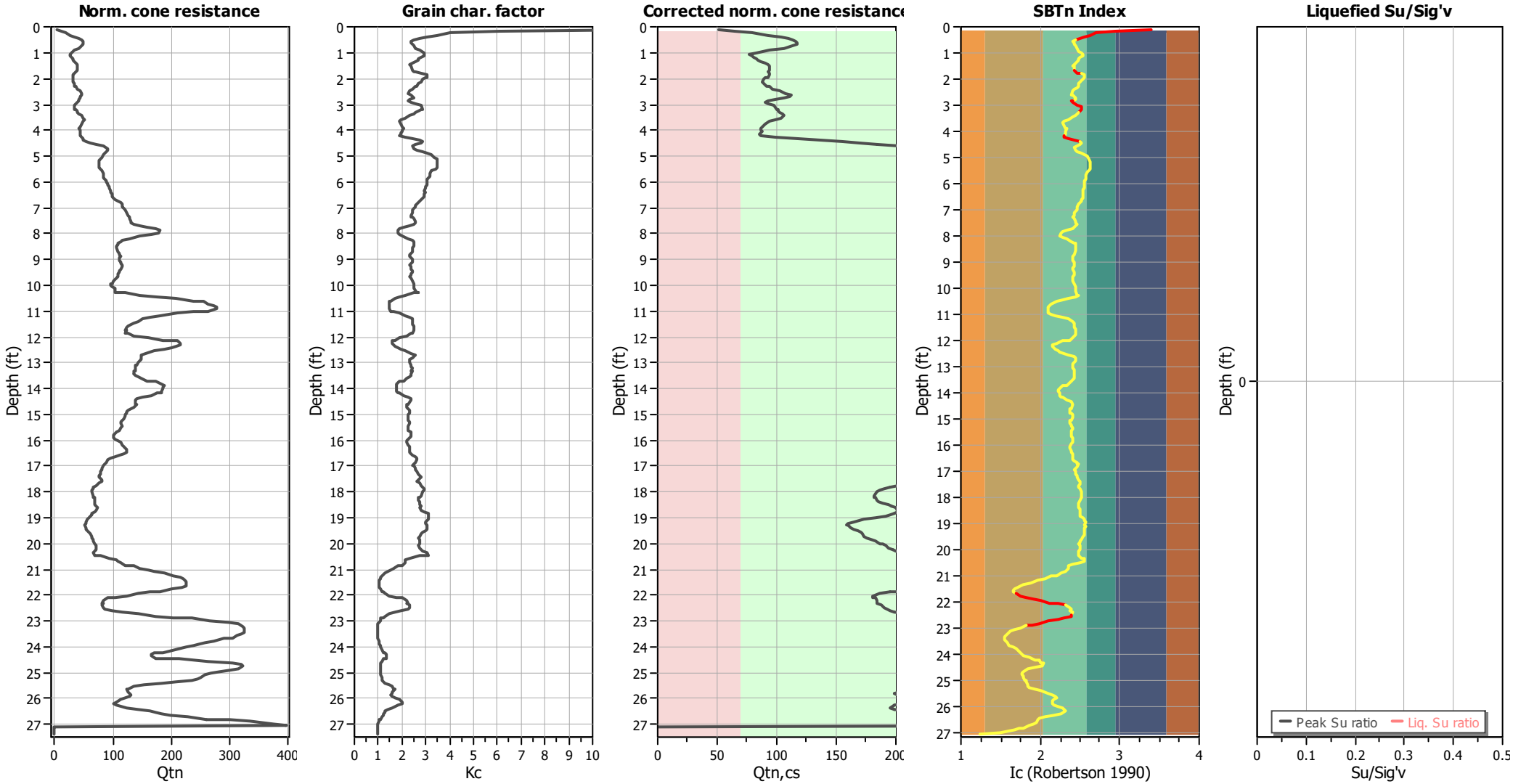
Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	45.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
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Peak ground acceleration:	0.76	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	45.00 ft	Fill height:	N/A	Limit depth:	N/A

APPENDIX F

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

Leighton

APPENDIX F

LEIGHTON CONSULTING, INC.
EARTHWORK AND GRADING GUIDE SPECIFICATIONS

TABLE OF CONTENTS

Section		Appendix F Page
F-1.0	**GENERAL**	**1**
F-1.1	Intent	1
F-1.2	Role of Leighton Consulting, Inc.	1
F-1.3	The Earthwork Contractor	1
F-2.0	**PREPARATION OF AREAS TO BE FILLED**	**2**
F-2.1	Clearing and Grubbing	2
F-2.2	Processing	3
F-2.3	Overexcavation	3
F-2.4	Benching	3
F-2.5	Evaluation/Acceptance of Fill Areas	3
F-3.0	**FILL MATERIAL**	**4**
F-3.1	Fill Quality	4
F-3.2	Oversize	4
F-3.3	Import	4
F-4.0	**FILL PLACEMENT AND COMPACTION**	**4**
F-4.1	Fill Layers	4
F-4.2	Fill Moisture Conditioning	5
F-4.3	Compaction of Fill	5
F-4.4	Compaction of Fill Slopes	5
F-4.5	Compaction Testing	5
F-4.6	Compaction Test Locations	5
F-5.0	**EXCAVATION**	**6**
F-6.0	**TRENCH BACKFILLS**	**6**
F-6.1	Safety	6
F-6.2	Bedding and Backfill	6
F-6.3	Lift Thickness	7

Leighton

F-1.0 GENERAL

F-1.1 Intent

These Earthwork and Grading Guide Specifications are for grading and earthwork shown on the current, approved grading plan(s) and/or indicated in the Leighton Consulting, Inc. geotechnical report(s). These Guide Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the project-specific recommendations in the geotechnical report shall supersede these Guide Specifications. Leighton Consulting, Inc. shall provide geotechnical observation and testing during earthwork and grading. Based on these observations and tests, Leighton Consulting, Inc. may provide new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

F-1.2 Role of Leighton Consulting, Inc.

Prior to commencement of earthwork and grading, Leighton Consulting, Inc. shall meet with the earthwork contractor to review the earthwork contractor's work plan, to schedule sufficient personnel to perform the appropriate level of observation, mapping and compaction testing. During earthwork and grading, Leighton Consulting, Inc. shall observe, map, and document subsurface exposures to verify geotechnical design assumptions. If observed conditions are found to be significantly different than the interpreted assumptions during the design phase, Leighton Consulting, Inc. shall inform the owner, recommend appropriate changes in design to accommodate these observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include (1) natural ground after clearing to receiving fill but before fill is placed, (2) bottoms of all "remedial removal" areas, (3) all key bottoms, and (4) benches made on sloping ground to receive fill.

Leighton Consulting, Inc. shall observe moisture-conditioning and processing of the subgrade and fill materials, and perform relative compaction testing of fill to determine the attained relative compaction. Leighton Consulting, Inc. shall provide *Daily Field Reports* to the owner and the Contractor on a routine and frequent basis.

F-1.3 The Earthwork Contractor

The earthwork contractor (Contractor) shall be qualified, experienced and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Guide

Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing grading and backfilling in accordance with the current, approved plans and specifications.

The Contractor shall inform the owner and Leighton Consulting, Inc. of changes in work schedules at least one working day in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that Leighton Consulting, Inc. is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish earthwork and grading in accordance with the applicable grading codes and agency ordinances, these Guide Specifications, and recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of Leighton Consulting, Inc., unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, adverse weather, etc., are resulting in a quality of work less than required in these specifications, Leighton Consulting, Inc. shall reject the work and may recommend to the owner that earthwork and grading be stopped until unsatisfactory condition(s) are rectified.

F-2.0 PREPARATION OF AREAS TO BE FILLED

F-2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies and Leighton Consulting, Inc.. Care should be taken not to encroach upon or otherwise damage native and/or historic trees designated by the Owner or appropriate agencies to remain. Pavements, flatwork or other construction should not extend under the “drip line” of designated trees to remain.

Leighton Consulting, Inc. shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 3 percent of organic materials (by dry weight: ASTM D 2974). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area. As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that

are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

F-2.2 Processing

Existing ground that has been declared satisfactory for support of fill, by Leighton Consulting, Inc., shall be scarified to a minimum depth of 6 inches (15 cm). Existing ground that is not satisfactory shall be over-excavated as specified in the following Section F-2.3. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

F-2.3 Overexcavation

In addition to removals and over-excavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be over-excavated to competent ground as evaluated by Leighton Consulting, Inc. during grading. All undocumented fill soils under proposed structure footprints should be excavated

F-2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), (>20 percent grade) the ground shall be stepped or benched. The lowest bench or key shall be a minimum of 15 feet (4.5 m) wide and at least 2 feet (0.6 m) deep, into competent material as evaluated by Leighton Consulting, Inc.. Other benches shall be excavated a minimum height of 4 feet (1.2 m) into competent material or as otherwise recommended by Leighton Consulting, Inc.. Fill placed on ground sloping flatter than 5:1 (horizontal to vertical units), (<20 percent grade) shall also be benched or otherwise over-excavated to provide a flat subgrade for the fill.

F-2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by Leighton Consulting, Inc. as suitable to receive fill. The Contractor shall obtain a written acceptance (*Daily Field Report*) from Leighton Consulting, Inc. prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys and benches.

F-3.0 FILL MATERIAL

F-3.1 Fill Quality

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by Leighton Consulting, Inc. prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to Leighton Consulting, Inc. or mixed with other soils to achieve satisfactory fill material.

F-3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 6 inches (15 cm), shall not be buried or placed in fill unless location, materials and placement methods are specifically accepted by Leighton Consulting, Inc.. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 feet (3 m) measured vertically from finish grade, or within 2 feet (0.61 m) of future utilities or underground construction.

F-3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of Section F-3.1, and be free of hazardous materials ("contaminants") and rock larger than 3-inches (8 cm) in largest dimension. All import soils shall have an Expansion Index (EI) of 20 or less and a sulfate content no greater than (≤) 500 parts-per-million (ppm). A representative sample of a potential import source shall be given to Leighton Consulting, Inc. at least four full working days before importing begins, so that suitability of this import material can be determined and appropriate tests performed.

F-4.0 FILL PLACEMENT AND COMPACTION

F-4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill, as described in Section F-2.0, above, in near-horizontal layers not exceeding 8 inches (20 cm) in loose thickness. Leighton Consulting, Inc. may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers, and only if the building officials with the appropriate jurisdiction approve. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

F-4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM) Test Method D 1557.

F-4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, each layer shall be uniformly compacted to not-less-than (≥) 90 percent of the maximum dry density as determined by ASTM Test Method D 1557. In some cases, structural fill may be specified (see project-specific geotechnical report) to be uniformly compacted to at-least (≥) 95 percent of the ASTM D 1557 modified Proctor laboratory maximum dry density. For fills thicker than (>) 15 feet (4.5 m), the portion of fill deeper than 15 feet below proposed finish grade shall be compacted to 95 percent of the ASTM D 1557 laboratory maximum density. Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

F-4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by back rolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet (1 to 1.2 m) in fill elevation, or by other methods producing satisfactory results acceptable to Leighton Consulting, Inc.. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of the ASTM D 1557 laboratory maximum density.

F-4.5 Compaction Testing

Field-tests for moisture content and relative compaction of the fill soils shall be performed by Leighton Consulting, Inc.. Location and frequency of tests shall be at our field representative(s) discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

F-4.6 Compaction Test Locations

Leighton Consulting, Inc. shall document the approximate elevation and horizontal coordinates of each density test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that Leighton

Consulting, Inc. can determine the test locations with sufficient accuracy. Adequate grade stakes shall be provided.

F-5.0 EXCAVATION

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by Leighton Consulting, Inc. during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by Leighton Consulting, Inc. based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, then observed and reviewed by Leighton Consulting, Inc. prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by Leighton Consulting, Inc..

F-6.0 TRENCH BACKFILLS

F-6.1 Safety

The Contractor shall follow all OSHA and Cal/OSHA requirements for safety of trench excavations. Work should be performed in accordance with Article 6 of the *California Construction Safety Orders*, 2009 Edition or more current (see also: http://www.dir.ca.gov/title8/sb4a6.html).

F-6.2 Bedding and Backfill

All utility trench bedding and backfill shall be performed in accordance with applicable provisions of the 2018 Edition of the *Standard Specifications for Public Works Construction* (Green Book). Bedding material shall have a Sand Equivalent greater than 30 (SE>30). Bedding shall be placed to 1-foot (0.3 m) over the top of the conduit, and densified by jetting in areas of granular soils, if allowed by the permitting agency. Otherwise, the pipe-bedding zone should be backfilled with Controlled Low Strength Material (CLSM) consisting of at least one sack of Portland cement per cubic-yard of sand, and conforming to Section 201-6 of the 2018 Edition of the *Standard Specifications for Public Works Construction* (Green Book). Backfill over the bedding zone shall be placed and densified mechanically to a minimum of 90 percent of relative compaction (ASTM D 1557) from 1 foot (0.3 m) above the top of the conduit to the surface. Backfill above the pipe zone shall **not** be jetted. Jetting of the bedding around the conduits shall be observed by Leighton Consulting, Inc. and backfill above the pipe zone (bedding) shall be observed and tested by Leighton Consulting, Inc..

F-6.3 Lift Thickness

Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to Leighton Consulting, Inc. that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method, and only if the building officials with the appropriate jurisdiction approve.

APPROXIMATE LIMITS OF MUDFLOW MAPPING, LEIGHTON CONSULTING, INC. PROJECT MEMORANDUM JANUARY 11, 2019

APPROXIMATE LOCATION OF ESCONDIDO THRUST FAULT IN FER 229. YOUNGEST DOCUMENTED DISPLACEMENT OF 124 THOUSAND YEARS BEFORE PRESENT (YBP) NOT ACTIVE BY STATE OF CALIFORNIA DEFINITION DASHED WHERE APPROXIMATE. QUERIED WHERE UNCERTAIN.

APPROXIMATE LOCATION OF INFERRED FAULT SEPARATING MONTEREY SHALE FROM UPPER TOPANGA FORMATION BY DIBBLEE (1992). MAPPING BY CAMPELL (1992) AT THIS LOCATION OBSERVED A CLEAR DEPOSITIONAL CONTACT BETWEEN MONTEREY SHALE AND TRANCAS FROMATION (TOPANGA EQUIVALENT). NO FAULT SCENARIO DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN

Approximate Project Boundary per This Report

Zone of Soil Creep. Cracks Parallel to Top of Slope in Asphalt paving. Some Asphalt Paving Undermined Due to Erosion.

Existing 4-inch diameter, Monitoring Well-MW-2 GW measured at 58.65' below top of pipe. Total depth 77.40'. Well construction unknown

Building C

Qyd

Tm

LB-2 T.D.17' Tm@1-17'

TP-3 T.D.24" Af@ 0-24" IR>10 in/hr

TP-1 T.D.21" Af@ 0-21" IR=2.1 in/hr

TP-2 T.D.22" Af@ 0-22" IR=5.4 in/hr

LHCT-1 T.D.26.5' Qyd@1-22' Tm@22-26.5'

LB-1 T.D.21.5' Qyd@1-21.5'

LHCT-2 T.D.26.5' Qyd@1-17.5' Tm@17.5-26.5'

B-2C T.D.3.75'

B-3 T.D.25'

B-2B T.D.3.5'

B-1 T.D.33'

B-4 T.D.25'

B-2A T.D.5.5'

B-5 T.D.50'

B-6 T.D.25'

B-7 T.D.25.5'

LIT-4 T.D.11.5' Qyd 0-5' Tm@5-11.5'

LIT-3 T.D.10.33' Qyd 0-3.3' Tm@3.3-10.33'

LB-3 T.D.13.5' @5' Tm

LB-2 T.D.36.5' Afu 0-6' Qyd@6-31' Tm@31'

B-3 T.D.51.5' Qyd@1-10' Tm@10' G.W.@48.5'

LB-1 T.D.38.5' Afu 0-5' Qyd@5'

B-4 T.D.31.5' Qyd@1-20' Tm@20' No G.W.

B-2 T.D.31.5' Qyd@1-15' Tm@15' No G.W.

LIT-2 T.D.11.33' Qyd 0-2.5' Tm@2.5-11.33'

LBA-1 T.D.81' Qyd 0-9' Tm@9'

B-1 T.D.5' Qyd@0' No G.W.

LIT-1 T.D.11.33' Qyd 0-5' Tm@5-11.33'

2020-LB-3 T.D.20' Refusal Afu 0-5' Qyd@5' No G.W.

CPT-4 T.D.47.7' Refusal

2020-LB-2 T.D.21.5' Afu 0-6.5' Qyd@6.5' No G.W.

CPT-5 T.D.52.8'

2020-LB-4 T.D.31.5' Afu 0-2' Qyd@2' No G.W.

2020-LB-1 T.D.31.5' Afu 0-5' Qyd@5' No G.W.

2020-LB-5 T.D.27' Refusal Afu 0-1' Qyd@1' No G.W.

CPT-3 T.D.28' Refusal

CPT-1 T.D.24.6' Refusal

2020-LP-1 T.D.15' Afu 0-1' (10-15') Qyd@1' No G.W.

CPT-2 T.D.30.1' Refusal

2020-LB-7 T.D.31.5' Afu 0-1.5' Qyd@1.5' No G.W.

2020-LB-6 T.D.46.5' Afu 0-2' Qyd@2-45' Tm@45' No G.W.

CPT-6 T.D.27.4' Refusal

LEGEND

Afu	ARTIFICIAL FILL, UNDOCUMENTED
Qyd	MARINE TERRACE DEPOSITS
Tm	TERTIARY MONTEREY SHALE: SILTSTONE/CLAYSTONE
65W 42	STRIKE AND DIP OF BEDDING (LEIGHTON, 2009)
2020-LB-7	APPROXIMATE LOCATION OF HOLLOW STEM AUGER BORINGS SHOWING TOAL DEPTH (T.D.) AND THICKNESS OF UNDOCUMENTED ARTIFICIAL FILL (Afu) OVER NATIVE MARINE TERRACE (Qyd) OVERLYING BEDROCK OF THE MONTEREY FORMATION (Tm)
CPT-6	APPROXIMATE LOCATION OF CONE PENETROMETER TEST (CPT) LOCATIONS SHOWING TOTAL DEPTH (T.D.) IN FEET BELOW GROUND SURFACE. REFUSAL NOTED WHERE APPLICABLE.
LP-1	APPROXIMATE LOCATION OF INFILTRATION TEST WELL SHOWING TOTAL DEPTH (T.D.) IN FEET BELOW GROUND SURFACE TEST DEPTH NOTED IN PARANTHESES

B-7 T.D.25.5'	HOLLOW STEM AUGER BORING (ASSOCIATED SOILS ENGINEERS, INC., 1999) SHOWING TOTAL DEPTH (T.D.) IN FEET
B-1 T.D.33'	BUCKET AUGER BORING (ASSOCIATED SOILS ENGINEERS, INC., 1999) SHOWING TOTAL DEPTH (T.D.) IN FEET
LB-2 T.D.17' Tm@1-17'	HOLLOW STEM AUGER BORING (LEIGHTON, 2009b), [ADDENDUM 1] SHOWING TOTAL DEPTH (T.D.) AND DEPTH TO EARTH UNITS IN FEET BELOW GROUND SURFACE
LIT-4 T.D.11.5' Qdy@0-5' Tm@5-11.5'	HOLLOW STEM AUGER BORING (LEIGHTON, 2009c), [ADDENDUM 2] SHOWING TOTAL DEPTH (T.D.) AND DEPTH TO EARTH UNITS IN FEET BELOW GROUND SURFACE
LHCT-2 T.D.26.5' Qdy@1-17.5' Tm@17.5-26.5'	HOLLOW STEM AUGER BORING (LEIGHTON, 2009d), [ADDENDUM 3] SHOWING TOTAL DEPTH (T.D.) AND DEPTH TO EARTH UNITS IN FEET BELOW GROUND SURFACE
TP-3 T.D.24" Af@0-24" IR>10 in/hr	TEST PIT LOCATION (LEIGHTON, 2010) SHOWING TOTAL DEPTH (T.D.) AND DEPTH TO EARTH UNITS IN FEET BELOW GROUND SURFACE, AND INFILLTRATION RATE (IR) IN INCHES PER HOUR (in./hr.)

LB-3 T.D.13.5' @5' Tm	HOLLOW STEM AUGER BORING (LEIGHTON, 2016b) SHOWING TOTAL DEPTH (T.D.) AND DEPTH TO EARTH UNITS IN FEET BELOW GROUND SURFACE
LBA-1 T.D.81' Qyd 0-9' Tm@9'	BUCKET AUGER CORE BORING (LEIGHTON, 2016a) SHOWING TOTAL DEPTH (T.D.) AND DEPTH TO EARTH UNITS IN FEET BELOW GROUND SURFACE
B-4 T.D.31.5' Qyd@1-20' Tm@20' No G.W.	HOLLOW STEM AUGER BORING (LEIGHTON, 2009a) SHOWING TOTAL DEPTH (T.D.) AND DEPTH TO EARTH UNITS IN FEET BELOW GROUND SURFACE
G.W.	GROUNDWATER AT TIME OF DRILLING
	GEOLOGIC CONTACT, DASHED WHERE APPROXIMATE
	INDICATES DIRECTION OF SOIL CREEP DOWN SLOPE
B B'	GEOLOGIC CROSS SECTION. SEE PLATE 2

SCALE 0 50 100 FEET

PLATE 1

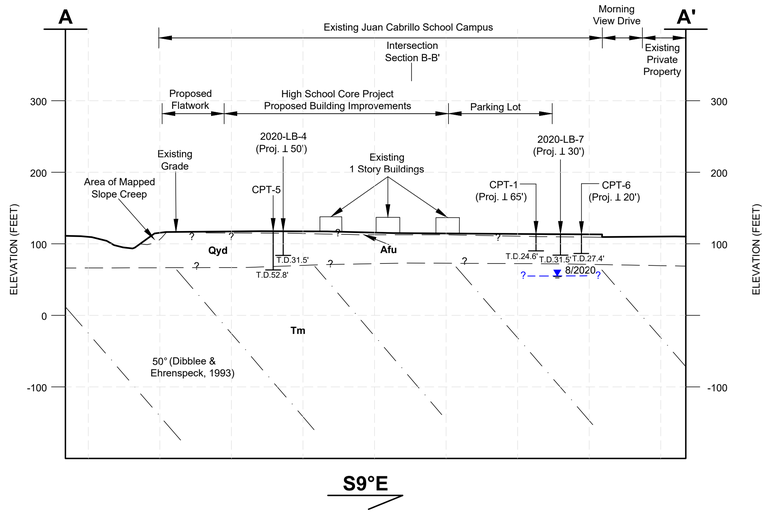
Leighton

GEOTECHNICAL MAP

Malibu Middle/High School Building Proposed
Phase I New High School Core Project
30215 Morning View Drive, Malibu, California

Proj: 11382.016	Eng/Geol: CCK/JR
Scale: 1"=100'	Date: January 2021

Drafted By: BQT | Checked By: BQT | I:\DRAFTING\11382\01ICAD\2020-06-10\11382-01E_P01_GM_2021-01-15.DWG [01-15-21 2:36:47PM] Plotted by: bbarr



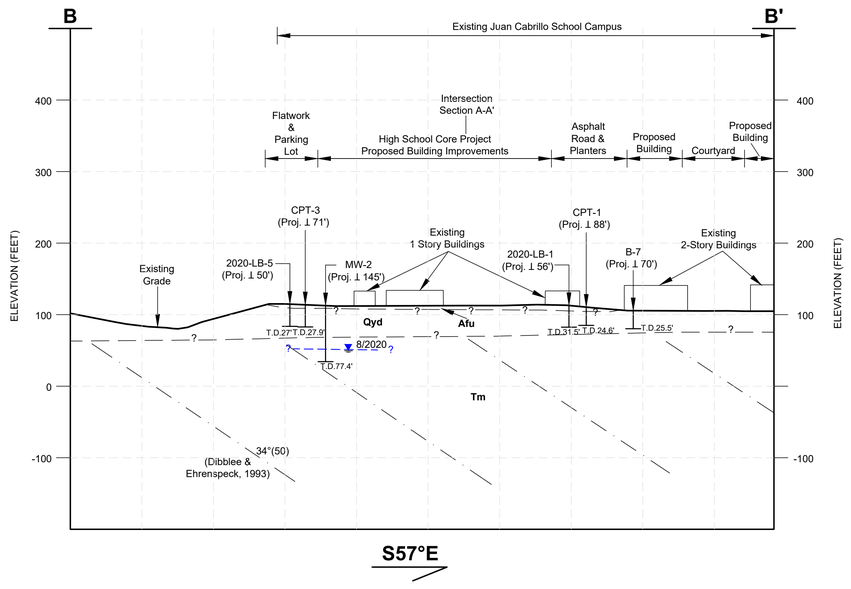


PLATE 2

Leighton

GEOTECHNICAL CROSS SECTIONS A-A' AND B-B'

Malibu Middle/High School Building Proposed
Phase I New High School Core Project
30215 Morning View Drive, Malibu, California

Proj: 11382.016	Eng/Geol: CCK/JR
Scale: 1"=100'	Date: November 2020

Drafted By: BQT | Checked By: BQT | C:\DRAFTING\11382\016\ACAD\2020-08-10\11382-016_PS2_CS_2020-11-11.DWG (11-11-20 10:54:37AM) Plotted by: bhan

Appendix J Hydrology and Water Quality Reports

Appendices

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DRAFT

SMMUSD Malibu HS
ESHA and Phase 1 Hydrology & Hydraulics Report

161-20008

09/01/21

Prepared for:
NAC Architecture
837 North Spring Street 3rd Floor
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555 South Flower Street, Suite 4300
Los Angeles, CA 90071

Project No. 1NAC010700

TABLE OF CONTENTS

1.0 Introduction 2
1.1 Project Description 2
1.2 Major Drainage Features 2
1.3 Proposed Improvements 2
1.4 Design Criteria 3
2.0 ESHA Hydrology 3
2.1 Overview 3
Methodology 3
2.2 Results 4
3.0 ESHA Existing Hydraulics 4
3.1 Overview 4
3.2 Methodology 5
3.3 Results 5
4.0 Proposed ESHA Hydraulics 5
4.1 Proposed Improvements 5
4.2 Results 5
5.0 Phase I Hydrology and Hydraulics 5
6.0 Phase I Stormwater Quality 5

TABLES

Table 2-1 Hydrologic Input 3
Table 2-2 Subwatershed Results 4
Table 2-3 ESHA Peak Flow Rates 4

APPENDIX A – HYDROLOGY OUTPUT
APPENDIX B – HEC-RAS OUTPUT
APPENDIX C – ESHA EXHIBITS
APPENDIX D – ONSITE DRAINAGE REPORT
APPENDIX E – ONSITE STORMWATER QUALITY REPORT
APPENDIX F – PROPSOED IMPROVEMENT OPTIONS

1.0 Introduction

1.1 Project Description

The Santa Monica-Malibu Unified School District (District) is proposing a redevelopment of the former Juan Cabrillo Elementary School and Malibu High School in Los Angeles County to create a new campus for the Middle and High School with core areas for both facilities as well as shared amenities. The proposed project is under the purview of the District itself, the City of Malibu, and California Coastal Commission (CCC). The project will require a Specific Plan and Local Coastal Plan Amendment through the City as well as an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act. Overall site improvements will be phased.

This report addresses Phase I of the project which includes development along the western portion of the school site. In addition to site improvements, the project includes improvements to the Environmentally Sensitive Habitat Area (ESHA) located along ~1000ft of the western property boundary. The main body of this report is related to the ESHA, with onsite improvements and stormwater quality discussion and report included in the appendices.

1.2 Major Drainage Features

The ESHA is sole major drainage feature within Phase 1 of the proposed project. It conveys stormwater runoff from 305 acres originating in the foothills north of the project site. The typical cross section within Phase I improvement area is 15 feet in depth with side slopes ranging from 1:1 to 2:1 (h:v). Vegetation along the reach include various trees, cacti, shrubs and grasses. A 60” CMP is located at the southern end of the project conveying flow under Morning View Drive. Analysis shows overtopping of the roadway in a dip section during all storm events other than a 2-year.

Maintenance has recently been done to remove nonnative grasses along the reach. Photos of the existing channel conditions are provided on exhibits in Appendix

1.3 Proposed Improvements

Improvements to the ESHA will include removal of non-native plant species, bank stabilization and reseeding, planting of new trees, and erosion repair. Bank stabilization will primarily be achieved by placement of turf reinforcement mats (TRM), erosion control blankets (ECB) or similar feature that will be seeded. Temporary irrigation may be necessary during the 3-year establishment period. Erosion repair will occur along the bank at locations where banks have become vertical and at storm drain outfall locations from the school site. Information regarding proposed TRM and ECB options is provided in Appendix F.

1.4 Design Criteria

Formal design criteria are not established for the ESHA improvements; however, the intent of the project is to remove nonnative species, improve the habitat and stabilize the channel, which is subject to erosion, especially following burns in the contributing watershed.

2.0 ESHA Hydrology

2.1 Overview

The contributing drainage area proving stormwater runoff to the ESHA was delineated using USGS National Elevation Data. A total of 305 acres was determined, originating in undeveloped mountainous areas which comprises roughly one half of the overall watershed area. The other half consists of primarily residential neighborhoods. Slopes range from 4-22% within the contributing drainage area.

Methodology

The project is located within the City of Malibu, in Los Angeles County. The City requires hydrologic calculations to be performed using the County Methodology. Per county standards, the overall watershed was broken into approximately 40-acre watersheds and XPSWMMM used to calculated peak flows. Rainfall, soil types and impervious percentages were obtained from Los Angeles County provided shapefiles. Rainfall values ranged from 6.9 to7.2 inches. Soil types 32 and 38 were present within the drainage area. Impervious values were established as 1% for undeveloped areas and 21% for developed areas based on the LA County Land Use shapefile. Table 2-1 summarizes the hydrologic input. Watershed Maps are provided in Appendix A.

Table 2-1
Hydrologic Input

WS EXHIBIT LABEL	Area (ac)	Flow Path (ft)	Slope	Soil Type	Imp(%)	Rainfall (in)
OS2E	39.43	2135	0.24	32	1	7.2
OS2D	41.77	2250	0.22	32	1	7.1
OS2C	45.72	3671	0.18	32	1	7
OS2B	42.76	3500	0.20	32	1	14
OS2A	32.06	2913	0.14	38	21	6.9
CP1E	35.24	3042	0.11	38	21	6.9
CP1D	5.61	1057	0.04	38	21	6.9
CP1C	1.97	399	0.03	38	1	6.9
CP1B	3.16	612	0.02	38	21	6.9
CP1A	38.50	2787	0.08	38	21	6.9

2.2 Results

A peak flow of 490cfs for the 50-year 4th day storm event was calculated as flowing through the ESHA within the project area. Los Angeles County factors were used to establish the peak flow rates for other storm events based on the 50-year event. Table 2-2 summarizes individual watershed peak discharges for various storm events and Table 2-3 summarizes the total peak flows within the ESHA.

Table 2-2
Sub watershed Results

WS EXHIBIT LABEL	Area (ac)	Tc (min)	Q100 (cfs)	Q50 (cfs)	Q25(cfs)	Q10 (cfs)	Q5 (cfs)	Q2(cfs)
OS2E	39.43	9	115	103	90	73	60	40
OS2D	41.77	9	132	108	95	77	63	42
OS2C	45.72	14	111	91	80	65	53	35
OS2B	42.76	7	101	83	73	59	49	32
OS2A	32.06	13	75	62	54	44	36	24
CP1E	35.24	13	94	77	68	55	45	30
CP1D	5.61	8	19	16	14	11	9	6
CP1C	1.97	5	9	8	7	5	4	3
CP1B	3.16	6	12	10	9	7	6	4
CP1A	38.50	15	77	63	56	45	37	24

Table 2-3
ESHA Peak Flow Rates

Q100 (cfs)	Q50 (cfs)	Q25(cfs)	Q10 (cfs)	Q5 (cfs)	Q2(cfs)
446	398	349	284	232	154

3.0 ESHA Existing Hydraulics

3.1 Overview

HEC-RAS was used to analyzed hydraulics in the ESHA in order to establish water surface elevations and flow velocities for various storm events. Project topographic data was primarily used to cut cross sections within the project limits and was supplemented with USGS NED data as necessary to provide containment along the western bank and cross sections downstream of the 60" CMP cross culvert.

3.2 Methodology

Analyses were performed using a steady state flow simulation for each calculated storm event. The model was run with the subcritical flow regime and a normal depth downstream boundary conditions using the channel slope. Manning's values were set at 0.10 for the channel and 0.25 for the channel overbanks to account for vegetation.

3.3 Results

Result from the RAS model indicated erosive velocities averaging 6fps during the 2-year storm event and 8fps during the 50-year event and average depths of 3ft and 5ft respectively. Note that the analysis assumes well established vegetation and does not account for burning or loss of vegetation that may occur due to maintenance or during different seasons.

4.0 Proposed ESHA Hydraulics

4.1 Proposed Improvements

The existing conditions HEC-RAS model was modified to account for changes in Manning's values due to proposed vegetation changes as a result of the proposed improvements.

4.2 Results

Results from the HEC-RAS model indicate that flows for the design storm event are contained within the channel banks, and do not overtop onto Malibu High School property. Results also show that the existing culvert under Morning View Drive is undersized and overtops during frequent storm events. Upsizing of the culvert should be considered.

5.0 Phase I Hydrology and Hydraulics

Phase I improvements and drainage analyses are provided in Appendix E.

6.0 Phase I Stormwater Quality

Phase I stormwater quality discussion and analyses are provided in Appendix E.

APPENDIX A
HYDROLOGY OUTPUT

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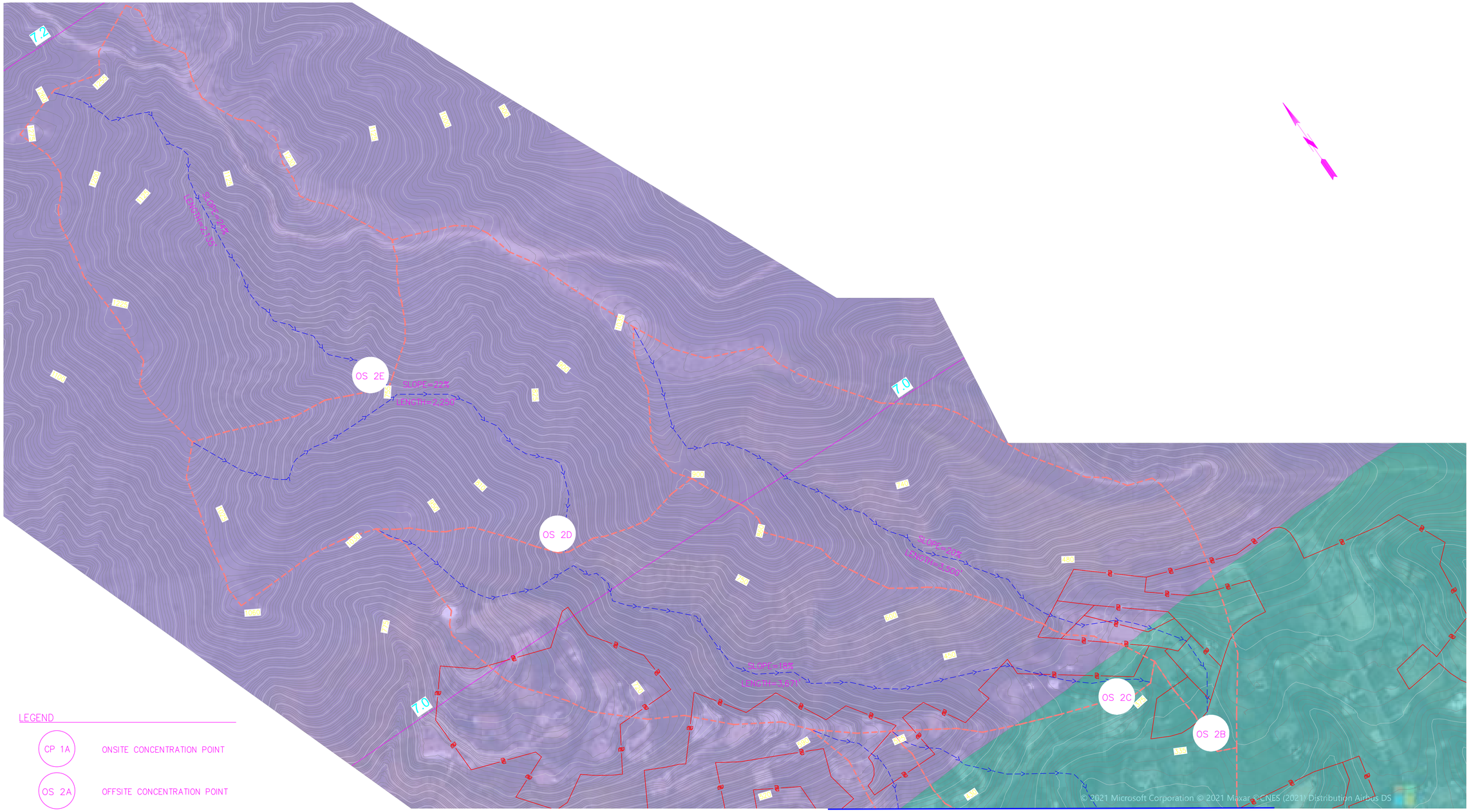

MATCHLINE SEE SHEET 2

LEGEND

- CP 1A — ONSITE CONCENTRATION POINT
- OS 2A — OFFSITE CONCENTRATION POINT
- WATERSHED BOUNDARY
- PARCEL BLOCK BOUNDARIES
- HEC-RAS CROSS SECTIONS
- 50-YEAR 24-HOUR RAINFALL
- SOIL TYPE 32
- SOIL TYPE 38

CADD PROJECT FILE NAME $FILE$$
CHECKER JO
DESIGNER JO/EA
DRAFTER EA

811 Know what's below. Call before you dig.

APPROVED BY: CITY OF DATE
APPROVED BY: CITY OF DATE
APPROVED BY: CITY OF DATE

APPROVED BY MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS
ASSISTANT DEPUTY DIRECTOR DATE
RECOMMENDED BY:
DESIGN TEAM X DATE

DATE	MARK	DESCRIPTION

REVISIONS

PROJECT ENGINEER DATE

LOS ANGELES COUNTY PUBLIC WORKS

MALIBU HIGH SCHOOL

ESHA CHANNEL
PROJECT DESCRIPTION
PROJECT ID NO. RDCXXXXXXX
WATERSHED MAP

DWG XX-X-XXX.X | PD XXXXXXX | SHEET 1 OF 2

30% PRELIMINARY PLANS UNOFFICIAL AND SUBJECT TO CHANGE DATE: $DATE$

PLAN XX

DATE: $DATE TIME: $TIME FILE: $FILE$

MATCHLINE SEE SHEET 1

LEGEND

- CP 1A — ONSITE CONCENTRATION POINT
- OS 2A — OFFSITE CONCENTRATION POINT
- WATERSHED BOUNDARY
- PARCEL BLOCK BOUNDARIES
- HEC-RAS CROSS SECTIONS
- 50-YEAR 24-HOUR RAINFALL
- SOIL TYPE 32
- SOIL TYPE 38

DRAFTER	EA
DESIGNER	JO/EA
CHECKER	JO
CADD PROJECT FILE NAME	$FILE$

811 Know what's below. Call before you dig.

APPROVED BY:
CITY OF ____ DATE

APPROVED BY:
CITY OF ____ DATE

APPROVED BY:
CITY OF ____ DATE

APPROVED BY MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS
ASSISTANT DEPUTY DIRECTOR ____ DATE

RECOMMENDED BY:
DESIGN TEAM X ____ DATE

DATE	MARK	DESCRIPTION

REVISIONS

PROJECT ENGINEER ____ DATE

LOS ANGELES COUNTY PUBLIC WORKS

MALIBU HIGH SCHOOL
ESHA CHANNEL
PROJECT DESCRIPTION
PROJECT ID NO. RDCXXXXXXX
WATERSHED MAP

DWG XX-X-XXX.X | PD XXXXXXX | SHEET 2 OF 2

30% PRELIMINARY PLANS UNOFFICIAL AND SUBJECT TO CHANGE
DATE: $DATE$

PLAN XX

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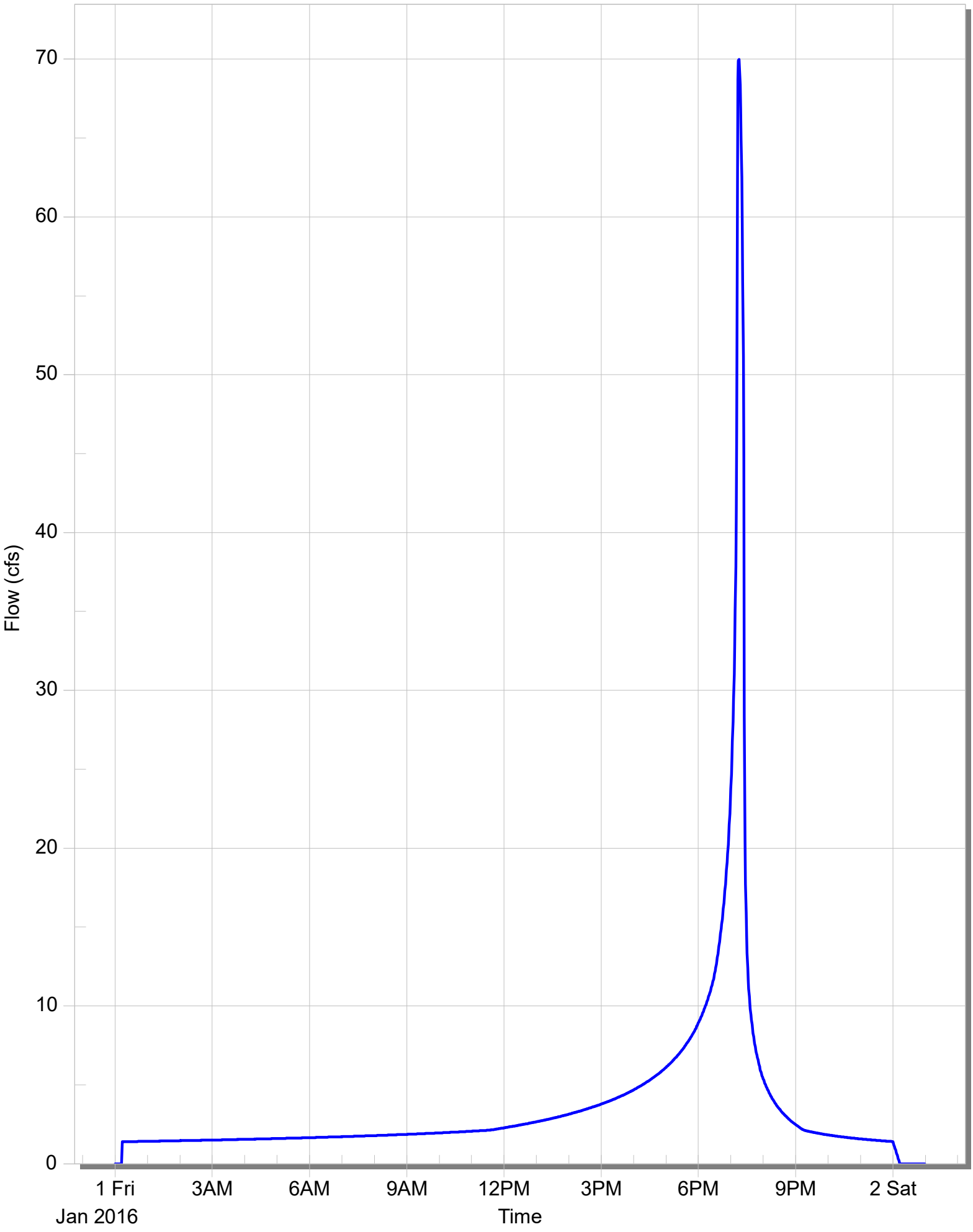

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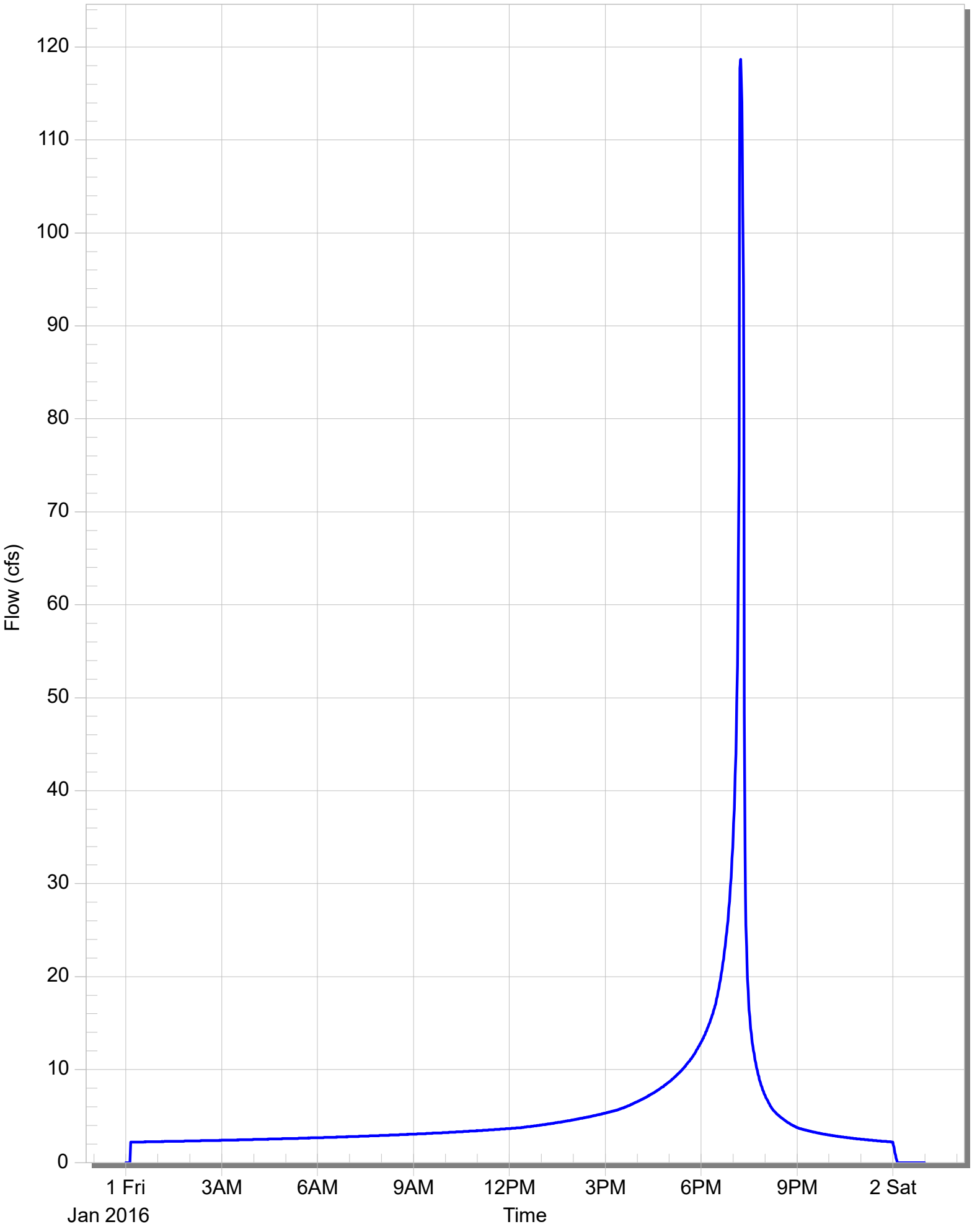

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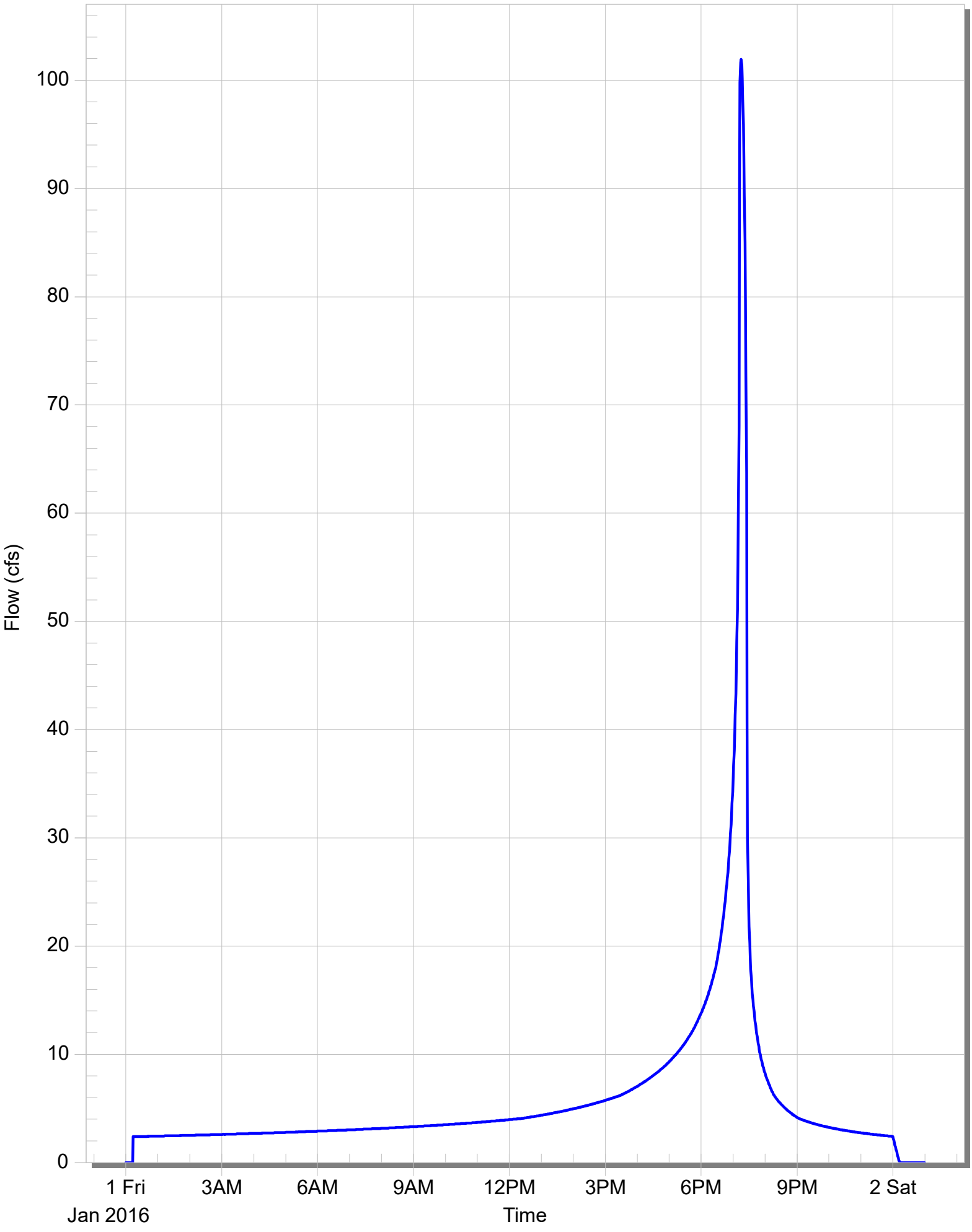

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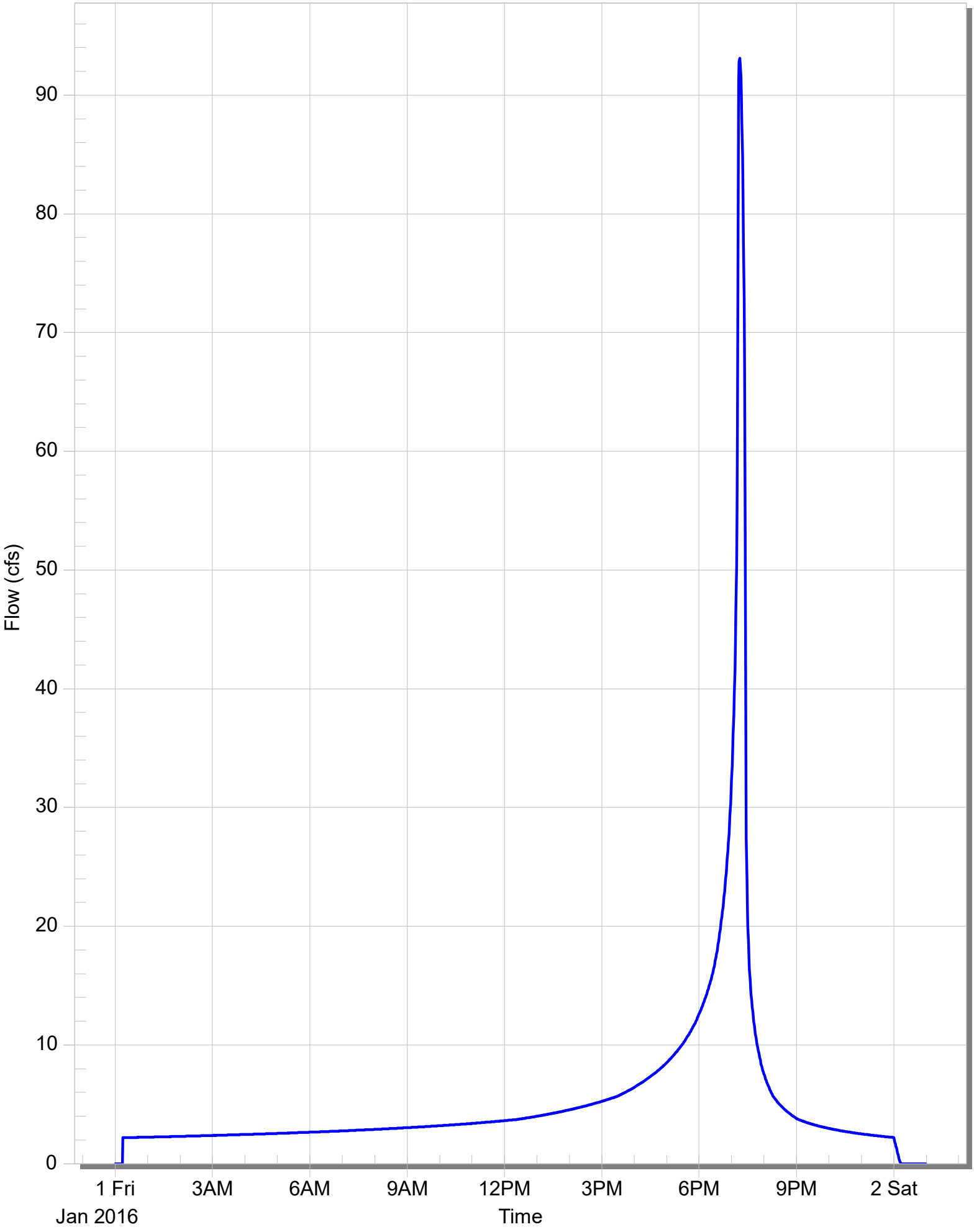

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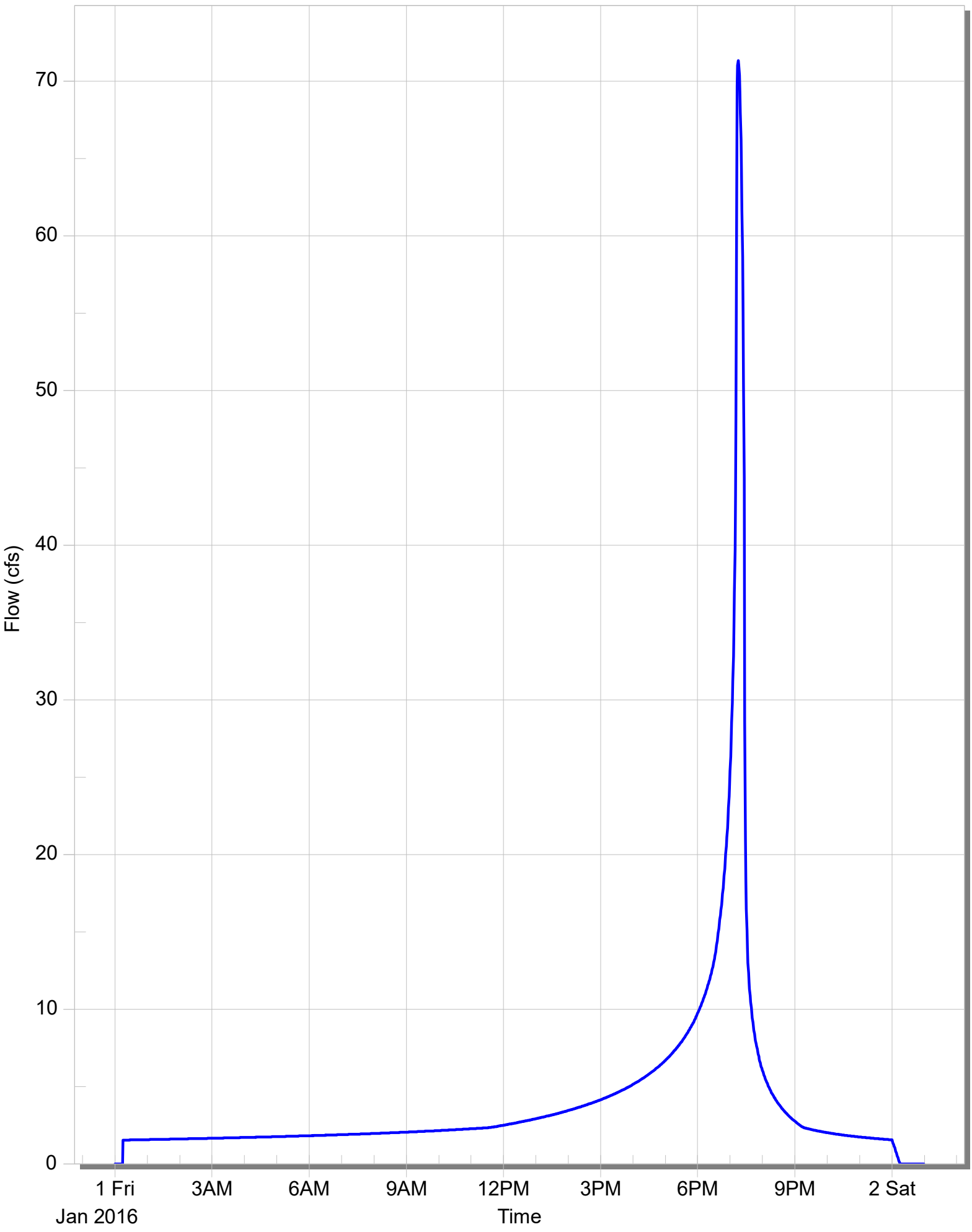

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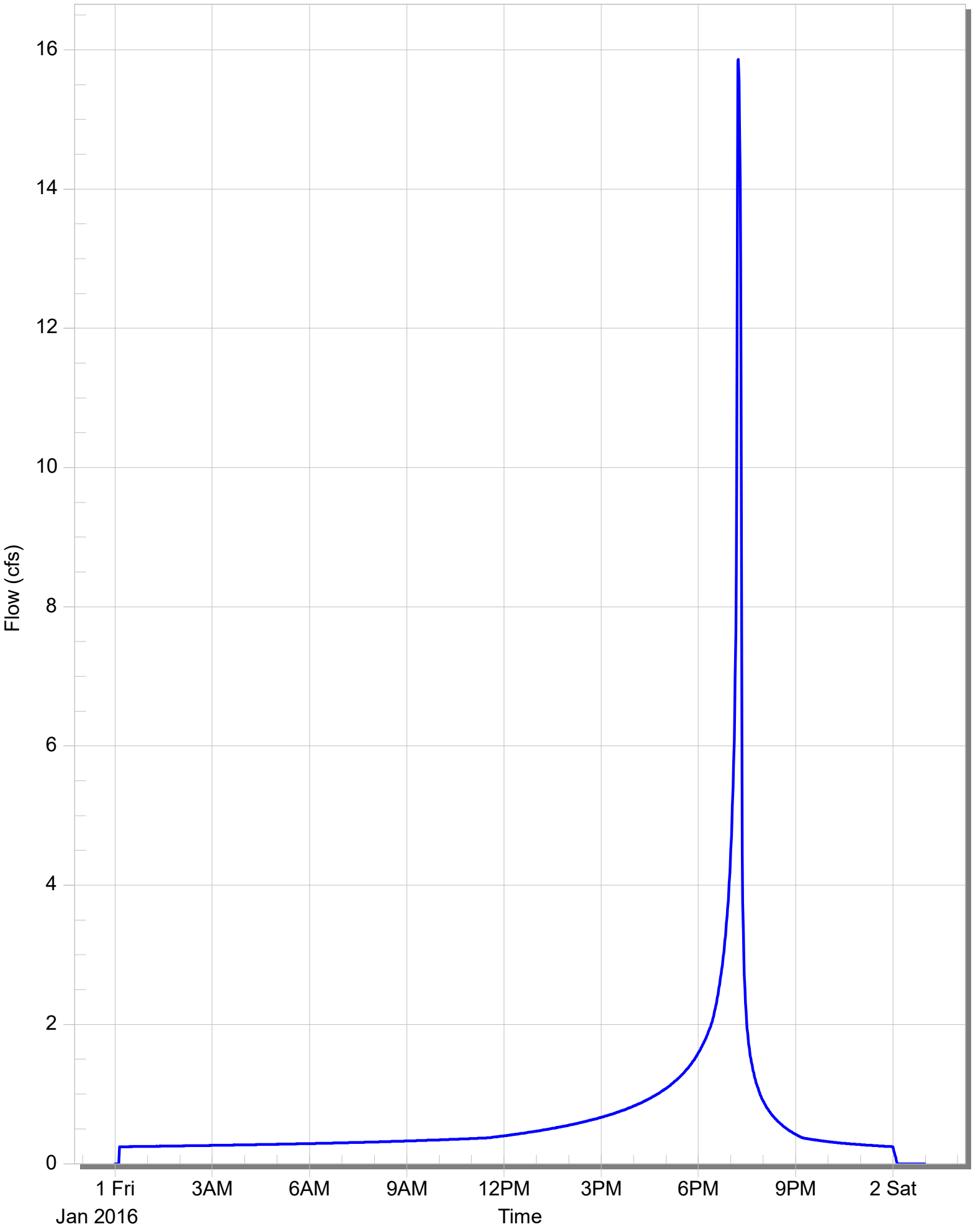

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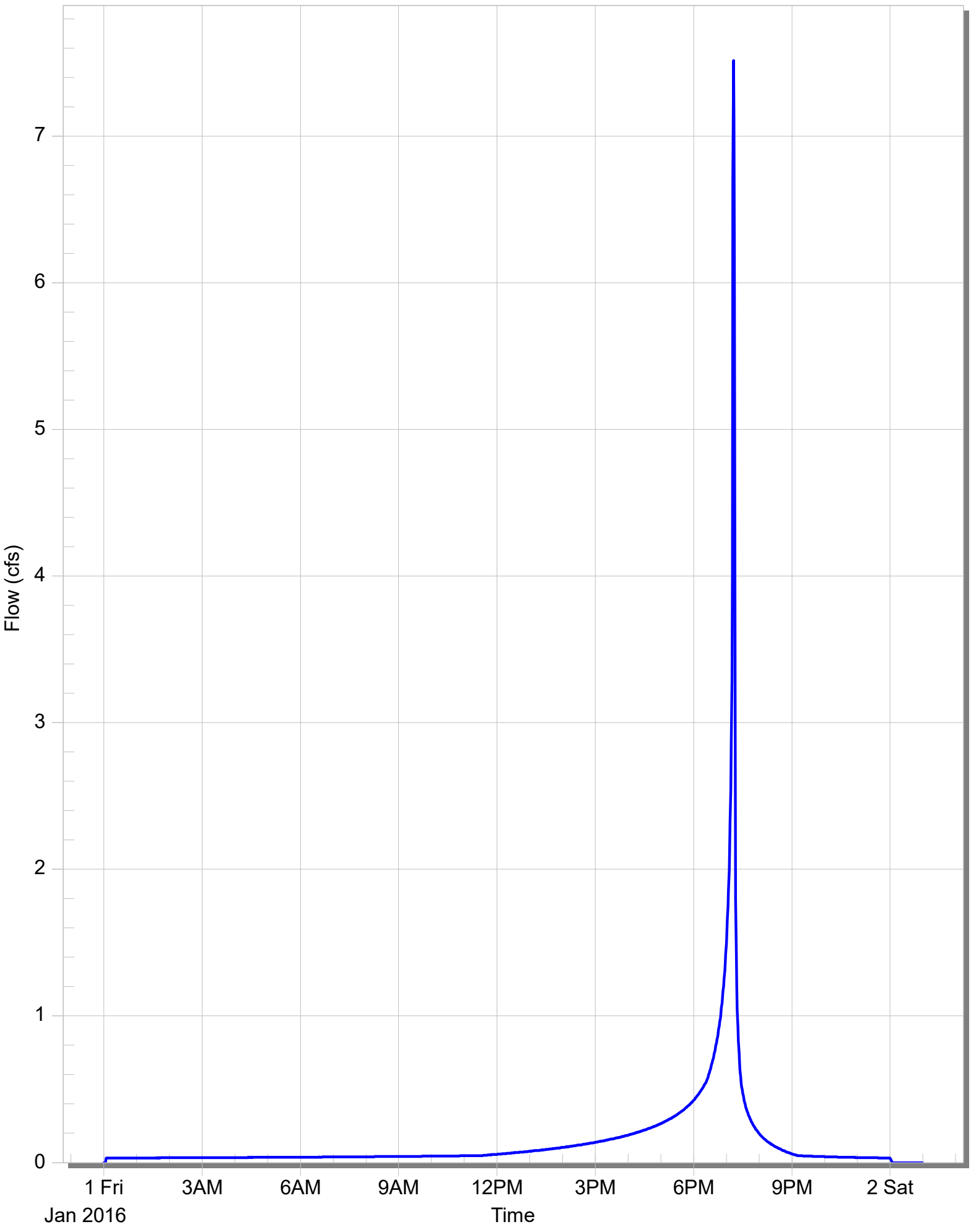

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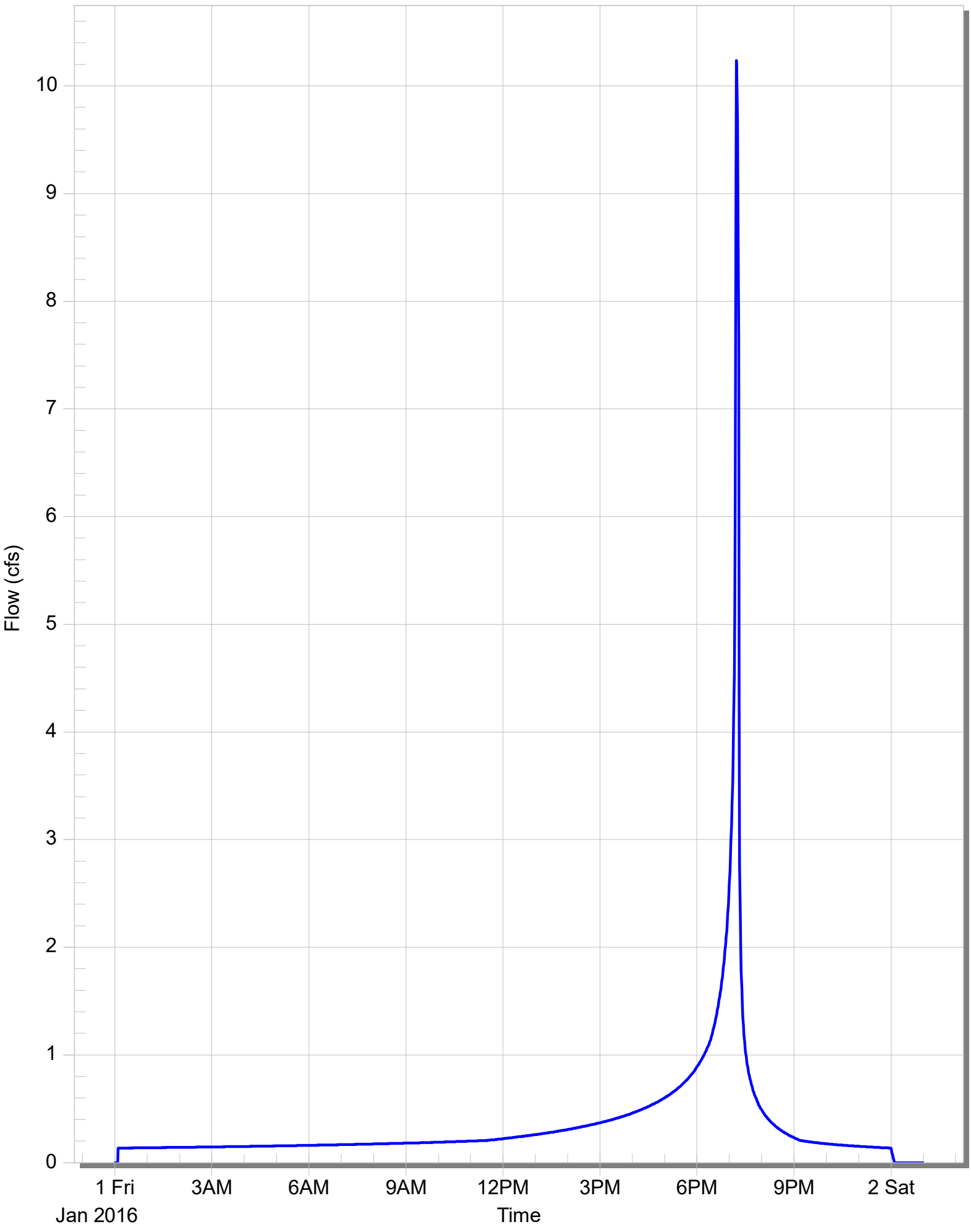

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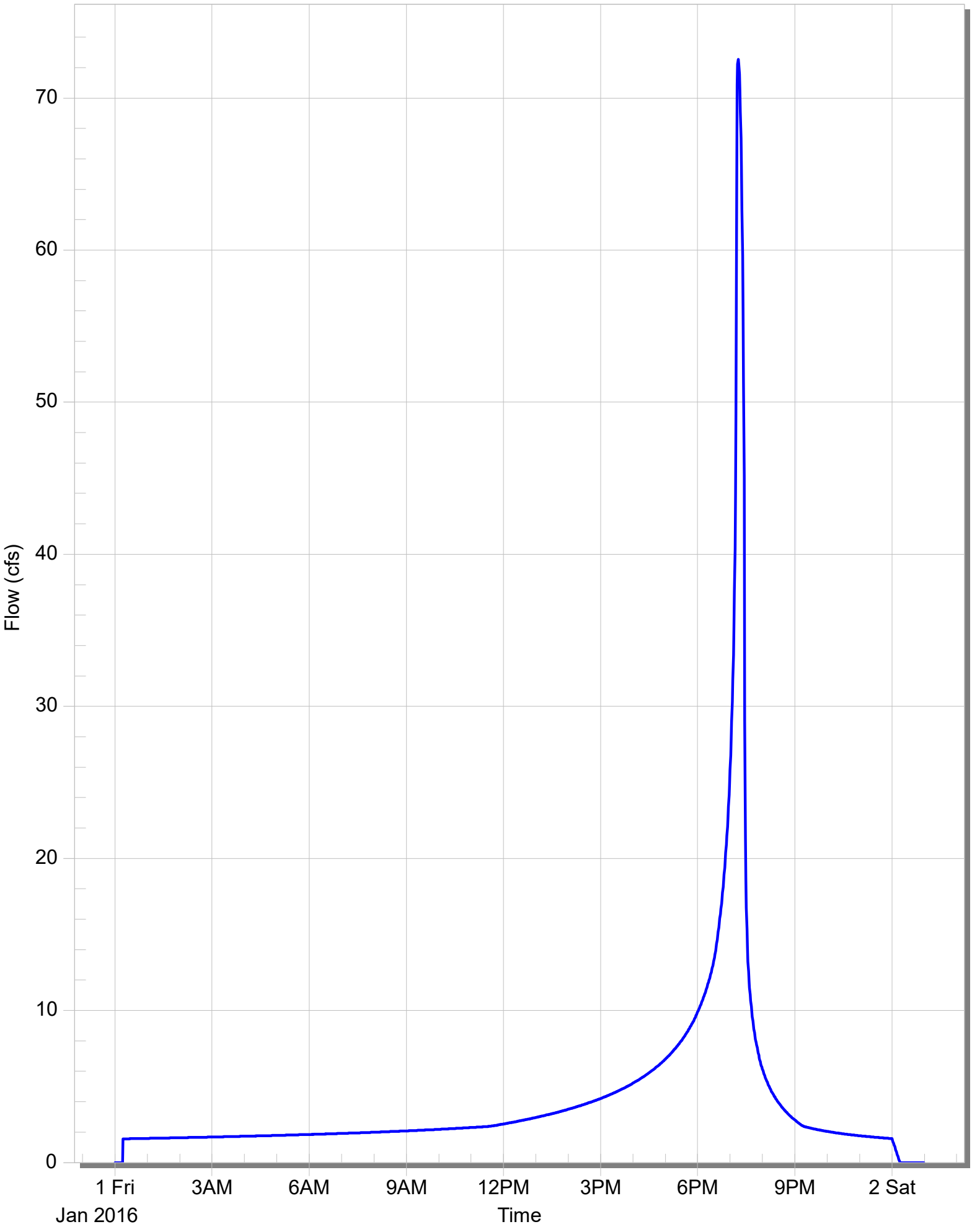
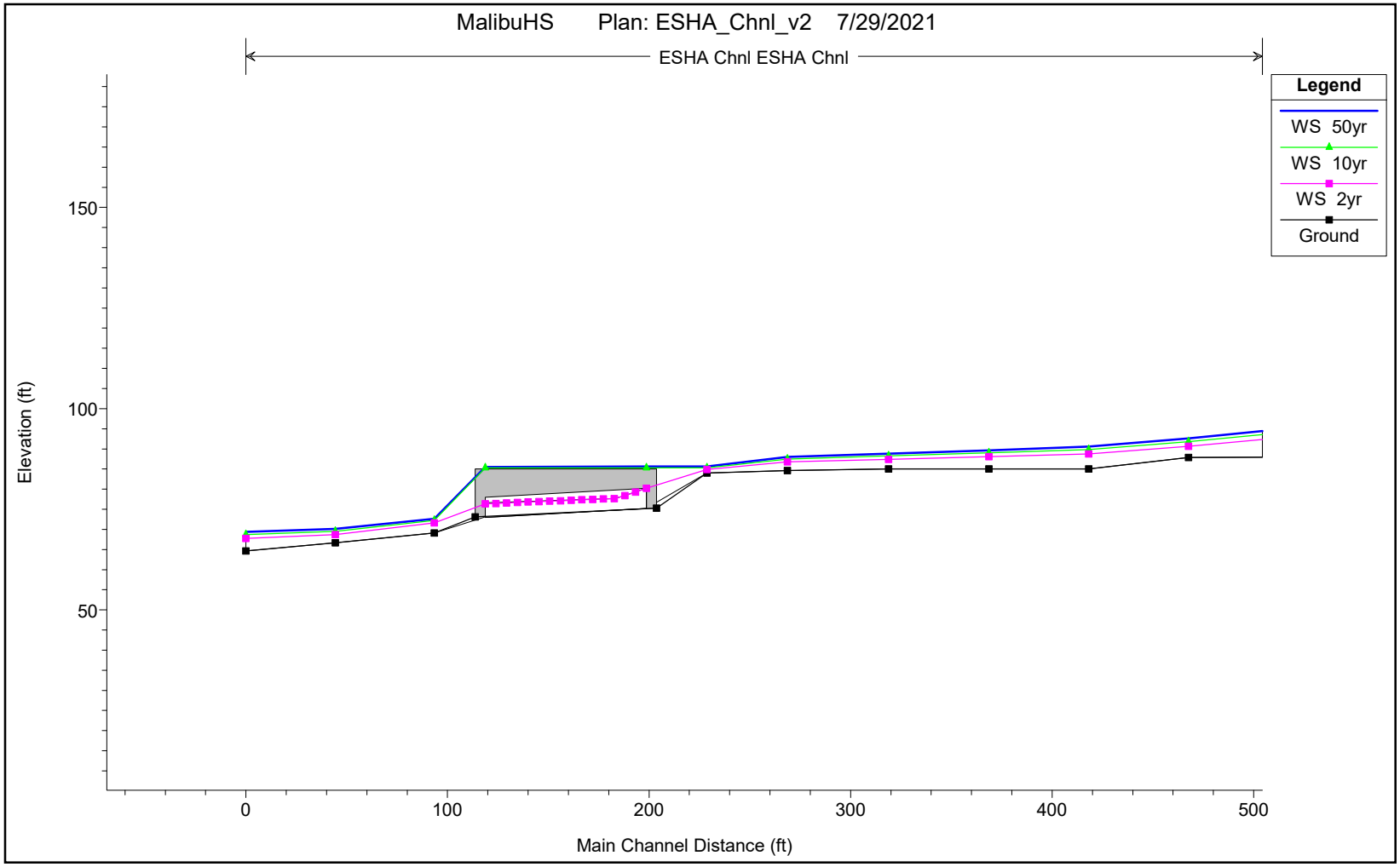


APPENDIX B
HEC-RAS OUTPUT


MalibuHS Plan: ESHA_Chnl_v2 7/29/2021
ESHA Chnl ESHA Chnl
Legend
WS 50yr
WS 10yr
WS 2yr
Ground
Elevation (ft)
150
100
50
0
100
200
300
400
500
Main Channel Distance (ft)

HEC-RAS Plan: novegetation River: ESHA Chnl Reach: ESHA Chnl

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ESHA Chnl	1295	100yr	449.00	141.75	145.57	145.57	146.69	0.005435	10.52	68.16	31.83	0.96
ESHA Chnl	1295	50yr	398.00	141.75	145.34	145.34	146.42	0.005621	10.25	61.01	30.02	0.96
ESHA Chnl	1295	25yr	349.00	141.75	145.12	145.12	146.15	0.005713	9.89	54.52	28.24	0.96
ESHA Chnl	1295	10yr	284.00	141.75	144.80	144.80	145.75	0.005808	9.32	45.93	25.89	0.95
ESHA Chnl	1295	5yr	232.00	141.75	144.49	144.49	145.38	0.006111	8.88	38.27	23.44	0.96
ESHA Chnl	1295	2yr	154.00	141.75	143.97	143.97	144.71	0.006504	7.91	27.01	19.45	0.96
ESHA Chnl	1295	50yr Burn	498.00	141.75	145.78	145.78	146.92	0.005315	10.77	74.76	33.41	0.96
ESHA Chnl	1251	100yr	449.00	139.10	142.29	142.29	143.22	0.005760	9.09	71.30	38.94	0.94
ESHA Chnl	1251	50yr	398.00	139.10	142.13	142.13	143.00	0.005806	8.77	64.95	37.80	0.94
ESHA Chnl	1251	25yr	349.00	139.10	141.96	141.96	142.78	0.005814	8.42	58.80	36.64	0.93
ESHA Chnl	1251	10yr	284.00	139.10	141.73	141.73	142.47	0.005726	7.85	50.58	34.91	0.91
ESHA Chnl	1251	5yr	232.00	139.10	141.50	141.50	142.18	0.005984	7.47	42.54	32.80	0.91
ESHA Chnl	1251	2yr	154.00	139.10	141.08	141.08	141.67	0.006461	6.70	29.88	28.01	0.91
ESHA Chnl	1251	50yr Burn	498.00	139.10	142.43	142.43	143.41	0.005838	9.44	76.66	39.88	0.96
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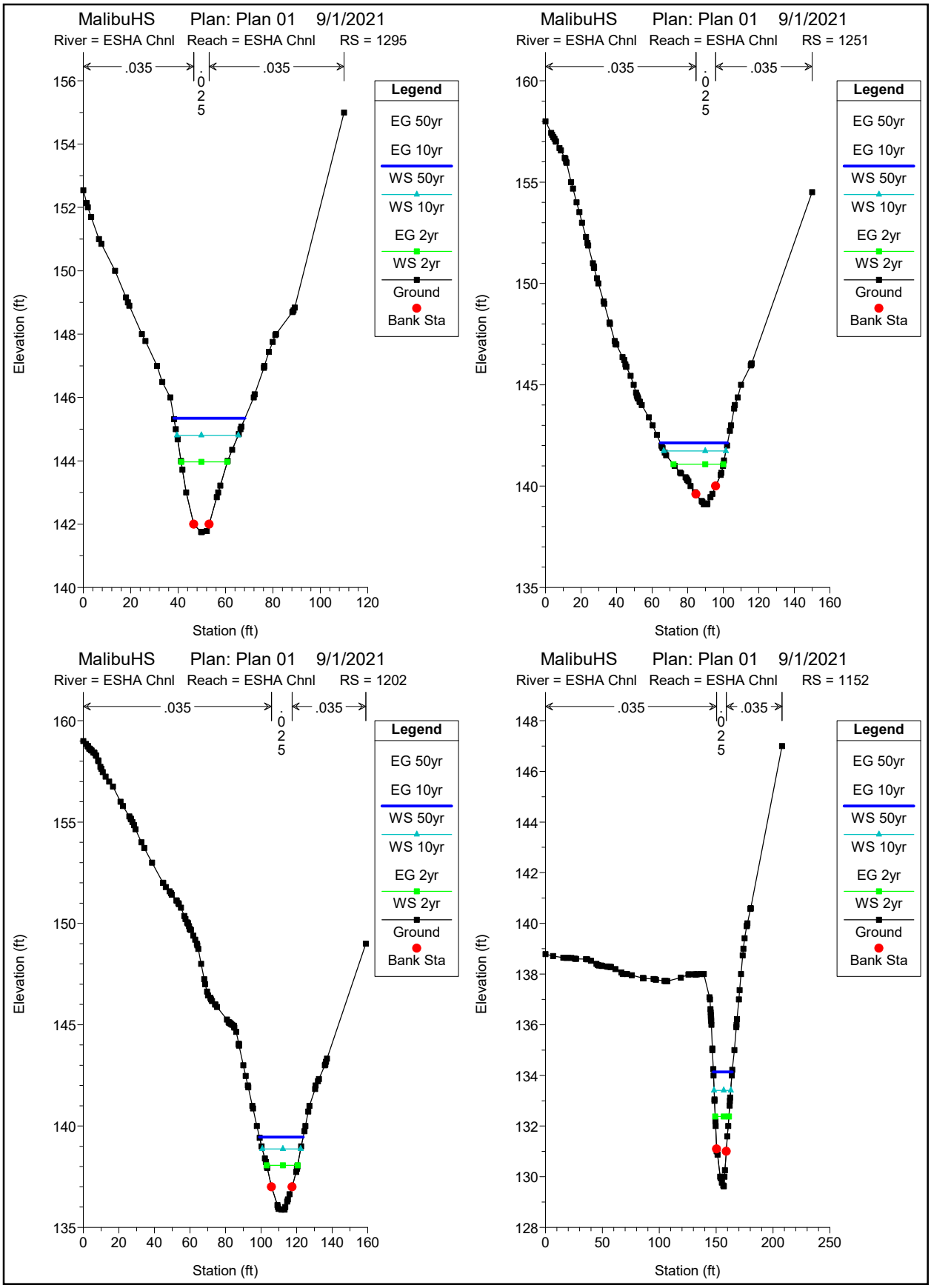
ESHA Chnl	1152	5yr	232.00	129.63	133.03	133.03	134.22	0.006338	9.01	29.20	13.61	0.95
ESHA Chnl	1152	2yr	154.00	129.63	132.38	132.38	133.35	0.007153	8.03	20.82	11.99	0.96
ESHA Chnl	1152	50yr Burn	498.00	129.63	134.69	134.69	136.43	0.005334	11.26	55.51	18.33	0.94
ESHA Chnl	1104	100yr	449.00	125.00	130.04	130.04	131.58	0.005546	10.51	51.85	18.92	0.91
ESHA Chnl	1104	50yr	398.00	125.00	129.76	129.76	131.22	0.005681	10.16	46.72	17.99	0.91
ESHA Chnl	1104	25yr	349.00	125.00	129.47	129.47	130.85	0.005872	9.80	41.62	16.97	0.91
ESHA Chnl	1104	10yr	284.00	125.00	129.03	129.03	130.31	0.006361	9.34	34.44	15.43	0.93
ESHA Chnl	1104	5yr	232.00	125.00	128.65	128.65	129.82	0.006796	8.85	28.83	14.13	0.94
ESHA Chnl	1104	2yr	154.00	125.00	128.00	128.00	128.96	0.007810	7.92	20.35	11.93	0.97
ESHA Chnl	1104	50yr Burn	498.00	125.00	130.29	130.29	131.91	0.005437	10.83	56.70	19.72	0.91
ESHA Chnl	1056	100yr	449.00	121.84	127.48	127.48	129.15	0.005691	11.09	50.88	17.25	0.91
ESHA Chnl	1056	50yr	398.00	121.84	127.17	127.17	128.77	0.005829	10.72	45.76	16.34	0.91
ESHA Chnl	1056	25yr	349.00	121.84	126.87	126.87	128.36	0.005951	10.31	40.88	15.41	0.91
ESHA Chnl	1056	10yr	284.00	121.84	126.40	126.40	127.77	0.006267	9.75	34.07	14.05	0.91
ESHA Chnl	1056	5yr	232.00	121.84	125.97	125.97	127.24	0.006795	9.31	28.24	12.76	0.93
ESHA Chnl	1056	2yr	154.00	121.84	125.24	125.24	126.30	0.007790	8.35	19.74	10.71	0.95
ESHA Chnl	1056	50yr Burn	498.00	121.84	127.78	127.78	129.50	0.005473	11.34	56.18	18.16	0.90
ESHA Chnl	1006	100yr	449.00	117.10	122.49	122.49	124.09	0.006401	10.38	47.96	17.06	0.94
ESHA Chnl	1006	50yr	398.00	117.10	122.22	122.22	123.72	0.006558	10.00	43.46	16.31	0.94
ESHA Chnl	1006	25yr	349.00	117.10	121.93	121.93	123.34	0.006842	9.65	38.86	15.49	0.95
ESHA Chnl	1006	10yr	284.00	117.10	121.50	121.50	122.79	0.007552	9.20	32.36	14.13	0.97
ESHA Chnl	1006	5yr	232.00	117.10	121.15	121.15	122.30	0.007951	8.64	27.65	13.08	0.97
ESHA Chnl	1006	2yr	154.00	117.10	120.50	120.50	121.45	0.009130	7.82	19.84	11.11	1.00
ESHA Chnl	1006	50yr Burn	498.00	117.10	122.74	122.74	124.43	0.006267	10.71	52.25	17.75	0.94
ESHA Chnl	954	100yr	449.00	113.87	118.53	118.53	120.06	0.005815	10.21	49.88	18.30	0.93
ESHA Chnl	954	50yr	398.00	113.87	118.26	118.26	119.70	0.006037	9.89	44.94	17.56	0.94
ESHA Chnl	954	25yr	349.00	113.87	117.98	117.98	119.34	0.006260	9.53	40.20	16.78	0.94
ESHA Chnl	954	10yr	284.00	113.87	117.58	117.58	118.81	0.006664	9.00	33.77	15.42	0.95
ESHA Chnl	954	5yr	232.00	113.87	117.21	117.21	118.34	0.007298	8.57	28.30	14.15	0.97
ESHA Chnl	954	2yr	154.00	113.87	116.61	116.61	117.52	0.008469	7.64	20.41	12.18	1.00
ESHA Chnl	954	50yr Burn	498.00	113.87	118.78	118.78	120.38	0.005651	10.51	54.53	19.01	0.93
ESHA Chnl	904	100yr	449.00	108.96	113.59	113.59	114.99	0.005513	9.97	53.41	20.70	0.91
ESHA Chnl	904	50yr	398.00	108.96	113.34	113.34	114.66	0.005639	9.63	48.34	19.99	0.91
ESHA Chnl	904	25yr	349.00	108.96	113.07	113.07	114.33	0.005862	9.30	43.13	19.22	0.92
ESHA Chnl	904	10yr	284.00	108.96	112.69	112.69	113.84	0.006234	8.81	36.03	17.78	0.93
ESHA Chnl	904	5yr	232.00	108.96	112.35	112.35	113.39	0.006626	8.33	30.26	16.36	0.94
ESHA Chnl	904	2yr	154.00	108.96	111.76	111.76	112.62	0.007680	7.47	21.34	13.80	0.96
ESHA Chnl	904	50yr Burn	498.00	108.96	113.81	113.81	115.29	0.005438	10.30	58.07	21.33	0.92
ESHA Chnl	854	100yr	449.00	106.92	111.70	111.70	113.39	0.005874	10.71	47.62	16.15	0.95
ESHA Chnl	854	50yr	398.00	106.92	111.41	111.41	113.00	0.006057	10.34	43.03	15.42	0.95
ESHA Chnl	854	25yr	349.00	106.92	111.12	111.12	112.60	0.006230	9.93	38.66	14.70	0.95
ESHA Chnl	854	10yr	284.00	106.92	110.68	110.68	112.02	0.006730	9.41	32.40	13.64	0.96
ESHA Chnl	854	5yr	232.00	106.92	110.30	110.30	111.51	0.007175	8.88	27.47	12.74	0.97
ESHA Chnl	854	2yr	154.00	106.92	109.67	109.67	110.63	0.008237	7.89	19.88	11.18	0.99
ESHA Chnl	854	50yr Burn	498.00	106.92	111.99	111.99	113.74	0.005594	10.96	52.44	16.92	0.93

HEC-RAS Plan: novegetation River: ESHA Chnl Reach: ESHA Chnl (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ESHA Chnl	804	100yr	449.00	103.99	108.64	108.64	110.27	0.005720	10.56	49.05	17.12	0.93
ESHA Chnl	804	50yr	398.00	103.99	108.34	108.34	109.89	0.006000	10.26	43.94	16.22	0.94
ESHA Chnl	804	25yr	349.00	103.99	108.04	108.04	109.49	0.006246	9.90	39.21	15.35	0.94
ESHA Chnl	804	10yr	284.00	103.99	107.62	107.62	108.93	0.006564	9.31	33.07	14.17	0.94
ESHA Chnl	804	5yr	232.00	103.99	107.23	107.23	108.42	0.007122	8.85	27.75	13.11	0.96
ESHA Chnl	804	2yr	154.00	103.99	106.59	106.59	107.55	0.008220	7.89	19.91	11.37	0.99
ESHA Chnl	804	50yr Burn	498.00	103.99	108.92	108.92	110.61	0.005514	10.83	53.88	17.92	0.92
ESHA Chnl	754	100yr	449.00	100.97	105.61	105.61	107.04	0.005952	9.89	51.31	19.92	0.93
ESHA Chnl	754	50yr	398.00	100.97	105.36	105.36	106.71	0.006158	9.57	46.35	19.24	0.94
ESHA Chnl	754	25yr	349.00	100.97	105.12	105.12	106.37	0.006221	9.15	41.92	18.60	0.93
ESHA Chnl	754	10yr	284.00	100.97	104.72	104.72	105.88	0.006902	8.75	34.68	17.13	0.96
ESHA Chnl	754	5yr	232.00	100.97	104.39	104.39	105.44	0.007395	8.27	29.27	15.82	0.97
ESHA Chnl	754	2yr	154.00	100.97	103.83	103.83	104.67	0.008629	7.39	21.01	13.45	1.00
ESHA Chnl	754	50yr Burn	498.00	100.97	105.84	105.84	107.34	0.005763	10.16	56.06	20.51	0.93
ESHA Chnl	704	100yr	449.00	95.58	100.01	100.01	101.52	0.006028	10.03	48.97	18.16	0.94
ESHA Chnl	704	50yr	398.00	95.58	99.75	99.75	101.17	0.006242	9.69	44.30	17.41	0.95
ESHA Chnl	704	25yr	349.00	95.58	99.47	99.47	100.81	0.006621	9.39	39.48	16.59	0.96
ESHA Chnl	704	10yr	284.00	95.58	99.08	99.08	100.29	0.007121	8.87	33.30	15.42	0.97
ESHA Chnl	704	5yr	232.00	95.58	98.75	98.75	99.83	0.007634	8.38	28.34	14.45	0.99
ESHA Chnl	704	2yr	154.00	95.58	98.19	98.19	99.05	0.008787	7.43	20.77	12.82	1.01
ESHA Chnl	704	50yr Burn	498.00	95.58	100.24	100.24	101.84	0.005928	10.37	53.16	18.84	0.95
ESHA Chnl	654	100yr	449.00	92.99	97.10	97.10	98.47	0.006314	9.60	51.17	20.79	0.96
ESHA Chnl	654	50yr	398.00	92.99	96.87	96.87	98.15	0.006498	9.26	46.50	20.03	0.96
ESHA Chnl	654	25yr	349.00	92.99	96.64	96.64	97.83	0.006636	8.87	42.10	19.30	0.96
ESHA Chnl	654	10yr	284.00	92.99	96.30	96.30	97.37	0.007170	8.39	35.58	18.17	0.97
ESHA Chnl	654	5yr	232.00	92.99	96.01	96.01	96.96	0.007559	7.91	30.45	17.12	0.98
ESHA Chnl	654	2yr	154.00	92.99	95.47	95.47	96.26	0.008350	7.12	21.91	14.95	0.99
ESHA Chnl	654	50yr Burn	498.00	92.99	97.33	97.33	98.75	0.006030	9.83	56.03	21.59	0.95
ESHA Chnl	604	100yr	449.00	90.98	94.90	94.90	96.31	0.005916	9.75	51.23	20.09	0.95
ESHA Chnl	604	50yr	398.00	90.98	94.66	94.66	95.98	0.006105	9.41	46.44	19.34	0.95
ESHA Chnl	604	25yr	349.00	90.98	94.40	94.40	95.65	0.006420	9.10	41.53	18.56	0.96
ESHA Chnl	604	10yr	284.00	90.98	94.05	94.05	95.17	0.006803	8.57	35.20	17.51	0.97
ESHA Chnl	604	5yr	232.00	90.98	93.74	93.74	94.74	0.007256	8.09	29.94	16.54	0.97
ESHA Chnl	604	2yr	154.00	90.98	93.22	93.22	94.02	0.008321	7.18	21.74	14.72	1.00
ESHA Chnl	604	50yr Burn	498.00	90.98	95.12	95.12	96.61	0.005822	10.08	55.55	20.73	0.95
ESHA Chnl	554	100yr	449.00	88.00	92.21	92.21	93.52	0.005644	9.49	54.32	23.18	0.92
ESHA Chnl	554	50yr	398.00	88.00	91.96	91.96	93.21	0.005910	9.22	48.74	22.10	0.93
ESHA Chnl	554	25yr	349.00	88.00	91.72	91.72	92.90	0.006181	8.91	43.45	20.96	0.94
ESHA Chnl	554	10yr	284.00	88.00	91.39	91.39	92.44	0.006436	8.36	36.79	19.49	0.94
ESHA Chnl	554	5yr	232.00	88.00	91.07	91.07	92.03	0.007002	7.96	30.84	18.07	0.96
ESHA Chnl	554	2yr	154.00	88.00	90.54	90.54	91.33	0.008206	7.13	21.98	15.46	0.99
ESHA Chnl	554	50yr Burn	498.00	88.00	92.42	92.42	93.79	0.005479	9.76	59.43	24.14	0.92
ESHA Chnl	505	100yr	449.00	87.86	91.45	91.45	92.75	0.006306	9.24	51.55	21.96	0.96
ESHA Chnl	505	50yr	398.00	87.86	91.24	91.24	92.45	0.006494	8.91	46.91	21.33	0.96
ESHA Chnl	505	25yr	349.00	87.86	91.01	91.01	92.15	0.006835	8.60	42.09	20.53	0.97
ESHA Chnl	505	10yr	284.00	87.86	90.69	90.69	91.71	0.007371	8.12	35.68	19.20	0.99
ESHA Chnl	505	5yr	232.00	87.86	90.41	90.41	91.32	0.007882	7.65	30.57	18.06	1.00
ESHA Chnl	505	2yr	154.00	87.86	89.96	89.96	90.67	0.008802	6.75	22.82	16.34	1.01
ESHA Chnl	505	50yr Burn	498.00	87.86	91.67	91.67	93.03	0.006039	9.48	56.27	22.51	0.95
ESHA Chnl	455	100yr	449.00	85.00	88.21	88.21	89.40	0.005871	9.09	56.62	25.79	0.95
ESHA Chnl	455	50yr	398.00	85.00	88.00	88.00	89.12	0.006054	8.79	51.36	25.04	0.95
ESHA Chnl	455	25yr	349.00	85.00	87.79	87.79	88.84	0.006288	8.47	46.12	24.14	0.95
ESHA Chnl	455	10yr	284.00	85.00	87.49	87.49	88.43	0.006572	7.95	39.22	22.90	0.95
ESHA Chnl	455	5yr	232.00	85.00	87.23	87.23	88.08	0.006897	7.48	33.44	21.82	0.96
ESHA Chnl	455	2yr	154.00	85.00	86.78	86.78	87.46	0.007816	6.65	24.08	19.56	0.97
ESHA Chnl	455	50yr Burn	498.00	85.00	88.39	88.39	89.65	0.005780	9.40	61.33	26.38	0.95
ESHA Chnl	405	100yr	449.00	85.00	87.05	87.05	87.99	0.007546	7.77	58.57	32.64	1.00
ESHA Chnl	405	50yr	398.00	85.00	86.91	86.91	87.77	0.007683	7.47	53.89	32.03	0.99
ESHA Chnl	405	25yr	349.00	85.00	86.80	86.75	87.56	0.007202	6.97	50.52	31.61	0.95
ESHA Chnl	405	10yr	284.00	85.00	86.67	86.54	87.26	0.006288	6.19	46.18	31.05	0.88
ESHA Chnl	405	5yr	232.00	85.00	86.55		87.02	0.005351	5.46	42.71	30.59	0.80
ESHA Chnl	405	2yr	154.00	85.00	86.31		86.60	0.004258	4.36	35.37	29.62	0.70
ESHA Chnl	405	50yr Burn	498.00	85.00	87.19	87.19	88.19	0.007347	8.03	63.04	33.23	0.99
ESHA Chnl	356	100yr	449.00	85.00	86.74	86.74	87.52	0.007412	7.14	64.96	45.13	0.97
ESHA Chnl	356	50yr	398.00	85.00	86.61	86.61	87.34	0.007701	6.90	59.15	43.67	0.98
ESHA Chnl	356	25yr	349.00	85.00	86.48	86.48	87.16	0.008030	6.64	53.50	42.19	0.99
ESHA Chnl	356	10yr	284.00	85.00	86.29	86.29	86.90	0.008573	6.24	45.86	40.11	0.99
ESHA Chnl	356	5yr	232.00	85.00	86.13	86.13	86.67	0.009094	5.86	39.63	38.34	1.00
ESHA Chnl	356	2yr	154.00	85.00	85.87	85.87	86.28	0.009969	5.17	29.79	36.28	1.01

HEC-RAS Plan: novegetation River: ESHA Chnl Reach: ESHA Chnl (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ESHA Chnl	356	50yr Burn	498.00	85.00	86.86	86.86	87.69	0.007129	7.35	70.62	46.52	0.97
ESHA Chnl	306	100yr	449.00	84.60	86.07	86.07	86.71	0.008676	6.42	69.95	56.09	1.01
ESHA Chnl	306	50yr	398.00	84.60	85.97	85.97	86.56	0.008872	6.18	64.42	54.78	1.00
ESHA Chnl	306	25yr	349.00	84.60	85.86	85.86	86.41	0.009107	5.97	58.47	53.40	1.01
ESHA Chnl	306	10yr	284.00	84.60	85.71	85.71	86.20	0.009374	5.63	50.48	51.49	1.00
ESHA Chnl	306	5yr	232.00	84.60	85.57	85.57	86.01	0.009779	5.33	43.55	49.78	1.00
ESHA Chnl	306	2yr	154.00	84.60	85.34	85.34	85.69	0.010586	4.74	32.49	47.02	1.01
ESHA Chnl	306	50yr Burn	498.00	84.60	86.16	86.16	86.84	0.008437	6.64	75.19	57.18	1.00
ESHA Chnl	266	100yr	449.00	84.04	85.56	85.56	86.22	0.007738	6.57	70.21	57.23	0.97
ESHA Chnl	266	50yr	398.00	84.04	85.44	85.44	86.07	0.008220	6.38	63.48	54.68	0.99
ESHA Chnl	266	25yr	349.00	84.04	85.33	85.33	85.91	0.008529	6.14	57.57	51.81	0.99
ESHA Chnl	266	10yr	284.00	84.04	85.17	85.17	85.68	0.009012	5.77	49.47	49.95	1.00
ESHA Chnl	266	5yr	232.00	84.04	85.03	85.03	85.49	0.009445	5.42	42.83	48.38	1.00
ESHA Chnl	266	2yr	154.00	84.04	84.80	84.80	85.16	0.010340	4.80	32.09	45.15	1.00
ESHA Chnl	266	50yr Burn	498.00	84.04	85.66	85.66	86.36	0.007538	6.78	75.96	58.59	0.97
ESHA Chnl	260		Culvert									
ESHA Chnl	130	100yr	449.00	69.12	71.43	71.43	72.14	0.008022	6.80	67.29	50.29	1.00
ESHA Chnl	130	50yr	398.00	69.12	71.32	71.32	71.98	0.008245	6.54	61.78	49.38	1.00
ESHA Chnl	130	25yr	349.00	69.12	71.20	71.20	71.81	0.008665	6.30	55.99	48.35	1.01
ESHA Chnl	130	10yr	284.00	69.12	71.04	71.04	71.58	0.009018	5.90	48.45	46.70	1.00
ESHA Chnl	130	5yr	232.00	69.12	70.89	70.89	71.38	0.009369	5.60	41.61	44.36	1.01
ESHA Chnl	130	2yr	154.00	69.12	70.63	70.63	71.02	0.010187	5.02	30.70	40.24	1.01
ESHA Chnl	130	50yr Burn	498.00	69.12	71.53	71.53	72.29	0.007820	7.03	72.50	51.13	1.00
ESHA Chnl	81	100yr	449.00	66.70	69.05	69.05	69.78	0.008207	6.86	65.64	46.49	1.01
ESHA Chnl	81	50yr	398.00	66.70	68.92	68.92	69.61	0.008475	6.65	59.91	45.18	1.01
ESHA Chnl	81	25yr	349.00	66.70	68.80	68.80	69.44	0.008695	6.42	54.35	43.66	1.01
ESHA Chnl	81	10yr	284.00	66.70	68.62	68.62	69.19	0.009011	6.08	46.68	41.45	1.01
ESHA Chnl	81	5yr	232.00	66.70	68.45	68.45	68.97	0.009361	5.79	40.04	39.40	1.01
ESHA Chnl	81	2yr	154.00	66.70	68.17	68.17	68.60	0.010033	5.21	29.54	35.90	1.01
ESHA Chnl	81	50yr Burn	498.00	66.70	69.16	69.16	69.93	0.008028	7.06	70.89	47.61	1.00
ESHA Chnl	37	100yr	449.00	64.67	66.73	66.73	67.45	0.008330	6.80	66.05	46.76	1.01
ESHA Chnl	37	50yr	398.00	64.67	66.60	66.60	67.28	0.008489	6.61	60.23	45.15	1.01
ESHA Chnl	37	25yr	349.00	64.67	66.47	66.47	67.11	0.008652	6.40	54.54	43.52	1.01
ESHA Chnl	37	10yr	284.00	64.67	66.29	66.29	66.86	0.008931	6.08	46.67	41.16	1.01
ESHA Chnl	37	5yr	232.00	64.67	66.12	66.12	66.64	0.009249	5.79	40.05	39.06	1.01
ESHA Chnl	37	2yr	154.00	64.67	65.84	65.84	66.26	0.009910	5.22	29.51	35.46	1.01
ESHA Chnl	37	50yr Burn	498.00	64.67	66.85	66.85	67.60	0.008107	6.94	71.79	48.30	1.00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.025
.035
Legend
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EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
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.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 1202
.035
.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
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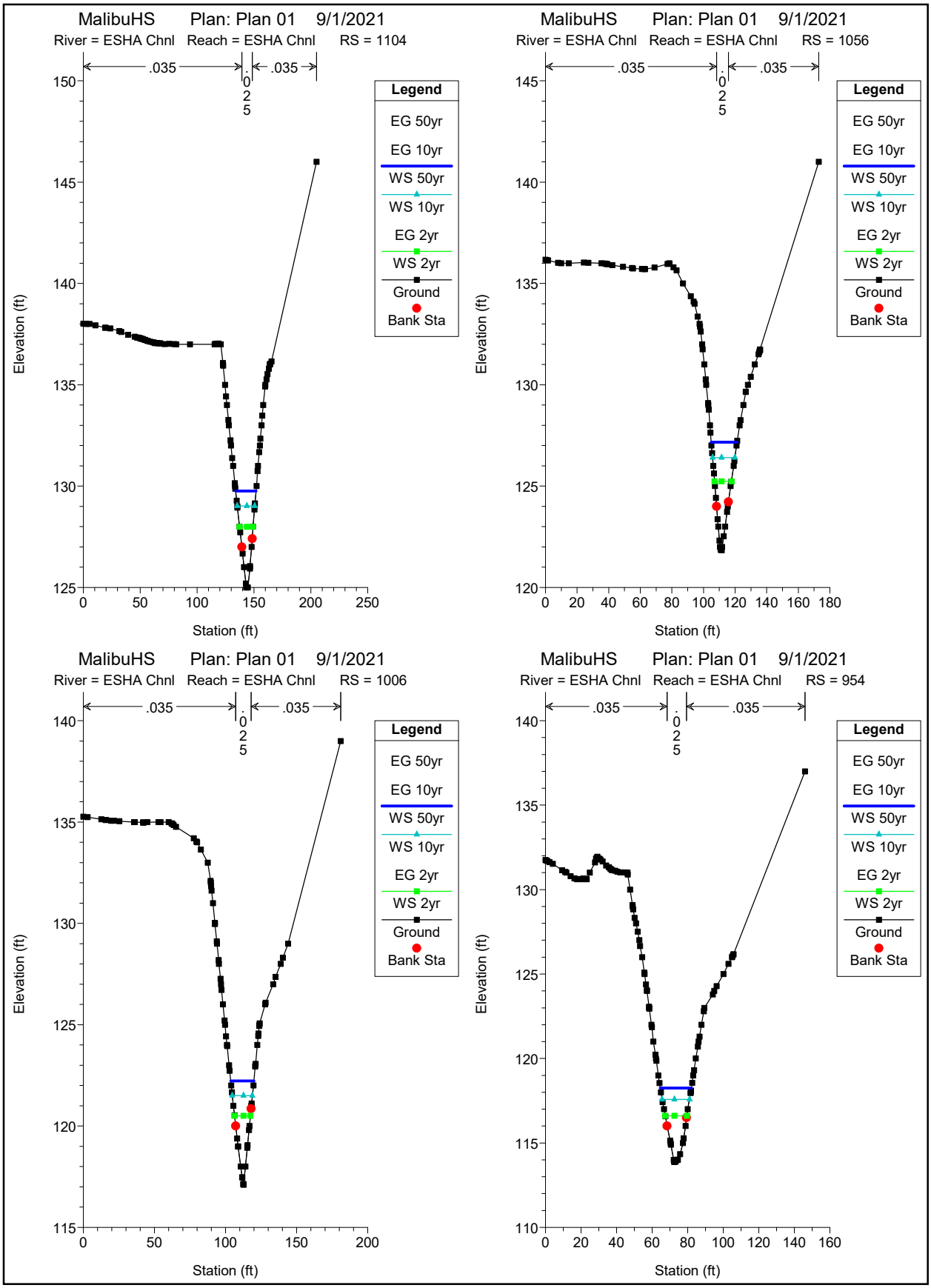
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)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EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
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.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
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.035
.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
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.035
.025
.035
Legend
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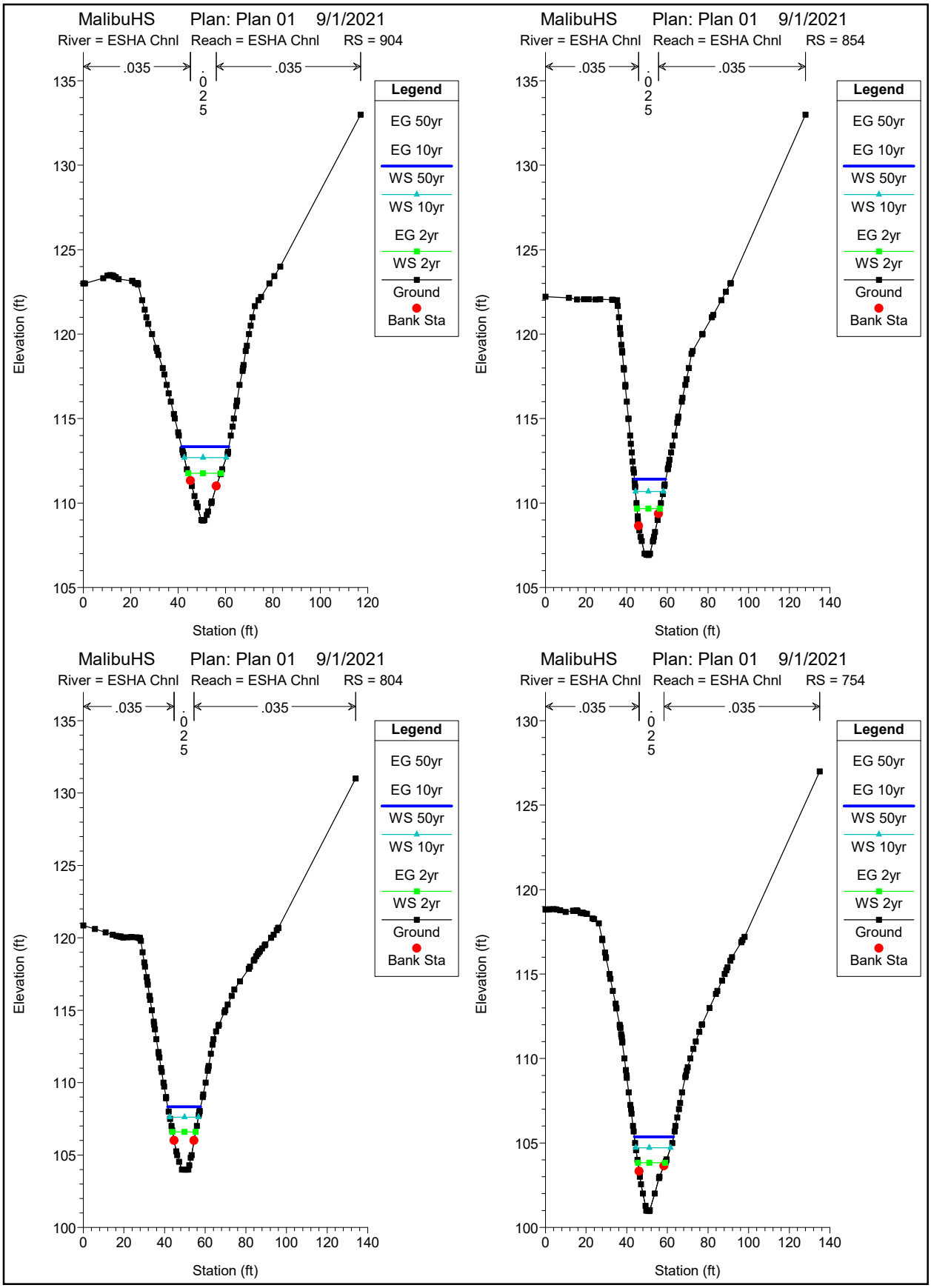
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)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WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
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.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 804
.035
.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
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.025
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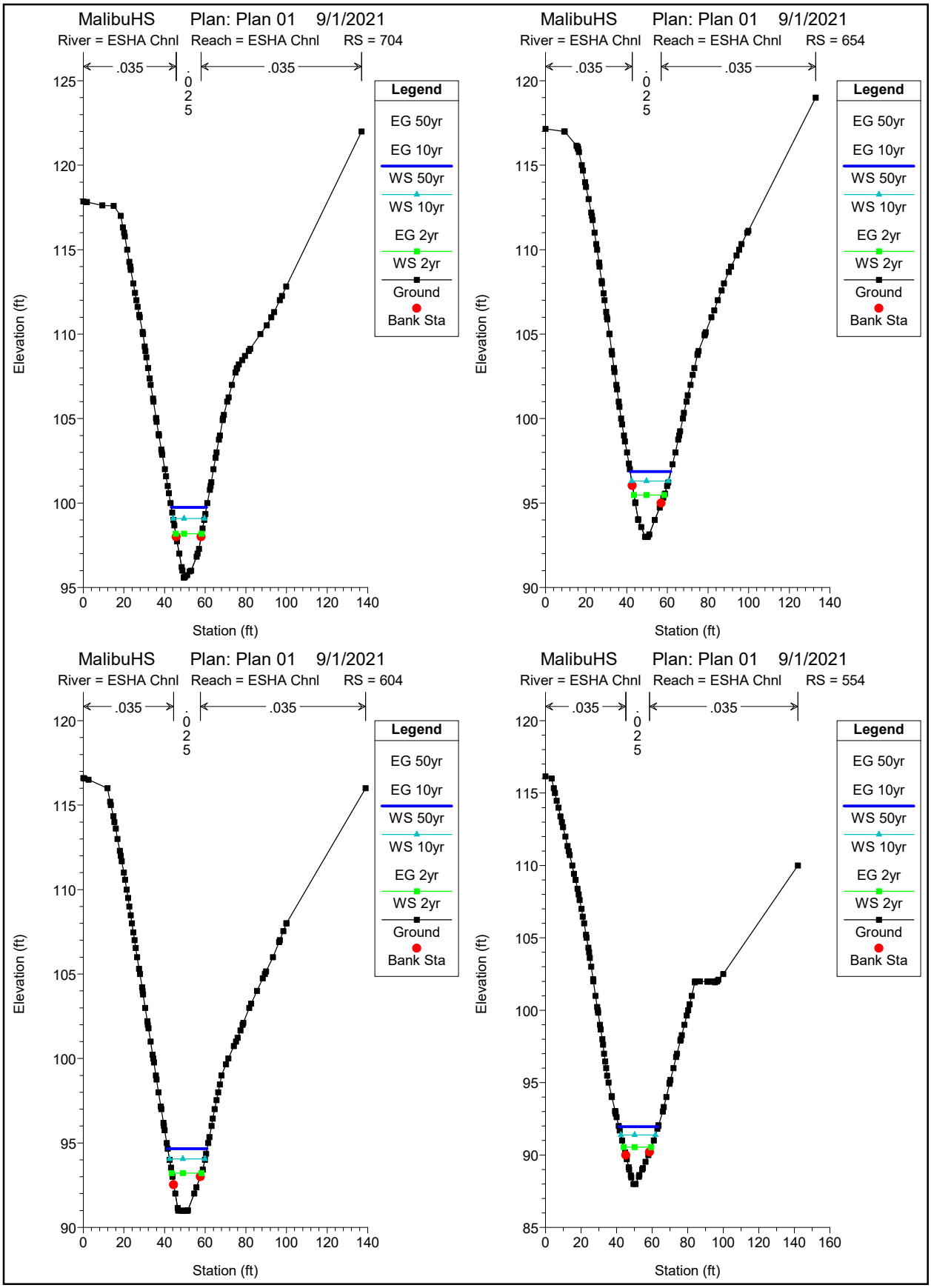
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)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.025
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Legend
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WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 654
.035
.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 604
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.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 554
.035
.025
.035
Legend
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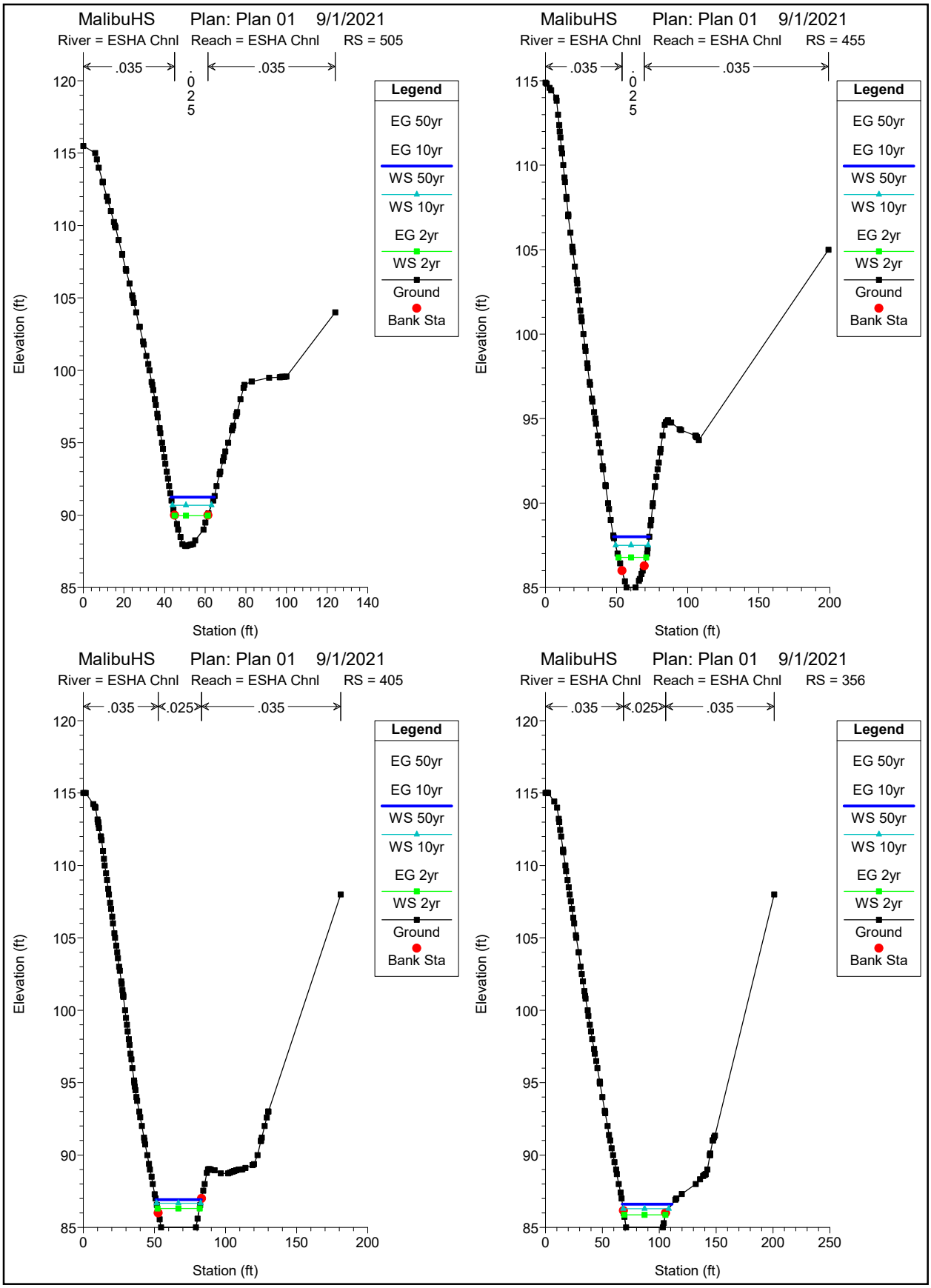
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)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Legend
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EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 455
.035
.025
.035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 405
.035
.025
.035
Legend
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EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 356
.035
.025
.035
Legend
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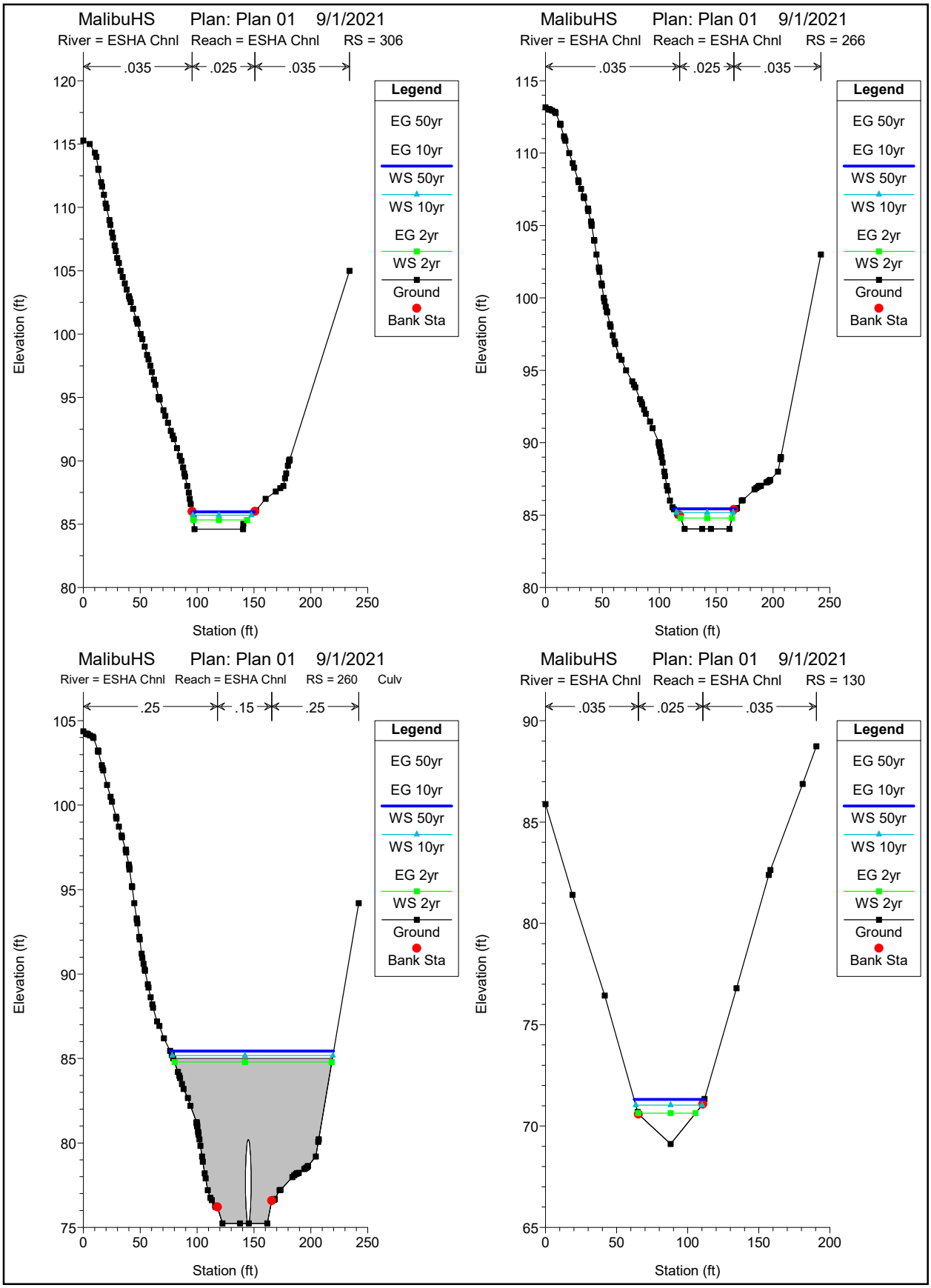
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)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Legend
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WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 266
.035 .025 .035
Legend
EG 50yr
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 260 Culv
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Legend
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EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
MalibuHS Plan: Plan 01 9/1/2021
River = ESHA Chnl Reach = ESHA Chnl RS = 130
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Legend
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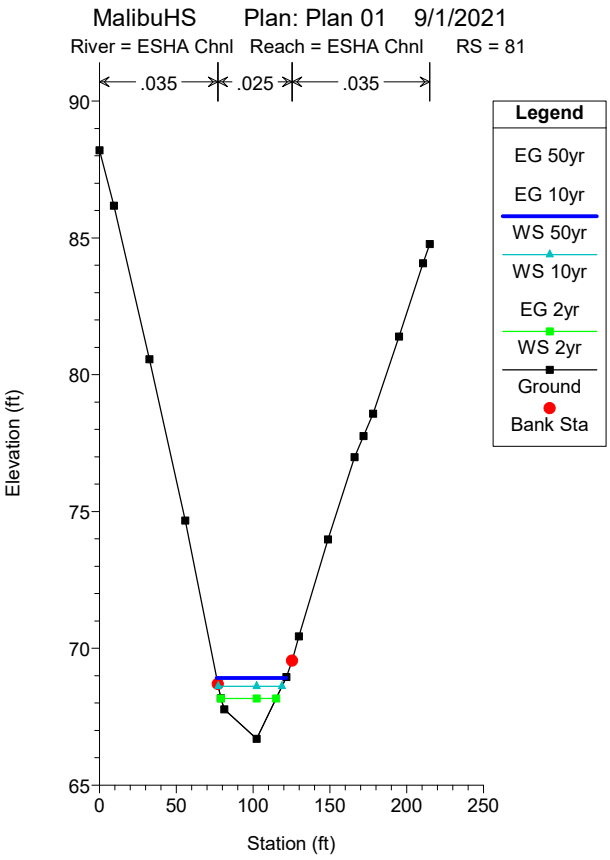
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)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.025
.035
Legend
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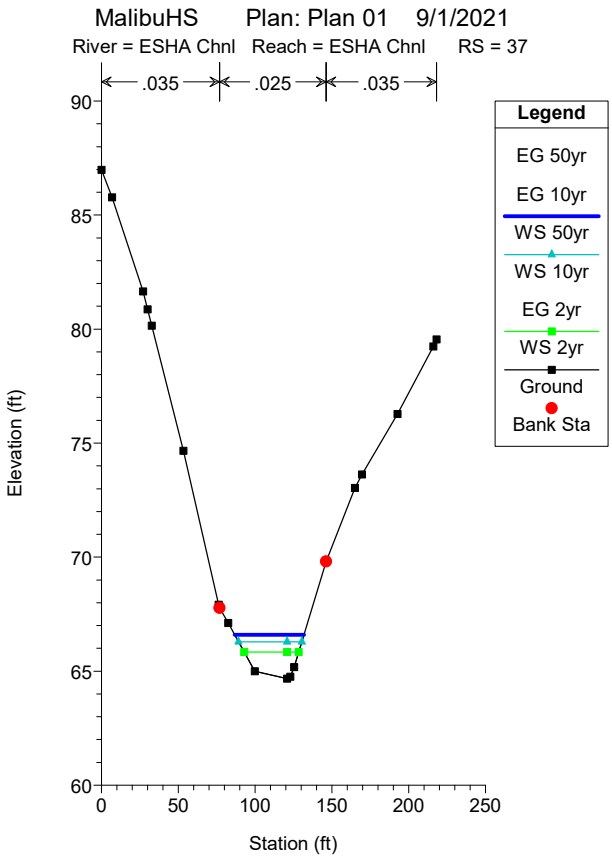
EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
90
85
80
75
70
65
0
50
100
150
200
250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.025
.035
Legend
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EG 10yr
WS 50yr
WS 10yr
EG 2yr
WS 2yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
90
85
80
75
70
65
60
0
50
100
150
200
250

National Flood Hazard Layer FIRMette

FEMA

118°49'56"W 34°1'40"N

118°49'18"W 34°1'11"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/29/2021 at 10:33 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX C
ESHA EXHIBITS

D:\Projects\1SAN\082310\MXD\Restoration\ex_Upstream_ESHA_Photos_20210706.mxd

Upstream ESHA

Exhibit 8a

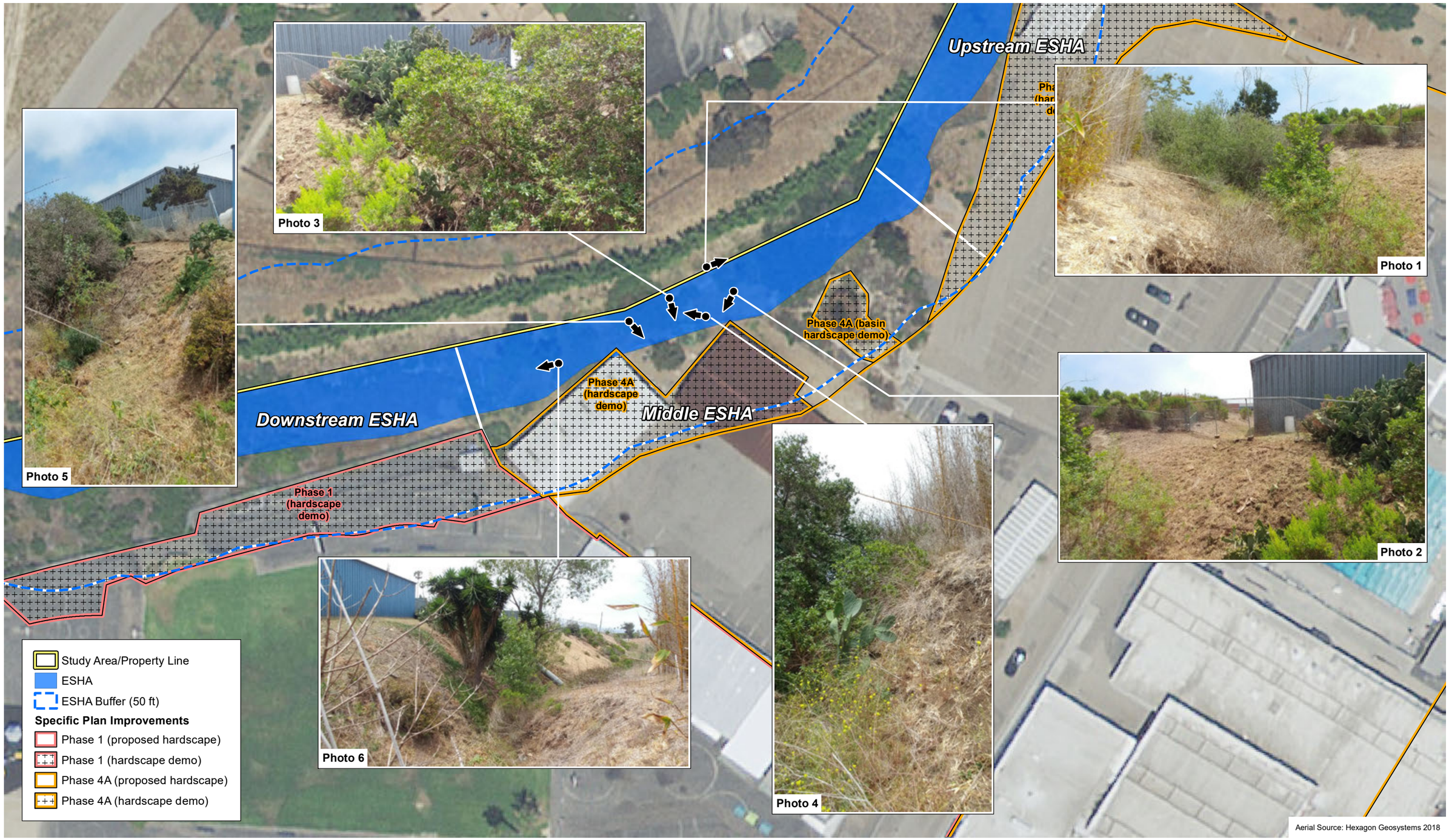
Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 07/29/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Conceptual_Plan\ex_ESHA_Photos.pdf



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Middle ESHA

Malibu Middle and High School Specific Plan and LCP Amendment Project

Exhibit 8b

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 07/29/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Conceptual_Plan\ex_ESHA_Photos.pdf

Aerial Source: Hexagon Geosystems 2018

D:\Projects\1SAN\082310\MXD\Restoration\ex_Downstream_ESHA1_Photos_20210715.mxd

Downstream ESHA

Exhibit 8c

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 07/29/2021 MMD) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Conceptual_Plan\ex_ESHA_Photos.pdf

Aerial Source: Hexagon Geosystems 2018

D:\Projects\1SAN\082310\MXD\Restoration\ex_Downstream_ESHA2_Photos_20210715.mxd

Downstream ESHA

Exhibit 8d

Malibu Middle and High School Specific Plan and LCP Amendment Project

N W E S

50 25 0 50 Feet

PSOMAS

(Rev: 07/29/2021 MDM) R:\Projects\1SAN\082310\Graphics\ESHA_Restoration\Conceptual_Plan\ex_ESHA_Photos.pdf

APPENDIX D
ONSITE DRAINAGE REPORT

APPENDIX E
ONSITE STORMWATER QUALITY

APPENDIX F
PROPOSED IMPROVEMENT OPTIONS

EROSION CONTROL BLANKETS

EROSION CONTROL

TEMPORARY EROSION CONTROL BLANKETS (ECBs) STOP SOIL EROSION AND PROMOTE SEED GERMINATION

There is the potential for soil erosion on virtually every development project. While there are many methods to reduce the liklihood of damaging erosion, vegetative cover is one of the best. Temporary Erosion Control products like ECBs help hold the soil in place while allowing seed germination. These products are typically made of natural material, which is bio and/or photo-degradable.

Typical materials are straw, coconut and excelsior. Straw and excelsior products normally last between 6 and 12 months. Coconut products can last up to 3 years.

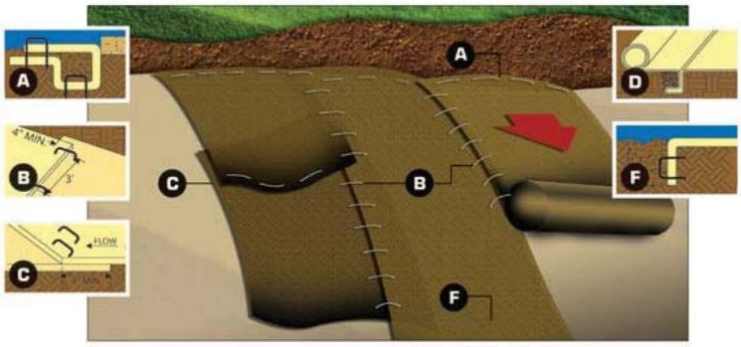
ADVANTAGES:

- Straw, excelsior and coconut depending on life expectancy
- Designed for moderate or steep and low-flow channels
- Available in rolls for easy installation
- 100% biodegradable netting available

12.18

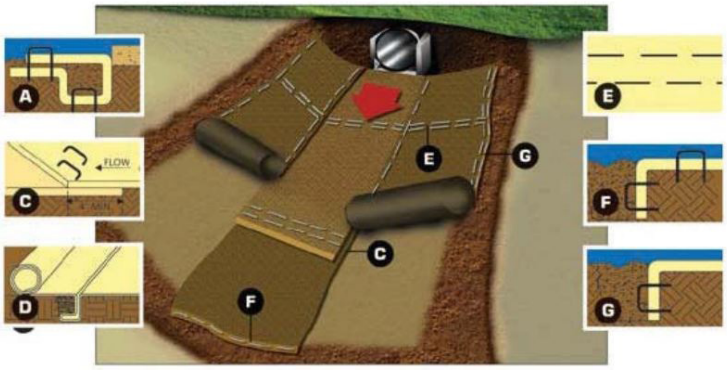
BASIC INSTALLATION

1. Prepare soil surface including raking, seeding and fertilizing
2. Begin installation process by digging a trench 6" deep by 6" wide at the top of the slope. Place 12" of blanket over the up-slope portion of the trench. Secure the blanket at the bottom of the trench with staples placed 12" apart. Backfill and compact the trench.
3. Apply seed, and fold remaining 12" over soil, secure with a row of staples placed 12" apart across the width of the blanket (A)
4. Roll blanket vertically down slope. Secure using the appropriate staple pattern below, specified by slopes.
5. Overlap parallel blankets by a min. 4" and secure with row of staples placed approx. 3' apart (B)
6. Additional vertical blankets can be joined using a min. 4" overlapping or shingle style in the direction of water flow. Connect the blankets by placing staples approx. 12" apart across the width of the blankets (C).
7. An intermittent check slot is recommended for blankets placed on a long slope. A 6" x 6" trench is made. Blanket is placed at bottom of trench and covered with approximately 2" of soil. Blanket is rolled over compacted soil and secured with staples placed 12" apart. Backfill and compact the trench. Apply seed, and continue with general installation (D).
8. End of blanket must be secured in a 6" X 6" trench with row of staples places at 12" intervals (F)



CHANNEL LINING INSTALLATION

1. Prepare soil surface including raking, seeding, and fertilizing
2. Begin installation process by digging a trench 6" deep by 6" wide at the top of the slope. Place 12" of blanket over the up-slope portion of the trench. Secure the blanket at the bottom of the trench with staples placed 12" apart. Backfill and compact the trench.
3. Apply seed, and fold remaining 12" over soil, secure with a row of staples placed 12" apart across the width of the blanket (A)
4. Continue placing blankets up the slopes on both sides, with a min. 4" overlapping - securing each blanket in the beginning trench. Staples should be placed in a staggered pattern at approx. 12" intervals, refer to sample patterns under Basic Installation Guidelines.
5. Additional horizontal blankets can be joined using a minimum 4" overlapping or shingle style in the direction of water flow. Connect the blankets by placing staples approx. 5" apart across the width of the blankets (E).
6. For max. performance, a check slot should be placed at 25' -40' intervals. Place a row of staples 4" apart along the entire width of the channel. A second row should be placed 4" below in a staggered pattern. (D).
7. The end of the blanket must be secured in a 6" x 6" trench by a row of staples placed at 12" intervals (F)
8. At the top edge of the side slope, fasten the blanket in a 6" x 6" trench with staples placed at 12" intervals. Install an additional row of staples 1' -0' down slope of the trench along the width of the fabric (G).



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LANDLOK®

STITCH-BONDED

LANDLOK® Turf Reinforcement Mats (TRMs) with X3® Fiber Technology are three-dimensional, woven and/or stitch-bonded polypropylene geotextiles that delivers long-term, value-added erosion protection. Vegetation is the most effective form of erosion control, and LANDLOK rolled erosion control solutions reinforce roots and stems to capture more sediment than conventional hard armored solutions.

Applications

- Channels and slopes
- Detention ponds
- Vegetated waterways
- Roadside erosion control

Features & Benefits

- Offers superior long-term, environmentally-friendly performance compared to rock riprap and concrete paving
- Woven construction is stronger and more durable than first generation TRMs that are netted, fused or laminated
- Patented X3® Fiber Technology offers a unique triblobal cross-section that captures and traps water, soil and seed better conventional fibers
- Enhances seedling emergence
- Engineered percent open area to provide both short-tem and long-term protection
- Demonstrates superior UV resistance
- Easy to install and more cost effective than conventional erosion control methods

Savings & Advantages

Designed for superior performance and longer design life as well as reduced installation and life-cycle costs. The LANDLOK® family of TRMs offers up to 10 years of design life, as well as soil protection and environmental improvement to meet regulatory requirements. Expect substantial cost savings over traditional hard armored solutions.

Made in the U.S.A.

ACCREDITED BUSINESS BBB

PGS-1268E-003 (01/2017)

EROSION CONTROL

EARTHSHIELD™ NATURAL
CM400 WOVEN COIR

EarthShield™ CM400 is a woven, open-mesh geotextile made from 100% natural and biodegradable Coir netting. Coir netting is installed on a surface to hold seed and soil intact during the establishment or vegetative cover. Coir mats are 100% biodegradable.

SPECIFICATIONS:

The CM400 open-mesh woven fabric will utilize the following characteristics:

PROPERTY	TEST METHOD	MACHINE DIRECTION	CROSS MATCH DIRECTION
Tensile Strength (Dry)	ASTM D4595	45 lb/in	50 lb/in
Tensile Strength (Wet)	ASTM D4595	46 lb/in	50 lb/in
Grab Elongation	ASTM D4632	23%	19%
Elongation at Failure (Dry)	ASTM D4595	30%	30%
Elongation at Failure (Wet)	ASTM D4595	27%	27%
Apparent Opening Size (AOS)	ASTM D4751	1.4" x 1.3"	
Percent Open Area		68%	
Mass	ASTM D5261	409 gsm	
Thickness	ASTM D5199	0.24	

Values quoted above are the result of multiple tests conducted at an independent testing facility. CM400 meets or exceeds values listed.
[1] Values apply to both machine and cross-machine directions

PACKAGING:

Roll Width	6.6 ft
Roll Length	164 ft.
Roll Area	120 yd^2

Disclaimer: ACF Environmental assumes no liability for the completeness or accuracy of this information or the ultimate use of this information. This document should not be construed as engineering advice. Always consult the project engineer for project specific requirements. The end user assumes sole responsibility for the use of this information and product.

Custom formulated to meet your erosion control needs.

EARTHSHIELD™ NATURAL
CM700 WOVEN COIR

EarthShield™ CM700 is a woven, open-mesh geotextile made from 100% natural and biodegradable Coir netting. Coir netting is installed on a surface to hold seed and soil intact during the establishment or vegetative cover. Coir mats are 100% biodegradable.

SPECIFICATIONS:

The CM700 open-mesh woven fabric will utilize the following characteristics:

PROPERTY	TEST METHOD	MACHINE DIRECTION	CROSS MATCH DIRECTION
Tensile Strength (Dry)	ASTM D4595	77 lb/in	86 lb/in
Tensile Strength (Wet)	ASTM D4595	78 lb/in	87 lb/in
Grab Elongation	ASTM D4632	26%	26%
Elongation at Failure (Dry)	ASTM D4595	26%	26%
Elongation at Failure (Wet)	ASTM D4595	27%	27%
Apparent Opening Size (AOS)	ASTM D4751	0.59” x 0.67”	
Percent Open Area		49%	
Mass	ASTM D5261	700 gsm	
Thickness	ASTM D5199	0.36	

Values quoted above are the result of multiple tests conducted at an independent testing facility. CM700 meets or exceeds values listed.
[1] Values apply to both machine and cross-machine directions

PACKAGING:

Roll Width	6.6 ft
Roll Length	164 ft.
Roll Area	120 yd^2

Disclaimer: ACF Environmental assumes no liability for the completeness or accuracy of this information or the ultimate use of this information. This document should not be construed as engineering advice. Always consult the project engineer for project specific requirements. The end user assumes sole responsibility for the use of this information and product.

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www.eastcoasterosion.com
443 Bricker Road Bernville, PA 19506
1.800.582.4005 +1.610.488.8496 Fax +1.610.488.8494

Material and Performance Specification

ECX-2™ Double Net Excelsior Rolled Erosion Control Product

Description:

The ECX-2™ is made with uniformly distributed 100% Aspen wood excelsior and two polypropylene nets securely sewn together with degradable thread. The tightly compressed blankets are wrapped and include a product label, code and installation guide. The blankets are palletized for easy transportation. The ECX-2™ has functional longevity of approximately 24 months, but will vary depending on soil and climatic conditions, and is suitable for slopes 2:1 to 1.5:1 and medium to high flow channels The ECX-2™ meets Type 3.B specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17.

Matrix:	1	2
	Aspen Wood Excelsior	

Netting:	Type	Net Color
Top:	Lightweight Photodegradable Polypropylene	Green
Middle:	None	
Bottom:	Lightweight Photodegradable Polypropylene	

Net Opening:	Top	Middle	Bottom
	0.5" x 0.5"		0.5" x 0.5"

Thread:	Type	Color
	Degradable Thread	White

Roll Sizes:	Standard	"A" Size	Mega
Width:	7.5 ft 2.3 m	3.75 ft 1.1 m	15 ft 4.6 m
Length:	120 ft 36.6 m	240 ft 73.2 m	120 ft 36.6 m
Weight ±10%:	64 lbs 29.0 kg	64 lbs 29.0 kg	128 lbs 58.1 kg
Area:	100 yd^2 83.6 m^2	100 yd^2 83.6 m^2	200 yd^2 167.2 m^2
#/Pallet:	20	9	16

Index Value Properties*:

Property	Test Method	Typical	
Mass/Unit Area	ASTM D6475	11.00 oz/yd^2	373.0 g/m2
Thickness	ASTM D6525	0.38 in	9.65 mm
Tensile Strength-MD	ASTM D6818	169 lb/ft	2.47 kN/m
Elongation-MD	ASTM D6818	23 %	
Tensile Strength-TD	ASTM D6818	135 lb/ft	1.97 kN/m
Elongation-TD	ASTM D6818	26.0 %	
Light Penetration	ASTM D6567	36 %	
Density / Specific Gravity	ASTM D792	N/A %	
Water Absorption	ASTM D1117	171 %	

*May differ depending upon raw material variations

Bench-Scale Testing* (NTPEP***):

Test Method	Parameters	Results
ECTC Method 2 Rainfall	50mm (2in) / hr-30 min	SLR**=6.69
	100mm (4in) / hr-30 min	SLR**=5.18
	150mm (6in) / hr-30 min	SLR**=3.99
ECTC Method 3 Shear Resistance	Shear at .50 in soil loss	2.24 lb/ft^2
ECTC Method 4 Germination	Top soil; Fescue; 21 day incubation	530 %

*Bench scale tests should not be used for design purposes.

**Soil Loss Ratio=Soil Loss Bare Soil/Soil Loss with RECP=1/C-Factor

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Slope Performance Design Values*:

Property	Test Method		Value
C-Factors	ASTM D6459		0.04
Slope Length (L)	**≤ 3:1**	**3:1-2:1**	**≥ 2:1**
< 50 ft (15 m)	0.035	0.144	0.272
50 ft – 100 ft	0.100	0.172	0.377
>100 ft (30 m)	0.210	0.317	0.541

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

Channel Performance Design Values*:

Property	Test Method				
Unvegetated Shear Stress	ASTM D 6460	2.13	lbs/ft^2	101.98	Pa
Unvegetated Velocity	ASTM D 6460	10.7	ft/s	3.26	m/s
Vegetated Shear Stress	NA	N/A	lbs/ft^2	N/A	Pa
Vegetated Velocity	NA	N/A	ft/s	N/A	m/s
Manning's N (Value Represents a Range)			0.026		

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

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Material and Performance Specification

ECSC-2™ Double Net Straw/Coconut Rolled Erosion Control Product

Description:

The ECSC-2™ is made with uniformly distributed 70% agricultural straw, 30% coconut fiber and two polypropylene nets securely sewn together with degradable thread. The tightly compressed blankets are wrapped and include a product label, code and installation guide. The blankets are palletized for easy transportation. The ECSC-2™ has functional longevity of approximately 24 months, but will vary depending on soil and climatic conditions, and is suitable for slopes 2:1 to 1:1 and low to medium flow channels. The ECSC-2™ meets Type 3.B specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17.

Matrix:	1	2
	70% Straw	30% Coconut

Netting:	Type	Net Color
Top:	Lightweight Photodegradable Polypropylene	Green
Middle:	None	
Bottom:	Medium weight UV Stabilized Polypropylene	

Net Opening:	Top	Middle	Bottom
	0.5" x 0.5"		0.75" x 0.75"

Thread:	Type	Color
	Degradable Thread	White

Roll Sizes:	Standard	"A" Size	Mega
Width:	8 ft 2.4 m	4 ft 1.2 m	16 ft 4.9 m
Length:	112.5 ft 34.3 m	225 ft 68.6 m	112.5 ft 34.3 m
Weight*:	57 lbs 25.9 kg	57 lbs 25.9 kg	114 lbs 51.7 kg
Area:	100 yd^2 83.6 m^2	100 yd^2 83.6 m^2	200 yd^2 167.2 m^2
#/Pallet:	25	9	25

*Weight at time of manufacturing.

Index Value Properties*:

Property	Test Method	Typical	
Mass/Unit Area	ASTM D6475	8.00 oz/yd^2	271.2 g/m2
Thickness	ASTM D6525	0.30 in	7.62 mm
Tensile Strength-MD	ASTM D6818	178 lb/ft	2.60 kN/m
Elongation-MD	ASTM D6818	31 %	
Tensile Strength-TD	ASTM D6818	148 lb/ft	2.16 kN/m
Elongation-TD	ASTM D6818	22.4 %	
Light Penetration	ASTM D6567	13 %	
Density / Specific Gravity	ASTM D792	N/A g/cm^3	
Water Absorption	ASTM D1117	436 %	

*May differ depending upon raw material variations

Bench-Scale Testing* (NTPEP***):

Test Method	Parameters	Results
ECTC Method 2 Rainfall	50mm (2in) / hr-30 min	SLR**=8.52
	100mm (4in) / hr-30 min	SLR**=11.01
	150mm (6in) / hr-30 min	SLR**=14.28
ECTC Method 3 Shear Resistance	Shear at .50 in soil loss	2.16 lb/ft^2
ECTC Method 4 Germination	Top soil; Fescue; 21 day incubation	503 %

*Bench scale tests should not be used for design purposes.

**Soil Loss Ratio=Soil Loss Bare Soil/Soil Loss with RECP=1/C-Factor

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Slope Performance Design Values*:

Property	Test Method		Value
C-Factors	ASTM D6459		0.02
Slope Length (L)	**≤ 3:1**	**3:1-2:1**	**≥ 2:1**
< 50 ft (15 m)	0.017	0.028	0.080
50 ft – 100 ft	0.031	0.059	0.125
>100 ft (30 m)	0.080	0.090	0.170

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

Channel Performance Design Values*:

Property	Test Method	Value			
Unvegetated Shear Stress	ASTM D 6460	2.25	lbs/ft^2	107.73	Pa
Unvegetated Velocity	ASTM D 6460	8.0	ft/s	2.44	m/s
Vegetated Shear Stress	NA	N/A	lbs/ft^2	N/A	Pa
Vegetated Velocity	NA	N/A	ft/s	N/A	m/s
Manning's N (Value Represents a Range)			0.029		

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

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Revised 1/11/2016

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Material and Performance Specification

ECSC-2B™ Double Net Straw/Coconut Biodegradable Rolled Erosion Control Product

Description:

The ECSC-2B™ is made with uniformly distributed 70% agricultural straw, 30% coconut fiber and two organic jute nets securely sewn together with biodegradable thread. The tightly compressed blankets are wrapped and include a product label, code and installation guide. The blankets are palletized for easy transportation. The ECSC-2B™ has functional longevity of approximately 18 months, but will vary depending on soil and climatic conditions, and is suitable for slopes 2:1 to 1:1 and low to medium flow channels. The ECSC-2B™ meets Type 3.B specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17.

Matrix:	1	2
	70% Straw	30% Coconut

Netting:	Type	Net Color
Top:	Organic Leno Weave Jute	Natural
Middle:	None	
Bottom:	Organic Leno Weave Jute	

Net Opening:	Top	Middle	Bottom
	0.5" x 1.0"		0.5" x 1.0"

Thread:	Type	Color
	Biodegradable Thread	Natural

Roll Sizes:	Standard	"A" Size	Mega
Width:	7.5 ft 2.3 m	3.75 ft 1.1 m	15 ft 4.6 m
Length:	120 ft 36.6 m	240 ft 73.2 m	120 ft 36.6 m
Weight ±10%:	60 lbs 27.2 kg	60 lbs 27.2 kg	120 lbs 54.4 kg
Area:	100 yd^2 83.6 m^2	100 yd^2 83.6 m^2	200 yd^2 167.2 m^2
#/Pallet:	16	6	16

Index Value Properties*:

Property	Test Method	Typical	
Mass/Unit Area	ASTM D6475	9.50 oz/yd^2	322.1 g/m2
Thickness	ASTM D6525	0.33 in	8.38 mm
Tensile Strength-MD	ASTM D6818	223 lb/ft	3.25 kN/m
Elongation-MD	ASTM D6818	14 %	
Tensile Strength-TD	ASTM D6818	134 lb/ft	1.96 kN/m
Elongation-TD	ASTM D6818	16.3 %	
Light Penetration	ASTM D6567	12 %	
Density / Specific Gravity	ASTM D792	N/A %	
Water Absorption	ASTM D1117	361 %	

*May differ depending upon raw material variations

Bench-Scale Testing* (NTPEP***):

Test Method	Parameters	Results
ECTC Method 2 Rainfall	50mm (2in) / hr-30 min	SLR**=11.89
	100mm (4in) / hr-30 min	SLR**=13.60
	150mm (6in) / hr-30 min	SLR**=15.50
ECTC Method 3 Shear Resistance	Shear at .50 in soil loss	2.46 lb/ft^2
ECTC Method 4 Germination	Top soil; Fescue; 21 day incubation	671 %

*Bench scale tests should not be used for design purposes.

**Soil Loss Ratio=Soil Loss Bare Soil/Soil Loss with RECP=1/C-Factor

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Slope Performance Design Values*:

Property	Test Method		Value
C-Factors	ASTM D6459		0.06
Slope Length (L)	**≤ 3:1**	**3:1-2:1**	**≥ 2:1**
< 50 ft (15 m)	0.055	0.070	0.122
50 ft – 100 ft	0.073	0.101	0.167
>100 ft (30 m)	0.122	0.132	0.212

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

Channel Performance Design Values*:

Property	Test Method	Value			
Unvegetated Shear Stress	ASTM D 6460	2.00	lbs/ft^2	95.76	Pa
Unvegetated Velocity	ASTM D 6460	8.0	ft/s	2.44	m/s
Vegetated Shear Stress	NA	N/A	lbs/ft^2	N/A	Pa
Vegetated Velocity	NA	N/A	ft/s	N/A	m/s
Manning's N (Value Represents a Range)			0.029		

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

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ECSC-2™ Double Net Straw/Coconut Rolled Erosion Control Product

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Matrix:	1	2
	70% Straw	30% Coconut

Netting:	Type	Net Color
Top:	Medium weight UV Stabilized Polypropylene	Green
Middle:	None	
Bottom:	Lightweight Photodegradable Polypropylene	

Net Opening:	Top	Middle	Bottom
	0.5" x 0.5"		0.75" x 0.75"

Thread:	Type	Color
	Degradable Thread	White

Roll Sizes:	Standard	"A" Size	Mega
Width:	7.5 ft 2.3 m	3.75 ft 1.1 m	15 ft 4.6 m
Length:	120 ft 36.6 m	240 ft 73.2 m	120 ft 36.6 m
Weight ±10%:	57 lbs 25.9 kg	57 lbs 25.9 kg	114 lbs 51.7 kg
Area:	100 yd^2 83.6 m^2	100 yd^2 83.6 m^2	200 yd^2 167.2 m^2
#/Pallet:	20	9	16

Index Value Properties*:

Property	Test Method	Typical	
Mass/Unit Area	ASTM D6475	9.00 oz/yd^2	305.1 g/m2
Thickness	ASTM D6525	0.30 in	7.62 mm
Tensile Strength-MD	ASTM D6818	178 lb/ft	2.60 kN/m
Elongation-MD	ASTM D6818	31 %	
Tensile Strength-TD	ASTM D6818	148 lb/ft	2.16 kN/m
Elongation-TD	ASTM D6818	22.4 %	
Light Penetration	ASTM D6567	13 %	
Density / Specific Gravity	ASTM D792	N/A %	
Water Absorption	ASTM D1117	436 %	

*May differ depending upon raw material variations

Bench-Scale Testing* (NTPEP***):

Test Method	Parameters	Results
ECTC Method 2 Rainfall	50mm (2in) / hr-30 min	SLR**=8.52
	100mm (4in) / hr-30 min	SLR**=11.01
	150mm (6in) / hr-30 min	SLR**=14.28
ECTC Method 3 Shear Resistance	Shear at .50 in soil loss	2.16 lb/ft^2
ECTC Method 4 Germination	Top soil; Fescue; 21 day incubation	503 %

*Bench scale tests should not be used for design purposes.

**Soil Loss Ratio=Soil Loss Bare Soil/Soil Loss with RECP=1/C-Factor

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Slope Performance Design Values*:

Property	Test Method		Value
C-Factors	ASTM D6459		0.02
Slope Length (L)	**≤ 3:1**	**3:1-2:1**	**≥ 2:1**
< 50 ft (15 m)	0.017	0.028	0.080
50 ft – 100 ft	0.031	0.059	0.125
>100 ft (30 m)	0.080	0.090	0.170

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

Channel Performance Design Values*:

Property	Test Method	Value			
Unvegetated Shear Stress	ASTM D 6460	2.25	lbs/ft^2	107.73	Pa
Unvegetated Velocity	ASTM D 6460	8.0	ft/s	2.44	m/s
Vegetated Shear Stress	NA	N/A	lbs/ft^2	N/A	Pa
Vegetated Velocity	NA	N/A	ft/s	N/A	m/s
Manning's N (Value Represents a Range)			0.029		

*Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

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Revised 1/1/2014

DRAFT

SMMUSD Malibu HS
Specific Plan Hydrology & Hydraulics Report

10/11/21

Prepared for:
Santa Monica-Malibu Unified School District
Facilities Improvement Projects
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Project No. 1SAN082310

TABLE OF CONTENTS

1.1 Project Description 3
1.2 Major Drainage Features 3
1.3 Proposed Improvements 4
1.4 Design Criteria 4
2.0 Hydrology 4
2.1 Overview 4
2.2 Methodology 5
3.0 Stormwater Quality 8
4.0 Storm Drain Hydraulics ESHA Existing Hydraulics 8
4.1 Overview 8
4.2 Methodology 8
4.3 Results 8
5.0 Phased Storm Drain Capacities 9
5.1 Preliminary Hydraulics 9

TABLES

Table 2-1 Hydrologic Input 6
Table 2-2 Subwatershed Results 7
Table 2-3 ESHA Peak Flow Rates 7
Table 3-1 Stormwater Treatment 8
Table 5-1 Storm Drain Sizing 9

APPENDICES

APPENDIX A – CAMPUS MASTERPLAN DRAINAGE EXHIBITS
APPENDIX B – DRAINAGE MAPS
APPENDIX C - HYDROLOGIC MODELING OUTPUT
APPENDIX D – STORMWATER QUALITY
APPENDIX E – ESHA HEC-RAS OUTPUT
APPENDIX F – STORMDRAIN SIZING

1.1 Project Description

The Santa Monica-Malibu Unified School District (District) is proposing a redevelopment of the former Juan Cabrillo Elementary School and Malibu High School in Los Angeles County to create a new campus for the Middle and High School with core areas for both facilities as well as shared amenities. The proposed project is under the purview of the District itself, the City of Malibu, and California Coastal Commission (CCC). The project will require a Specific Plan and Local Coastal Plan Amendment through the City as well as an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act. Overall site improvements will be phased.

This report addresses the four (4) phases of improvements associated with the Malibu Middle and High School Campus Specific Plan. Seven (7) onsite drainage management areas (DMAs) were identified in the 2019 Campus Masterplan, each with proposed water quality and hydromodification Best Management Practices (BMPs). Phase I is currently funded and under design, which includes development along the western portion of the school site and ESHA improvements.

1.2 Major Drainage Features

The environmentally sensitive habitat area (ESHA) is the sole major drainage feature within the overall redevelopment area. It is located along the western edge of the school property within Phase 1 of the proposed project and conveys stormwater runoff from 305 acres of developed and undeveloped lands originating in the foothills north of the project site. The typical channel cross section within the Phase I improvement area is 15 feet in depth with side slopes ranging from 1:1 to 2:1 (h:v). Vegetation along the reach include various trees, cacti, shrubs and grasses. A 60” CMP is located at the southern end of the project conveying flow under Morning View Drive. Analysis shows overtopping of the roadway in a dip section during all storm events other than a 2-year. The ESHA along the southern portion of the school site had been identified as “Drainage 1”. The upper portion of the ESHA has been designated as “Drainage 2”.

Two other “drainages” with smaller contributing drainage areas have been identified along the eastern sides of the school property and are designated as “Drainage 3” and Drainage 4”, each of which have incised channel segments with vegetative canopies. Stormwater runoff within these drainages is captured prior to reaching the phased development/equestrian areas and conveyed via storm drain pipe to Morning View Drive.

Capacities of the existing pipes or other conveyance structures are unknown and should be verified prior to development to ensure adequate capture and conveyance with no overflow reaching the school site.

1.3 Proposed Improvements

Phased improvements will increase the overall imperviousness of the sites and shall continue to convey flow to existing outfall locations. Improvements will include water quality features to treat stormwater runoff generated within each phase development area and detention/retention to reduce total runoff volume that match or be less than under existing conditions. Onsite infrastructure may include catch basins, new and existing storm drain pipes and channels in order to convey stormwater safely and efficiently through the site while maintaining current drainage patterns at property boundaries.

1.4 Design Criteria

The City of Malibu uses the 100-year design storm for stormwater conveyance through proposed developments. This value is obtained using the LA County Modrat methodology and a factor applied to the 50-year value to obtain the 100-year and other lesser storm events. When post-development runoff flow rates exceed pre-development, flow rates, mitigation must be obtained through one of the following approaches:

1) Provide a detention volume equal to 1" of rainfall from impervious surfaces and ½" from pervious surfaces, while slowly releasing the peak flows rates during the 2-yr, 10-year and 100-year storm events.
2) Demonstrate all drainage facilities downstream of the project site (from the site to the ocean) are adequate to convey the 25-yr storm event
3) Construct improvements to offsite drainage facilities so that all drainage facilities downstream (from the project site to the ocean) are adequate to convey the 25-year storm event
4) Other measures to accomplish the goal of mitigating all downstream facilities.

All existing onsite stormwater conveyance features shall be analyzed to establish existing capacities and upsized as necessary to provide 100-year flow rate conveyance, or detention provided to reduce flow to match pipe capacities. Tables 2-2 and 2-3 provide design discharge rates for various offsite drainages. Estimate total detention volumes calculated during the original master planning effort are summarized in Table 3-1, as well as stormwater quality flow rates and volumes performed during preparation of this report.

2.0 Hydrology

2.1 Overview

The contributing drainage area proving stormwater runoff to the ESHA was delineated using USGS National Elevation Data. A total of 305 acres was determined, originating in undeveloped mountainous areas which comprises roughly one half of the overall watershed area. The other half consists of primarily residential neighborhoods. Slopes range from 4-22% within the contributing drainage area.

2.2 Methodology

The project is located within the City of Malibu, in Los Angeles County. The City requires hydrologic calculations to be performed using the County Methodology. Per county standards, the overall watershed was broken into approximately 40-acre watersheds and XPSWMMM used to calculated peak flows. Rainfall, soil types and impervious percentages were obtained from Los Angeles County provided shapefiles. Rainfall values ranged from 6.9 to7.2 inches. Soil types 32 and 38 were present within the drainage area. Impervious values were established as 1% for undeveloped areas and 21% for developed areas based on the LA County Land Use shapefile. Table 2-1 summarizes the hydrologic input. Watershed Maps are provided in Appendix B.

Table 2-1
Hydrologic Input

WS EXHIBIT LABEL	Area (ac)	Flow Path (ft)	Slope	Soil Type	Imp(%)	Rainfall (in)
OS2E	39.43	2135	0.24	32	1	7.2
OS2D	41.77	2250	0.22	32	1	7.1
OS2C	45.72	3671	0.18	32	1	7
OS2B	42.76	3500	0.20	32	1	14
OS2A	32.06	2913	0.14	38	21	6.9
OS3A	6.13	979	0.09	38	21	6.9
OS3B	1.40	464	0.13	38	21	6.9
OS3C	2.33	2008	0.60	38	21	6.9
OS3D	24.59	2099	0.16	38	21	6.9
OS4A	13.98	1887	0.06	38	21	6.9
CP1F	17.35	1984	0.06	38	21	6.9
CP1E	35.24	3042	0.11	38	21	6.9
CP1D	5.61	1057	0.04	38	21	6.9
CP1C	1.97	399	0.03	38	1	6.9
CP1B	3.16	612	0.02	38	21	6.9
CP1A	38.50	2787	0.08	38	21	6.9
DMA A	3.07	542	0.01	38	90	6.8
DMA B	3.11	607	0.01	38	90	6.8
DMA C	1.16	315	0.01	38	90	6.8
DMA D	3.17	499	0.01	38	90	6.8
DMA E	3.35	435	0.01	38	90	6.8
DMA F	1.69	321	0.01	38	90	6.8
DMA G	1.37	193	0.01	38	90	6.8

A peak flow of 490cfs for the 50-year 4th day storm event was calculated as flowing through the ESHA within the project area. Los Angeles County factors were used to establish the peak flow rates for other storm events based on the 50-year event. Table 2-2 summarizes individual watershed peak discharges for various storm events and Table 2-3 summarizes the total peak flows within the ESHA.

Table 2-2
Subwatershed Results

WS Label	Tc (min)	Q_{100} (cfs)	Q_{50} (cfs)	Q25(cfs)	Q_{10} (cfs)	Q_5 (cfs)	Q_2(cfs)
OS2E	9	115	103	90	73	60	40
OS2D	9	132	108	95	77	63	42
OS2C	14	111	91	80	65	53	35
OS2B	7	101	83	73	59	49	32
OS2A	13	75	62	54	44	36	24
OS3A	7	25	20	18	14	12	8
OS3B	5	6	5	4	4	3	2
OS3C	13	6	5	5	4	3	2
OS3D	10	68	56	49	40	33	22
OS4A	12	38	31	28	22	18	12
CP1F	13	47	39	34	28	23	15
CP1E	13	94	77	68	55	45	30
CP1D	8	19	16	14	11	9	6
CP1C	5	9	8	7	5	4	3
CP1B	6	12	10	9	7	6	4
CP1A	15	77	63	56	45	37	24
DMA A	5	12	10	9	7	6	4
DMA B	5	12	10	9	7	6	4
DMA C	5	5	4	4	3	2	2
DMA D	6	13	10	9	7	6	4
DMA E	6	14	12	10	8	7	4
DMA F	5	7	6	5	4	4	2
DMA G	5	6	5	4	4	3	2

Table 2-3
ESHA Peak Flow Rates

Q_{100} (cfs)	Q_{50} (cfs)	Q_{25}(cfs)	Q_{10} (cfs)	Q_5 (cfs)	Q_2(cfs)
446	398	349	284	232	154

3.0 Stormwater Quality

Proposed preliminary alignments for onsite storm drain system are depicted on the watershed maps and campus master plan exhibits provided in Appendix A and B. Water quality volumes and flow rate calculations are provided in Appendix D and summarized in Table 3-1.

Table 3-1
Stormwater Treatment

Phase	DMA	Area (ac)	85th %WQF (cfs)	85% WQV (ft3)	0.75" WQF (cfs)	0.75" WQV (ft^3)	Total Detention Volume Required (ft^3)
1	A	3.08	0.52	6421	0.57	6879	11,000
1	B	3.05	0.42	6422	0.46	6881	10,000
2	C	1.15	0.19	2395	0.21	2566	4,000
3	D	3.1	0.45	6557	0.5	7025	11,000
3	E	3.26	0.53	7311	0.58	7833	11,400
3	F	1.9	0.21	3486	0.3	3735	7,000
4	G	1.37	0.26	2481	0.28	3044	5,000

4.0 Storm Drain Hydraulics ESHA Existing Hydraulics

4.1 Overview

HEC-RAS was used to analyzed hydraulics in the ESHA in order to establish water surface elevations and flow velocities for various storm events. Project topographic data was primarily used to cut cross sections within the project limits and was supplemented with USGS NED data as necessary to provide containment along the western bank and cross sections downstream of the 60” CMP cross culvert.

4.2 Methodology

Analyses were performed using a steady state flow simulation for each calculated storm event. The model was run with the subcritical flow regime and a normal depth downstream boundary conditions using the channel slope. Manning’s values were set at 0.10 for the channel and 0.25 for the channel overbanks to account for vegetation.

4.3 Results

Result from the RAS model indicated erosive velocities averaging 6fps during the 2-year storm event and 8fps during the 50-year event and average depths of 3ft and 5ft

respectively. Note that the analysis assumes well established vegetation and does not account for burning or loss of vegetation that may occur due to maintenance or during different seasons.

Results from the HEC-RAS model also indicate that flows for the design storm event are contained within the channel banks, and do not overtop onto Malibu High School property. Results also show that the existing culvert under Morning View Drive is undersized and overtops during frequent storm events. Upsizing of the culvert should be considered. Results are provided in Appendix E.

5.0 Phased Storm Drain Capacities

5.1 Preliminary Hydraulics

100-Year design storm peak flow rates shall be conveyed through storm drain systems under normalized flow depth conditions (i.e. not pressurized). Pipe capacity calculations were performed to determine the minimum pipe size necessary for conveyance of each drainage management area within the proposed project phasing. Pipe sized range between 18” and 25” with an assumed minimum slope of 0.50% and are summarized in Table 5-1. Calculation sheets are provided in Appendix F.

Table 5-1
Storm Drain Sizing

WS EXHIBIT LABEL	Area (ac)	Q50 (cfs)	Minimum Size Pipe 0.5%
DMA A	3.07	12	24" RCP
DMA B	3.11	12	24" RCP
DMA C	1.16	5	18" RCP
DMA D	3.17	13	24" RCP
DMA E	3.35	14	24" RCP
DMA F	1.69	7	18" RCP
DMA G	1.37	6	18" RCP

APPENDIX A
CAMPUS MASTERPLAN
DRAINAGE EXHIBITS

Figure 9.3-8 Conceptual Storm Drain + Water Quality: Phase 1

LEGEND

- LIMIT OF WORK
- SD — PROPOSED STORM DRAIN PIPE
- X / X.XX — DRAINAGE MANAGEMENT AREA (DMA) / TOTAL ACREAGE
- XX — UTILITY POINT OF CONNECTION

NOTES

1. PHASE 1 ASSUMED TO CONTINUE NATURAL DRAINAGE PATTERN.

2. PHASE 1 TO INCORPORATE WATER QUALITY AND HYDROMODIFICATION BMP'S PRIOR TO DISCHARGE.

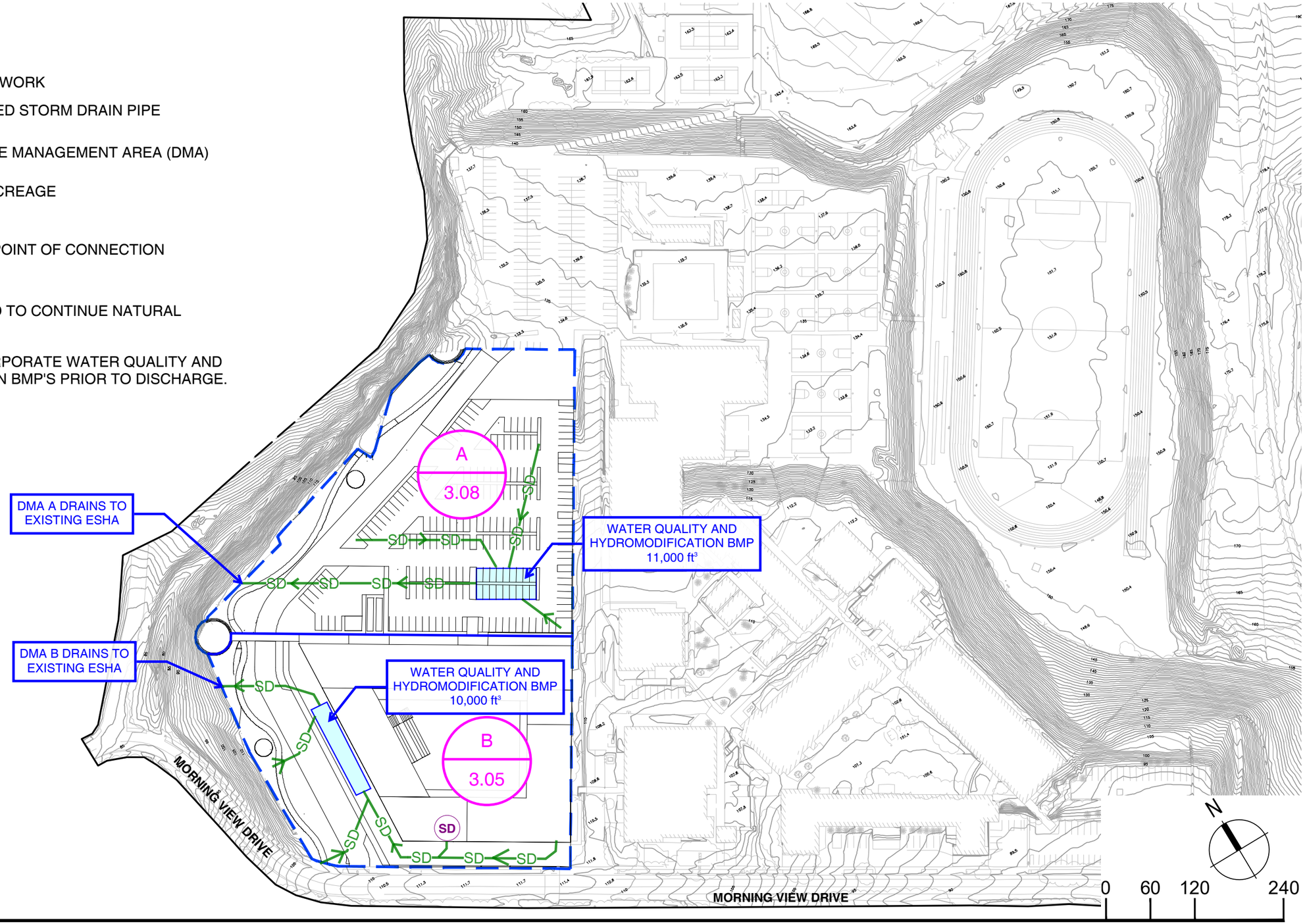


Figure 9.4-9 Conceptual Storm Drain and Water Quality: Phases 2-4

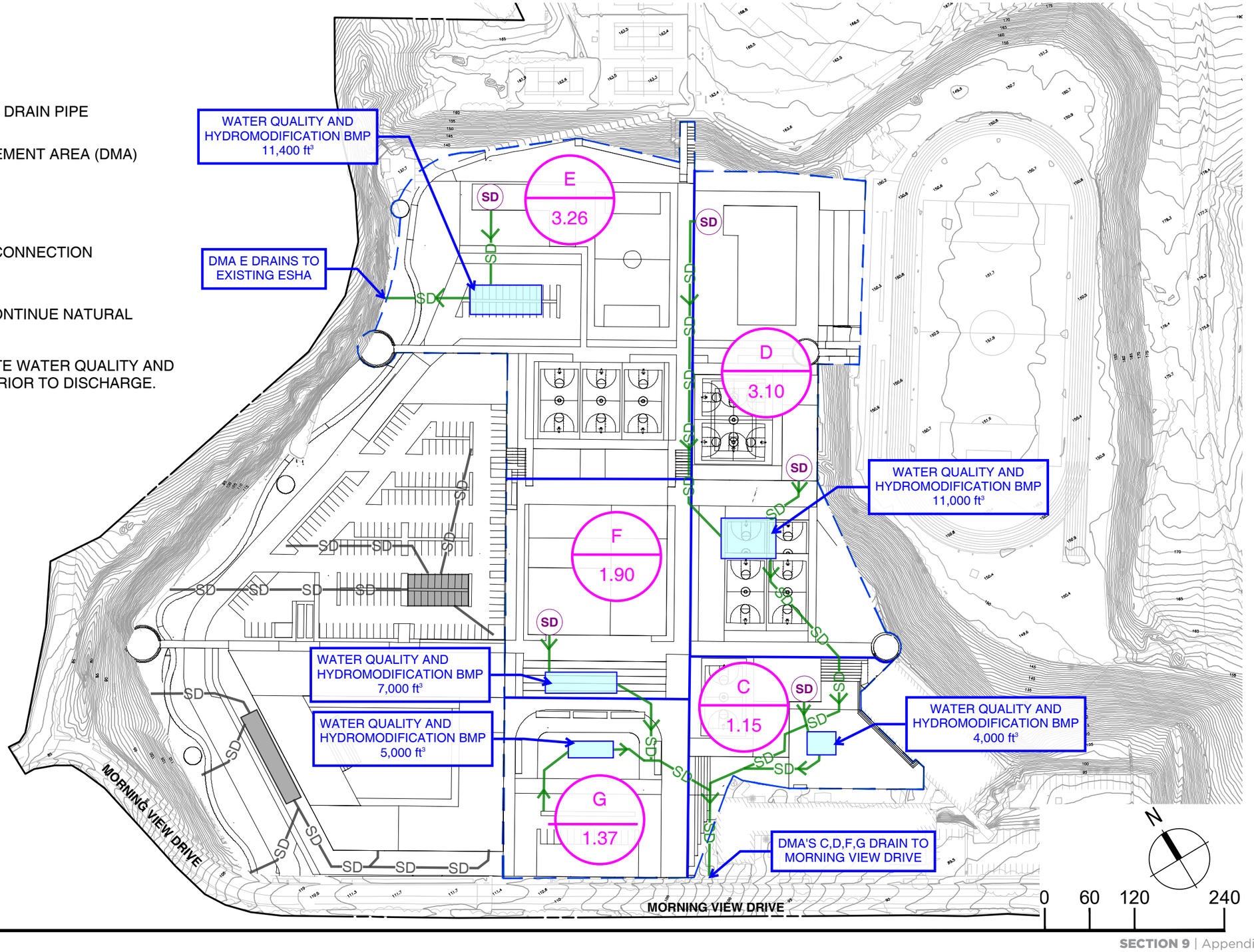
LEGEND

- LIMIT OF WORK
- SD — PROPOSED STORM DRAIN PIPE
- X / X.XX — DRAINAGE MANAGEMENT AREA (DMA) / TOTAL ACREAGE
- XX — UTILITY POINT OF CONNECTION

NOTES

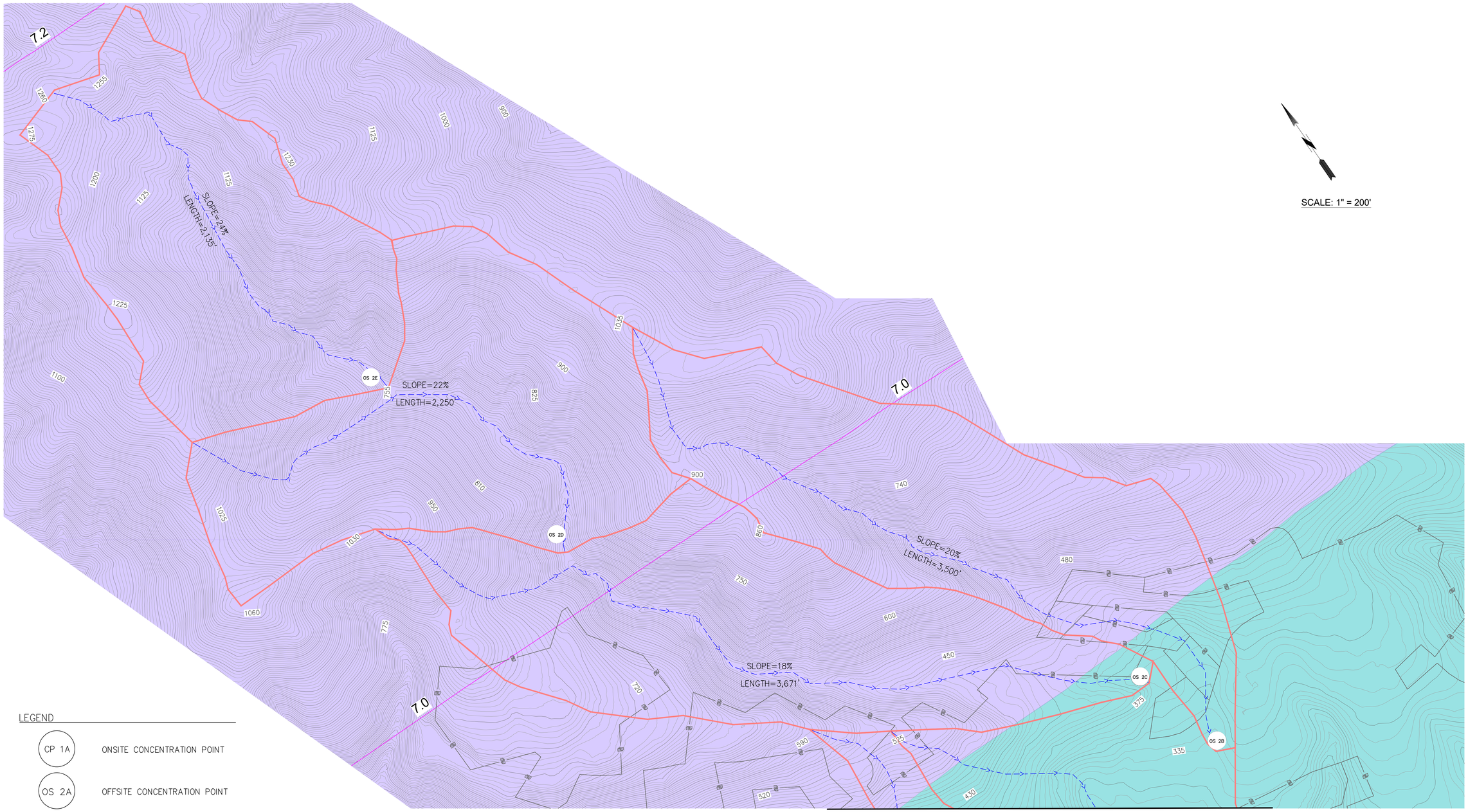
1. PHASES 2-4 ASSUMED TO CONTINUE NATURAL DRAINAGE PATTERN.

2. PHASES 2-4 TO INCORPORATE WATER QUALITY AND HYDROMODIFICATION BMP'S PRIOR TO DISCHARGE.



APPENDIX B
DRAINAGE MAPS

FED ID XXXXXXX



SCALE: 1" = 200'

MATCHLINE SEE SHEET 2

LEGEND

- CP 1A — ONSITE CONCENTRATION POINT
- OS 2A — OFFSITE CONCENTRATION POINT
- WATERSHED BOUNDARY
- PARCEL BLOCK BOUNDARIES
- HEC-RAS CROSS SECTIONS
- 50-YEAR 24-HOUR RAINFALL
- SOIL TYPE 32
- SOIL TYPE 38

DRAFTER EA | DESIGNER JO/EA | CHECKER JO | CADD PROJECT FILE NAME $FILE$

811 Know what's below. Call before you dig.

APPROVED BY:
CITY OF DATE

APPROVED BY:
CITY OF DATE

APPROVED BY:
CITY OF DATE

APPROVED BY MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS
ASSISTANT DEPUTY DIRECTOR DATE

RECOMMENDED BY:
DESIGN TEAM X DATE

DATE	MARK	DESCRIPTION

REVISIONS

PROJECT ENGINEER DATE

LOS ANGELES COUNTY PUBLIC WORKS

SMMUSD MALIBU HS
SPECIFIC PLAN

WATERSHED MAP

DWG XX-X-XXX.X | PD XXXXXXX | SHEET 1 OF 4

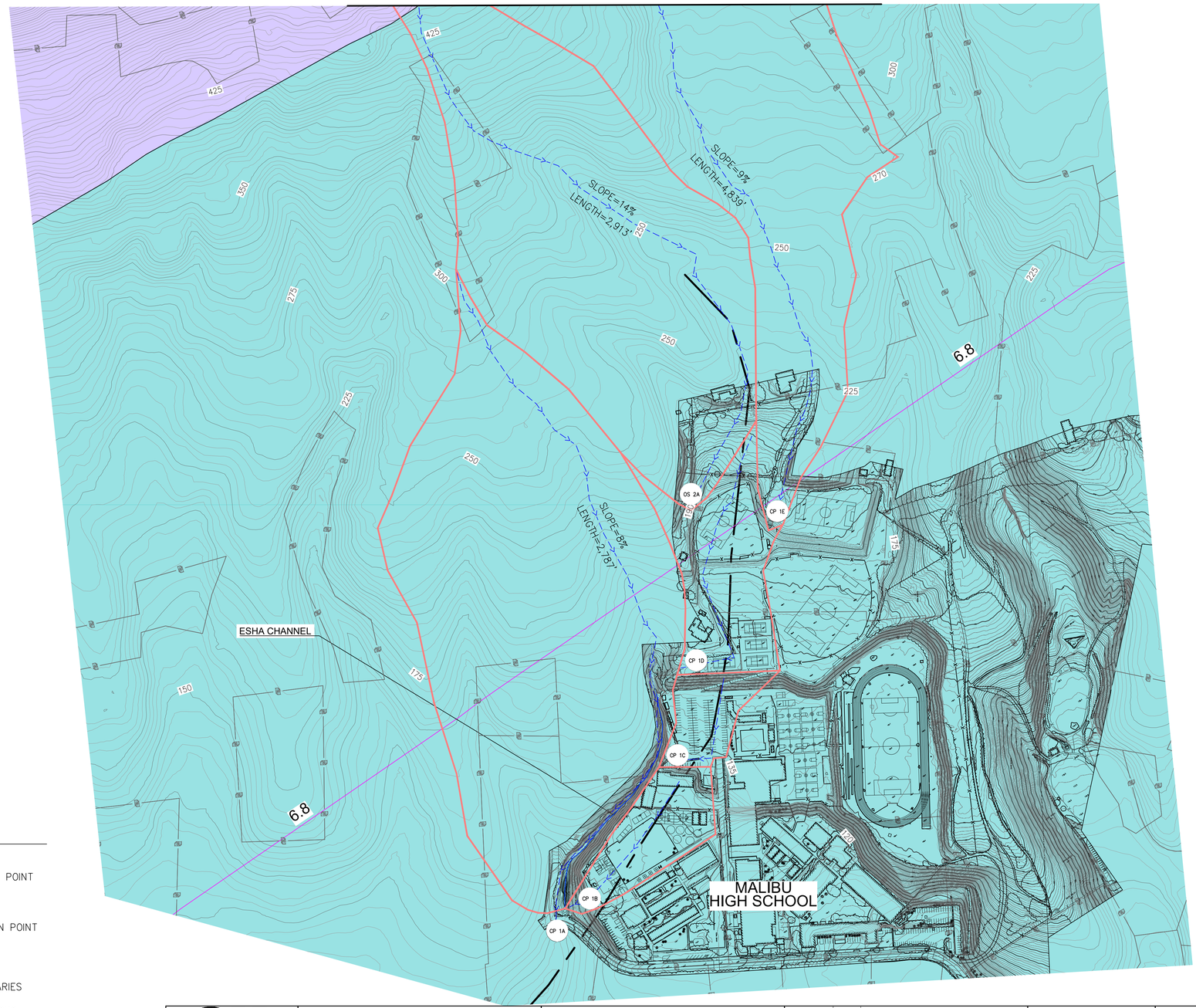
UNOFFICIAL AND SUBJECT TO CHANGE
DATE: $DATE$

PLAN XX

DATE: $DATE$ TIME: $TIME$ FILE: $FILE$

FED ID XXXXXXX

MATCHLINE SEE SHEET 1



SCALE: 1" = 200'

LEGEND

- CP 1A — ONSITE CONCENTRATION POINT
- OS 2A — OFFSITE CONCENTRATION POINT
- WATERSHED BOUNDARY
- PARCEL BLOCK BOUNDARIES
- HEC-RAS CROSS SECTIONS
- 50-YEAR 24-HOUR RAINFALL
- SOIL TYPE 32
- SOIL TYPE 38

CADD PROJECT FILE NAME $FILE$
CHECKER JO
DESIGNER JO/EA
DRAFTER EA

811 Know what's below. Call before you dig.

APPROVED BY:
CITY OF DATE

APPROVED BY:
CITY OF DATE

APPROVED BY:
CITY OF DATE

APPROVED BY MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS
ASSISTANT DEPUTY DIRECTOR DATE

RECOMMENDED BY:
DESIGN TEAM X DATE

DATE	MARK	DESCRIPTION

REVISIONS

PROJECT ENGINEER DATE

LOS ANGELES COUNTY PUBLIC WORKS

SMMUSD MALIBU HS
SPECIFIC PLAN

WATERSHED MAP

DWG XX-X-XXX.X | PD XXXXXXX | SHEET 2 OF 4

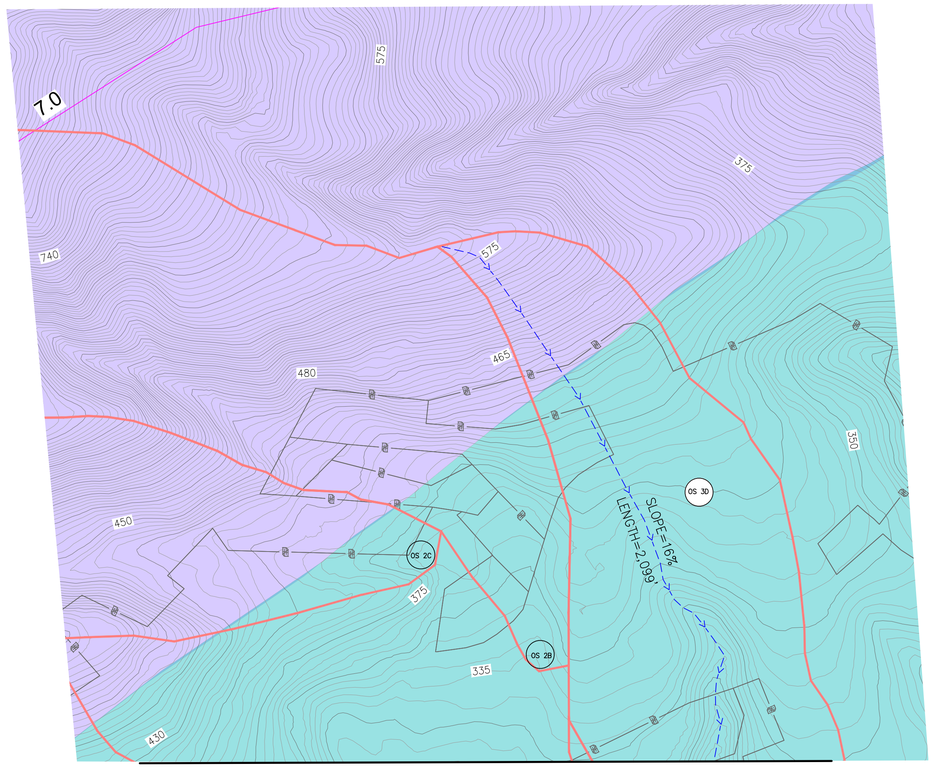
UNOFFICIAL AND SUBJECT TO CHANGE
DATE: $DATE$

PLAN XX

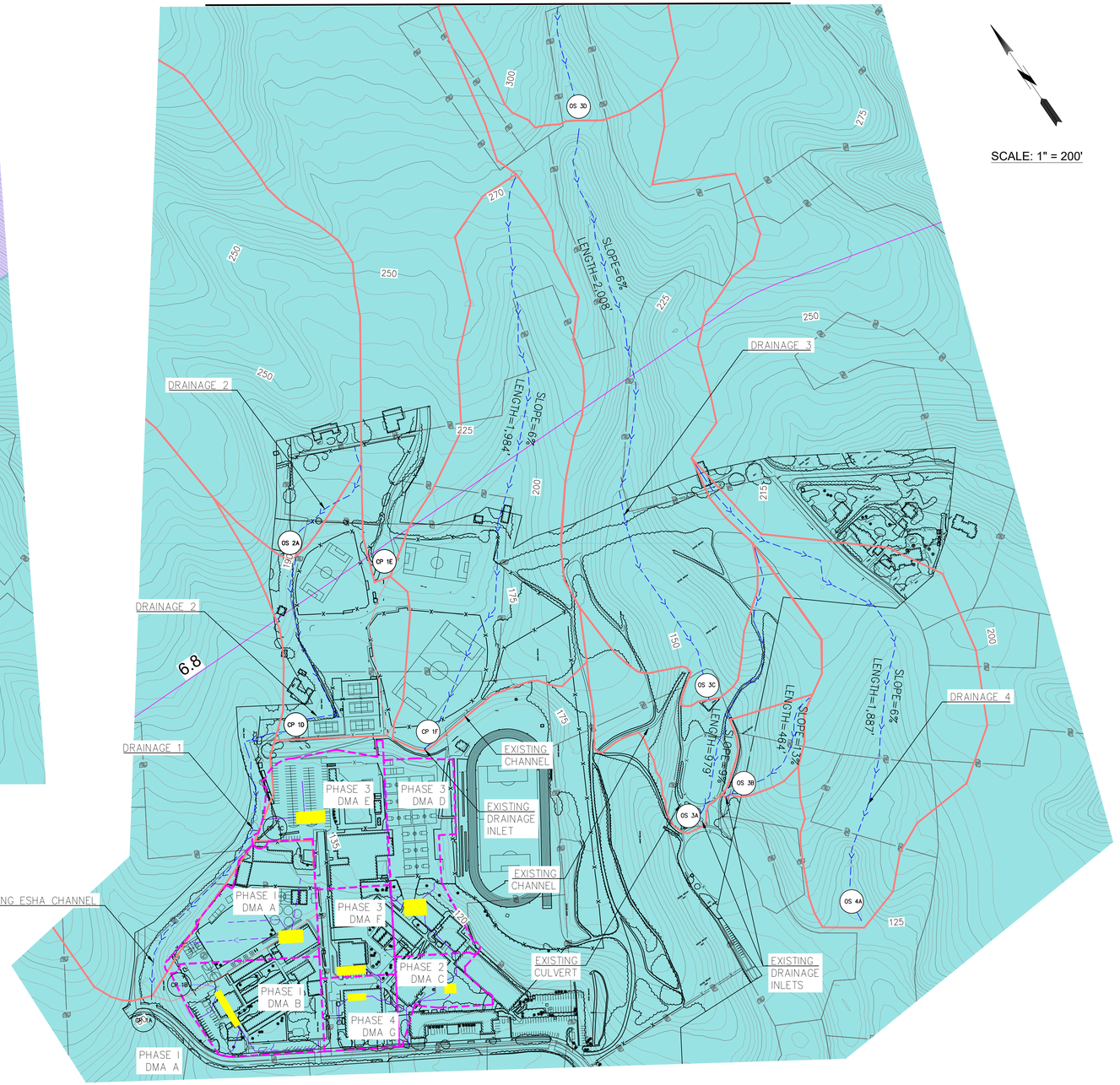
DATE: $DATE$ TIME: $TIME$ FILE: $FILE$

FED ID XXXXXXX

MATCHLINE SEE BELOW LEFT



MATCHLINE SEE ABOVE RIGHT



LEGEND

- CP 1A — ONSITE CONCENTRATION POINT
- OS 2A — OFFSITE CONCENTRATION POINT
- WATERSHED BOUNDARY
- PARCEL BLOCK BOUNDARIES
- PHASE WATERSHED BOUNDARY
- 50-YEAR 24-HOUR RAINFALL
- SOIL TYPE 32
- SOIL TYPE 38

CADD PROJECT FILE NAME	$FILE$
CHECKER	JO
DESIGNER	JO/EA
DRAFTER	EA

Know what's below. Call before you dig.

APPROVED BY:
CITY OF ____ DATE

APPROVED BY:
CITY OF ____ DATE

APPROVED BY:
CITY OF ____ DATE

APPROVED BY MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS
ASSISTANT DEPUTY DIRECTOR ____ DATE

RECOMMENDED BY:
DESIGN TEAM X ____ DATE

DATE	MARK	DESCRIPTION
		REVISIONS

PROJECT ENGINEER ____ DATE

LOS ANGELES COUNTY PUBLIC WORKS

SMMUSD MALIBU HS
SPECIFIC PLAN

WATERSHED MAP

DWG XX-X-XXX.X | PD XXXXXXX | SHEET 3 OF 4

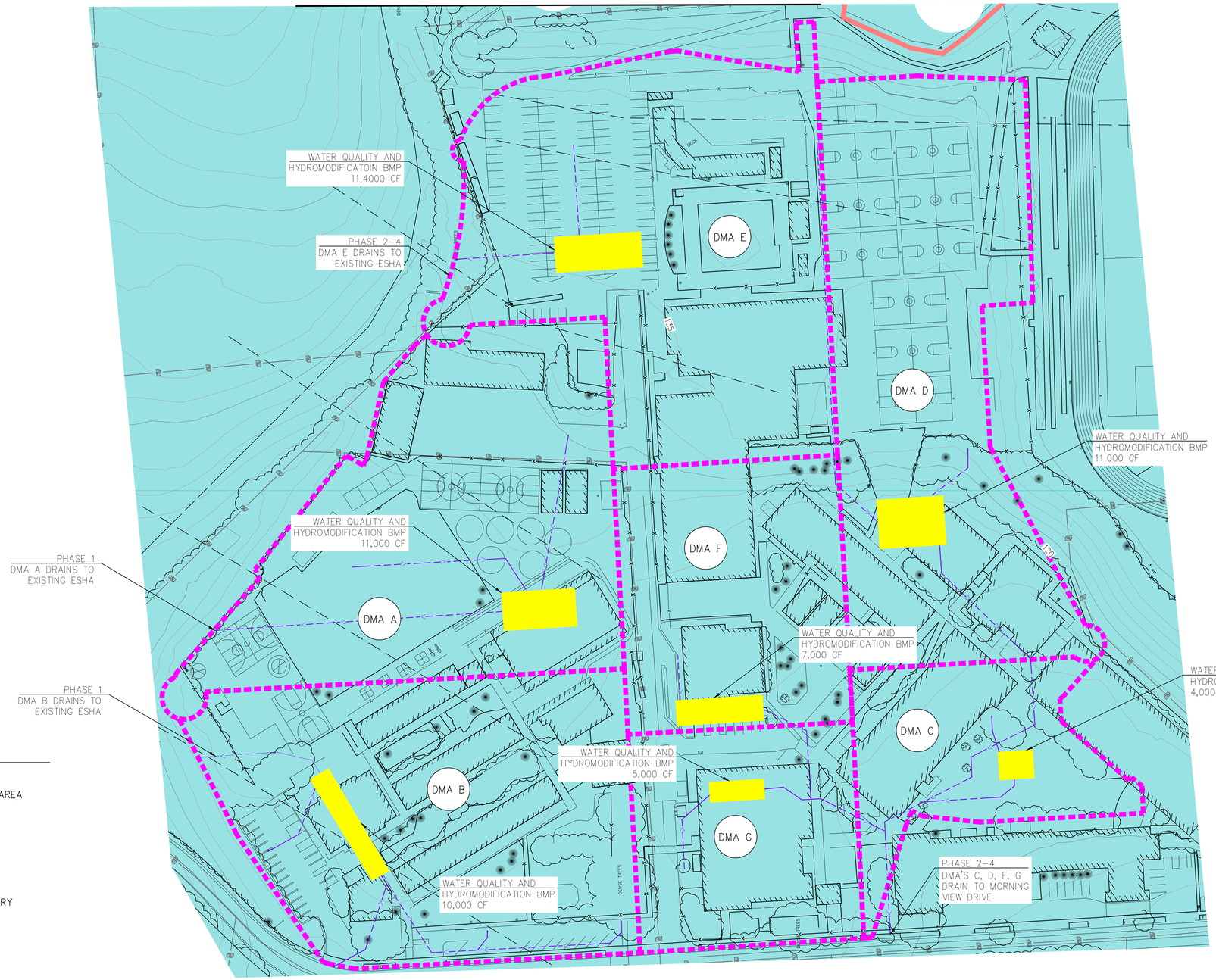
UNOFFICIAL AND SUBJECT TO CHANGE
DATE: $DATE$

PLAN XX

DATE: $DATE$ TIME: $TIME$ FILE: $FILE$

FED ID XXXXXXX

MATCHLINE SEE SHEET 1



SCALE: 1" = 60'

LEGEND

- DMA A — ONSITE DRAINAGE MANAGEMENT AREA
- OS A — OFFSITE CONCENTRATION POINT
- PHASE 1 WATERSHED BOUNDARY
- PHASE 2-4 WATERSHED BOUNDARY
- PARCEL BLOCK BOUNDARIES
- HEC-RAS CROSS SECTIONS
- 50-YEAR 24-HOUR RAINFALL
- SOIL TYPE 32
- SOIL TYPE 38
- WATER QUALITY AND HYDROMODIFICATION BMP

DRAFTER	DESIGNER	CHECKER	CADD PROJECT FILE NAME
EA	JO/EA	JO	$FILE$

811 Know what's below. Call before you dig.

APPROVED BY: CITY OF ____ DATE ____

APPROVED BY: CITY OF ____ DATE ____

APPROVED BY: CITY OF ____ DATE ____

APPROVED BY MARK PESTRELLA, DIRECTOR OF PUBLIC WORKS

ASSISTANT DEPUTY DIRECTOR ____ DATE ____

RECOMMENDED BY:

DESIGN TEAM X ____ DATE ____

DATE	MARK	DESCRIPTION
		REVISIONS

PROJECT ENGINEER ____ DATE ____

LOS ANGELES COUNTY PUBLIC WORKS

SMMUSD MALIBU HS

SPECIFIC PLAN

WATERSHED MAP

DWG XX-X-XXX.X | PD XXXXXXX | SHEET 2 OF 4

UNOFFICIAL AND SUBJECT TO CHANGE
DATE: $DATE$

PLAN XX

DATE: $DATE$ TIME: $TIME$ FILE: $FILE$

APPENDIX C
HYDROLOGIC MODELING OUTPUT

Peak Flow Hydrologic Analysis

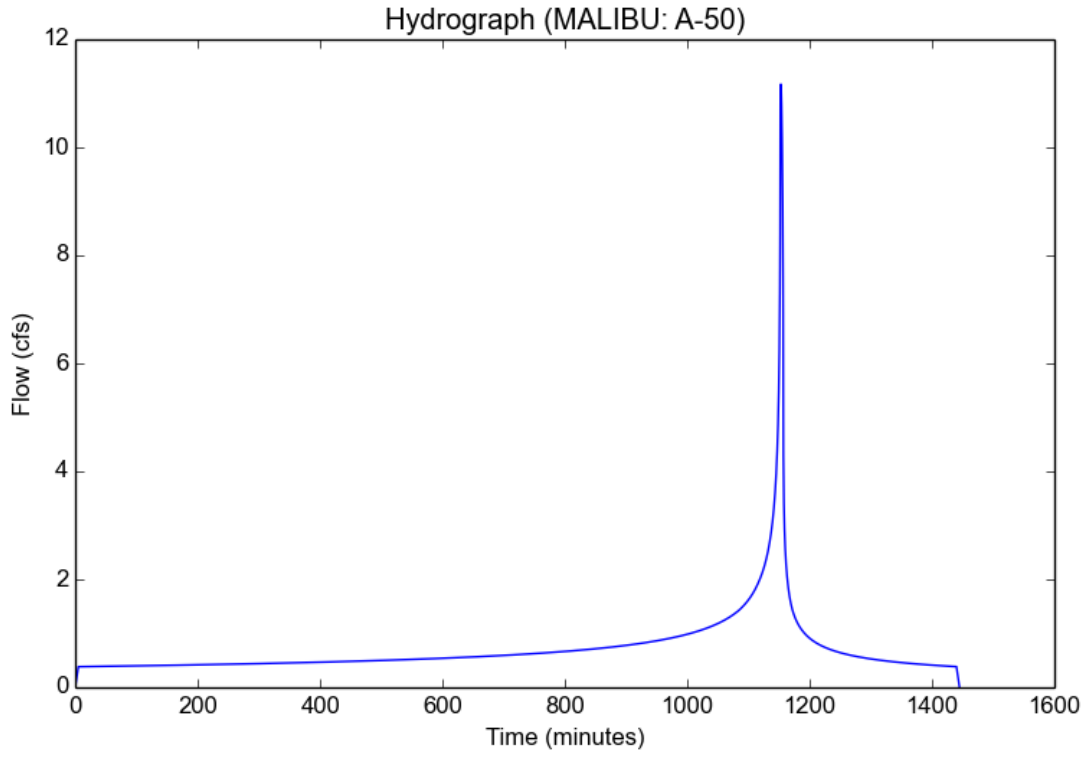
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	A-50
Area (ac)	3.107274894
Flow Path Length (ft)	303.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	50-yr
Fire Factor	0.83
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	4.0571
Undeveloped Runoff Coefficient (Cu)	0.7609
Developed Runoff Coefficient (Cd)	0.8861
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	11.1705
Burned Peak Flow Rate (cfs)	11.6628
24-Hr Clear Runoff Volume (ac-ft)	1.4452
24-Hr Clear Runoff Volume (cu-ft)	62953.0523



Peak Flow Hydrologic Analysis

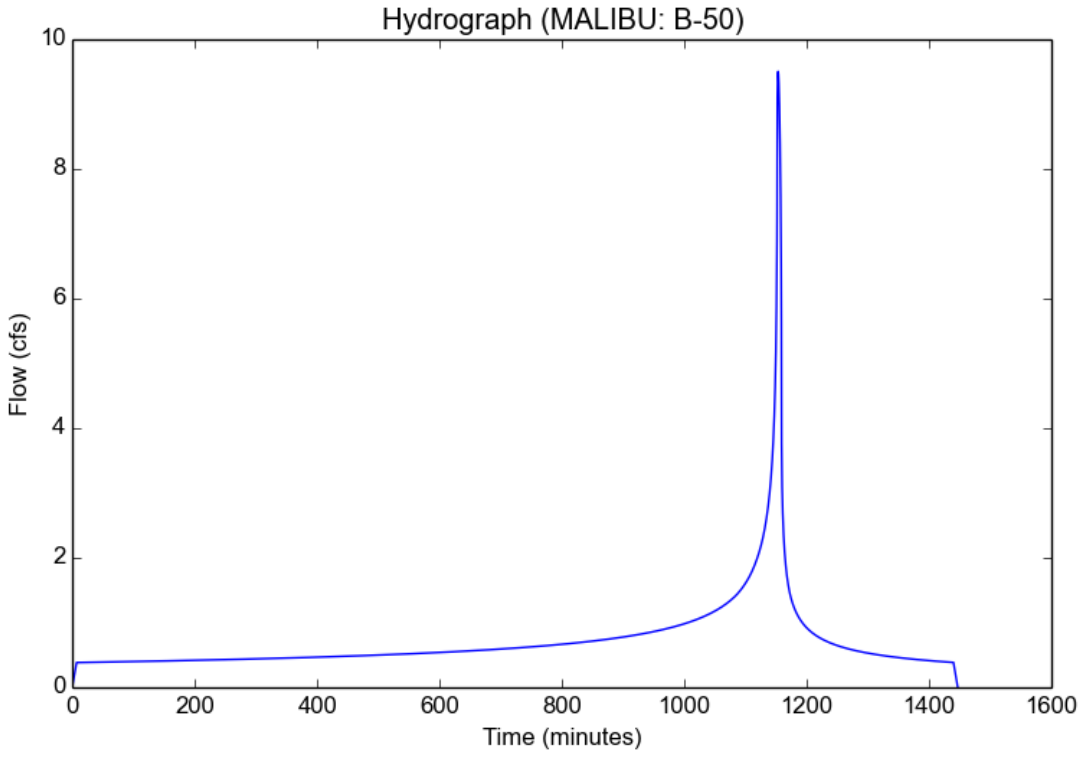
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	B-50
Area (ac)	3.10780727
Flow Path Length (ft)	607.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	50-yr
Fire Factor	0.83
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	3.4636
Undeveloped Runoff Coefficient (Cu)	0.7306
Developed Runoff Coefficient (Cd)	0.8831
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	9.5055
Burned Peak Flow Rate (cfs)	9.9272
24-Hr Clear Runoff Volume (ac-ft)	1.4454
24-Hr Clear Runoff Volume (cu-ft)	62960.8543



Peak Flow Hydrologic Analysis

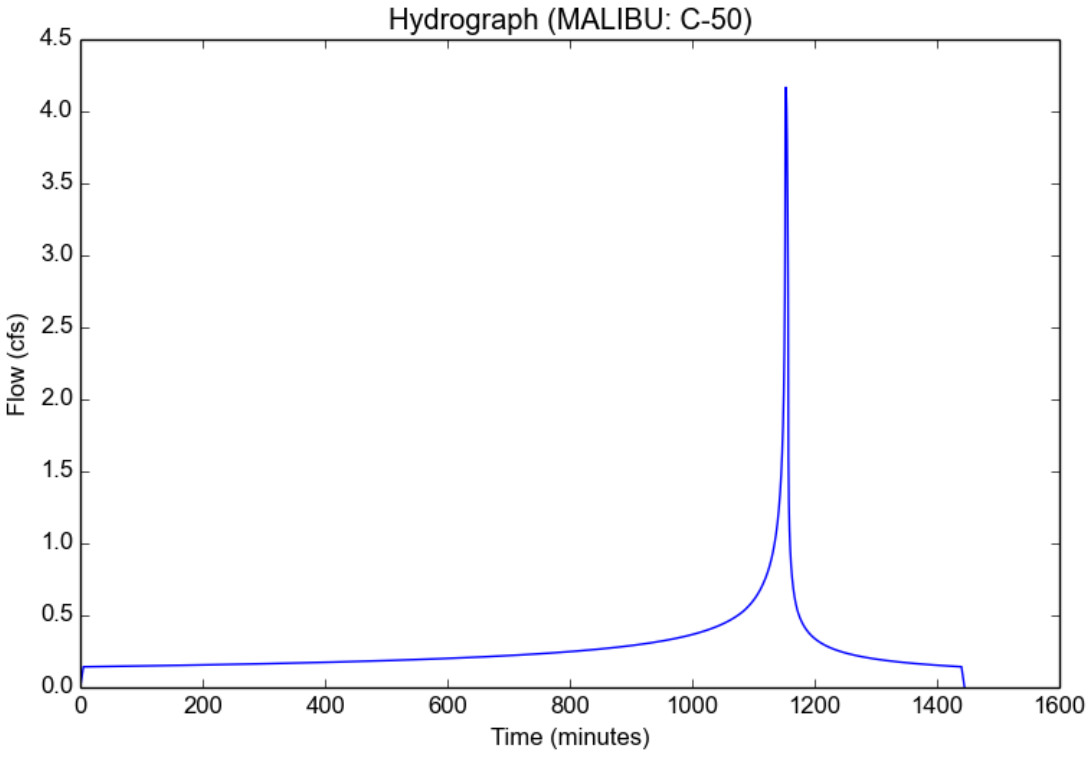
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	C-50
Area (ac)	1.158902121
Flow Path Length (ft)	315.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	50-yr
Fire Factor	0.83
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	4.0571
Undeveloped Runoff Coefficient (Cu)	0.7609
Developed Runoff Coefficient (Cd)	0.8861
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.1662
Burned Peak Flow Rate (cfs)	4.3498
24-Hr Clear Runoff Volume (ac-ft)	0.539
24-Hr Clear Runoff Volume (cu-ft)	23479.2312



Peak Flow Hydrologic Analysis

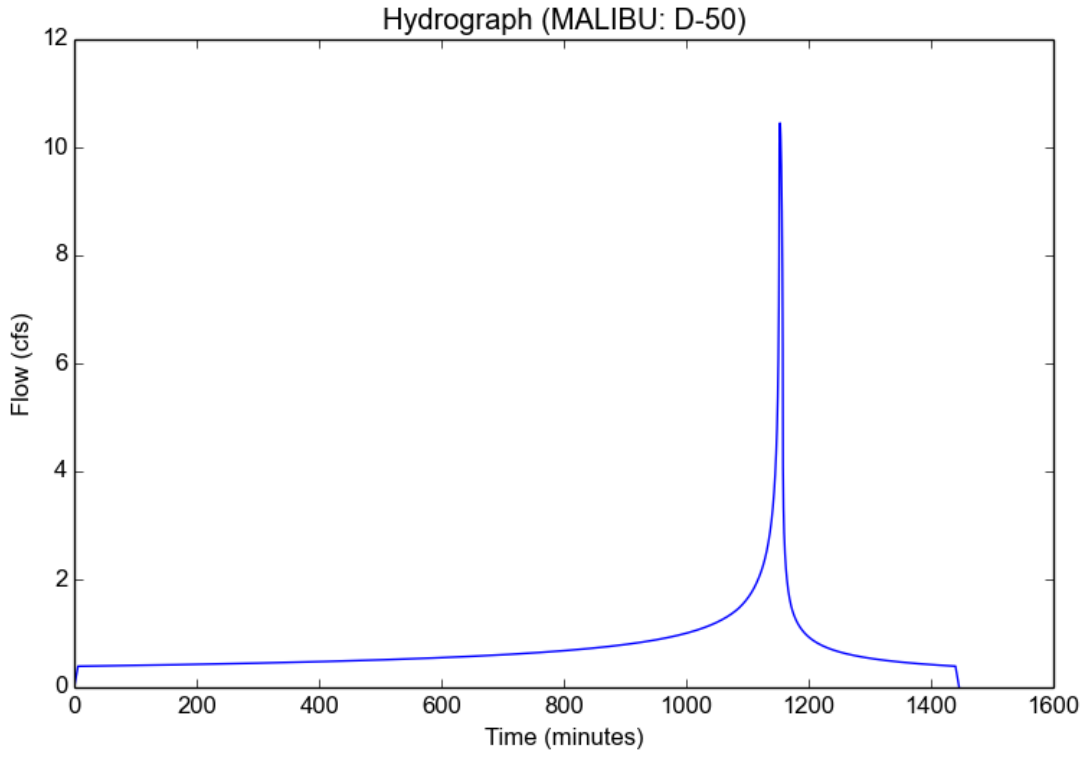
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	D-50
Area (ac)	3.173142296
Flow Path Length (ft)	499.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	50-yr
Fire Factor	0.83
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	3.7239
Undeveloped Runoff Coefficient (Cu)	0.7445
Developed Runoff Coefficient (Cd)	0.8844
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	10.451
Burned Peak Flow Rate (cfs)	10.9134
24-Hr Clear Runoff Volume (ac-ft)	1.4758
24-Hr Clear Runoff Volume (cu-ft)	64285.784



Peak Flow Hydrologic Analysis

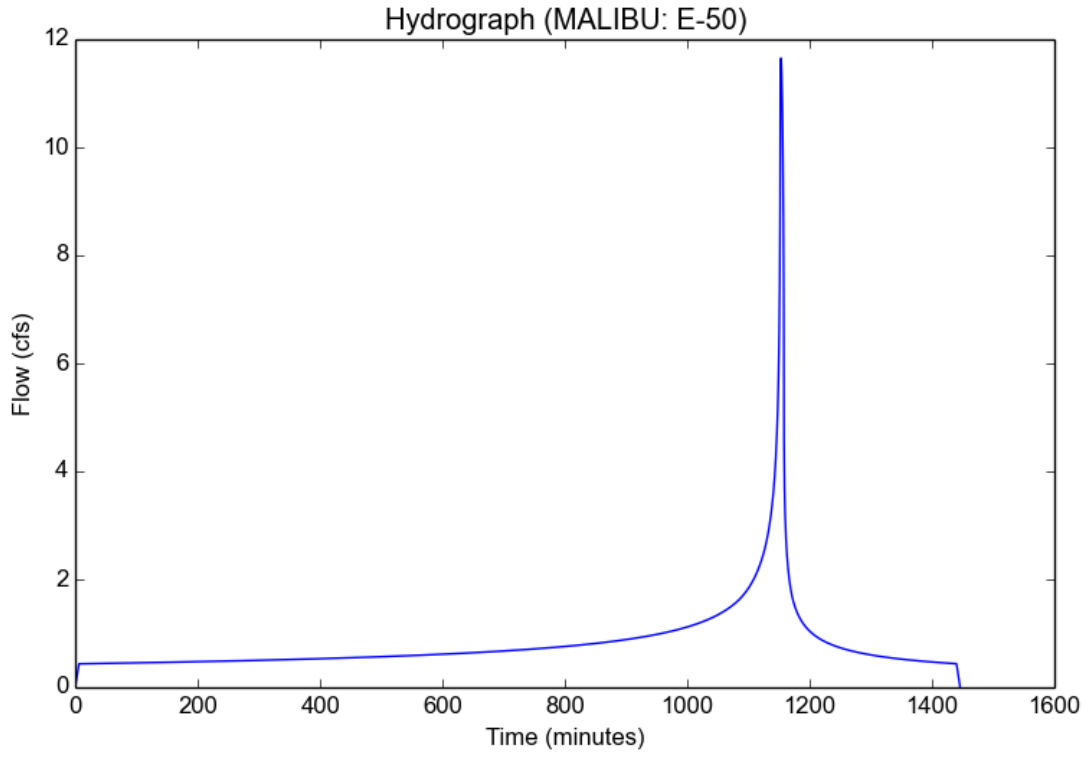
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	E-50
Area (ac)	3.538183017
Flow Path Length (ft)	435.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	50-yr
Fire Factor	0.83
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	3.7239
Undeveloped Runoff Coefficient (Cu)	0.7445
Developed Runoff Coefficient (Cd)	0.8844
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	11.6533
Burned Peak Flow Rate (cfs)	12.1688
24-Hr Clear Runoff Volume (ac-ft)	1.6456
24-Hr Clear Runoff Volume (cu-ft)	71681.2698



Peak Flow Hydrologic Analysis

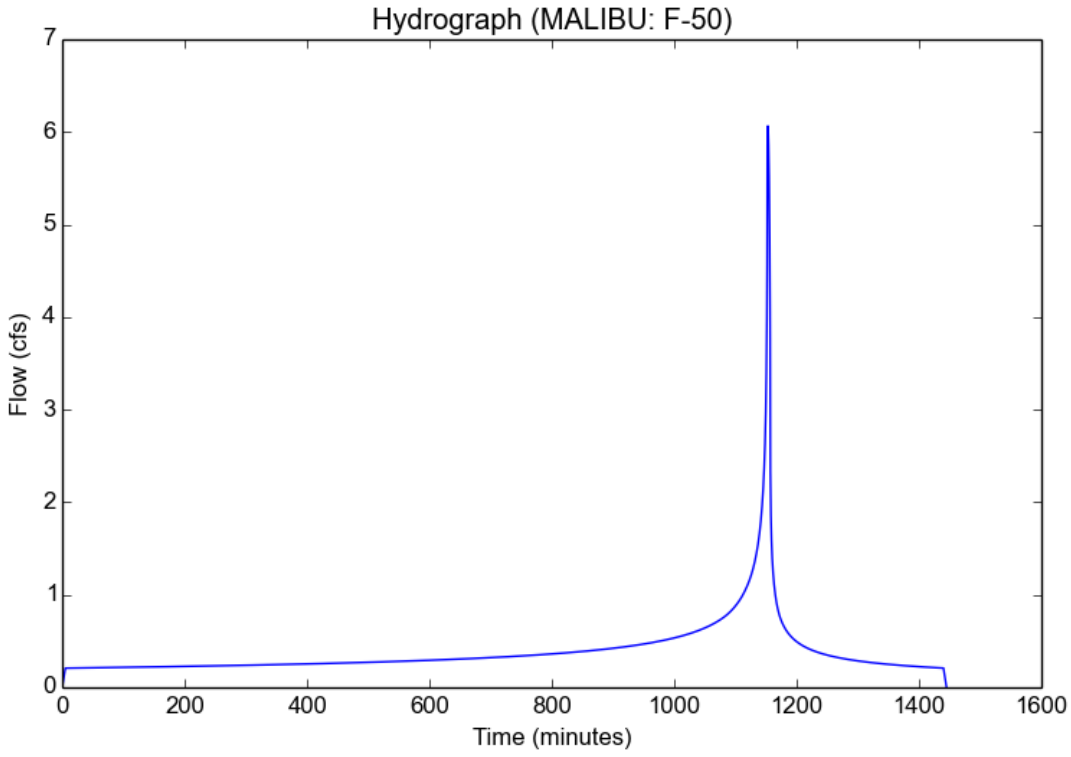
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	F-50
Area (ac)	1.687038196
Flow Path Length (ft)	321.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	50-yr
Fire Factor	0.83
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	4.0571
Undeveloped Runoff Coefficient (Cu)	0.7609
Developed Runoff Coefficient (Cd)	0.8861
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	6.0648
Burned Peak Flow Rate (cfs)	6.3321
24-Hr Clear Runoff Volume (ac-ft)	0.7846
24-Hr Clear Runoff Volume (cu-ft)	34179.2108



Peak Flow Hydrologic Analysis

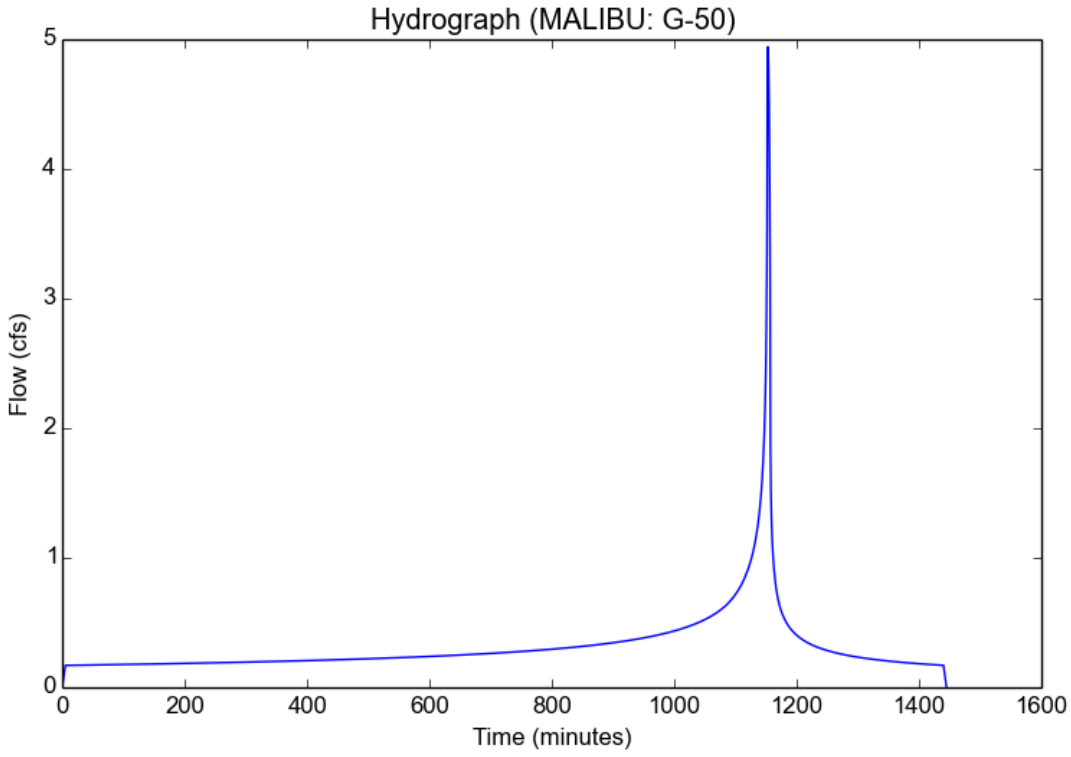
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	G-50
Area (ac)	1.374980149
Flow Path Length (ft)	193.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.8
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	50-yr
Fire Factor	0.83
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.8
Peak Intensity (in/hr)	4.0571
Undeveloped Runoff Coefficient (Cu)	0.7609
Developed Runoff Coefficient (Cd)	0.8861
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	4.943
Burned Peak Flow Rate (cfs)	5.1608
24-Hr Clear Runoff Volume (ac-ft)	0.6395
24-Hr Clear Runoff Volume (cu-ft)	27856.9487



Peak Flow Hydrologic Analysis

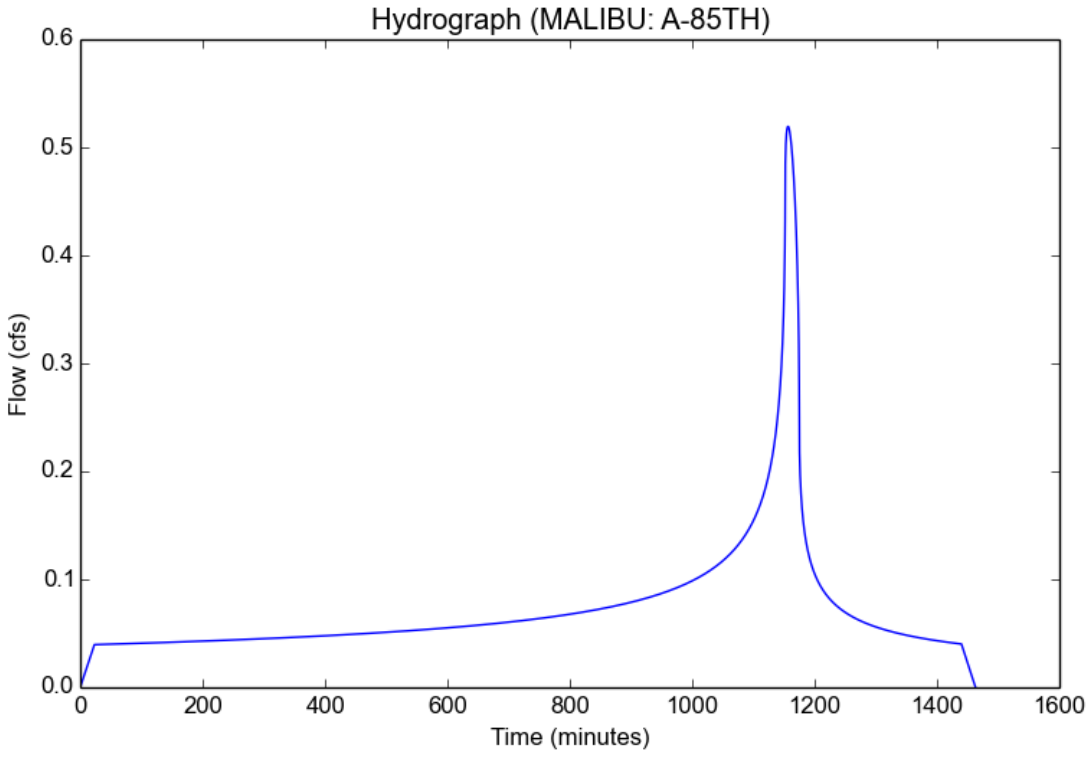
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	A-85TH
Area (ac)	3.107274894
Flow Path Length (ft)	303.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.2038
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	0.5194
Burned Peak Flow Rate (cfs)	0.5387
24-Hr Clear Runoff Volume (ac-ft)	0.1474
24-Hr Clear Runoff Volume (cu-ft)	6420.916



Peak Flow Hydrologic Analysis

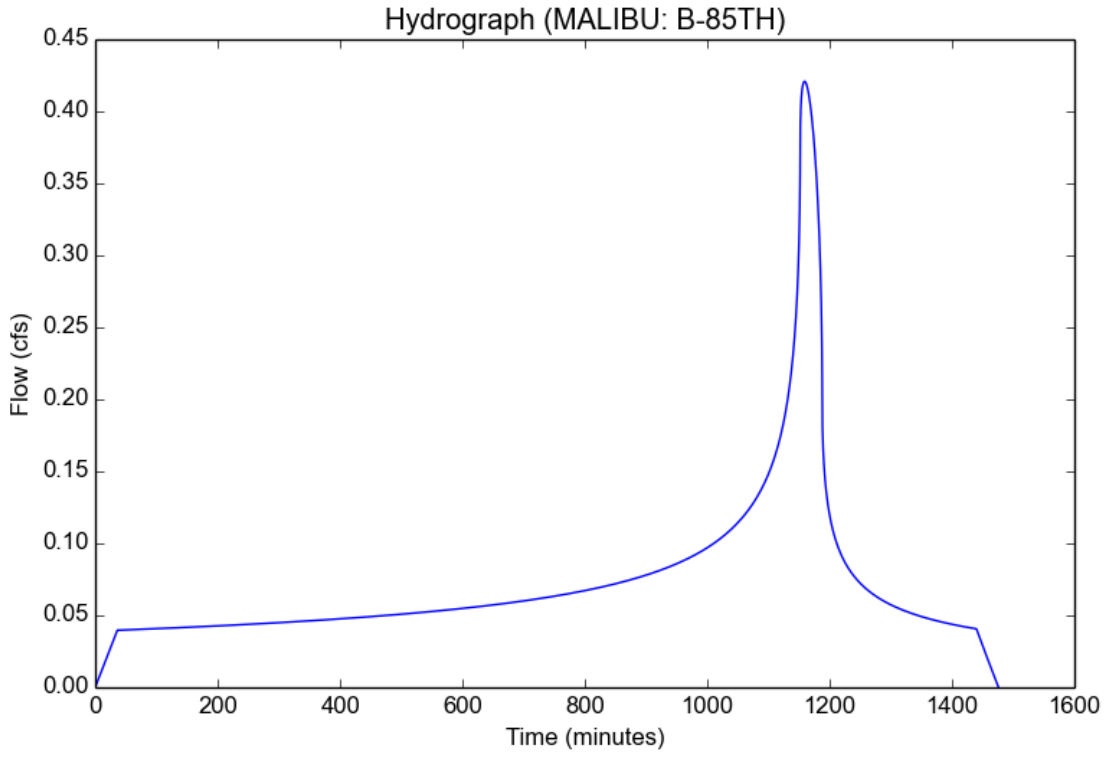
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	B-85TH
Area (ac)	3.10780727
Flow Path Length (ft)	607.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1651
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	36.0
Clear Peak Flow Rate (cfs)	0.4208
Burned Peak Flow Rate (cfs)	0.4351
24-Hr Clear Runoff Volume (ac-ft)	0.1474
24-Hr Clear Runoff Volume (cu-ft)	6422.0795



Peak Flow Hydrologic Analysis

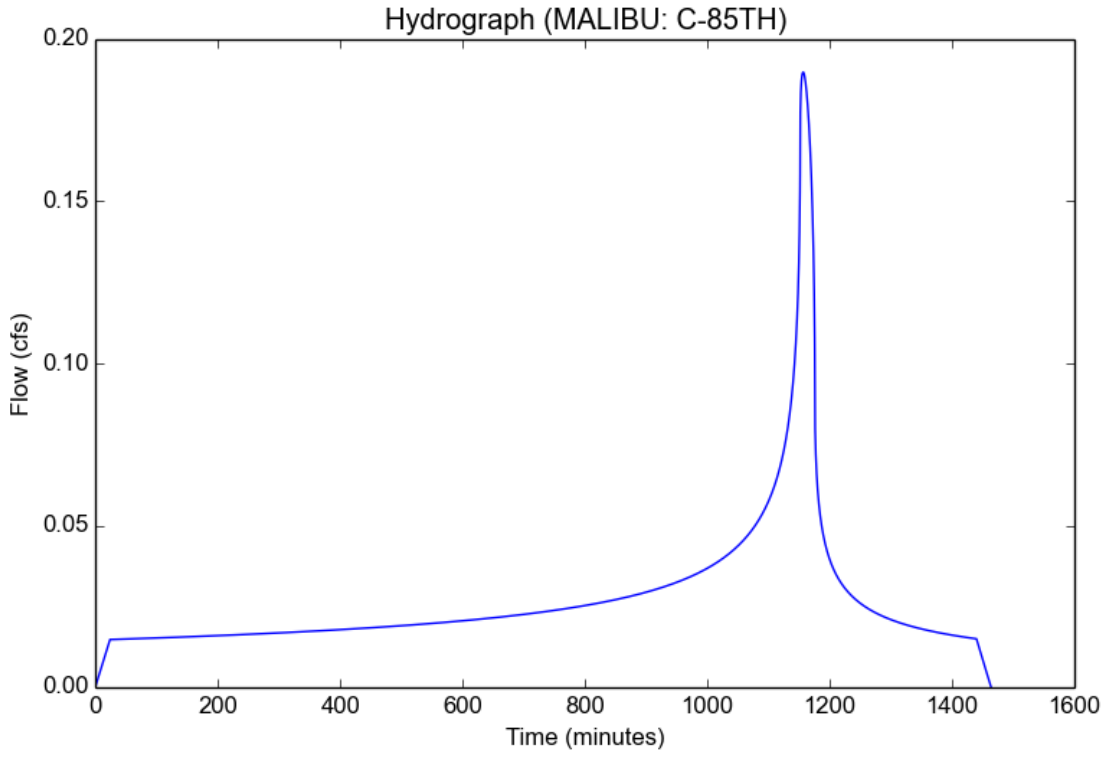
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	C-85TH
Area (ac)	1.158902121
Flow Path Length (ft)	315.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1998
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	0.1899
Burned Peak Flow Rate (cfs)	0.1969
24-Hr Clear Runoff Volume (ac-ft)	0.055
24-Hr Clear Runoff Volume (cu-ft)	2394.7729



Peak Flow Hydrologic Analysis

File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	D-85TH
Area (ac)	3.173142296
Flow Path Length (ft)	499.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1745
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	32.0
Clear Peak Flow Rate (cfs)	0.4542
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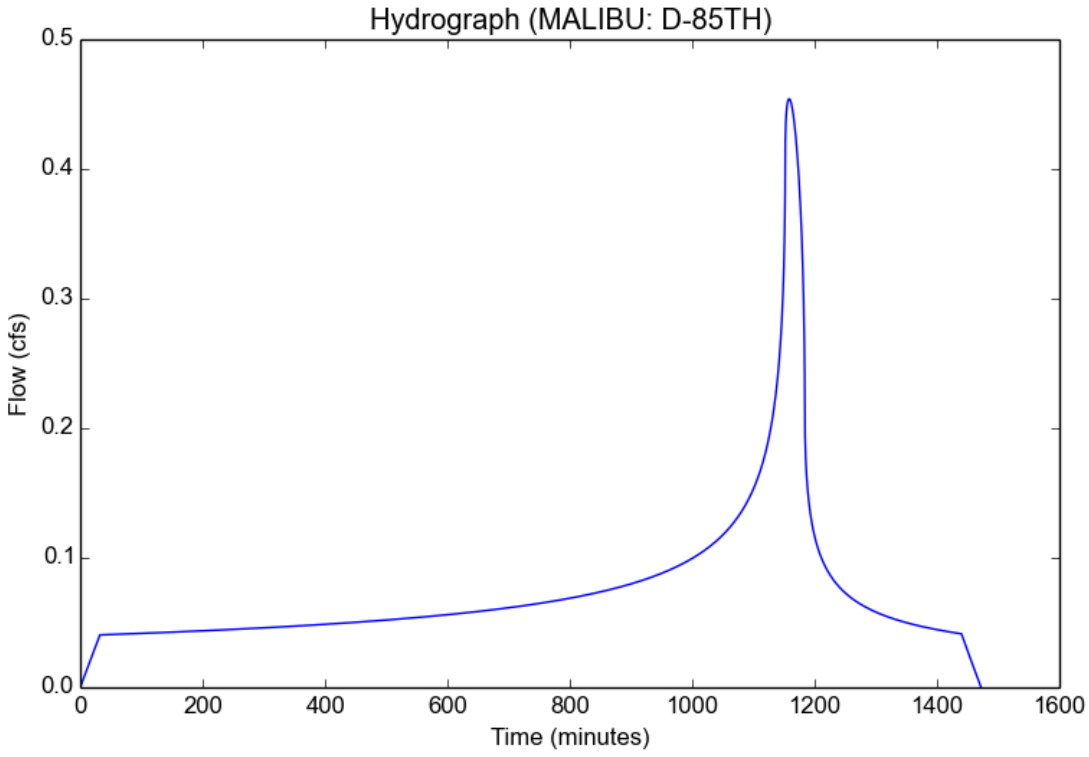
24-Hr Clear Runoff Volume (ac-ft)	0.1505
24-Hr Clear Runoff Volume (cu-ft)	6557.067



Peak Flow Hydrologic Analysis

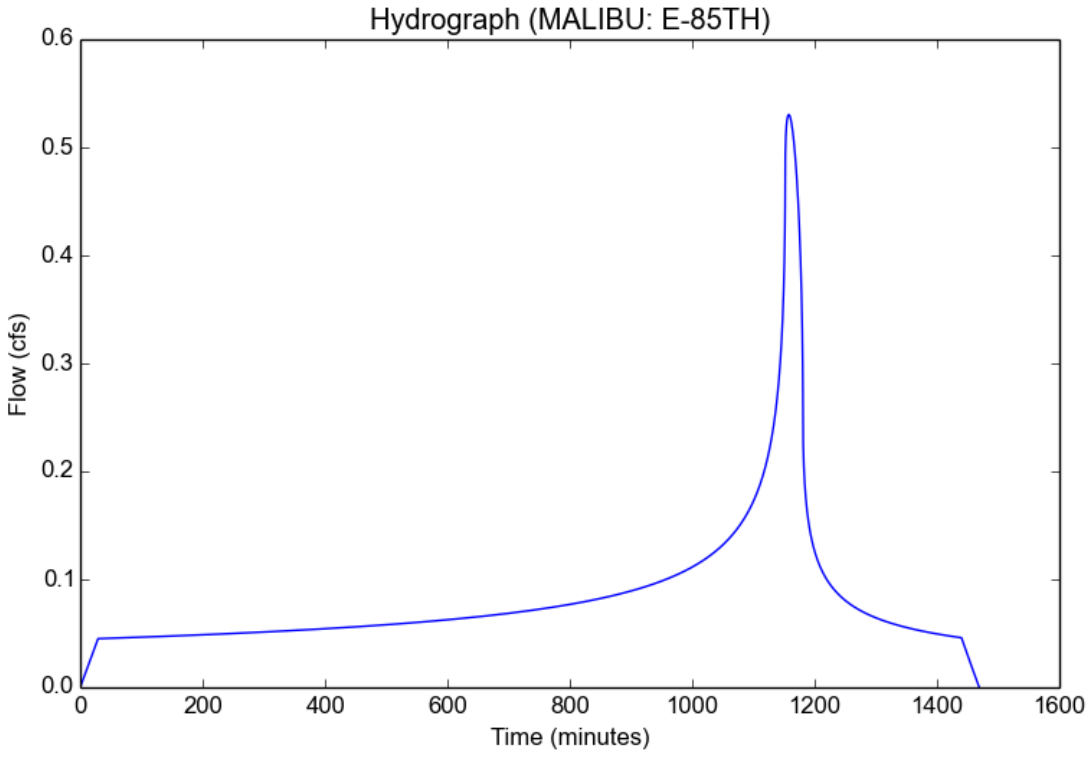
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	E-85TH
Area (ac)	3.538183017
Flow Path Length (ft)	435.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1828
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	29.0
Clear Peak Flow Rate (cfs)	0.5304
Burned Peak Flow Rate (cfs)	0.5492
24-Hr Clear Runoff Volume (ac-ft)	0.1678
24-Hr Clear Runoff Volume (cu-ft)	7311.3798



Peak Flow Hydrologic Analysis

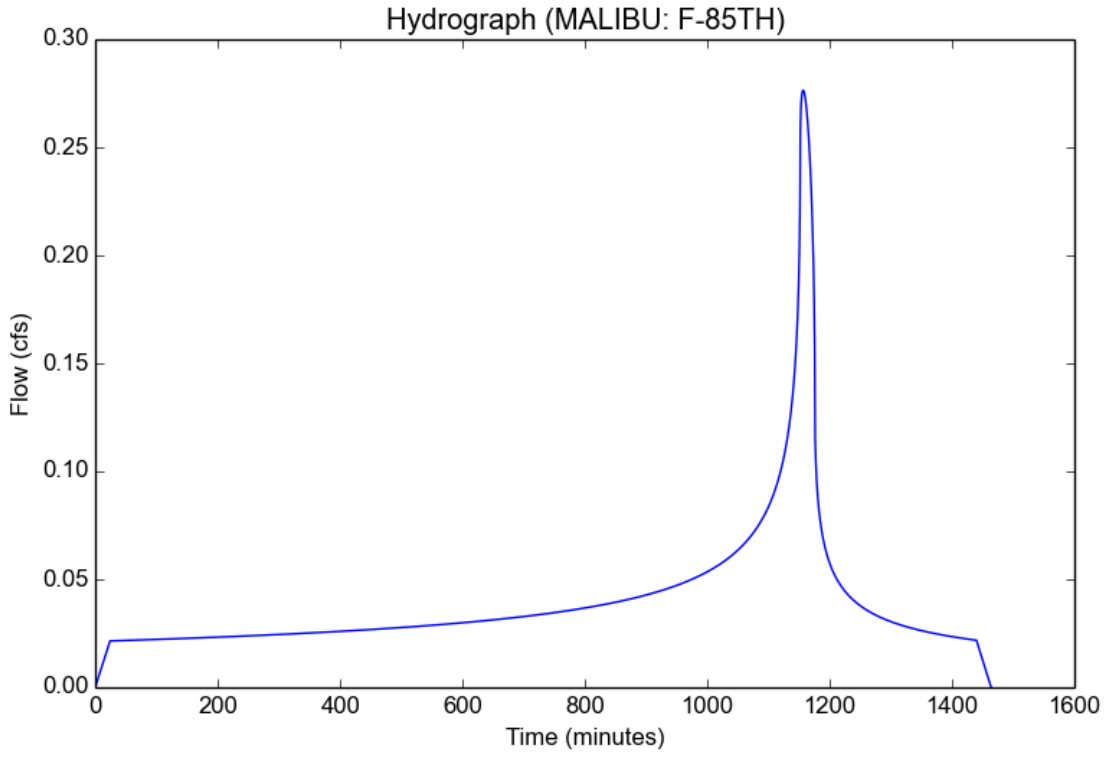
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	F-85TH
Area (ac)	1.687038196
Flow Path Length (ft)	321.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1998
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	0.2764
Burned Peak Flow Rate (cfs)	0.2866
24-Hr Clear Runoff Volume (ac-ft)	0.08
24-Hr Clear Runoff Volume (cu-ft)	3486.1212



Peak Flow Hydrologic Analysis

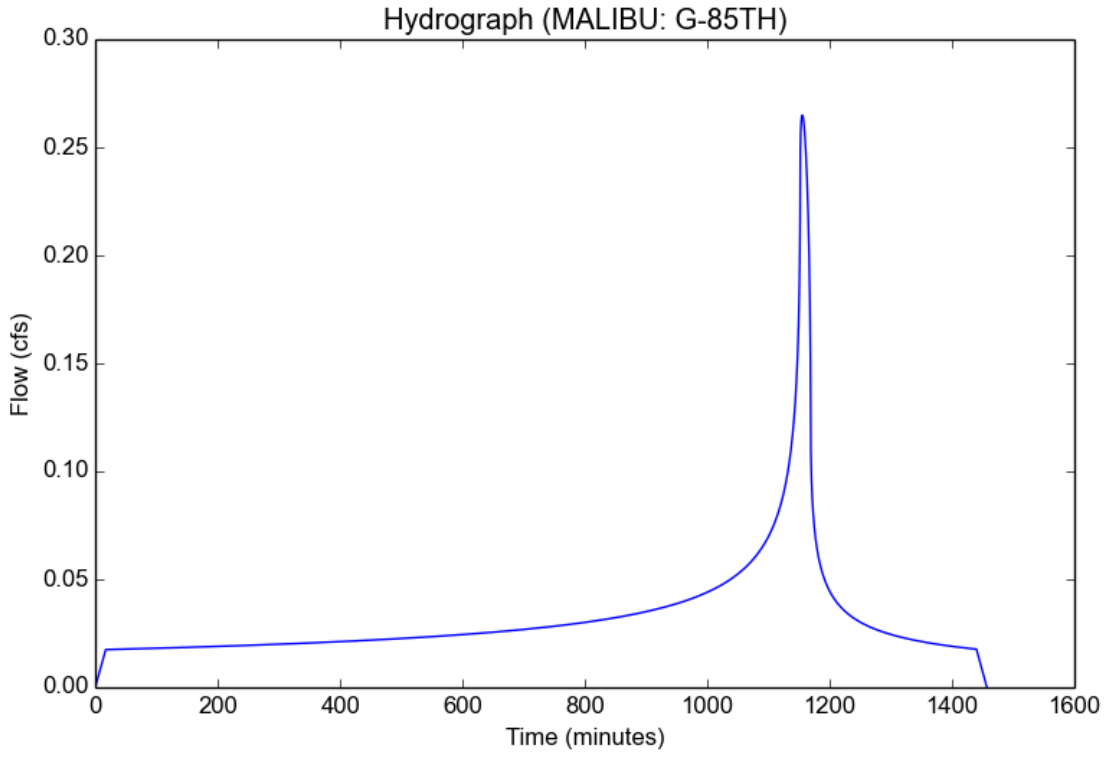
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	G-85TH
Area (ac)	1.374980149
Flow Path Length (ft)	193.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.235
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.2649
Burned Peak Flow Rate (cfs)	0.2753
24-Hr Clear Runoff Volume (ac-ft)	0.0652
24-Hr Clear Runoff Volume (cu-ft)	2841.2694



Peak Flow Hydrologic Analysis

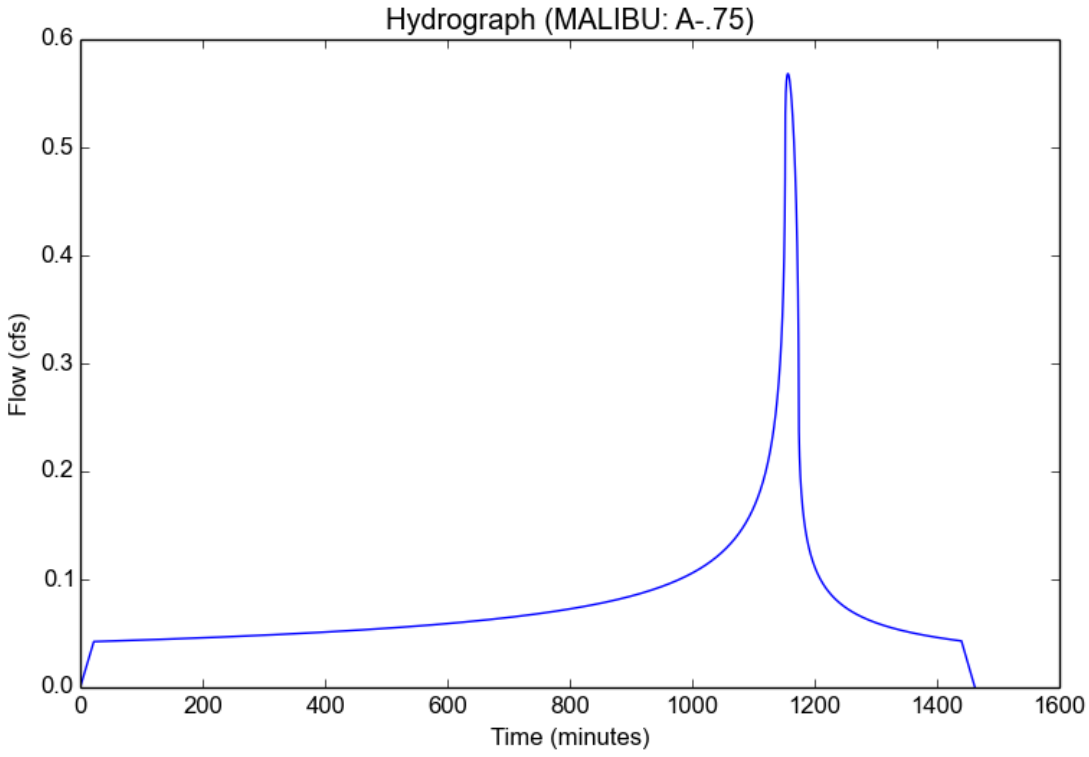
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	A-.75
Area (ac)	3.107274894
Flow Path Length (ft)	303.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.223
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.5682
Burned Peak Flow Rate (cfs)	0.5901
24-Hr Clear Runoff Volume (ac-ft)	0.1579
24-Hr Clear Runoff Volume (cu-ft)	6879.5489



Peak Flow Hydrologic Analysis

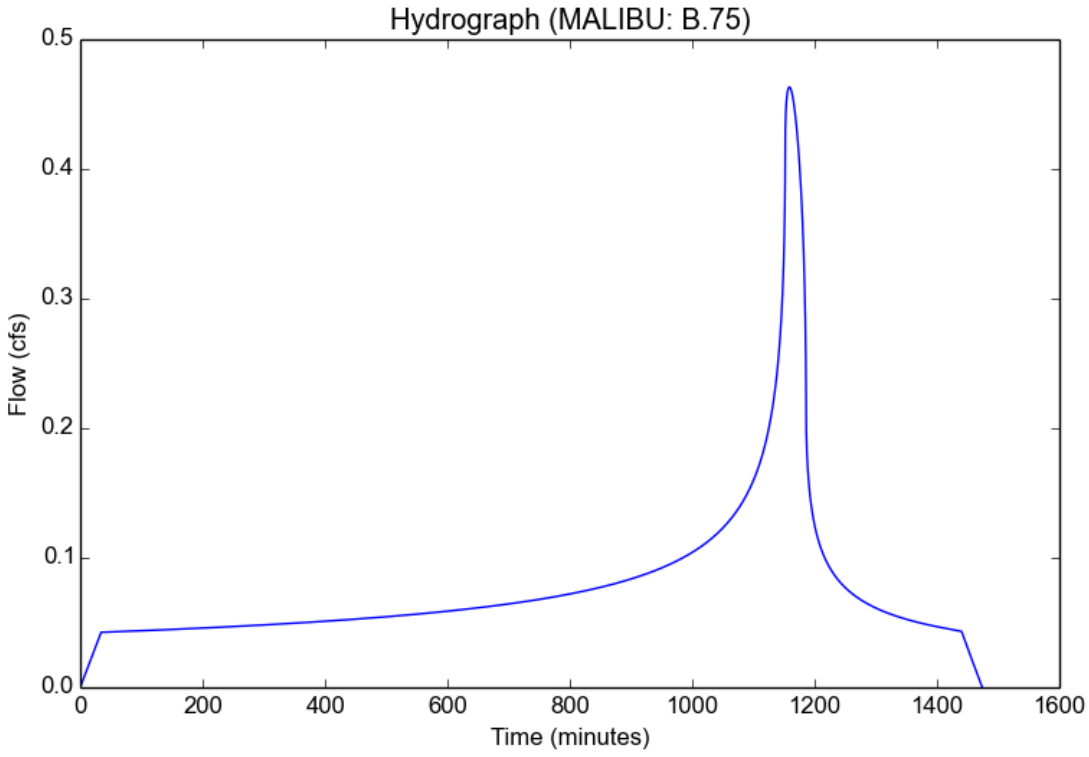
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	B.75
Area (ac)	3.10780727
Flow Path Length (ft)	607.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1818
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	34.0
Clear Peak Flow Rate (cfs)	0.4632
Burned Peak Flow Rate (cfs)	0.4796
24-Hr Clear Runoff Volume (ac-ft)	0.158
24-Hr Clear Runoff Volume (cu-ft)	6880.787



Peak Flow Hydrologic Analysis

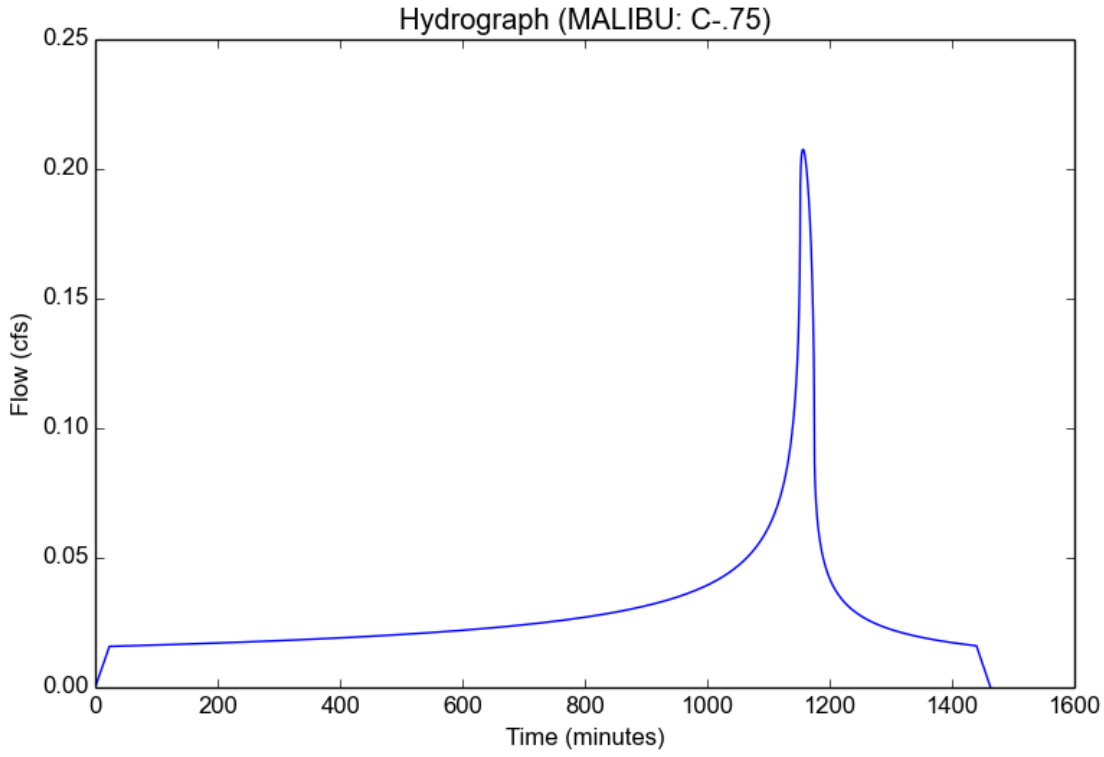
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	C-.75
Area (ac)	1.158902121
Flow Path Length (ft)	315.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2184
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	0.2076
Burned Peak Flow Rate (cfs)	0.2155
24-Hr Clear Runoff Volume (ac-ft)	0.0589
24-Hr Clear Runoff Volume (cu-ft)	2565.8265



Peak Flow Hydrologic Analysis

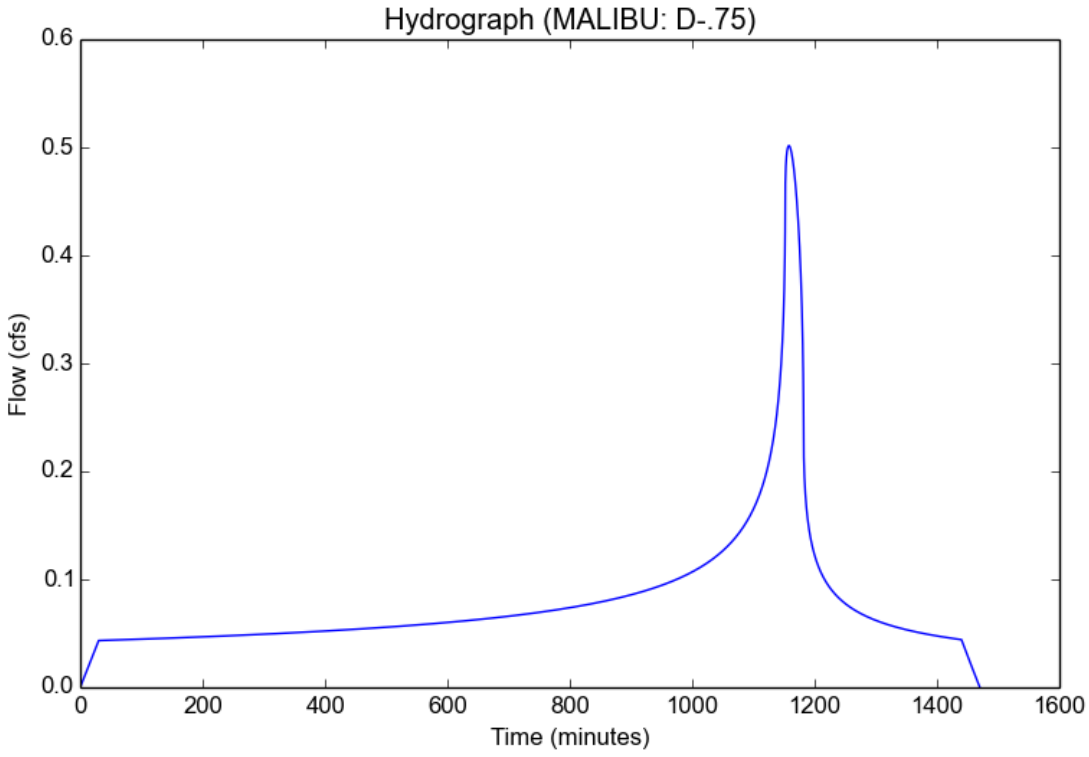
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	D-.75
Area (ac)	3.173142296
Flow Path Length (ft)	499.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1928
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.5016
Burned Peak Flow Rate (cfs)	0.5198
24-Hr Clear Runoff Volume (ac-ft)	0.1613
24-Hr Clear Runoff Volume (cu-ft)	7025.4177



Peak Flow Hydrologic Analysis

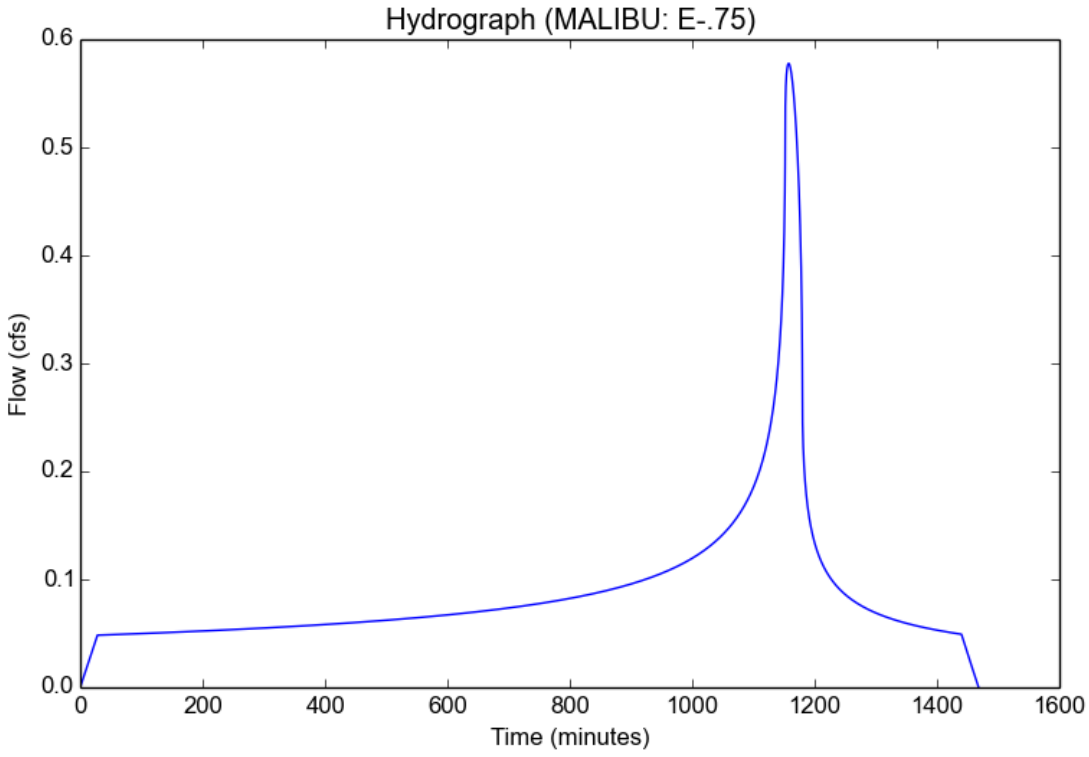
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	E-.75
Area (ac)	3.538183017
Flow Path Length (ft)	435.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1991
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.5777
Burned Peak Flow Rate (cfs)	0.599
24-Hr Clear Runoff Volume (ac-ft)	0.1798
24-Hr Clear Runoff Volume (cu-ft)	7833.6154



Peak Flow Hydrologic Analysis

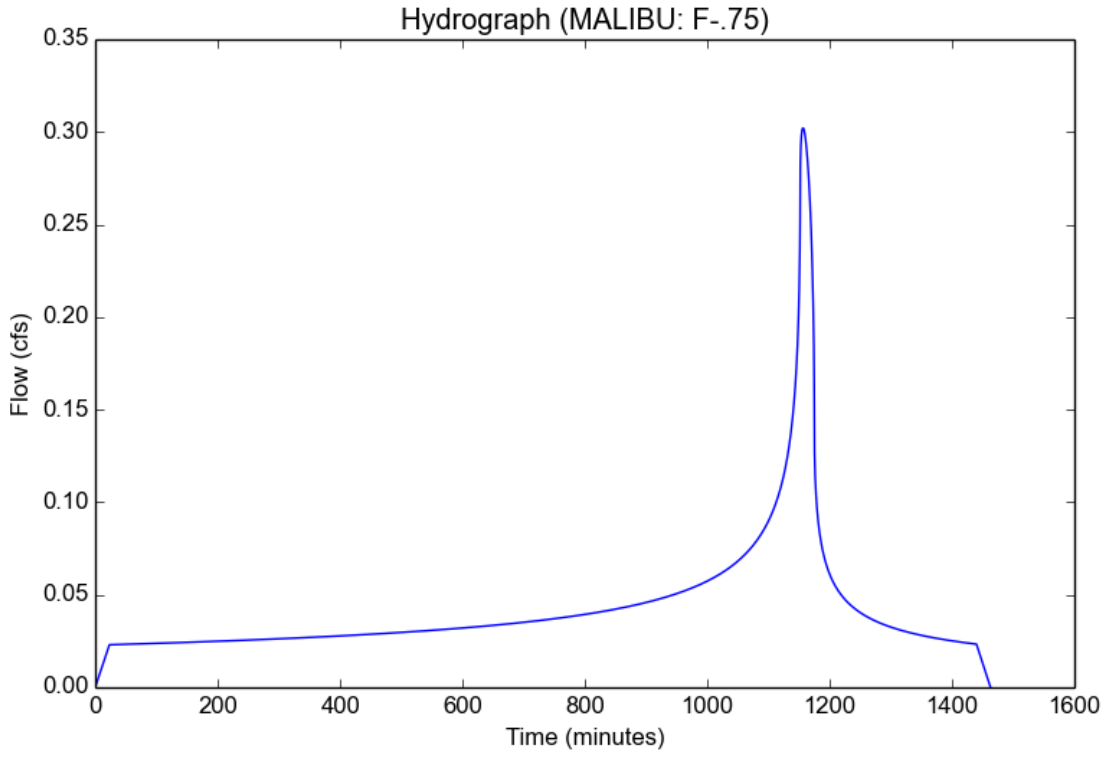
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	F-.75
Area (ac)	1.687038196
Flow Path Length (ft)	321.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2184
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	0.3021
Burned Peak Flow Rate (cfs)	0.3137
24-Hr Clear Runoff Volume (ac-ft)	0.0857
24-Hr Clear Runoff Volume (cu-ft)	3735.1277



Peak Flow Hydrologic Analysis

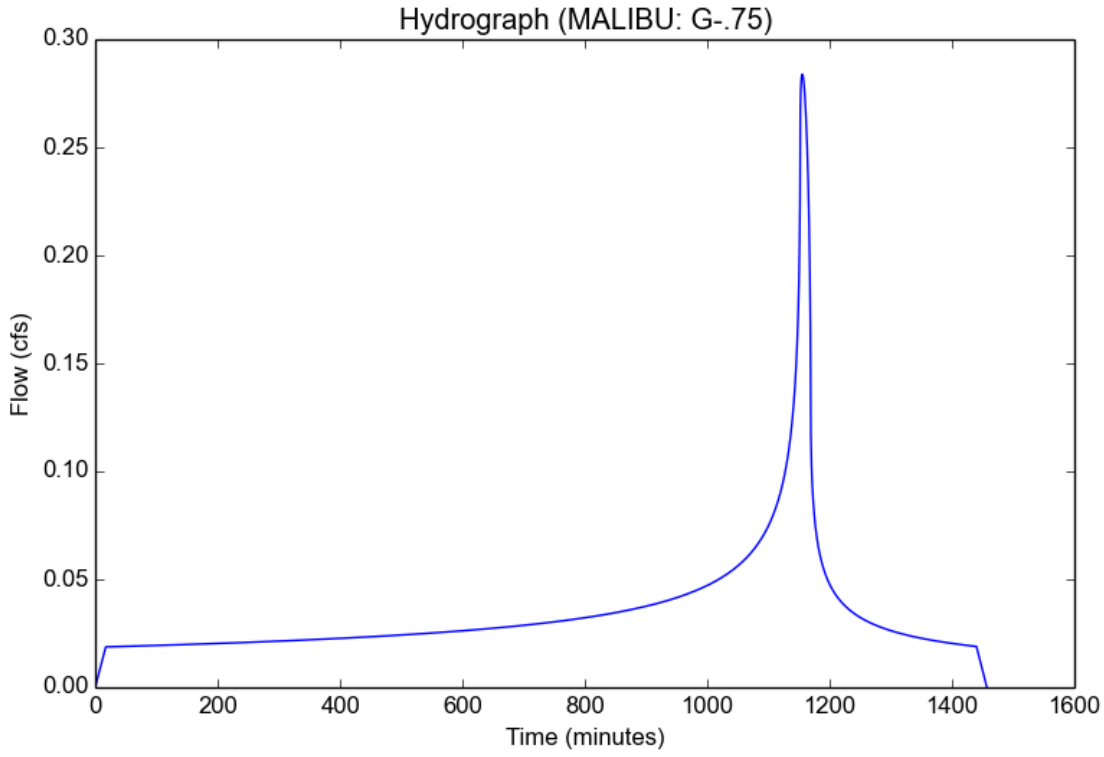
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Calcs/MALIBU Report2.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	G-.75
Area (ac)	1.374980149
Flow Path Length (ft)	193.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2517
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.2838
Burned Peak Flow Rate (cfs)	0.2953
24-Hr Clear Runoff Volume (ac-ft)	0.0699
24-Hr Clear Runoff Volume (cu-ft)	3044.2172



APPENDIX D
STORMWATER QUALITY

Peak Flow Hydrologic Analysis

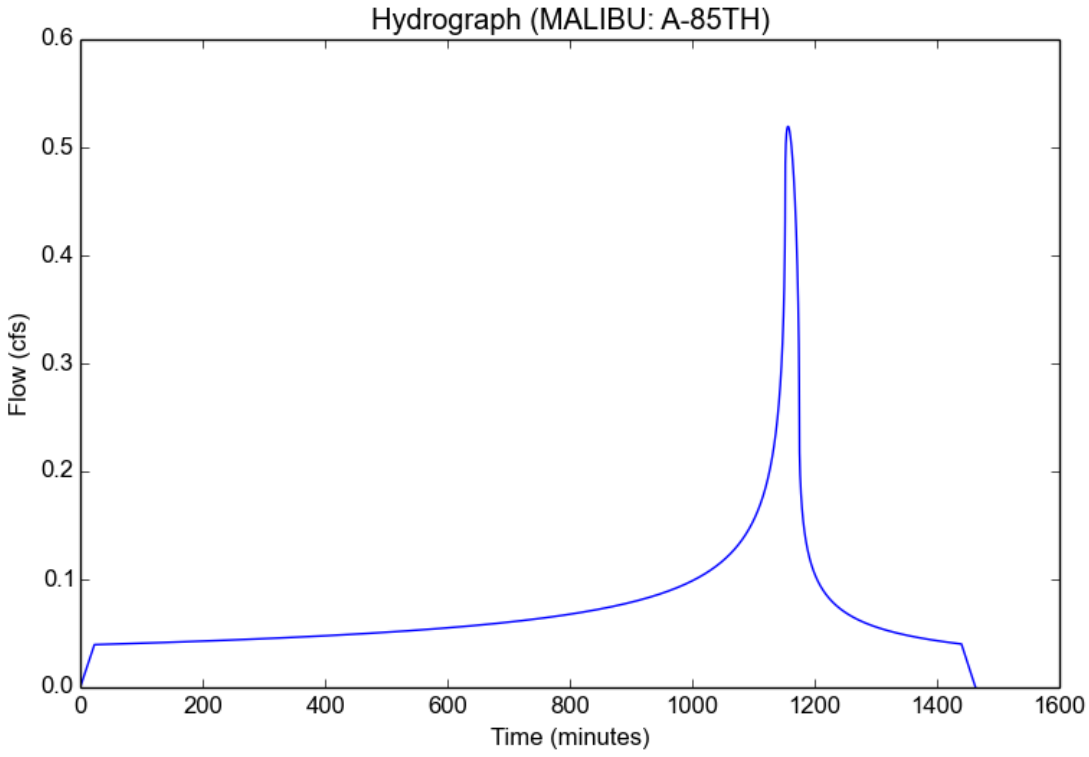
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	A-85TH
Area (ac)	3.107274894
Flow Path Length (ft)	303.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.2038
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	0.5194
Burned Peak Flow Rate (cfs)	0.5387
24-Hr Clear Runoff Volume (ac-ft)	0.1474
24-Hr Clear Runoff Volume (cu-ft)	6420.916



Peak Flow Hydrologic Analysis

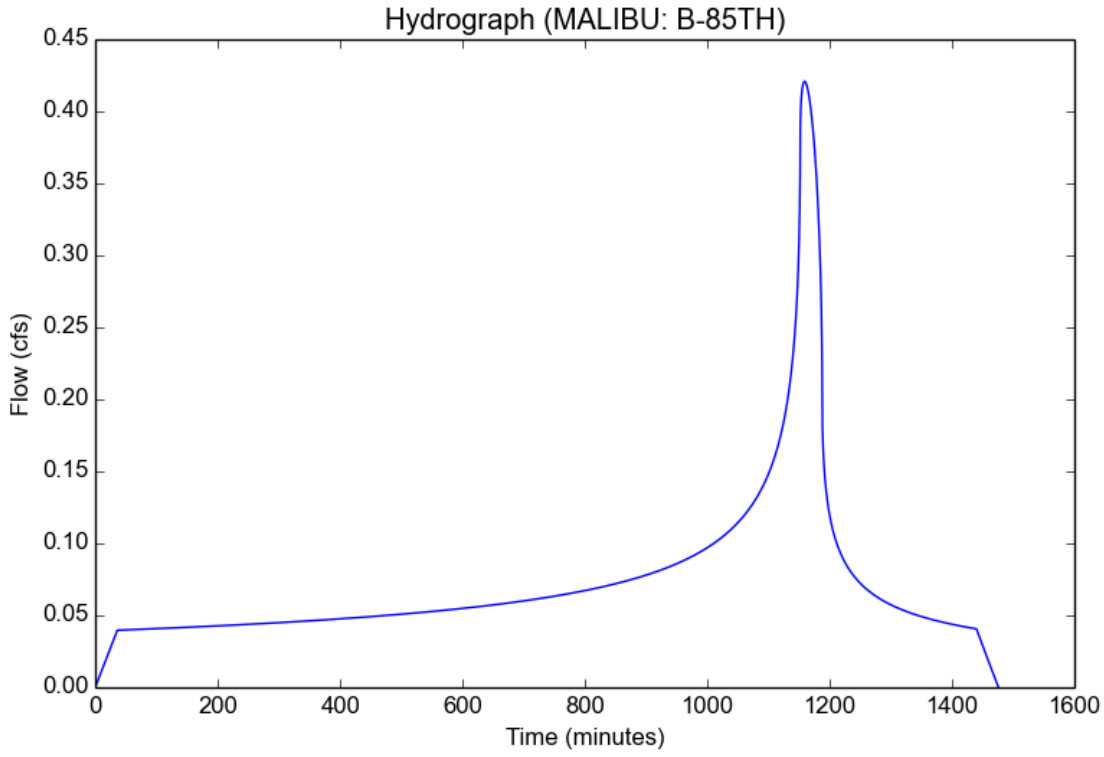
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	B-85TH
Area (ac)	3.10780727
Flow Path Length (ft)	607.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1651
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	36.0
Clear Peak Flow Rate (cfs)	0.4208
Burned Peak Flow Rate (cfs)	0.4351
24-Hr Clear Runoff Volume (ac-ft)	0.1474
24-Hr Clear Runoff Volume (cu-ft)	6422.0795



Peak Flow Hydrologic Analysis

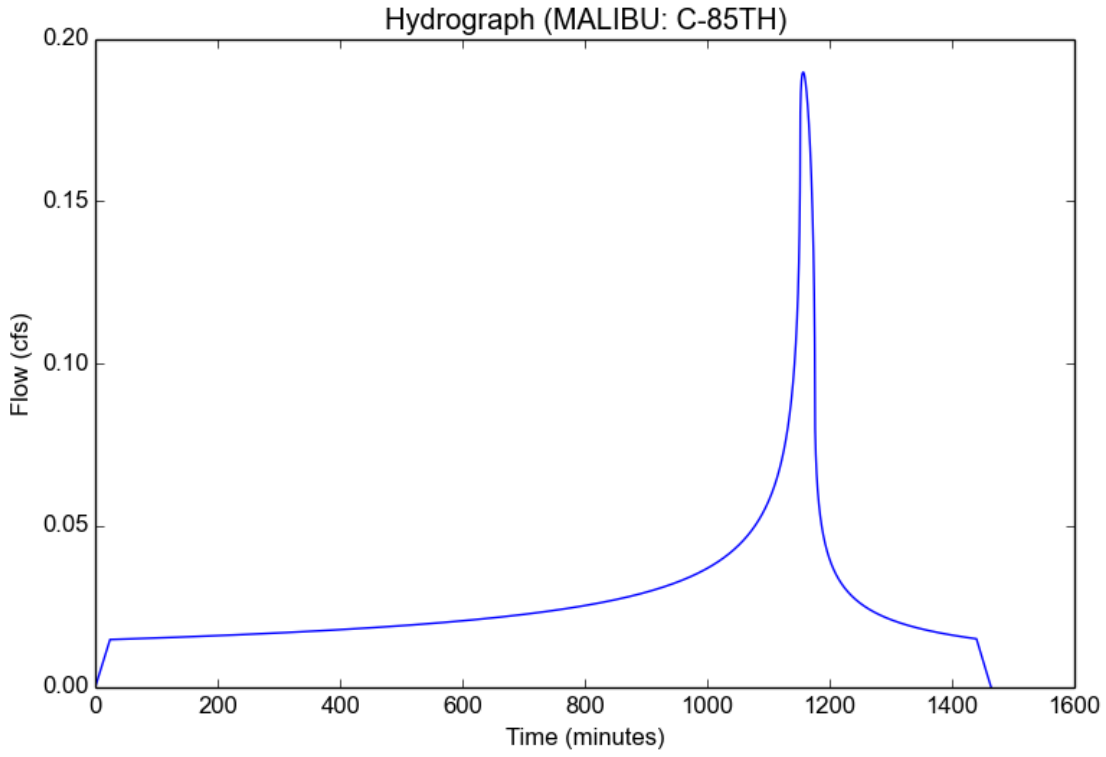
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	C-85TH
Area (ac)	1.158902121
Flow Path Length (ft)	315.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1998
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	0.1899
Burned Peak Flow Rate (cfs)	0.1969
24-Hr Clear Runoff Volume (ac-ft)	0.055
24-Hr Clear Runoff Volume (cu-ft)	2394.7729



Peak Flow Hydrologic Analysis

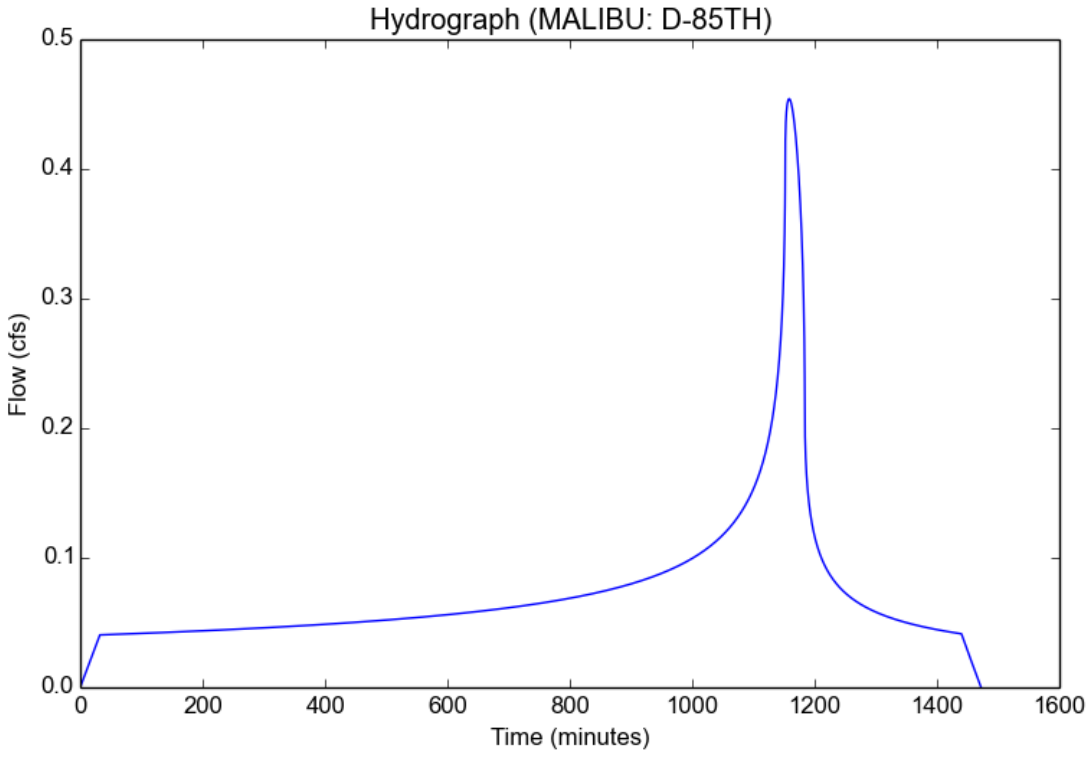
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	D-85TH
Area (ac)	3.173142296
Flow Path Length (ft)	499.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1745
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	32.0
Clear Peak Flow Rate (cfs)	0.4542
Burned Peak Flow Rate (cfs)	0.47
24-Hr Clear Runoff Volume (ac-ft)	0.1505
24-Hr Clear Runoff Volume (cu-ft)	6557.067



Peak Flow Hydrologic Analysis

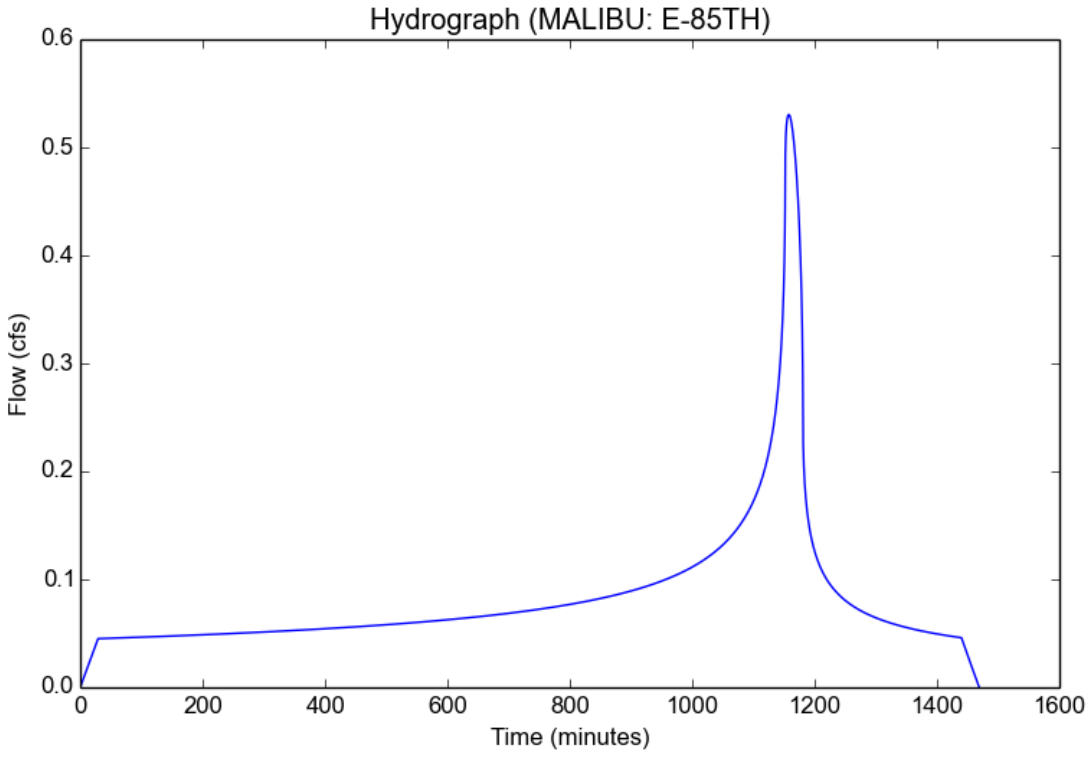
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	E-85TH
Area (ac)	3.538183017
Flow Path Length (ft)	435.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1828
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	29.0
Clear Peak Flow Rate (cfs)	0.5304
Burned Peak Flow Rate (cfs)	0.5492
24-Hr Clear Runoff Volume (ac-ft)	0.1678
24-Hr Clear Runoff Volume (cu-ft)	7311.3798



Peak Flow Hydrologic Analysis

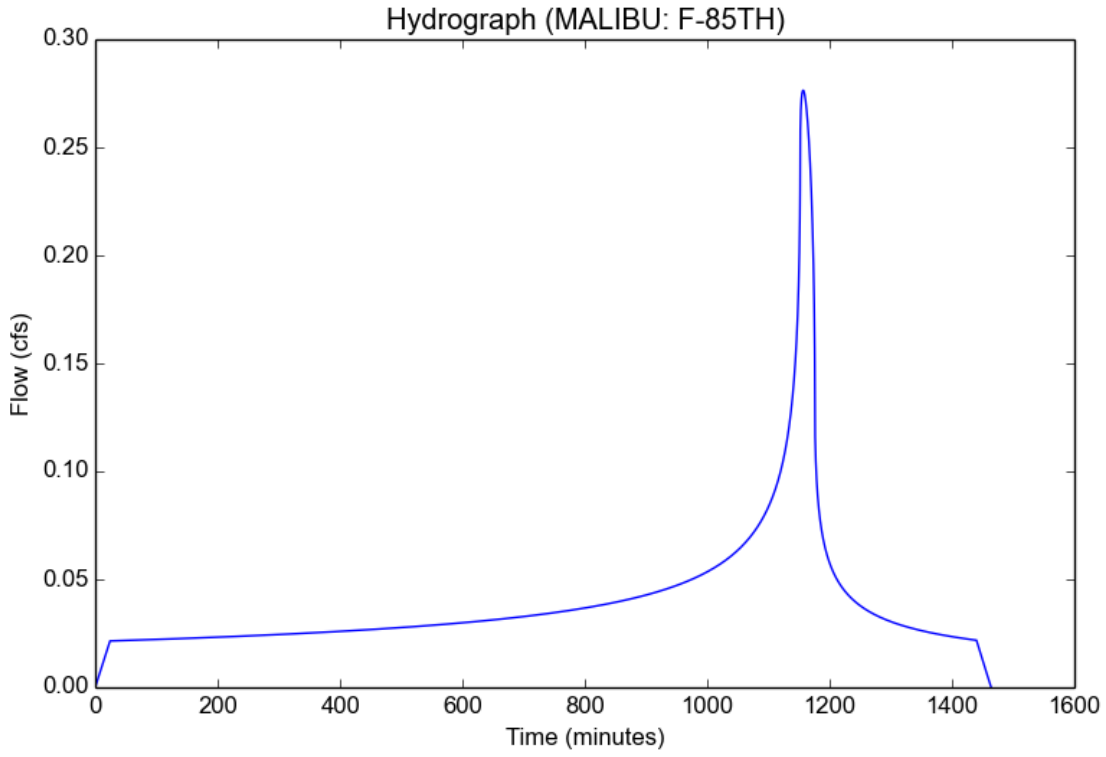
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	F-85TH
Area (ac)	1.687038196
Flow Path Length (ft)	321.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.1998
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	24.0
Clear Peak Flow Rate (cfs)	0.2764
Burned Peak Flow Rate (cfs)	0.2866
24-Hr Clear Runoff Volume (ac-ft)	0.08
24-Hr Clear Runoff Volume (cu-ft)	3486.1212



Peak Flow Hydrologic Analysis

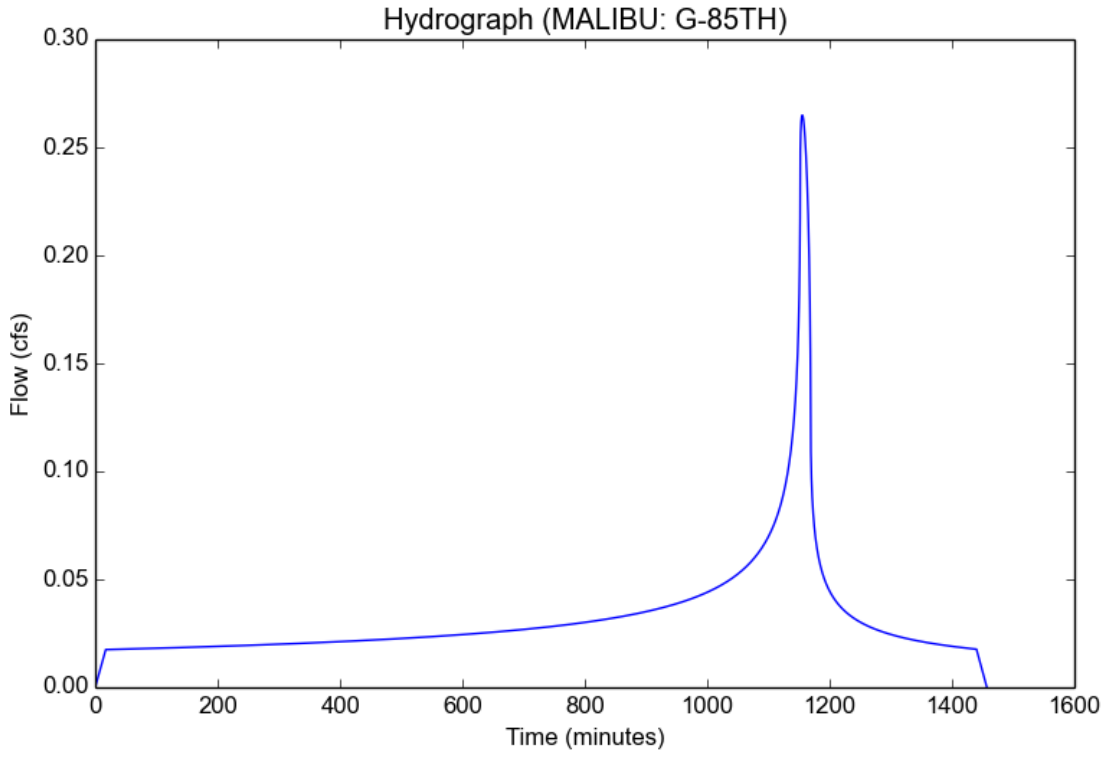
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	G-85TH
Area (ac)	1.374980149
Flow Path Length (ft)	193.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	0.7
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	85th percentile storm
Fire Factor	0.83
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.7
Peak Intensity (in/hr)	0.235
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.2649
Burned Peak Flow Rate (cfs)	0.2753
24-Hr Clear Runoff Volume (ac-ft)	0.0652
24-Hr Clear Runoff Volume (cu-ft)	2841.2694



Peak Flow Hydrologic Analysis

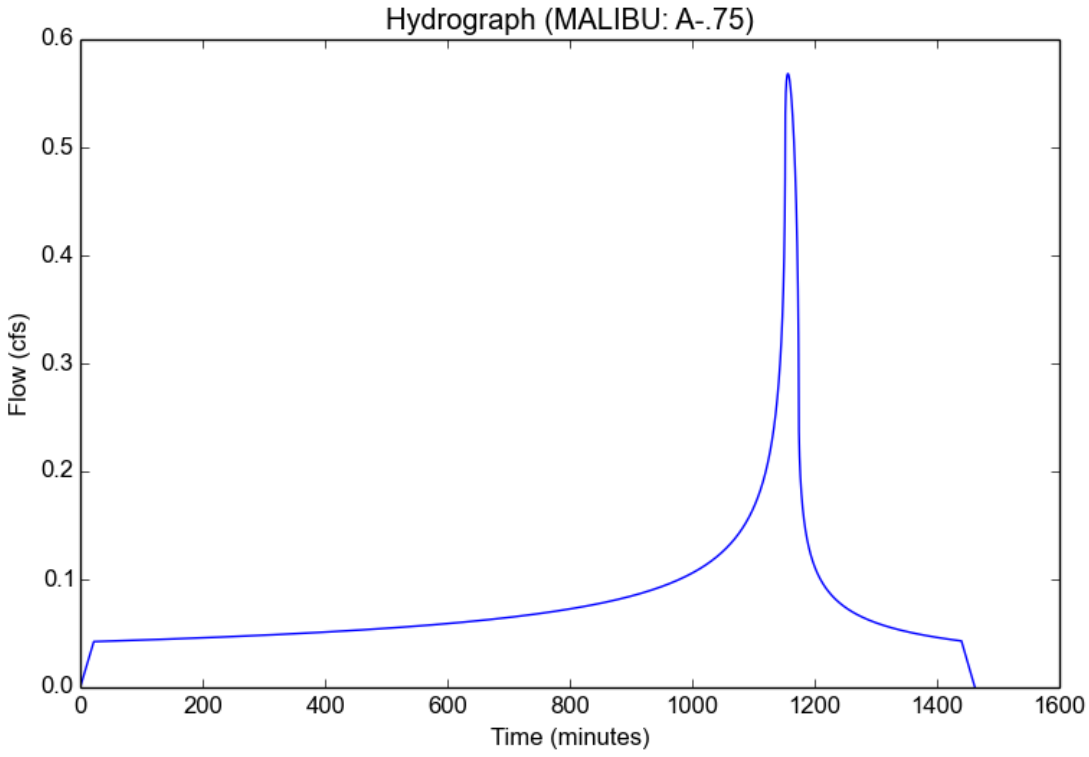
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	A-.75
Area (ac)	3.107274894
Flow Path Length (ft)	303.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.223
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	22.0
Clear Peak Flow Rate (cfs)	0.5682
Burned Peak Flow Rate (cfs)	0.5901
24-Hr Clear Runoff Volume (ac-ft)	0.1579
24-Hr Clear Runoff Volume (cu-ft)	6879.5489



Peak Flow Hydrologic Analysis

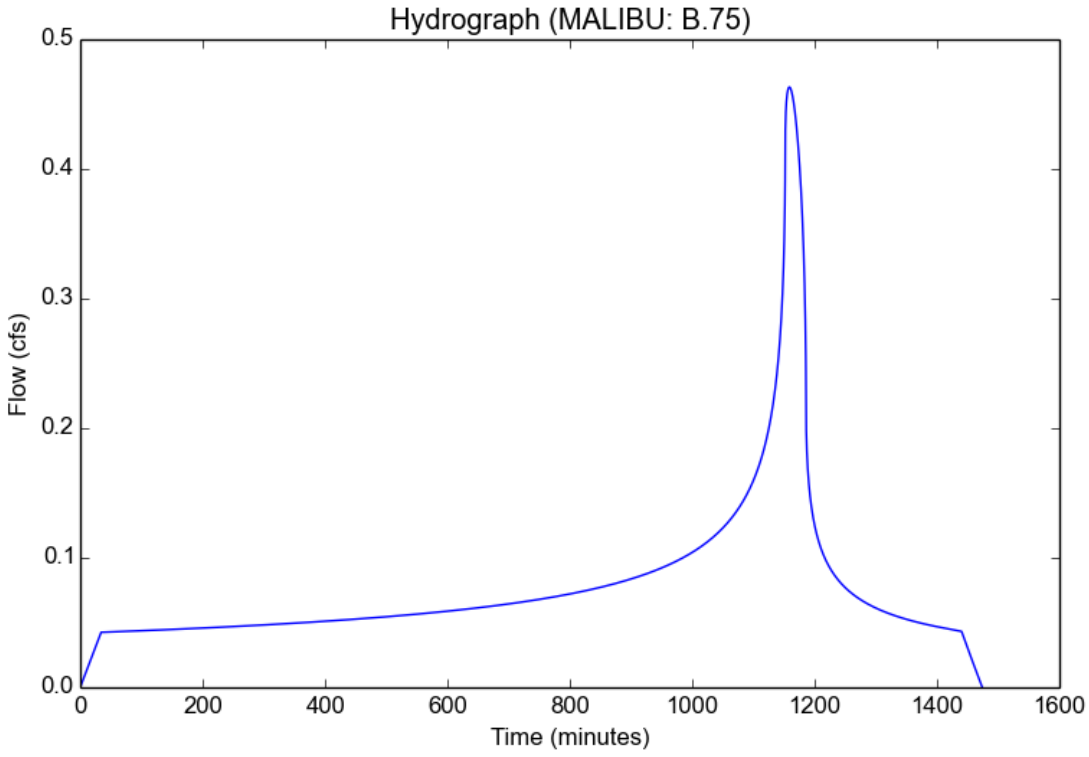
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	B.75
Area (ac)	3.10780727
Flow Path Length (ft)	607.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1818
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	34.0
Clear Peak Flow Rate (cfs)	0.4632
Burned Peak Flow Rate (cfs)	0.4796
24-Hr Clear Runoff Volume (ac-ft)	0.158
24-Hr Clear Runoff Volume (cu-ft)	6880.787



Peak Flow Hydrologic Analysis

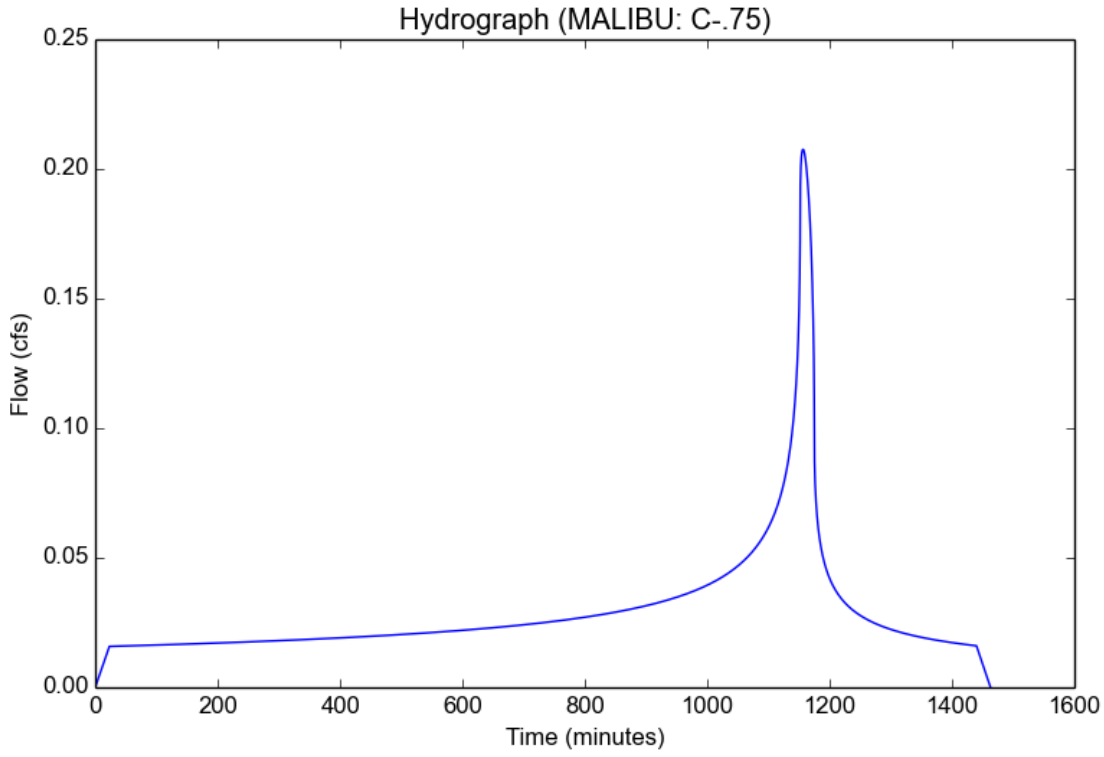
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	C-.75
Area (ac)	1.158902121
Flow Path Length (ft)	315.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2184
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	0.2076
Burned Peak Flow Rate (cfs)	0.2155
24-Hr Clear Runoff Volume (ac-ft)	0.0589
24-Hr Clear Runoff Volume (cu-ft)	2565.8265



Peak Flow Hydrologic Analysis

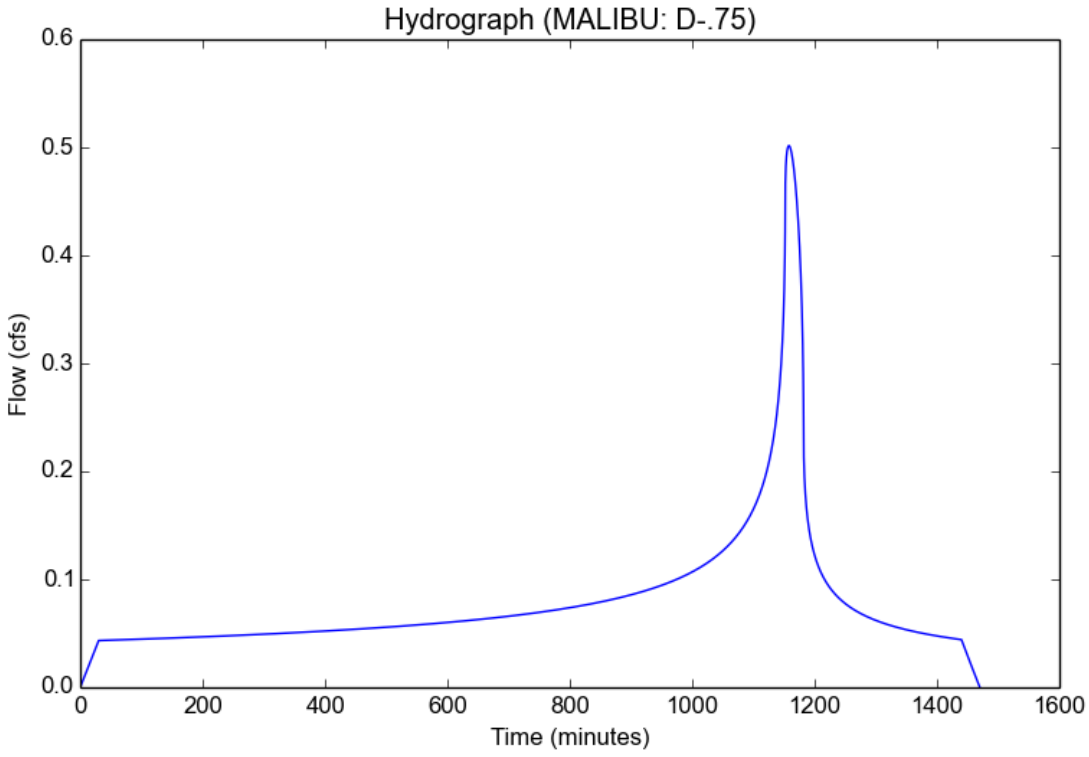
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	D-.75
Area (ac)	3.173142296
Flow Path Length (ft)	499.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1928
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.5016
Burned Peak Flow Rate (cfs)	0.5198
24-Hr Clear Runoff Volume (ac-ft)	0.1613
24-Hr Clear Runoff Volume (cu-ft)	7025.4177



Peak Flow Hydrologic Analysis

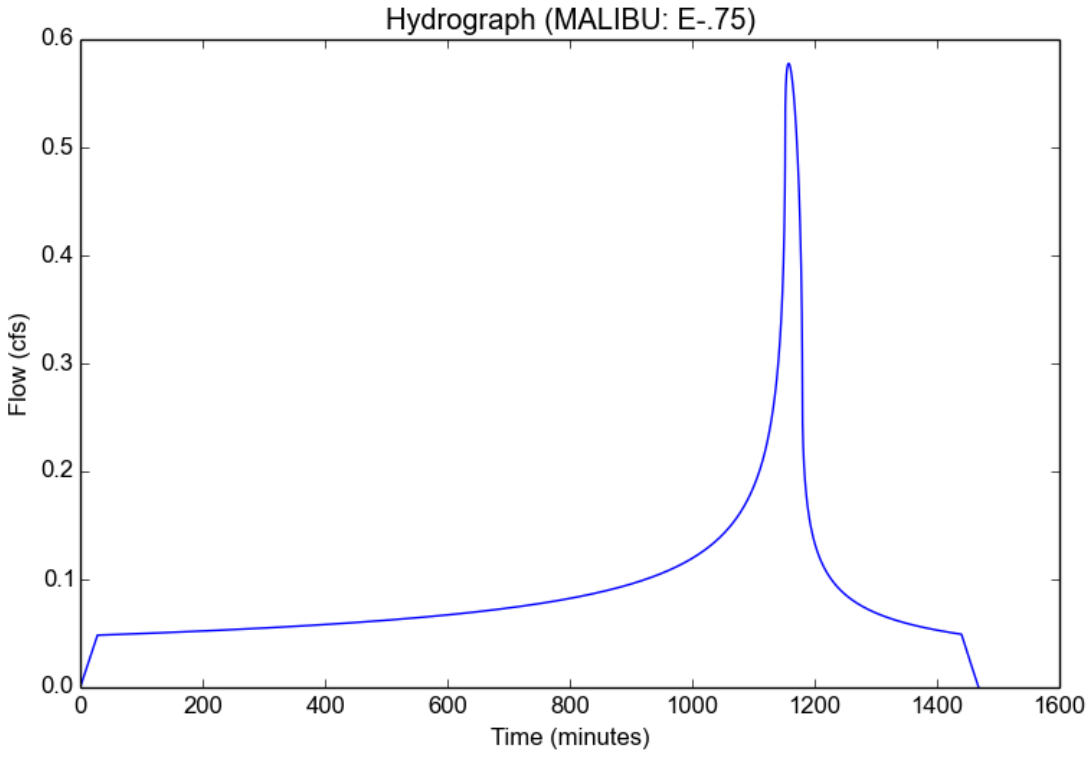
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	E-.75
Area (ac)	3.538183017
Flow Path Length (ft)	435.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.1991
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.5777
Burned Peak Flow Rate (cfs)	0.599
24-Hr Clear Runoff Volume (ac-ft)	0.1798
24-Hr Clear Runoff Volume (cu-ft)	7833.6154



Peak Flow Hydrologic Analysis

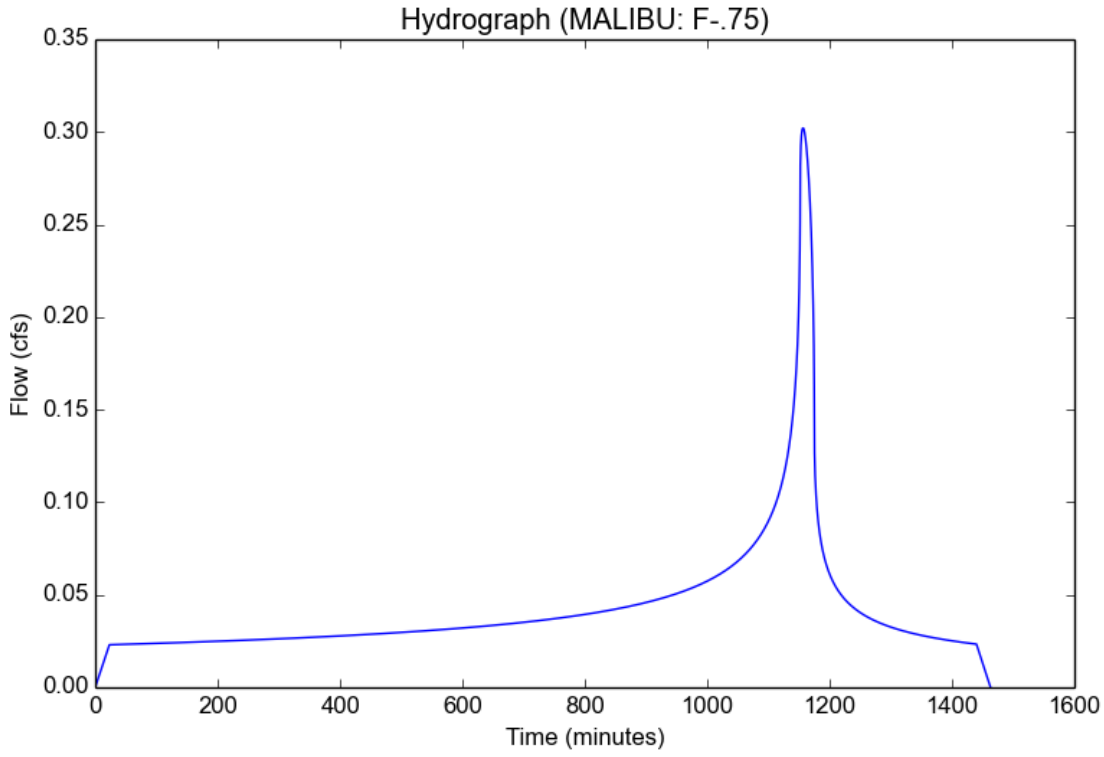
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	F-.75
Area (ac)	1.687038196
Flow Path Length (ft)	321.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2184
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	23.0
Clear Peak Flow Rate (cfs)	0.3021
Burned Peak Flow Rate (cfs)	0.3137
24-Hr Clear Runoff Volume (ac-ft)	0.0857
24-Hr Clear Runoff Volume (cu-ft)	3735.1277



Peak Flow Hydrologic Analysis

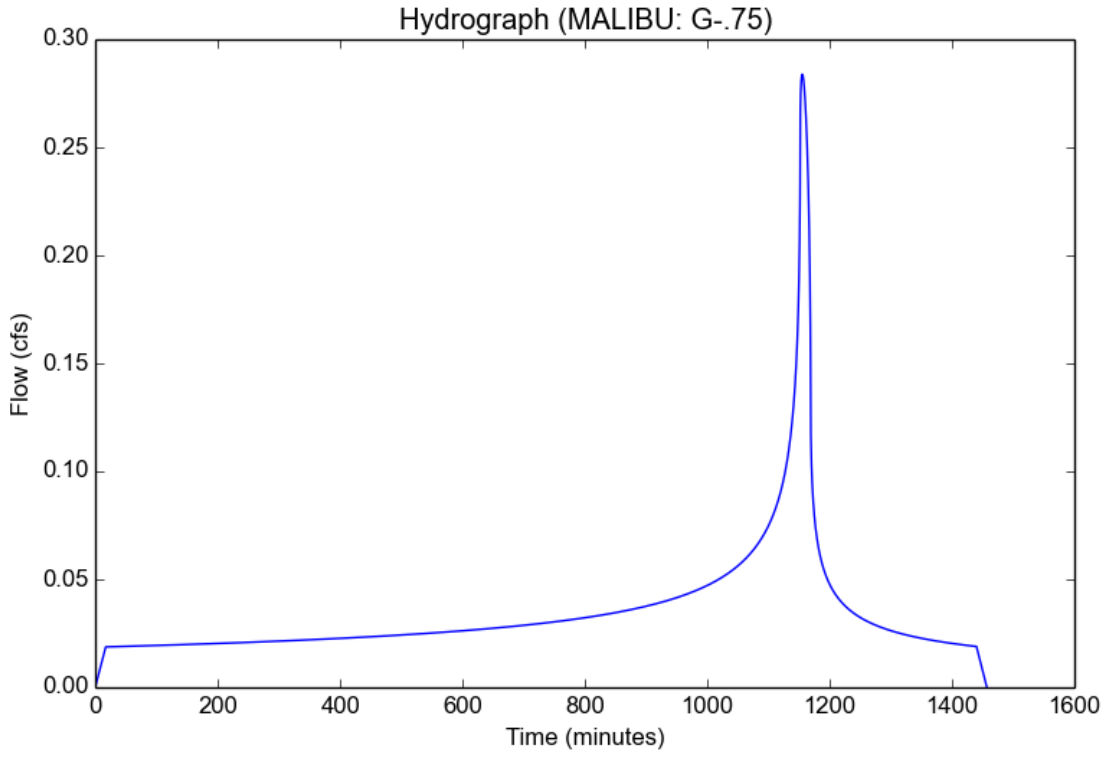
File location: W:/1NAC010701/ENGR/DOCS/Hydrology & Hydraulic Report/1SAN082310/Report/Appendix C -Hydrology Output/MALIBU Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	MALIBU
Subarea ID	G-.75
Area (ac)	1.374980149
Flow Path Length (ft)	193.0
Flow Path Slope (vft/hft)	0.01
0.75-inch Rainfall Depth (in)	0.75
Percent Impervious	0.9
Soil Type	38
Design Storm Frequency	0.75 inch storm
Fire Factor	0.83
LID	True

Output Results

Modeled (0.75 inch storm) Rainfall Depth (in)	0.75
Peak Intensity (in/hr)	0.2517
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.82
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	0.2838
Burned Peak Flow Rate (cfs)	0.2953
24-Hr Clear Runoff Volume (ac-ft)	0.0699
24-Hr Clear Runoff Volume (cu-ft)	3044.2172



APPENDIX E
ESHA HEC-RAS OUTPUT

National Flood Hazard Layer FIRMette

FEMA

118°49'56"W 34°1'40"N

118°49'18"W 34°1'11"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

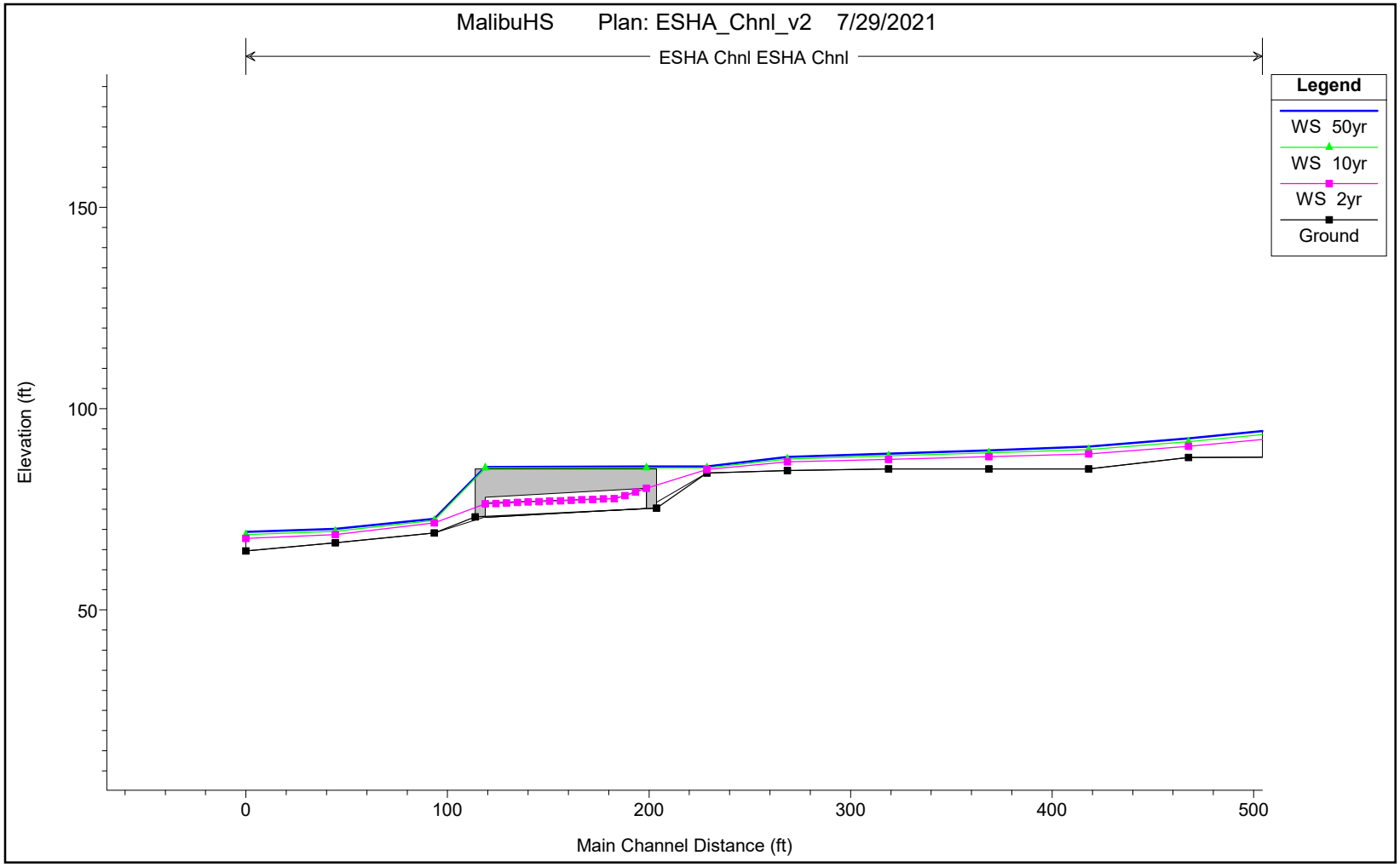
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/29/2021 at 10:33 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

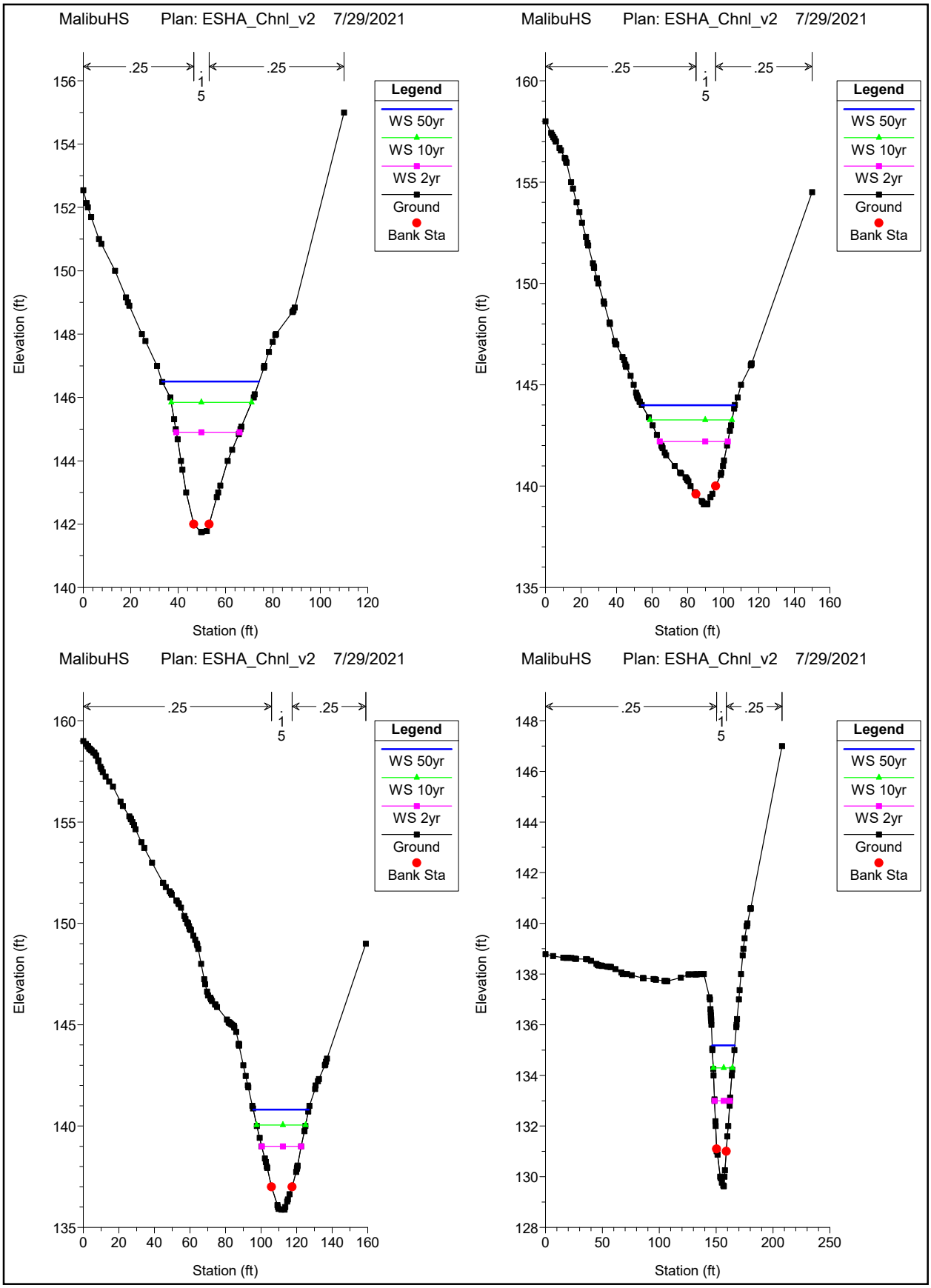

MalibuHS Plan: ESHA_Chnl_v2 7/29/2021
ESHA Chnl ESHA Chnl
Legend
WS 50yr
WS 10yr
WS 2yr
Ground
Elevation (ft)
150
100
50
0
100
200
300
400
500
Main Channel Distance (ft)

HEC-RAS Plan: ESHA_Chnl_v2 River: ESHA Chnl Reach: ESHA Chnl

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ESHA Chnl	1295	50yr	490.00	141.75	146.50		147.26	0.105328	8.95	101.52	40.88	0.73
ESHA Chnl	1295	10yr	350.00	141.75	145.85		146.48	0.101474	7.94	77.14	33.97	0.70
ESHA Chnl	1295	2yr	189.00	141.75	144.90		145.34	0.091577	6.30	48.46	26.62	0.63
ESHA Chnl	1251	50yr	490.00	139.10	144.00		144.30	0.041666	5.55	148.50	52.40	0.46
ESHA Chnl	1251	10yr	350.00	139.10	143.26		143.53	0.043153	5.03	112.46	46.07	0.45
ESHA Chnl	1251	2yr	189.00	139.10	142.21		142.41	0.046696	4.23	67.95	38.34	0.45
ESHA Chnl	1202	50yr	490.00	135.88	140.82		141.53	0.078713	7.48	91.12	31.24	0.62
ESHA Chnl	1202	10yr	350.00	135.88	140.06		140.66	0.081665	6.74	68.76	27.60	0.61
ESHA Chnl	1202	2yr	189.00	135.88	139.00		139.42	0.082372	5.43	42.30	22.24	0.58
ESHA Chnl	1152	50yr	490.00	129.63	135.18	134.69	136.54	0.131286	9.98	64.93	19.84	0.79
ESHA Chnl	1152	10yr	350.00	129.63	134.29		135.44	0.139833	9.02	48.44	17.02	0.79
ESHA Chnl	1152	2yr	189.00	129.63	132.99	132.68	133.83	0.162827	7.54	28.65	13.50	0.80
ESHA Chnl	1104	50yr	490.00	125.00	132.51		133.03	0.040295	6.45	108.50	27.06	0.44
ESHA Chnl	1104	10yr	350.00	125.00	131.50		131.93	0.039652	5.73	82.83	23.73	0.43
ESHA Chnl	1104	2yr	189.00	125.00	130.00		130.29	0.038089	4.56	51.09	18.80	0.40
ESHA Chnl	1056	50yr	490.00	121.84	128.19	127.77	129.62	0.146217	10.31	64.03	19.45	0.79
ESHA Chnl	1056	10yr	350.00	121.84	127.27	126.89	128.49	0.154667	9.35	47.43	16.64	0.78
ESHA Chnl	1056	2yr	189.00	121.84	125.91	125.59	126.82	0.176210	7.81	27.56	12.60	0.79
ESHA Chnl	1006	50yr	490.00	117.10	124.70	122.70	125.32	0.051844	6.68	92.53	23.31	0.48
ESHA Chnl	1006	10yr	350.00	117.10	123.79	121.93	124.27	0.049025	5.82	72.41	20.76	0.45
ESHA Chnl	1006	2yr	189.00	117.10	122.43	120.82	122.73	0.044218	4.49	46.82	16.88	0.41
ESHA Chnl	954	50yr	490.00	113.87	118.75	118.75	120.38	0.208193	10.57	53.87	18.91	0.94
ESHA Chnl	954	10yr	350.00	113.87	117.98	117.98	119.37	0.229507	9.62	40.22	16.78	0.95
ESHA Chnl	954	2yr	189.00	113.87	116.90	116.90	117.91	0.280408	8.08	24.05	13.10	0.98
ESHA Chnl	904	50yr	490.00	108.96	116.19		116.62	0.032436	5.76	117.53	28.48	0.40
ESHA Chnl	904	10yr	350.00	108.96	115.15		115.51	0.033059	5.15	89.47	25.36	0.40
ESHA Chnl	904	2yr	189.00	108.96	113.66		113.91	0.033696	4.17	55.00	20.92	0.38
ESHA Chnl	854	50yr	490.00	106.92	113.54		114.35	0.064503	7.61	81.53	20.76	0.56
ESHA Chnl	854	10yr	350.00	106.92	112.54		113.20	0.065774	6.78	62.05	18.22	0.54
ESHA Chnl	854	2yr	189.00	106.92	111.06		111.52	0.070643	5.51	37.83	14.55	0.53
ESHA Chnl	804	50yr	490.00	103.99	110.83		111.49	0.049948	6.94	92.94	22.78	0.49
ESHA Chnl	804	10yr	350.00	103.99	109.92		110.43	0.046297	6.02	73.22	20.51	0.46
ESHA Chnl	804	2yr	189.00	103.99	108.54		108.86	0.041006	4.63	47.29	16.82	0.41
ESHA Chnl	754	50yr	490.00	100.97	106.14	105.82	107.38	0.156076	9.27	62.19	21.27	0.82
ESHA Chnl	754	10yr	350.00	100.97	105.40	105.12	106.44	0.166195	8.36	47.18	19.35	0.81
ESHA Chnl	754	2yr	189.00	100.97	104.38	104.08	105.09	0.179096	6.77	29.18	15.79	0.79
ESHA Chnl	704	50yr	490.00	95.58	101.65		102.38	0.065820	7.13	82.75	22.98	0.55
ESHA Chnl	704	10yr	350.00	95.58	100.79		101.38	0.065147	6.28	64.09	20.48	0.53
ESHA Chnl	704	2yr	189.00	95.58	99.53		99.91	0.065428	4.99	40.53	16.77	0.51
ESHA Chnl	654	50yr	490.00	92.99	99.22		99.70	0.042255	5.85	103.03	27.91	0.45
ESHA Chnl	654	10yr	350.00	92.99	98.35		98.73	0.041948	5.17	79.91	25.03	0.44
ESHA Chnl	654	2yr	189.00	92.99	97.13		97.37	0.039428	4.03	51.86	20.91	0.40
ESHA Chnl	604	50yr	490.00	90.98	96.59		97.23	0.058543	6.73	89.25	25.05	0.53
ESHA Chnl	604	10yr	350.00	90.98	95.69		96.22	0.061531	6.04	67.89	22.44	0.53
ESHA Chnl	604	2yr	189.00	90.98	94.35		94.74	0.072942	5.05	40.62	18.41	0.54
ESHA Chnl	554	50yr	490.00	88.00	95.06		95.37	0.023445	4.89	137.24	34.62	0.35
ESHA Chnl	554	10yr	350.00	88.00	94.18		94.42	0.021753	4.25	108.25	31.34	0.33
ESHA Chnl	554	2yr	189.00	88.00	92.91		93.05	0.018127	3.23	71.58	26.31	0.29
ESHA Chnl	505	50yr	490.00	87.86	92.58		93.32	0.085242	7.06	78.05	25.12	0.62
ESHA Chnl	505	10yr	350.00	87.86	91.78		92.41	0.095313	6.44	58.89	22.80	0.63
ESHA Chnl	505	2yr	189.00	87.86	90.61		91.10	0.133032	5.61	34.25	18.89	0.69
ESHA Chnl	455	50yr	490.00	85.00	90.56		90.90	0.029100	5.03	126.36	33.27	0.39
ESHA Chnl	455	10yr	350.00	85.00	89.86		90.11	0.025245	4.26	103.75	31.07	0.35
ESHA Chnl	455	2yr	189.00	85.00	88.75		88.89	0.020590	3.19	71.11	27.58	0.30
ESHA Chnl	405	50yr	490.00	85.00	89.63		89.80	0.016248	3.37	177.96	75.34	0.28
ESHA Chnl	405	10yr	350.00	85.00	89.01		89.14	0.014609	2.89	133.65	64.43	0.26
ESHA Chnl	405	2yr	189.00	85.00	88.06		88.13	0.011392	2.11	93.37	36.64	0.22
ESHA Chnl	356	50yr	490.00	85.00	88.80		88.94	0.017803	3.16	193.74	78.95	0.29
ESHA Chnl	356	10yr	350.00	85.00	88.25		88.36	0.016618	2.74	152.19	71.11	0.27
ESHA Chnl	356	2yr	189.00	85.00	87.43		87.49	0.014425	2.09	99.20	55.93	0.24

HEC-RAS Plan: ESHA_Chnl_v2 River: ESHA Chnl Reach: ESHA Chnl (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ESHA Chnl	306	50yr	490.00	84.60	87.98		88.08	0.016205	2.70	200.46	83.87	0.27
ESHA Chnl	306	10yr	350.00	84.60	87.48		87.57	0.014913	2.31	161.47	75.03	0.25
ESHA Chnl	306	2yr	189.00	84.60	86.76		86.80	0.012888	1.74	111.21	63.88	0.22
ESHA Chnl	266	50yr	490.00	84.04	85.64	85.64	86.34	0.275600	6.78	74.84	58.32	0.98
ESHA Chnl	266	10yr	350.00	84.04	85.33	85.33	85.91	0.308240	6.15	57.63	51.82	0.99
ESHA Chnl	266	2yr	189.00	84.04	84.91	84.91	85.31	0.358699	5.11	36.96	45.96	1.01
ESHA Chnl	260		Culvert									
ESHA Chnl	130	50yr	490.00	69.12	72.61		72.85	0.044856	3.99	132.37	59.95	0.43
ESHA Chnl	130	10yr	350.00	69.12	72.22		72.39	0.039829	3.38	109.64	56.76	0.40
ESHA Chnl	130	2yr	189.00	69.12	71.63		71.73	0.032884	2.51	77.68	51.95	0.34
ESHA Chnl	81	50yr	490.00	66.70	70.10		70.37	0.056940	4.20	119.86	56.09	0.48
ESHA Chnl	81	10yr	350.00	66.70	69.51		69.76	0.074853	4.00	88.36	51.17	0.53
ESHA Chnl	81	2yr	189.00	66.70	68.69		68.91	0.120637	3.81	49.60	42.32	0.62
ESHA Chnl	37	50yr	490.00	64.67	69.36	66.82	69.43	0.010011	2.19	227.58	72.96	0.21
ESHA Chnl	37	10yr	350.00	64.67	68.69	66.48	68.75	0.010003	1.95	180.89	67.71	0.21
ESHA Chnl	37	2yr	189.00	64.67	67.75	65.97	67.78	0.010016	1.57	120.36	59.89	0.20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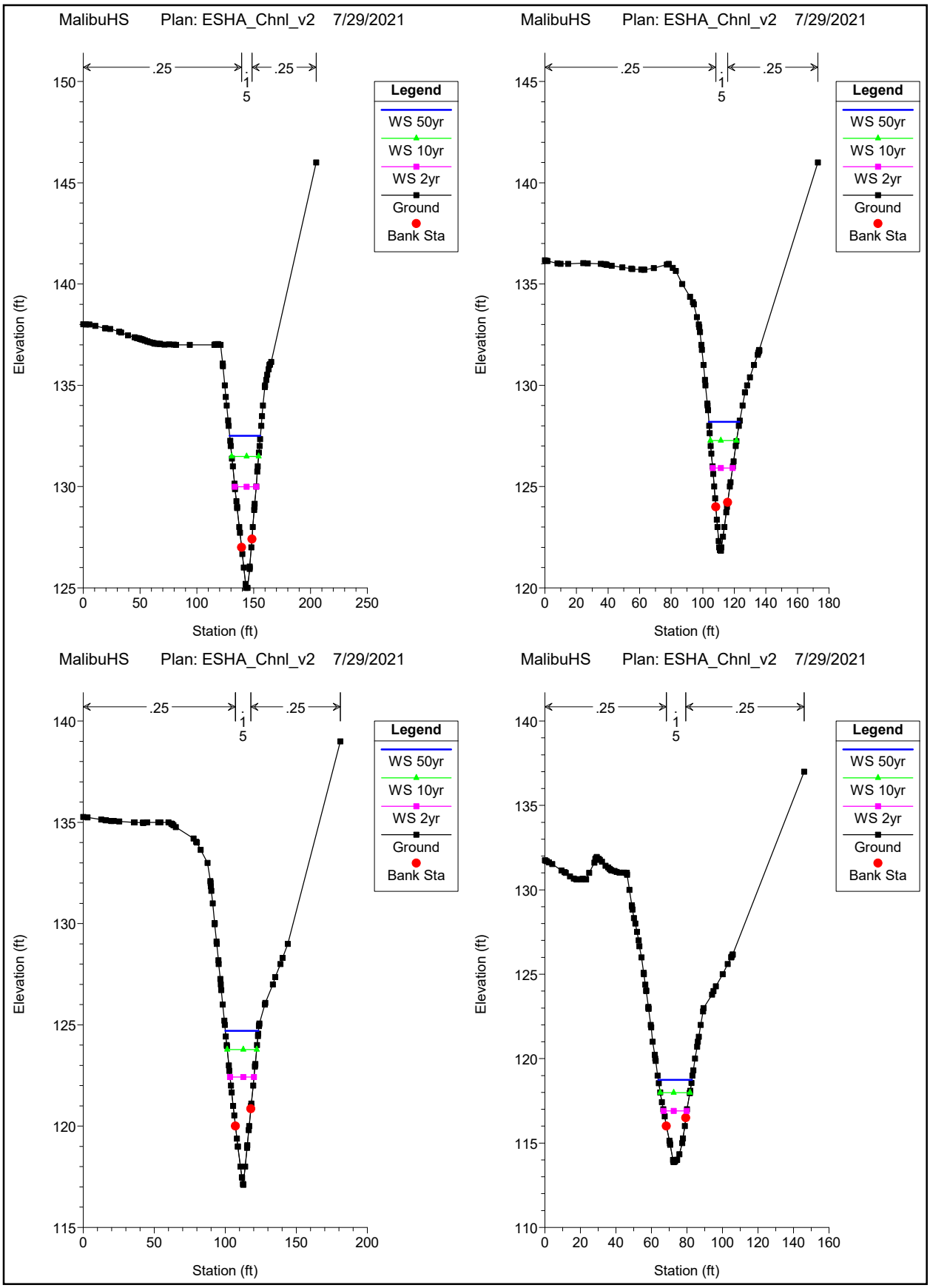
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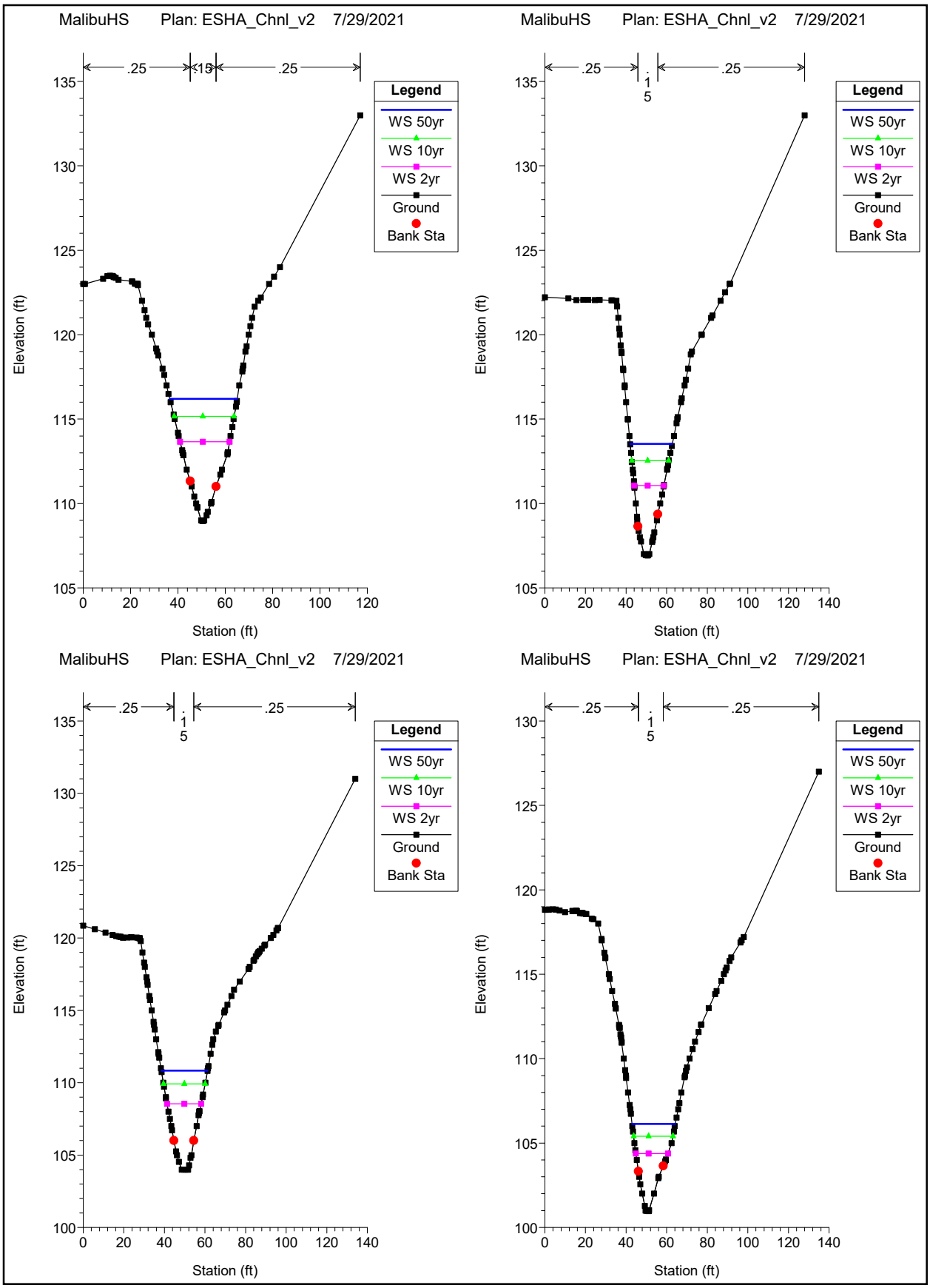
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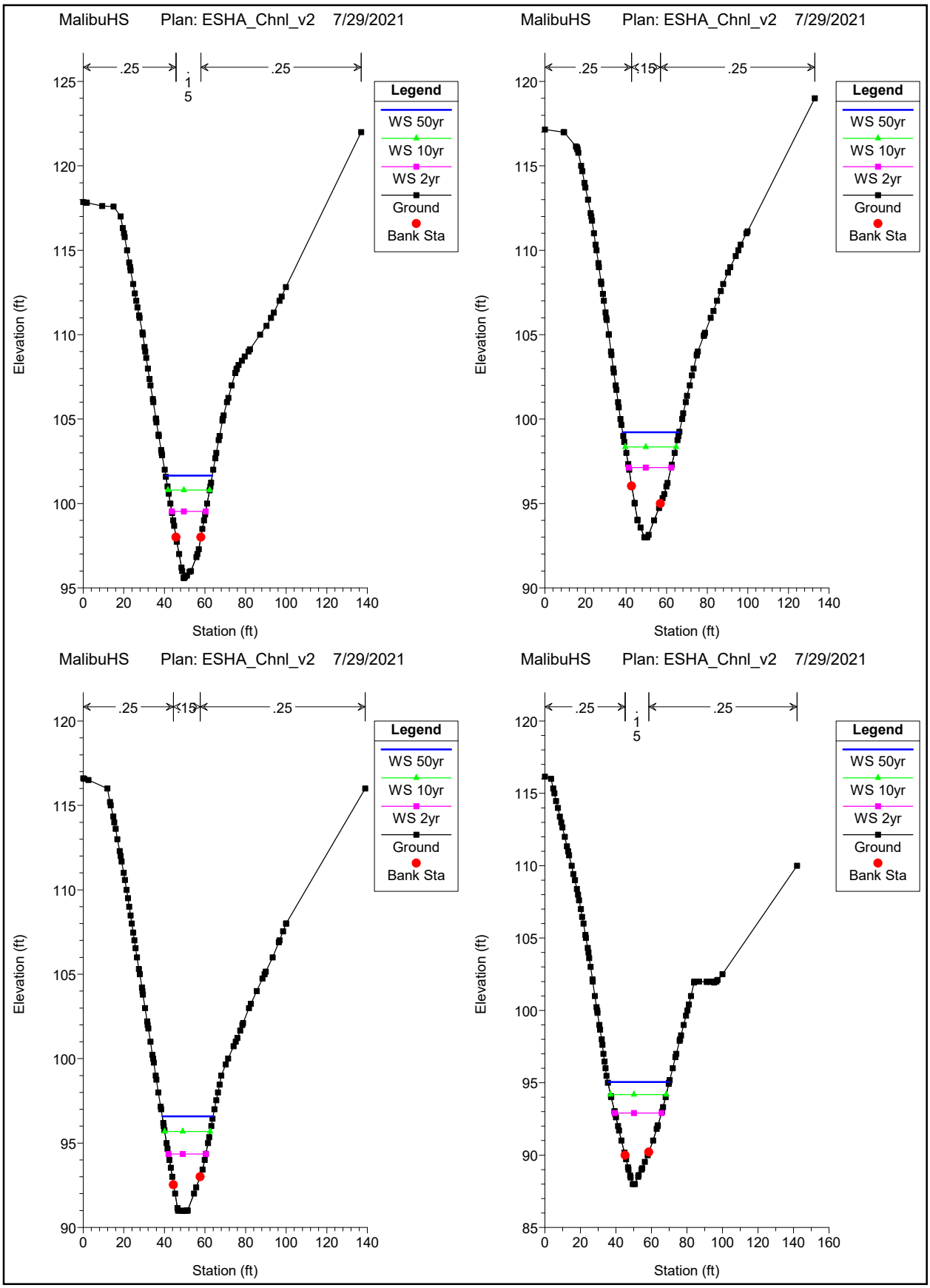
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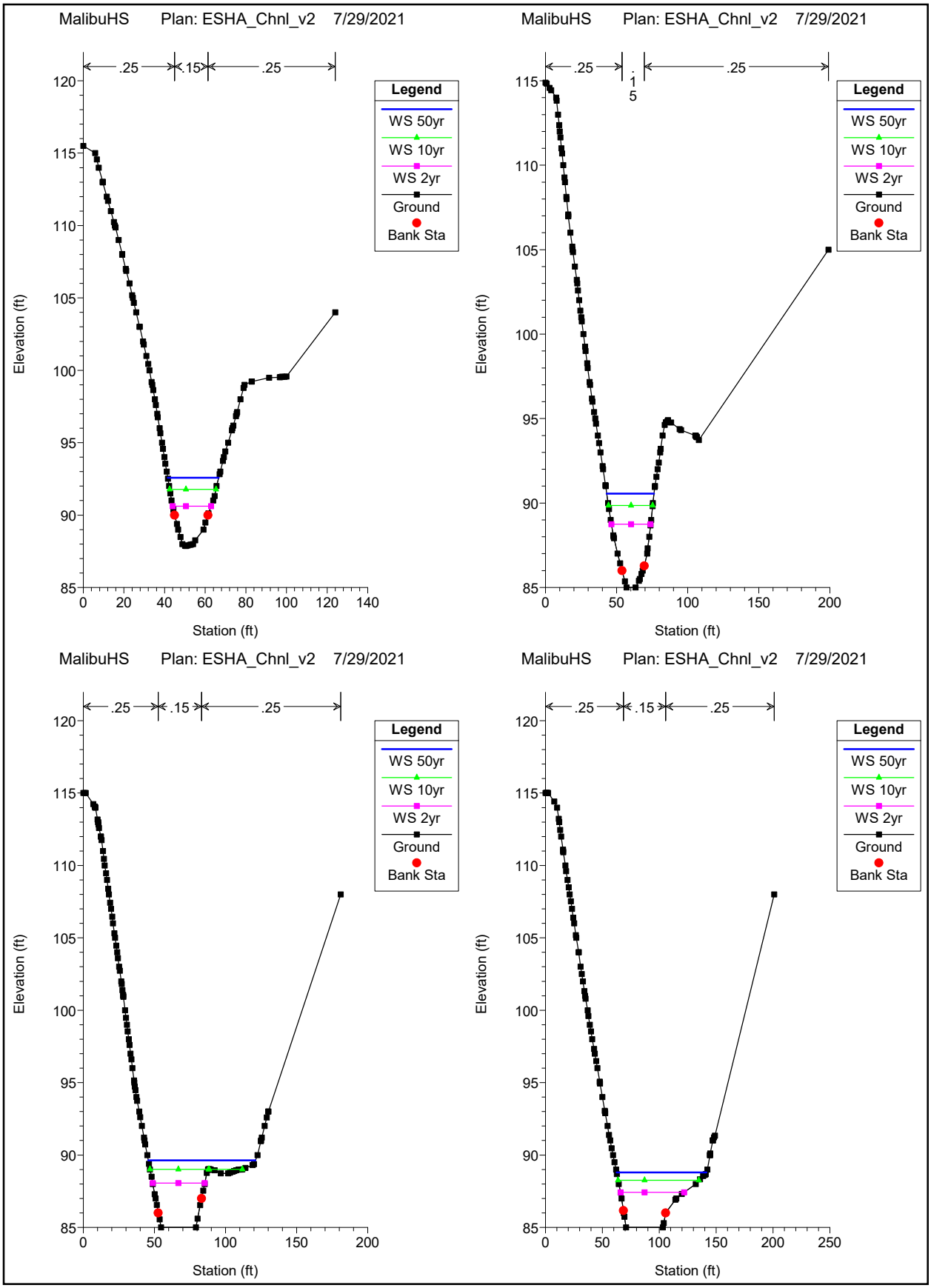
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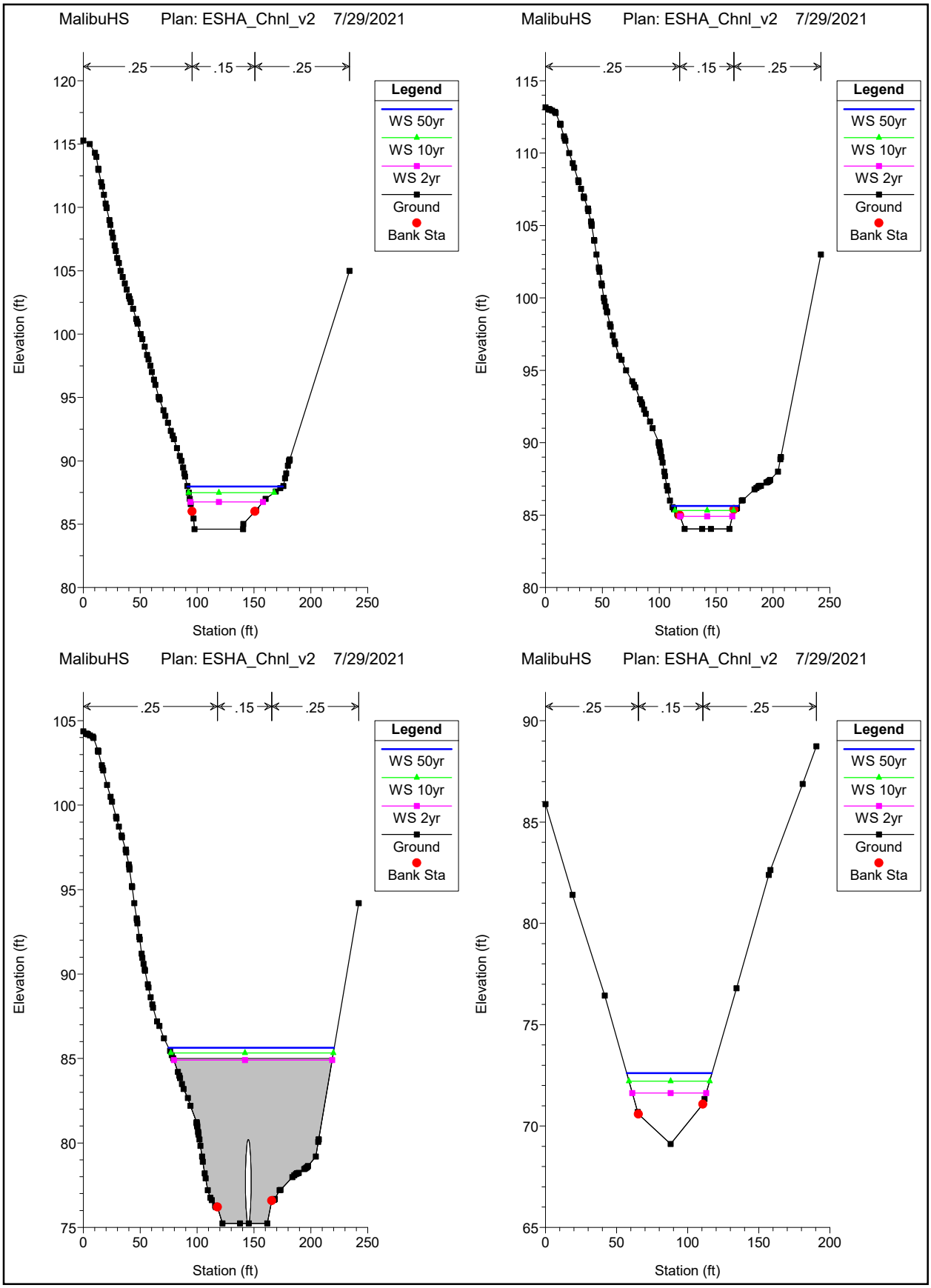
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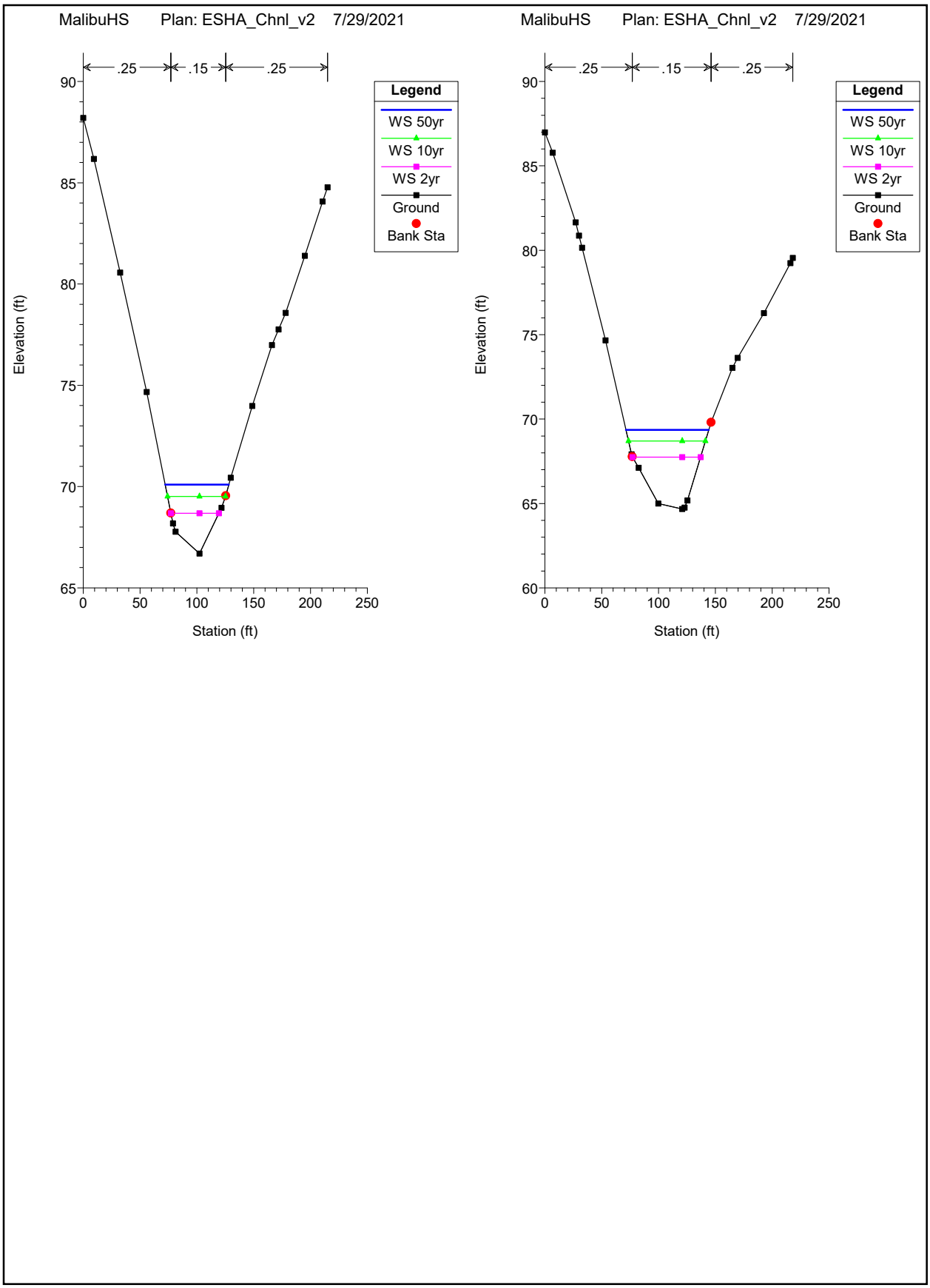
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APPENDIX F
STORMDRAIN SIZING

Worksheet for Circular Pipe - 1

Project Description	
Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Normal Depth	18.0 in
Diameter	18.0 in
Discharge	7.43 cfs

Results	
Discharge	7.43 cfs
Normal Depth	18.0 in
Flow Area	1.8 ft²
Wetted Perimeter	4.7 ft
Hydraulic Radius	4.5 in
Top Width	0.00 ft
Critical Depth	12.7 in
Percent Full	100.0 %
Critical Slope	0.007 ft/ft
Velocity	4.20 ft/s
Velocity Head	0.27 ft
Specific Energy	1.77 ft
Froude Number	(N/A)
Maximum Discharge	7.99 cfs
Discharge Full	7.43 cfs
Slope Full	0.005 ft/ft
Flow Type	Undefined

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	18.0 in
Critical Depth	12.7 in
Channel Slope	0.005 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for Circular Pipe - 1

Project Description	
Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.005 ft/ft
Normal Depth	24.0 in
Diameter	24.0 in
Discharge	16.00 cfs

Results	
Discharge	16.00 cfs
Normal Depth	24.0 in
Flow Area	3.1 ft²
Wetted Perimeter	6.3 ft
Hydraulic Radius	6.0 in
Top Width	0.00 ft
Critical Depth	17.3 in
Percent Full	100.0 %
Critical Slope	0.007 ft/ft
Velocity	5.09 ft/s
Velocity Head	0.40 ft
Specific Energy	2.40 ft
Froude Number	(N/A)
Maximum Discharge	17.21 cfs
Discharge Full	16.00 cfs
Slope Full	0.005 ft/ft
Flow Type	Undefined

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	24.0 in
Critical Depth	17.3 in
Channel Slope	0.005 ft/ft
Critical Slope	0.007 ft/ft

Appendix K Noise Modeling Worksheets

Appendices

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Segment	Existing No Project	Existing Plus Project	2031 Without Project	2031 With Project	Project Noise Increase	Cumulative Increase	Project Cumulative Contribution
Morning View Drive - east of Pacific Coast Highway	5,717	5843	6009	6135	0.09	0.31	0.09
Morning View Drive - east of Merritt Drive	5,006	5132	5262	5388	0.11	0.32	0.10
Morning View Drive - west of Ebbtide Way	2,312	2312	2430	2430	0.00	0.22	0.00
Morning View Drive - west of campus	1,486	1486	1562	1562	0.00	0.22	0.00
Clover Heights Avenue - south of Harvester Road	192	318	202	328	2.19	2.33	2.11
Merritt Drive - south of Morning View	792	918	833	959	0.64	0.83	0.61
Pacific Coast Highway - south of Moringin View	24,800	24926	26068	26194	0.02	0.24	0.02

Appendix L Public Service Letters Responses

Appendices

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COUNTY OF LOS ANGELES
FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(323) 881-2461
www.fire.lacounty.gov

"Proud Protectors of Life, Property, and the Environment"

DARYL L. OSBY
FIRE CHIEF
FORESTER & FIRE WARDEN

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MARK RIDLEY-THOMAS
SECOND DISTRICT

SHEILA KUEHL
THIRD DISTRICT

JANICE HAHN
FOURTH DISTRICT

KATHRYN BARGER
FIFTH DISTRICT

November 3, 2020

Tracy Chu, Project Planner
Placeworks
Planning Division
700 S. Flower Street
Los Angeles, CA 90017

Dear Ms. Chu:

REQUEST FOR FIRE DEPARTMENT INFORMATION FOR THE ENVIRONMENTAL IMPACT REPORT, "MALIBU MIDDLE AND HIGH SCHOOL CAMPUS SPECIFIC PLAN," WOULD REDEVELOP AND MODERNIZE THE EXISTING MMHS CAMPUS AND FORMER JCES CAMPUS TO CREATE THREE DIFFERENT AREAS: MIDDLE SCHOOL CORE, HIGH SCHOOL CORE, AND SHARED FACILITIES, LOCATED AT 30215 MORNING VIEW DRIVE, MALIBU, FFER 2020007327

The Request for Fire Department Information has been reviewed by the Planning Division, Land Development Unit, Forestry Division, and Health Hazardous Materials Division of the County of Los Angeles Fire Department.

The following are their comments:

PLANNING DIVISION:

1. Please confirm or update the following information for the Los Angeles County Fire Department:

   Stations, Staff, and Apparatus

   a. The nearest fire station to the Project Site is Station 71. Please provide the equipment and staffing information for each of the station in the following table.

Los Angeles County Fire Department Stations

Station No.	Location	Apparatus (number and Type of Emergency Vehicles)	Daily Staffing (Number and Type Personnel)
Station 71	28722 W. Pacific Coast Highway Malibu, CA 90265	*A 3-person engine company staffed with one captain, one firefighter specialist, one fire fighter/paramedic and a 2-person paramedic squad staffed with two fire fighters/paramedics on a daily basis. (A total of 5 personnel daily)*	

Performance Standard

b. Please provide Los Angeles County Fire Department's response time goals in the following table. Please feel free to revises the activity/incident types as necessary.

Los Angeles County Fire Department Performance Standards

Activity/Incident Type	Overall Time in Minutes/Seconds (from receipt of call to arrival onsite)
First-in Response Units	5:00 minutes goal
First-in BLS Units	5:00 minutes goal
First-in ALS Unit	8:00 minutes or less
First-in Paramedic Assessment	N/A

c. What was the average response time (if available) for the first-in response unit for the latest year for which data is available?

During the year 2019, Fire Station 71 had an average emergency response time for 1st arriving units of 4.27 minutes.

Funding

d. Please describe the funding sources/mechanisms (e.g. City development impacts fees, secure fire protection agreements, City general funds) that are used to provide fire protection services to the City?

The Fire Department is primarily funded by a share of property tax. The County of Los Angeles has a fire protection facilities fee (developer fee) for the benefit of the Fire Protection District in effect in the project area and a Special Tax approved by the voters in June 1997.

2. Are there any existing deficiencies (personnel, equipment) in the fire protection service currently provided to the Project Site?

   No, but all projects have a cumulative impact on existing resources. However, this Project will mitigate this impact by payment of the above referenced developer fee.

3. Please summarize any plans for fire service improvements plans or expanded capacity (personnel, equipment), if any, that would serve the Project area.

   Currently, there are no plans for additional personnel and equipment in the project area.

   a. What are the funding sources for the planned improvement?

      N/A

4. Will the LACoFD be able to serve any known cumulative developments in addition to the proposed Project?

   The effects of cumulative impact by new development are evaluated on a case by case basis. However, this project is expected to have a less than significant impact. Cumulative impacts are mitigated by the Fire Department's developer mitigation fees in effect in the the Project area.

   a. Please summarize any additional resources (stations, equipment, personnel) needed.

      Currently, fire service needs for the City of Malibu are being met, therefore, there are no plans for additional resources.

   b. What factors or standards are used to project these needs?

      N/A

5. Would the proposed Project affect LACoFD's ability to provide services? Please comment on any area of specific concern.

   While each additional development creates greater demands on existing resources, the project would have a negligible effect on service standards and will mitigate any impacts by the payment of the Fire Department's developer mitigation fees.

6. Please provide any additional comments and/or information regarding fire service provision in the Project site related to the proposed Project.

   We have no further comments.

For any questions regarding this response, please contact Loretta Bagwell, Planning Analyst, at (323) 881-2404 or Loretta.Bagwell@fire.lacounty.gov.

LAND DEVELOPMENT UNIT:

1. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows, and fire hydrants.

2. Every building constructed shall be accessible to Fire Department apparatus by way of access roadways with an all-weather surface. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building. The roadway shall provide approved signs and/or stripping stating, "NO PARKING - FIRE LANE" and shall be maintained in accordance with the County of Los Angeles Fire Code.

3. This property is located within the area described by the Fire Department as a Fire Hazard Severity Zone. A "Fuel Modification Plan" shall be submitted to the Fuel Modification for review by the Fuel Modification Unit prior to the approval of the building permit. Please contact the Department's Fuel Modification Unit for details. The Fuel Modification Plan Review Unit is located at 605 North Angeleno Avenue in the City of Azusa CA 91702-2904. They may be reached at (626) 969-5205 or visit https://www.fire.lacounty.gov/forestry-division/forestry-fuel-modification.

The County of Los Angeles Fire Department, Land Development Unit appreciates the opportunity to comment on this project. Should any questions arise, please contact Wally Collins at (323) 890-4243 or Wally.Collins@fire.lacounty.gov.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

Oak trees are known to exist in the proposed project area. Further field studies should be conducted to determine the presence of this species on the project site.

The statutory responsibilities of the County of Los Angeles Fire Department's Forestry Division include erosion control, watershed management, rare and endangered species, brush clearance, vegetation management, fuel modification for Fire Hazard Severity Zones, archeological and cultural resources, and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed.

This property is located in an area described by the Forester and Fire Warden as being in a Fire Hazard Severity Zone. The development of this project must comply with all Fire Hazard severity Zone code and ordinance requirements for fuel modification. Specific questions regarding fuel modification requirements should be directed to the Fuel Modification Office at (626) 969-2375.

For any questions regarding this response, please contact Forestry Assistant, Joseph Brunet at (818) 890-5719.

HEALTH HAZARDOUS MATERIALS DIVISION:

The Health Hazardous Materials Division of the Los Angeles County Fire Department has no comments regarding the questions posed in the PLACEWORKS "Information Request Questionnaire" (dated 9/29/20) pertaining to the project.

Please contact HHMD senior typist-clerk, Perla Garcia at (323) 890-4035 or Perla.garcia@fire.lacounty.gov if you have any questions.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

RONALD M. DURBIN, CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

RMD:ac

OFFICE OF THE SHERIFF

COUNTY OF LOS ANGELES

HALL OF JUSTICE

ALEX VILLANUEVA, SHERIFF

October 29, 2020

Ms. Tracy Chu, Project Planner
PlaceWorks
700 S. Flower Street, Suite 600,
Los Angeles, California 90017

Dear Ms. Chu:

REQUEST FOR SHERIFF'S DEPARTMENT SERVICE INFORMATION IN PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT MALIBU MIDDLE AND HIGH SCHOOL CAMPUS SPECIFIC PLAN AND LOCAL COASTAL PLAN AMENDMENT PROJECT

Thank you for inviting the Los Angeles County Sheriff's Department (Department) to provide information and responses to specific questions to be addressed under California Environmental Quality Act (CEQA) in preparing a draft Environmental Impact Report, for the Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project (Project).

The proposed Project is located within the service area of the Department's Malibu-Lost Hills Sheriff's Station (Station). It may impact the current level of service provided by the Station due to the potential increase in resident and student population proposed by the Project. The Department will provide further comments for the Draft EIR during the public review period. Accordingly, the Station reviewed the request and provided the attached responses (see correspondence dated October 29, 2020, from Captain Salvador Becerra).

Should you have any questions regarding this matter, please contact me, at (323) 526-5657, or your staff may contact Ms. Rochelle Campomanes, at (323) 526-5614.

Sincerely,

ALEX VILLANUEVA, SHERIFF

Tracey Jue, Director
Facilities Planning Bureau

COUNTY OF LOS ANGELES

SHERIFF'S DEPARTMENT

"A Tradition of Service Since 1850"

DATE: October 29, 2020
FILE:

OFFICE CORRESPONDENCE

FROM: SALVADOR BECERRA, CAPTAIN
MALIBU/LOST HILLS STATION

TO: TRACEY JUE, DIRECTOR
FACILITIES PLANNING BUREAU

SUBJECT: RESPONSE TO REQUEST FOR SHERIFF'S DEPARTMENT SERVICE INFORMATION FOR THE PROPOSED MALIBU MIDDLE AND HIGH SCHOOL CAMPUS SPECIFIC PLAN AND LOCAL COASTAL PLAN AMENDMENT PROJECT

The Malibu/Lost Hills Sheriff's Station (Station) is providing the following information as a response to a request received from Place Works, a company who is currently assisting Santa Monica/Malibu Unified School District (Lead Agency) in preparing a Draft Environmental Impact Report (Draft EIR) for the proposed Malibu Middle and High School Campus Specific Plan and Local Coastal Plan Amendment Project (Project). The Project site includes the entirety of the Lead Agency's property that consists of the existing Malibu Equestrian Center in the eastern portion of the property, the existing Malibu Middle and High School (MMHS) campus in the center of the property located at 30215 Morning View Drive, and the former Juan Cabrillo Elementary School (JCES) campus in the western portion of the property, in the city of Malibu (City). The Project site is within the Station's service area. Upon release of the EIR for public review, the Department reserves the right to make modifications to the information should the circumstances change.

The proposed Project would redevelop and modernize the existing MMHS campus and former JCES campus to create three distinct areas: Middle School Core, High School Core, and shared facilities. Implementation of the proposed Project would result in demolition of all 11 buildings on the former JCES campus and 7 buildings on the MMHS campus. Building E and Building A/B which is under construction would remain with all other structures removed. The existing football/track, baseball, or softball field would remain. The new development of the proposed Project would result in 32 classrooms and 8 labs and a total of 190,967 square feet of building space, providing MMHS campus with a total of 47 classrooms and 12 labs and a total of 240,650 square feet of building space. The proposed maximum height of 45 feet above grade for Buildings D, C, H, and J exceed the Local Implementation Plan's 28-foot height requirements in order to meet the District's Education Specifications, the California Scholastic

Federation and National Federation of State High School Association requirements. The new Theater building would also have a maximum height of 45 feet above grade, while the other performing arts facilities would be 36 feet above grade. A total of 451 parking spaces would also be developed.

The questionnaire below is formatted to correspond with the format of the Request:

1. ***Please confirm or update the following information for the Los Angeles County Sheriff's Department:***

Stations and Staff

a. ***Please provide the equipment and staffing information for the Station in the following table.***

i. Equipment (Number of Police Vehicles)

As of October 2020, the Station was equipped with 34 patrol cars.

ii. Daily Staffing (Number and Type of Personnel)

As of October 2020, the Station was staffed by 130 sworn personnel and 30 professional staff.

Performance Standards

b. ***Please provide the Department's response time goals in the following table. Please feel free to revises the activity/incident types as necessary.***

Overall Time in Minutes/Seconds (from receipt of call to arrival onsite)

i. Routine Calls:

The Station's average or anticipated response time for routine calls is 38.2 minutes.

ii. Priority Calls:

The Station's average or anticipated response time for routine calls is 15.9 minutes.

iii. Emergent Calls:

The Station's average or anticipated response time for routine calls is 7.7 minutes.

(Please note these are approximate time ranges only and could be affected by traffic conditions and these response times are variable because the responding unit may be elsewhere within the Station's service area and not necessarily dispatched from the Station itself.)

c. What was the average response time (if available) for the latest year for which data is available for each call type?

i. Routine Calls:

The Station's average or anticipated response time for routine calls is 35.4 minutes.

ii. Priority Calls:

The Station's average or anticipated response time for routine calls is 13.7 minutes.

iii. Emergent Calls:

The Station's average or anticipated response time for routine calls is 7.5 minutes.

(Please note these are approximate time ranges only and could be affected by traffic conditions and these response times are variable because the responding unit may be elsewhere within the Station's service area and not necessarily dispatched from the Station itself.)

Funding

d. Please describe the funding sources/mechanisms (e.g., city development impacts fees, city general funds) that are used to provide police protection services to the city?

The Station's law enforcement service fees are currently being funded through contract agreement with the City of Malibu.

2. ***Are there any existing deficiencies (staff, equipment) in the police protection currently provided to the Project site?***

   The Station is currently understaffed, and the size of the facility is inadequate for current conditions. Any additional personnel and assets will be required as the additional staff required to service the development would further exacerbate the inadequacy of the Station's capacity as service area continues to grow with intensification of land uses.

3. ***Please summarize any plans for police service improvements plans or expanded capacity (personnel, equipment) if any, that would serve the Project area.***

   a. ***What are the funding sources for the planned improvements?***

      Currently, there are no available funding sources for any planned improvements due to the Department's budget constraints.

4. ***Will the LASD be able to serve any known cumulative developments in addition to the proposed Project?***

   The Station can serve the proposed Project with existing facilities. The proposed Project will be open to the community for its use in addition to the student population that may pose the need for additional resources. However, the Station believes that those increased needs will be met, and if they are greater than expected, the Station would be able to address the logistical issues with the school and the Lead Agency.

   a. ***Please summarize any additional resources (stations, equipment, personnel) needed.***

      Any additional personnel and assets will be required as the additional staff required to service the development would further exacerbate the inadequacy of the Station's capacity as service area continues to grow with intensification of land uses. Any expansion of the Station, or construction of new facilities, should not only account for the current shortage, but should also accommodate additional personnel and equipment that will become necessary as our service area continues to experience growth and intensification of land uses.

   b. ***What factors or standards are used to project these needs?***

The Department's service ratio varies from station to station based upon a number of factors such as crime rates, geography, and the number of calls for service. Depending upon the analysis provided in the EIR, the proposed project may increase staffing requirements which will be further evaluated during the public review period.

5. ***Would the proposed Project affect LASD's ability to provide services? Please comment on any area of specific concern.***

   The proposed Project will increase employees and daytime population of the Station's service area, which, in turn, will generate an increased demand for law enforcement services we provide. The Station expects the EIR to quantify the population increases, describe potential impacts to our resources and operations, and identify measures that will mitigate these impacts to a level of insignificance.

6. ***Please provide any additional comments and/or information regarding police service provision in the project site related to the proposed Project.***

   The Department generally prescribes to the principles of Crime Prevention through Environmental Design (CPTED). The goal of CPTED is to reduce opportunities for criminal activities by employing physical design features that discourage anti-social behavior, while encouraging the legitimate use of the site. The overall tenets of CPTED include defensible space, territoriality, surveillance, lighting, landscaping, and physical security. With advanced notice, Station personnel can be available to discuss CPTED with the Project developer.

   The Station recommends that an analysis and impacts of the proposed Project to the local transportation and circulation system also be included in the EIR. Traffic levels at intersections must be identified, studied and analyzed. Preparation of a Construction Mitigation Plan would also help in reducing impacts to traffic levels. A Construction Traffic Management Plan should also be implemented as part of the proposed Project to address construction-related traffic congestion and emergency access issues. If temporary lane closures are necessary for the installation of utilities, emergency access should be maintained at all times. Flag persons and/or detours should also be provided as needed to ensure safe traffic operations, and construction signs should be posted to advice of reduced construction zone speed limits.
   Thank you for including the Station in the environmental review process for the Project.

Should you have any questions regarding this matter, please contact me at (818) 878-5501, or Operations Lieutenant Hector Mancinas at (818) 878-5502.

SB:HM:mf

Appendix M Transportation Impact Assessment

Appendices

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Transportation Impact Analysis

Malibu Middle and High School Campus Specific Plan

Malibu, California

October 6 2021

Transportation Impact Analysis

Malibu Middle and High School Campus Specific Plan

Malibu, California

Prepared For:
PlaceWorks
700 South Flower Street
Suite 600
Los Angeles, CA 90017
(213) 623-1443

Prepared By:
Kittelson & Associates, Inc.
750 The City Drive
Suite 410
Orange, CA 92868
(714) 468-1997

Project Manager: Fernando Sotelo, TE, PTP
Project Principal: Damian Stefanakis

Project No. 25023

October 6 2021

TABLE OF CONTENTS

Introduction.. 7

Existing Conditions 12

Existing Traffic Conditions 20

Existing Intersection Operations 24

Transportation Impact Analysis 28

VMT Assessment – FOR CEQA DETERMINATION 28

Off-Site Intersections and Roadway Analysis 29

Other Transportation Impacts 37

LIST OF FIGURES

Figure 1: Site Location 9
Figure 2: Existing MMHS Campus Buildings and Facilities 10
Figure 3: Proposed Site Plan 11
Figure 4: Study Intersections and Roadway Network 13
Figure 5: Existing Bicycle Facilities 16
Figure 6: Existing Transit Facilities 17
Figure 7: MMHS Existing Parking Lots, Access, and Student Drop-Off 19
Figure 8: Existing Traffic Volumes 22
Figure 9: Phase 1 (2024) Traffic Volumes 33
Figure 10: Project Completion (2031) Traffic Volumes 36
Figure 11: Vehicle Circulation Plan 38
Figure 12: Phase 1 Circulation 45
Figure 13: Phase 1 Staging Area and Access 46

LIST OF TABLES

Table 1: Proposed Project Phasing 8
Table 2: Intersection Level of Service Definitions 23
Table 3: Existing Conditions Intersection Operations 25
Table 4: Existing Conditions 2021 Queues 25
Table 5: Roadway Segment Operations, Existing Conditions 26
Table 6: Phase 1 2024 Intersection Operations 30
Table 7: Phase 1 2024 Queuing 31
Table 8: Roadway Segment Operations, 2024 Conditions 31
Table 9: 2031 Intersection Operations 34
Table 10: 2031 Queuing 35
Table 11: Roadway Segment Operations, 2031 Conditions 35
Table 12: Roadway Segment Volumes and LOS, Existing + Lot F Conditions 40
Table 13: Roadway Segment Volumes, 2024 + Lot F Conditions 40
Table 14: Roadway Segment Volumes, 2031 + Lot F Conditions 40
Table 15: Phase 1 Construction Activity 42

APPENDICES

Appendix A Memorandum of Understanding

Appendix B Historic Student Enrollment

Appendix C Traffic Count Data

Appendix D Year 2020 Baseline LOS and Queuing Worksheets

Appendix E 2024 Phase 1 LOS Worksheets

Appendix F 2031 Project Completion LOS Worksheets

Appendix G Cumulative Projects

Appendix H Malibu Middle and High School Historical Enrollment Data

INTRODUCTION

This transportation impact study was commissioned by the Santa Monica-Malibu Unified School District (SMMUSD or District) per the Memorandum of Understanding with the City of Malibu. The purpose of this study is to analyze and address traffic conditions, operations, and site access issues associated with the Malibu Middle and High School (MMHS) Specific Plan Project (Project). This analysis will be used to support environmental review for the Project under the California Environmental Quality Act (CEQA).

Project Description

Santa Monica–Malibu Unified School District is redeveloping the former Juan Cabrillo Elementary School (JCES) and MMHS sites to create an updated, modern middle- and high-school campus that provides separate education spaces for the middle- and high-school students, improves vehicle and pedestrian circulation, and secures campus access. As shown in Figure 1, the Project is located at 30215 Morning View Drive in Malibu, CA.

The SMMUSD property consists of approximately 80 acres over nine parcels that includes the existing Malibu Equestrian Park in the eastern part of the property, the existing MMHS- campus in the center, and the former Juan Cabrillo Elementary School (JCES) campus in the west. The Project Site is situated on three of nine parcels: Assessor's Parcel Numbers (APN) 4469-017-900 (40.06 acres), 4469-018-900 (9.4 acres), and 4459-018-904 (2.57 acres). The total acreage of the Project Site is 52.03 acres. The majority of the Project would be developed within the existing MMHS campus and the former JCES campus, with one component of the Project (relocation of the bus barn) in the Malibu Equestrian Park.

The MMHS campus operates as a sixth- through twelfth-grade public school with a 2018-19 enrollment of 939 students and 134 staff. Presently, the MMHS campus has 60 classrooms (including 12 portable classrooms); a library, auditorium, and administrative offices; an athletic field, two gymnasiums, a pool, nine basketball courts, and four tennis courts; and parking for 282 vehicles in three parking lots. Figure 2 shows the existing MMHS campus buildings. The proposed Project would reorganize the campus into three defined areas: Middle School Core, High School Core, and shared amenities. The Project would result in the demolition of 18 existing buildings, with only the existing athletic fields, and the recently completed Buildings A/B and E remaining. The Project would not result in an increase in student enrollment or capacity. The campus modernization project is intended to provide more flexible classroom spaces as MMHS transitions into more project-based learning. Figure 3 shows the proposed site plan.

The Project would be developed in four phases over approximately 10 years, with each phase being dependent on funding availability. Phases are shown in the table below.

Table 1: Proposed Project Phasing

Phase	Demolition	Demolition Square Footage	New Construction	New Building Square Footage	Infrastructure Improvement	Timeline
1	JCES Buildings A, B, C, D, E, F, G, H, I, P6–P7	36,544	Building C, Parking Lot D Drop-off/Pick-up, Parking Lot C	68,019	• DMA A • DMA B • Septic 1	Fall 2022 – Fall 2024
2	N/A	N/A	Building D, Middle School Quad	22,376	• DMA C • Septic 2	Fall 2024 – Fall 2026
3	MMHS Buildings F, I, Field House and Portables	27,571	Buildings J, L, and M, Parking Lot E, Parking Lot F, Bus Barn	58,012	• DMA D • Septic 3 • Septic 5	Fall 2026 – Fall 2028
4	MMHS Building K, J, J1, Pool, Pool Building, Boys & Girls Club (relocated), JCES Portables P1-P5, Restroom Portable, Bus Barn, M&O Warehouse	69,581	Building H and I, Boys & Girls Club (relocated)	35,188	• DMA E • DMA F • Septic 4	Fall 2028 – Fall 2030
	MMHS Building H	14,478	N/A	N/A	• DMA G	Spring 2030 – Spring 2031

SMMUSD 2020.

Study Objectives

This study analyzes the potential transportation impacts of the Project, as follows:

- Operations at intersections in the vicinity of the campus
- Vehicle Miles Traveled (VMT) changes
- Site access and circulation
- Vehicle queuing resulting from student drop-off/pick-up activities
- Non-motorized transportation impacts and potential mitigation measures
- Traffic during construction activities

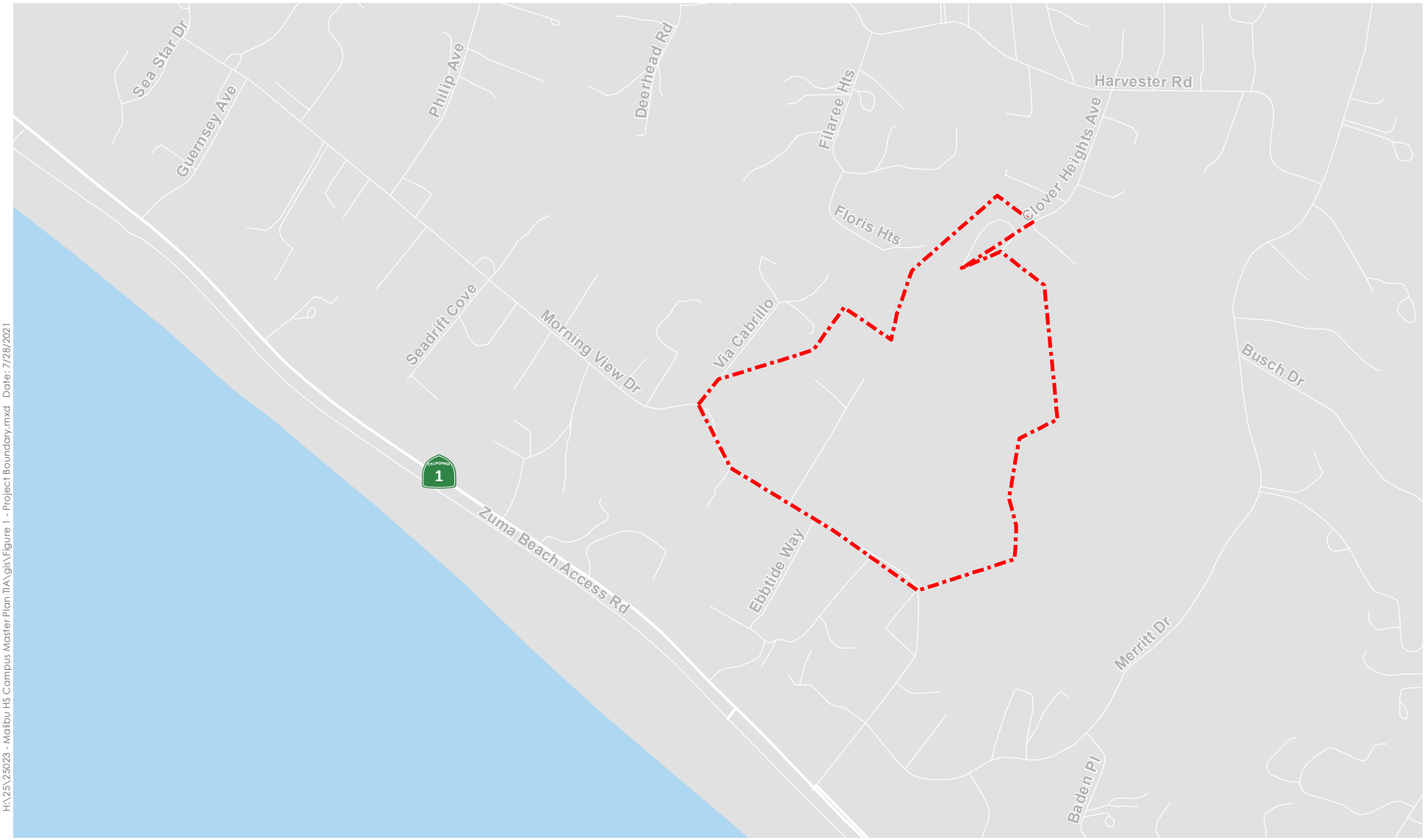
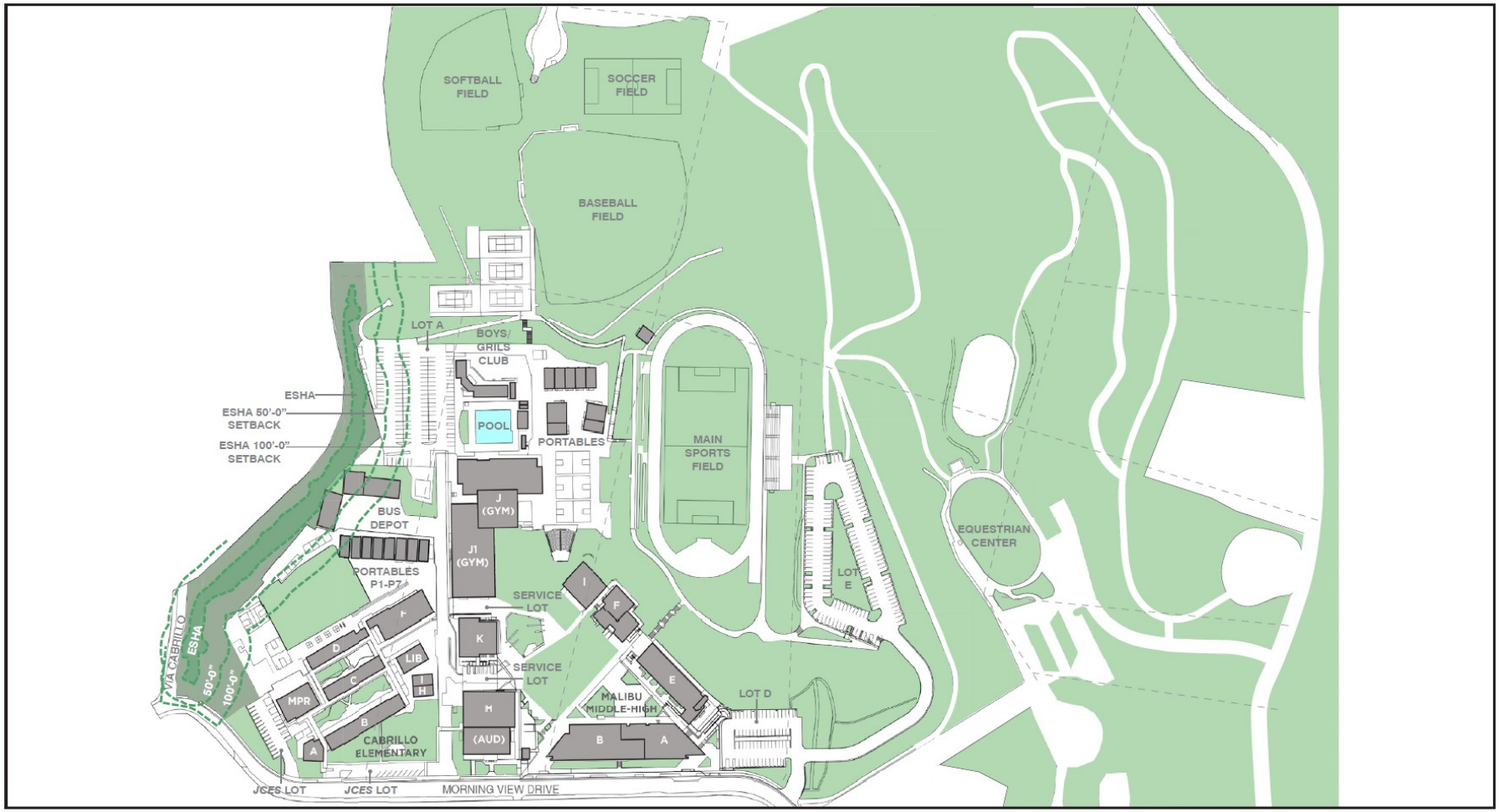


Figure 1

Project Boundary
Malibu, CA

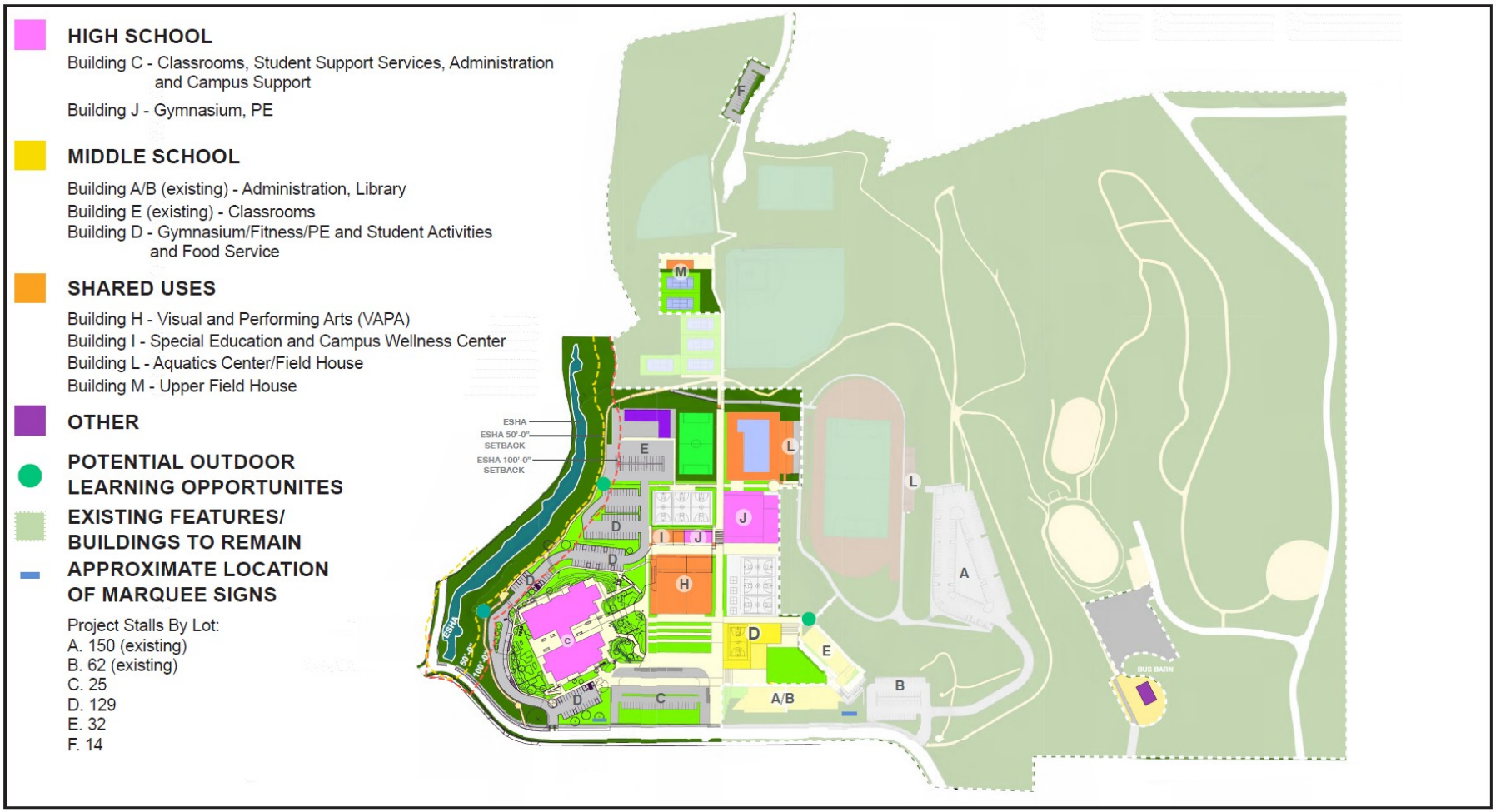
KITTELSON & ASSOCIATES

Figure 2: Existing MMHS Campus Buildings and Facilities



Source: LPA, 2021

Figure 3: Proposed Site Plan



Source: LPA, 2021

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current operational and geometric characteristics of the study intersections as well as transit services, bicyclist, and pedestrian facilities within the study area. The study area was determined in coordination with the City of Malibu and SMMUSD. A memorandum of understanding (MOU) that outlines the methodologies, assumptions of this study, and the study area to be evaluated was prepared and reviewed by City of Malibu Public Works staff in November 2020 and is included in Appendix A. The MOU indicates that baseline traffic conditions would be based on traffic counts taken in 2010, with annual traffic growth factor adjustments of 0.5 percent per year applied. At the time the MOU was prepared and approved by the City, new traffic counts would not represent typical traffic conditions as the school campus was not open for in-person activities due to Covid-19 health concerns. Since the time of the MOU, in-person activities resumed in 2021 with approximately 500 students attending in-person classes. Additionally, there was a need to expand the study area at the intersection of Clover Heights Avenue and Harvester Road, and the roadway segment of Clover Heights Avenue south of Harvester Road. Therefore, traffic counts were taken in May 2021.The 2021 counts were compared to the previous counts with growth adjustments for 2021 conditions. The comparison indicated that the 2021 counts are within the range and valid for the analysis. As described below, manual adjustments were made to the observed traffic counts to represent typical traffic conditions based on actual enrollment data.

The five study intersections provide local access to the school campus and define the extent of the boundaries for this transportation impact analysis. The following five study intersections were selected:

1. Pacific Coast Highway (PCH) and Morning View Drive
2. Merritt Drive and Morning View Drive
3. Morning View Drive and Ebbtide Way/proposed school access
4. Pacific Coast Highway and Guernsey Avenue
5. Clover Heights Avenue and Harvester Road

Roadway segments were also analyzed at the following locations:

1. Morning View Drive east of PCH
2. Morning View Drive east of Merritt Drive
3. Morning View Drive west of Ebbtide Way
4. Morning View Drive west of MMHS near Via Cabrillo
5. Merritt Drive south of Morning View Drive
6. Clover Heights Avenue south of Harvester Road
7. PCH south of Morning View Drive

Figure 4 presents the study intersections and the roadway network.

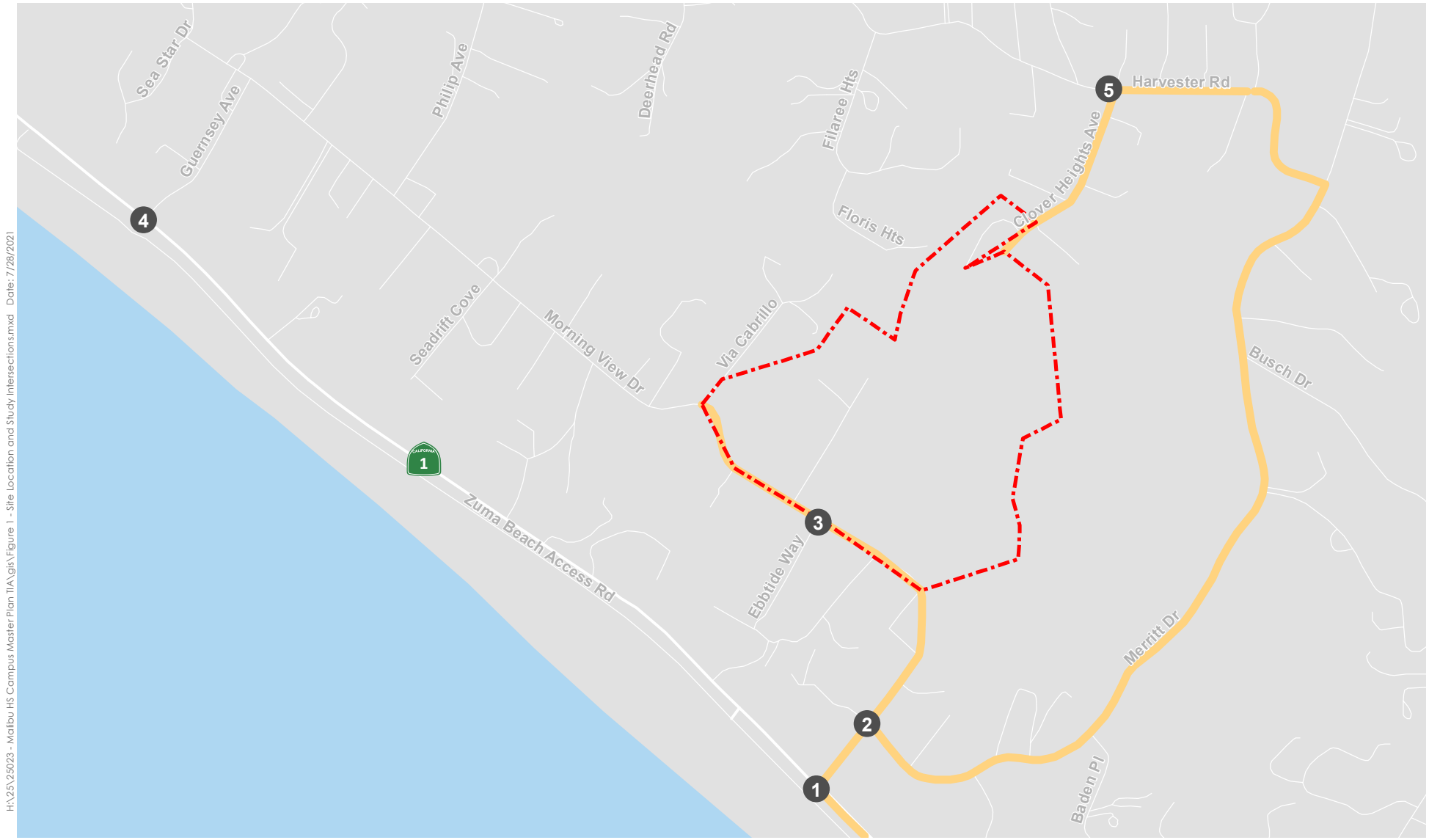


Figure 4

Study Intersections and Roadway Segments
Malibu, CA

KITTELSON & ASSOCIATES

Roadway Network

Pacific Coast Highway (PCH/State Route 1) is a major north-south state highway that runs along most of California's Pacific coastline. State Route 1 is located southwest of the Project site and travels southeast/northwest through the study area. Within the study area, State Route 1 is a four-lane roadway with intermittent on-street parking, Class II bike facilities, and left-turn lane pockets to access Morning View Drive and Guernsey Avenue. State Route 1 provides access between the city of Santa Monica and the city of Oxnard and is a designated route in the congestion management program (CMP). The posted speed limit in the study area is 50 miles per hour.

Morning View Drive is a two-lane, predominantly east-west local roadway that runs from a signalized intersection at Pacific Coast Highway to the south and runs northwest to a stop-controlled intersection at Guernsey Avenue. The road has a rural cross-section and open channel drainage, with significant changes in horizontal and vertical curvature. Morning View Drive provides access to homes and local and private roads, as well as direct access to MMHS via five driveways. The driveways provide access to four off-street parking areas and the main roadway that provides access to the rear area of the school. The posted speed limit is 30 mph and 25 mph in the school zone. On-street parking is available on the south side of the street in front of the MMHS campus. On the north side of the street, green curbs indicate short-term parking zones for student drop-off and pick-up.

Merritt Drive is a north-south local roadway that connects Morning View Drive in the south to Busch Drive to the north. It is a two-lane roadway with a rural cross-section and open channel drainage. It provides access to single-family residences and the Malibu Equestrian Park. It has a posted speed limit of 30 mph. Merritt Drive eventually merges with Busch Drive just south of Harvester Road.

Philip Avenue is a two-lane, predominantly east-west local roadway that connects to Morning View Drive to the south and provides access to single-family homes to the north. East of Sea View Drive, Philip Avenue becomes Harvester Road.

Guernsey Avenue is a two-lane, east-west local roadway that connects to Morning View Drive to the north and Pacific Coast Highway to the south.

Clover Heights Avenue is a north-south local roadway that connects to Harvester Road in the north and provides access to the baseball fields on the north side of the MMHS campus.

Pedestrian Facilities

Sidewalks are present on both sides of Morning View Drive from PCH to the western school boundary. The sidewalks in front of MMHS campus on the north side of Morning View Drive are paved. Sidewalks along the south side of Morning View Drive in front of MMHS and on both sides of Morning View Drive past the school boundaries are unpaved. Sidewalks on Morning View Drive west of the school western limits are not continuous: they exist mostly along the north side or the road and consist of unpaved sidewalks. Guernsey Avenue features a sidewalk halfway between PCH and Morning View Drive on the south side. In front of MMHS on Morning View Drive, four yellow ladder-striped crosswalks provide access from the south side of the street to campus. Two crossing guards staff the eastern crosswalks on Morning View Drive in front of the school during the AM drop-off and PM pick-up peak periods.

Bicycle Facilities

Bicycle facilities are defined by the following three classes in Chapter 1000 of California Department of Transportation's (Caltrans) Highway Design Manual:

- **Class I** – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
- **Class II** – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
- **Class III** – Provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists.

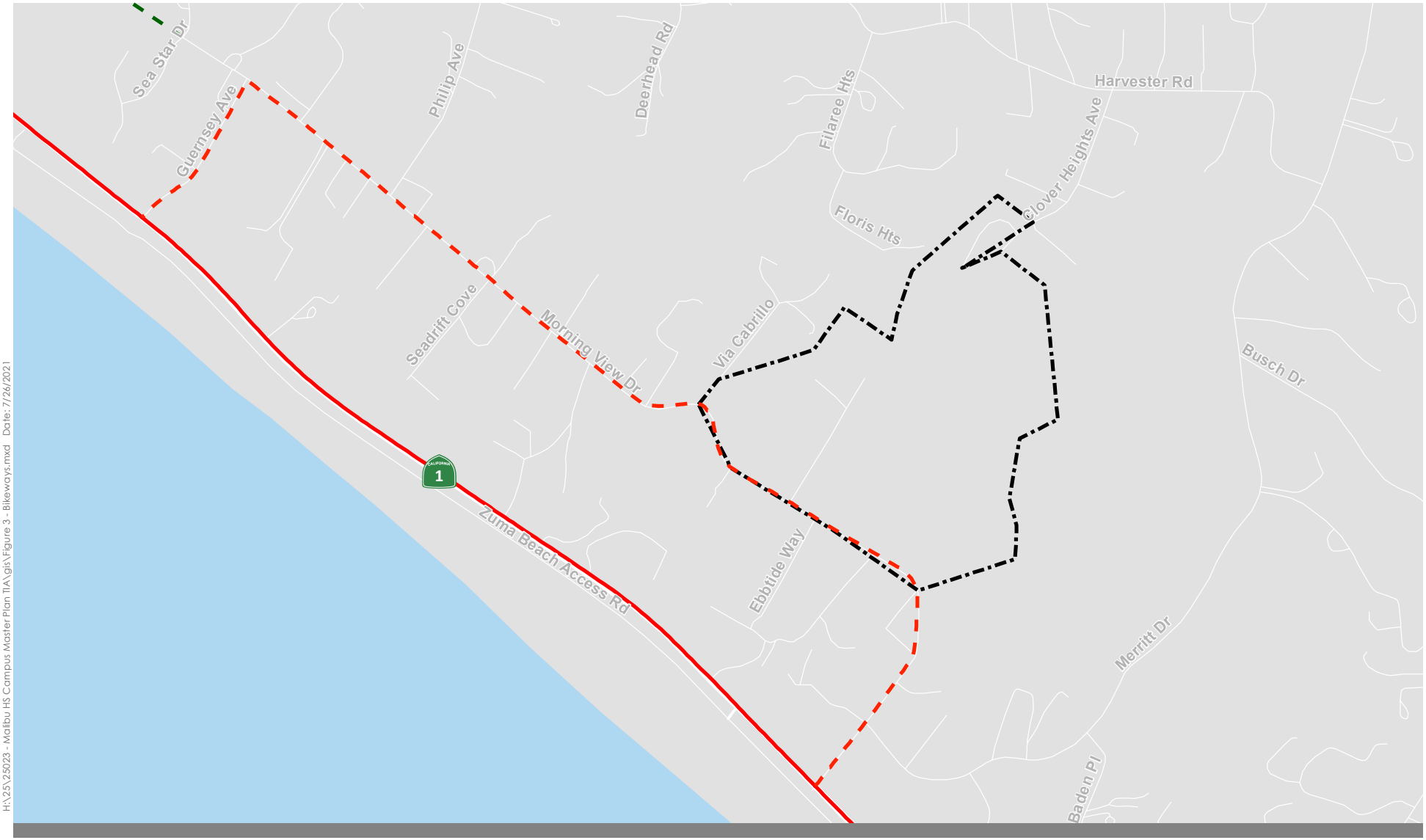
Class II bicycle lanes are present along both sides of Pacific Coast Highway. Pacific Coast Highway is a designated bike route. Bike facilities are currently not present on any other roadways in the study area.

Transit Service

Through SMMUSD, MMHS provides school bus passes for students. The transit system in the study area includes bus service provided by LA Metro as follows:

- **Line 534** is a Transbay service between Downtown Santa Monica and the Trancas Country Market. It stops at Third Street Promenade, The Getty Villa, and Pepperdine University. This line operates from 5AM to 10PM on weekdays at approximately 20-minute headways during peak hour. Weekend service is shorter and less frequent.

The bus stops within a ¼ mile of the Project site on Pacific Coast Highway.



Site Location

Bikeways

- Existing Class 3
- Proposed Class 1
- Proposed Class 2
- Proposed Class 3

0 1,000 Feet

Figure 3

Existing and Proposed Bikeways Malibu, CA

KITTELSON & ASSOCIATES

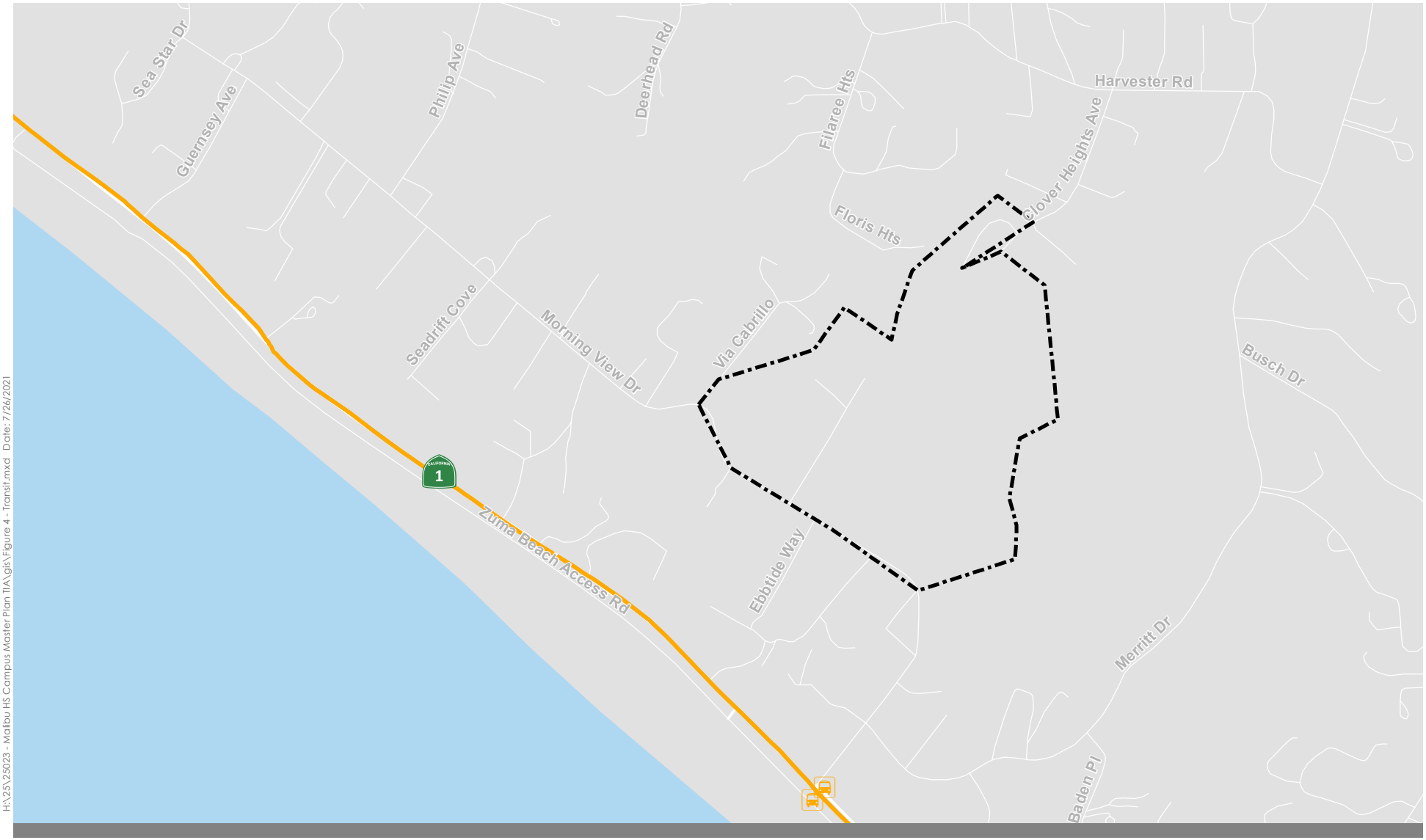


Figure 4

Existing Transit Services
Malibu, CA

KITTELSON & ASSOCIATES

Parking and Student Drop-off/Pick-Up

There are currently two main points of vehicular entry into the school campus. The first entry is along the eastern edge of the campus from Morning View Drive. The second point of entry is at the access road between the former JCES campus and the MMHS campus. This entry is a service access point and provides access to the bus barn, maintenance and operations warehouse, and Student Parking Lot A.

MMHS has several parking lots for guests, students, and staff, as well as community parking for non-campus events (i.e., Boys and Girls Club, pool, athletic fields). Students need a parking permit to park on campus during school hours. In the 2020-2021 school year (baseline conditions), the MMHS and JCES campuses had five parking lots with a total of 375 spaces utilized as follows:

- Parking Lot E, 150 spaces – Student, staff parking, and utilized for special events
- Lower Lot D, 62 spaces – Visitor parking
- Student Lot A, 119 spaces – Student parking and special event overflow
- JCES Lot, 37 spaces – Staff and visitor
- Service Lot, 7 spaces – Staff and vendors

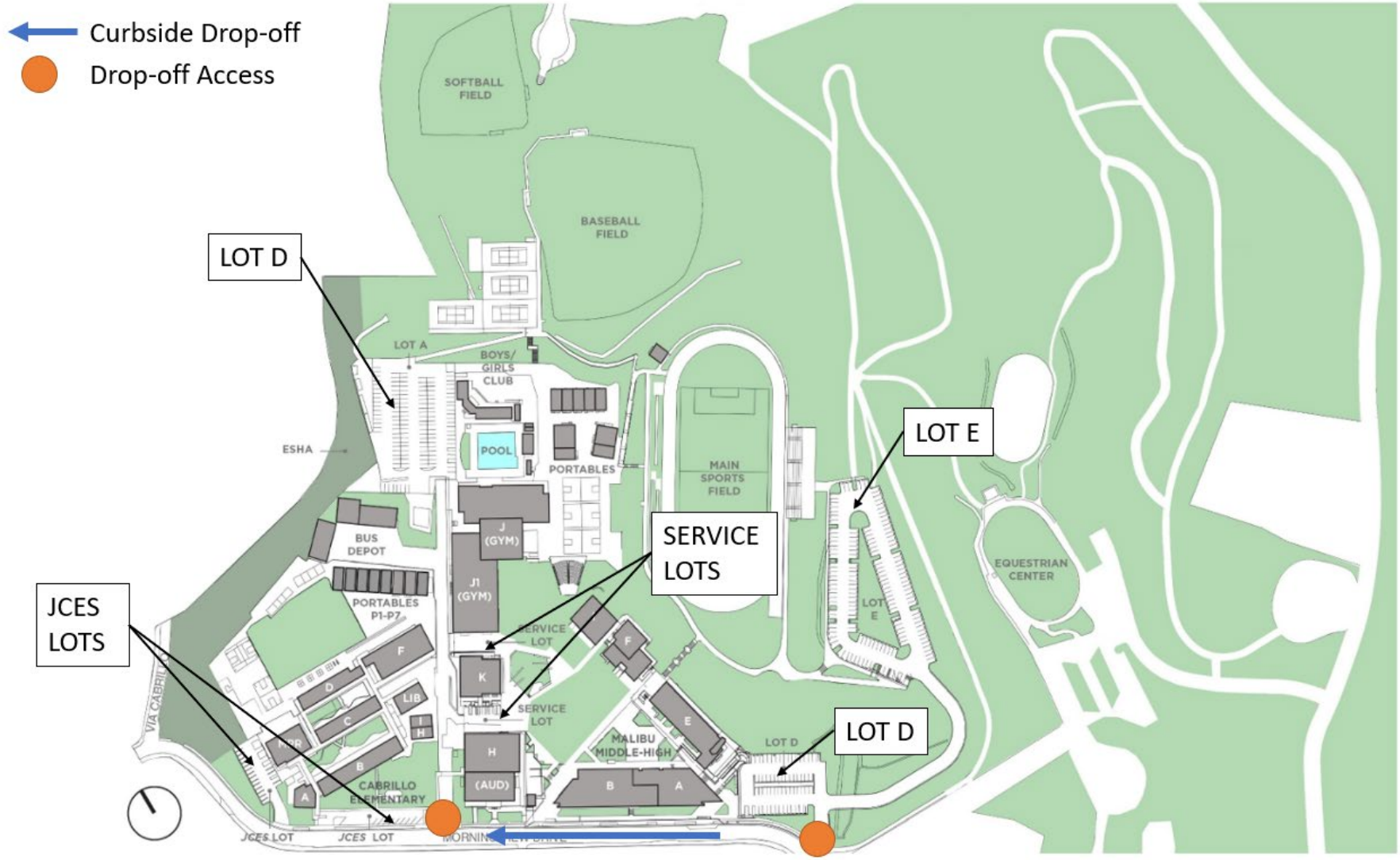
The existing parking lots are shown in Figure 7. The following describes student drop-off during the 2020-2021 school year, which represent baseline conditions. Student drop-off and pick-up for the middle school occurs in Parking Lot E, a 150-space lot, while drop-off and pick-up for the high school primarily occurs in the JCES parking lot. Curbside student drop-off and pick-up also occurs on the northern side of Morning View Drive.

No parking was allowed on the north side of Morning View Drive in the segment adjacent to the school. The curb is painted green with “tow-away” signs in this roadway segment. A sign indicates that no parking is allowed on the north side of Morning View Drive from 7:00AM to 8:30AM Monday to Friday, 1:30PM to 3:30PM Monday to Thursday, and 12:00PM to 1:30PM on Fridays when school is in session. The school is served by three buses that normally transport 150 to 200 students per day. The bus drop-off area is located at the upper Parking Lot E. After bus drop off, the three buses return to the existing bus barn located near Parking Lot D.

Based on data from MMHS staff, the majority of field users access the fields from parking lots and driveways via Morning View Drive.

It shall be noted that parking lots assignments and student and bud drop-off and pick-up have recently changed for the 2021-2022 school calendar. The drop-off on Morning View Drive has been assigned in the morning for bus drop-off, this area is used for student pickup in the afternoon. In the afternoon, the buses use the lower parking lot D. The pool lot accessed via Morning View Drive just east of the former JCES campus is used for drop-off and pick-up for autos for HS students is used for high school student pick-up and drop-off.

Figure 7: MMHS Existing Parking Lots, Access, and Student Drop-Off



Source: MMHS Campus Specific Plan, PlaceWorks, April 2021

EXISTING TRAFFIC CONDITIONS

Kittelson and Associates, Inc. contracted with a data collection subconsultant to collect existing traffic volumes for intersections and roadway segments to establish a basis for analysis in this study. Peak hour turning movement count data were collected on Thursday, June 3, 2021, from 7AM to 9AM and from 1PM to 6PM. Twenty-four-hour counts were also collected on roadway segments. Because the school was currently in session during this time with approximately 500 students attending in person (64 percent of the total enrolled student population in the 2020-2021 school year), adjustments to traffic counts taken in the spring of 2021 were applied to represent the expected traffic conditions with a conservative estimate of enrolled students attending in person.

Existing and Future Student Enrollment Considerations

The City of Malibu has a current population of approximately 10,654 compared to 12,645 in 2010, a decrease of 15.7 percent (US Census 2020). Additionally, the share of the population of Malibu under 18 years of age is 15.3 percent, which is lower than the regional share of 23.4 percent. Malibu's seniors (65 and above) make up 24.2 percent of the population, which is higher than the regional share of 13 percent. The most commonly occurring household size is of two people (40.4 percent) and the second most commonly occurring household is of one person (33.2 percent). Malibu has a higher share of single-person households than the SCAG region overall (33.2 percent vs. 23.4 percent) and a lower share of 7+ person households than the SCAG region overall (0.6 percent vs. 3.1 percent) (Malibu HE 2021). Further, prior to the Woolsey Fire, the City averaged 1.5 residential building permits per 1,000 residents, with only 4 such permits issued in 2018 (SCAG 2019). As such, Malibu has less school-age children than a similarly populated District.

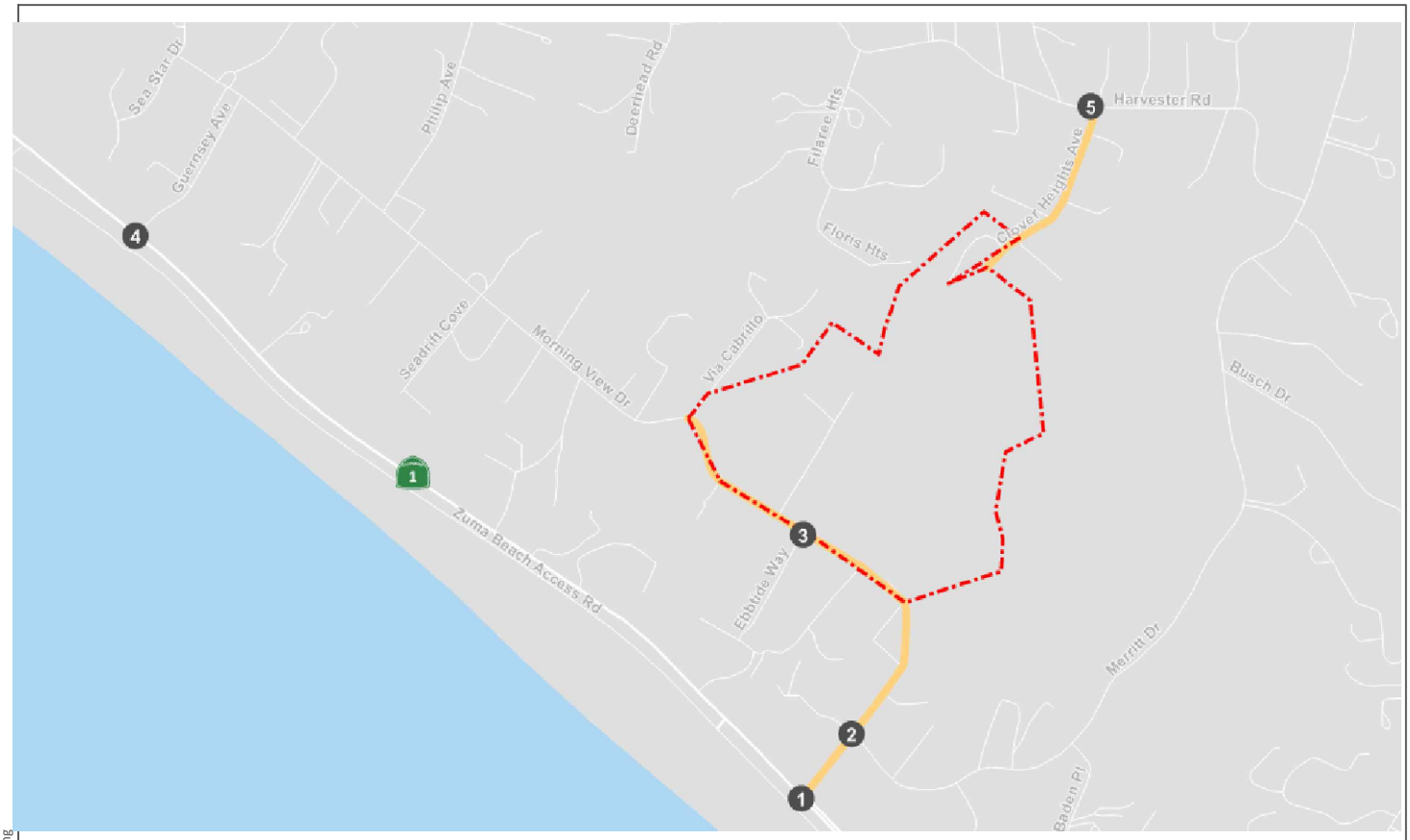
Consistent with the City's population decrease, enrollment at the campus has been steadily decreasing since 2006 from a high of approximately 1,576 (281 students at JCES and 1,295 at MMHS) to 1,142 (197 at JCES and 945 at MMHS) in 2018-2019. Enrollment since 2015 to 2020 at the campus has decrease by 15 percent. In the 2019-2020 school year after the closure of JCES, the student population at MMHS was 862, and in the current 2020-2021 school year, enrollment further declined to 784 students (refer to Table B-1 in Appendix B).

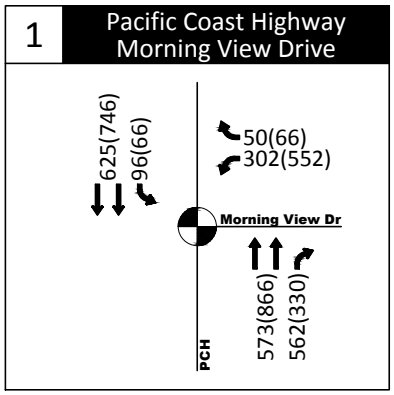
Moreover, enrollment is not projected to increase, as lower (feeder) grades have been tracking below historic levels, indicating a decrease in future enrollment at middle and high school grades may occur. Enrollment levels are expected to decrease over the coming decade, with a projected enrollment of 533 in 2025 (DecisionInsite 2021) Based on enrollment projections by Decision Insite LLC, the District anticipates a total enrollment of approximately 150 middle school students and 225 high school students, for a total of 375 students by 2030, which would represent a 12 percent reduction in student population compared to 2017 (Decision Insight 2021).

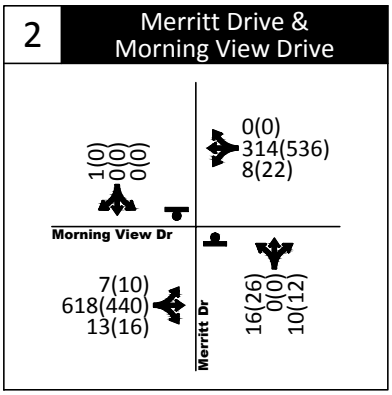
The existing MMHS campus has the capacity to seat approximately 1,200 students, as evidenced by the 2006 enrollment, but no longer meets the District's educational requirements due to the building's age and overall condition. The Proposed Project would not increase the capacity of the MMHS campus but would be designed to support the regrowth of the community from the Woolsey Fire.

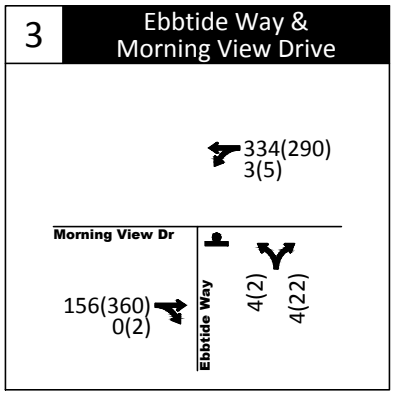
For the transportation analysis, a baseline level of enrollment needed to be determined. Using historical data, the highest vehicle trips would have occurred during the 2006 school year when approximately 1,500 students attended both JCES and MMHS. With the closure of JCES, 1,500 student enrollment would not be a realistic baseline. Therefore, a baseline of 1,200 students was considered, again based on maximum enrollment at MMHS reached in 2006. However, as shown in Table B-1 in Appendix B, the overall enrollment of the school has been declining for more than a decade. As the community recovers from the Woolsey Fire, the redevelopment proposed by the Project could potentially serve a student population of up to 1,200 students which is consistent with the existing capacity. However, reaching this maximum capacity is not considered likely for the foreseeable future, as evidenced by the DecisionInsite data. Therefore, for the purposes of this analysis, the traffic counts have been adjusted to reflect a student in-person enrollment of 1,000 students. This number is considered to be a conservative enrollment number based on past enrollment trends and current enrollment projections, and therefore considered a reasonable capacity number for purposes of the transportation analysis.

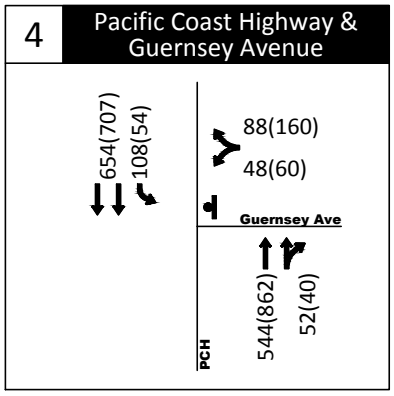
The manual adjustment of 1,000 students consisted of identifying the turn movement volumes at the study intersections associated with school traffic during the peak hours and applying an adjustment factor to represent typical school traffic conditions. For example, at the intersection of Morning View Drive at Merritt Drive, the traffic volumes at the northbound and southbound through volumes were multiplied by a factor of 2. This factor was conservatively chosen assuming that all traffic was associated with the school when counts were taken, and to adjust to the existing in-person attendance of 500 compared to typical attendance of 1,000 students. Other movements not associated with school traffic such as northbound through and southbound through traffic at the intersection of PCH at Morning View Drive were not adjusted. It shall be noted that pre-Covid-19 volumes on PCH from the Caltrans Traffic Census database were compared to the 2021 counts to ensure that counts were reasonable. Appendix C includes the traffic data counts and adjusted baseline volumes. Intersection geometries and existing (baseline adjusted) peak hour volumes are shown in Figure 8.

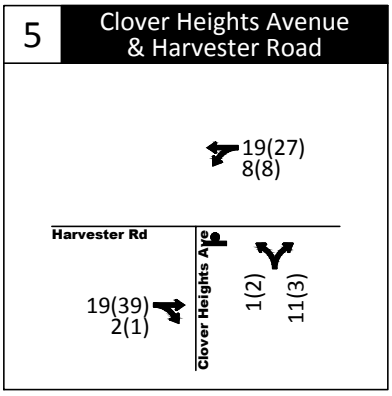












AM(PM) - Traffic Volume
STOP - All-Way Stop
- Stop Sign
- Traffic Signal

Existing
Intersection Traffic Volumes and Geometries
Malibu, California

Figure
8

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KITTELSON & ASSOCIATES

Intersection Operations Assessment Methodologies

"Level of service" describes the operating conditions experienced by users of a facility. Level of service (LOS) is a qualitative measure of the effect of several factors, including speed, travel time, traffic interruptions, freedom to maneuver, driving comfort, and convenience. Levels of service are designated A through F from best to worst, which cover the entire range of traffic operations that might occur. LOS A through E generally represent traffic volumes at less than roadway capacity while LOS F represents over capacity or forced flow conditions. In general, LOS D or better is considered acceptable while LOS E and LOS F are not. LOS is no longer used as a threshold from which to determine significant transportation impacts under the California Environmental Quality Act, but it is still used by the City of Malibu to describe the operating conditions experienced by motorists and is often used to determine whether circulation improvements are necessary as a condition of approval for a proposed project.

The peak hours selected for analysis are the highest volumes in four consecutive 15-minute periods in the morning hours from 7:00AM to 9:00 AM (known as the AM Peak) and during the mid-afternoon student dismissal period from 2:00PM to 4:00 PM on weekdays (known as the PM Peak).

The methodology used to assess intersection operations is based on the Highway Capacity Manual (HCM) 6th Edition. Per HCM methodology, overall average intersection delay at signalized intersections and worst-case approach delay at unsignalized intersections was calculated. The LOS corresponds to the delay calculated in seconds per vehicle. Queues can be accommodated within the available lengths at the left- and right-turn lanes.

Table 2 presents the relationship of average delay to level of service.

The HCM worksheet calculations also indicate the 95th percentile queue length—i.e., the length of the queue that is not exceeded 95 percent of the time, and the average queue lengths at intersection approaches.

Table 2: Intersection Level of Service Definitions

LOS	Description of Traffic Conditions	Average Delay Per Vehicle (Seconds)	
		Signalized	Unsignalized
A	**Free-flow operation:** Vehicles are completely unimpeded in their ability to maneuver within the traffic stream.	≤10.0	≤10.0
B	**Reasonable unimpeded operation:** The ability to maneuver within the traffic stream is only slightly restricted, and control delay at the boundary intersections is not significant.	>10.0 and ≤20.0	>10.0 and ≤15.0
C	**Stable operation:** The ability to maneuver and change lanes at midsegment locations may be more restricted than at LOS B.	>20.0 and ≤35.0	>15.0 and ≤25.0
D	**Less stable condition** in which small increases in flow may cause substantial increases in delay and decreases in travel speeds.	>35.0 and ≤55.0	>25.0 and ≤35.0
E	**Unstable operation and significant delay:** Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections.	>55.0 and ≤80.0	>35.0 and ≤50.0
F	**Flow at extremely low speed:** Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing.	>80.0	>50.0

Source: HCM 6th Edition, 2016

Level of Service Standards Considerations

Level of Service D is generally considered the design capacity of an arterial intersection. The approving agency may require on- or off-site improvements as a condition of approval if the proposed project would result in volume-to-capacity ratio increases or queuing increases as shown below:

i. Degrades operations at a signalized intersection as follows;

Study Intersections		
Pre-Project		
LOS	V/C	Increase in V/C
C	0.71-0.80	0.04 or more
D	0.81-0.90	0.02 or more
E/F	0.91 or more	0.01 or more

ii. Degrades the LOS at an unsignalized intersection to an unacceptable level of LOS D or worse;
iii. Increases delay by five or more seconds at an unsignalized intersection operating at a LOS A, B, C, D, or E/F;
iv. Project causes or exacerbates 95th percentile turning movement queues exceeding available turn pocket capacity;
v. Results in satisfying the most recent California Manual on Uniform Traffic Control Devices (CAMUTCD) peak-hour volume warrant or other warrants for traffic signal installation at the intersection; or
vi. Increases the v/c ratio on a roadway segment operating at an unacceptable level (LOS D, E, or F) by 0.05 or more.

Source: City of Malibu Traffic Memorandum and Traffic Impact Analysis Guidelines

EXISTING INTERSECTION OPERATIONS

The existing operations at the study intersections as observed based on counts collected June 2021are shown in Table 3.

The results indicate that the following intersections currently operate worse than LOS D:

- Guernsey Avenue and Pacific Coast Highway
- Morning View Drive and Merritt Drive

The degraded LOS at Morning View Drive and Merritt Drive is due to the delays at the westbound approach at Merritt Drive, as north-south traffic on Morning View Drive does not stop. Queue lengths at intersections were evaluated using Synchro software, version 10. Table 4 displays the 95th percentile queue lengths for PCH and Morning View Drive under existing conditions during both the AM and PM peak hour.

Appendix D includes the 95th percentile queue worksheets and the existing conditions LOS Synchro worksheets.

Table 3: Existing Conditions Intersection Operations

No.	Location	Control[1]	Peak Hour	Existing	
				Delay[2]	LOS[3]
1	Morning View Drive & PCH	Signal	AM	52.3	D
			PM	41.3	D
2	Morning View Drive & Merritt Drive	SSSC	AM	29.7	D
			PM	41.5	**E**
3	Morning View Drive & Ebbtide Way	None	AM	11.5	B
			PM	12.0	B
4	Guernsey Avenue & PCH	SSSC	AM	78.6	**F**
			PM	411.3	**F**
5	Clover Heights Avenue and Harvester Road	SSSC	AM	8.5	A
			PM	8.8	A

Notes:
1. SSSC = Side-Street Stop Control
2. Average delay in seconds is presented for signalized and all-way stop-controlled intersections. Worst approach average delay shown for side-street stop-controlled intersections.
3. **Bold** indicates LOS E and F.

Source: Kittelson & Associates, 2021

The 95th percentile queues are summarized in the table below. As shown in Table 4, the 95th percentile queue currently exceeds the storage capacity on the southbound left movement (e.g., driving southbound on PCH to make a left turn into Morning View Drive) by five feet in the AM peak hour. However, this is an uncommon occurrence as the average queues do not exceed the storage length. The storage capacity is not exceeded in the PM peak hour.

On the westbound approach of Morning View Drive to PCH, the 95th percentile queue reaches the intersection of Morning View Drive and Merritt Drive. However, this is an uncommon occurrence, as the average queue length does not reach Merritt Drive.

Table 4: Existing Conditions 2021 Queues

Intersection	Movement		Storage	95th Percentile Queues			
				AM Queue (ft.)	Exceed Storage?	PM Queue (ft.)	Exceed Storage?
PCH & Morning View Drive	NB	Right	130	18		45	
	SB	Left	115	120	**Yes**	79	
	WB	Left	-	176	**Yes**	441	**Yes**
		Right	-	15		17	
Merritt Drive & Morning View Drive	EB	Left/Right	-	0		0	
	WB	Left/Right	-	21		271	
PCH & Guernsey Avenue	SB	Left	100	15		10	
	WB	Left/Right	-	165		525	

Source: Kittelson & Associates, 2021.

Existing Roadway Segment Operations

Roadway segment traffic were evaluated at the following locations:

- Morning View Drive between Merritt Drive and school campus
- Morning View Drive between school campus and Via Cabrillo
- Merritt Drive between Morning View Drive and Baden Place
- Harvester Road between Clover Heights Avenue and Busch Drive
- Clover Heights Drive south of Harvester Road

Recent 24-hour traffic counts on the study street segments were conducted in June 2021 in conjunction with the intersection counts to determine the amount of existing traffic currently utilizing the roadways. The traffic volume on the street segments was adjusted using the same procedures as the study intersections (i.e., based on in-person student attendance vs. typical enrollment).

The roadway segment volumes are summarized in Table 5. The capacity for a two-lane stop-controlled urban street is 7,400 for a minor arterial and 10,900 for an urban principal arterial, according to NCHRP Report 825: Planning and Preliminary Engineering Applications Guide to the Highway Capacity Manual. Given the low traffic volumes in the study area, all roadways in the vicinity of the school operate at acceptable LOS A.

Table 5: Roadway Segment Operations, Existing Conditions

Roadway	Segment	Lanes	2021 ADT	V/C	LOS
Morning View Drive	east of Merritt Drive	2U	5,006	0.68	B
Morning View Drive	west of campus	2U	1,486	0.20	A
Clover Heights Avenue	south of Harvester Road	2U	192	0.04	A
Harvester Road	east of Clover Heights	2U	1,120	0.11	A
Merritt Drive	south of Morning View Drive	2U	792	0.17	A

Notes:
U = undivided roadway, D = divided roadway

EXISTING VEHICLE MILES TRAVELLED

As discussed below under the transportation impact analysis section, the California Office of Planning and Research (OPR) has updated the CEQA Guidelines and provided a final technical advisory in December 2018, which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts under CEQA.

The total daily VMT for the school can be calculated based on the sum of VMT for all users including students, staff and others (visitors, vendors, maintenance, etc). The total VMT from the school has been calculated based on the number of daily trips from staff, students and others multiplied by the average trip distance for each category. The number of trips from students, staff and others are derived from the ITE trip generation. The average trip length for students was calculated based on the school attendance boundary, and the average trip length for staff and others are based on average trip length data in the

Southern California Association of Governments (SCAG) travel demand model. Student VMT was calculated using ITE trip generation rates and data from the SCAG model. The total trip generation for the school for an enrollment of 1,000 students is 10,280 miles.

Source: Kittelson & Associates, 2021

TRANSPORTATION IMPACT ANALYSIS

According to the City's Traffic Memorandum and Traffic Impact Analysis Guidelines (City of Malibu, December 2019), the traffic analysis must include any intersection or roadway segment, regardless of jurisdictional boundaries, to which at least 15 peak-hour project trips or 100 daily trips would be added. Projects only satisfying the minimum trip threshold (30 peak-hour and/or 300 daily trips) but with fewer than 15 peak-hour or 100 daily project trips to any single offsite facility, will normally only require analysis of the intersection(s) or roadway segment(s) adjacent to the project site. In addition, the TIA shall evaluate the intersections/driveways proposed to provide access to the project site.

As previously discussed, the District is moving from a traditional classroom and instructional model to a progressive, project-based learning model; as a result, class sizes, support spaces, community areas, and collaboration zones require more space. The Proposed Project is intended to upgrade and enhance both campuses structures and facilities to meet the District's Education Specifications and better accommodate the maximum student population of 1,200 students. The Project includes new building construction, reconfiguration and modernization of existing buildings, and new parking and vehicular circulation areas within the existing footprint of the existing school.

This project is not increasing the capacity of the school. As discussed above, the Proposed Project would modernize campus facilities and retain the maximum capacity of 1,200 students, though it is highly unlikely this level of attendance will be reached in the foreseeable future based on past enrollment trends and future enrollment projections. Additionally, the attendance boundary of the school is not changing, and the campus will continue to be accessed via Morning View Drive. Therefore, trip distances and traffic patterns would not change as a result of Project implementation. Under no project and with project conditions, traffic volumes and patterns at off-site intersections and roadway segments would not change during school hours. To inform the public and decision makers on the future traffic conditions in conjunction with cumulative projects, the transportation analysis reviews future traffic conditions at study intersections and roadways during student drop-off and pick-up times at nearby intersections under Phase 1 Buildout in 2024 and Project Completion (full campus buildout) in 2031.

Additionally, the transportation impact analysis includes the following:

- Vehicle Miles Traveled (VMT) assessment
- Site access and circulation associated with student drop-off/pick-up
- Pedestrian access and facilities that will be affected by the Project access reconfiguration
- Clover Heights access and potential for neighborhood traffic related to after-school field activities
- Construction traffic and pedestrian and access locations that may be affected during construction

VMT ASSESSMENT – FOR CEQA DETERMINATION

Senate Bill 743 (SB 743) was signed into law in September 2013. SB 743 has fundamentally changed transportation impact analysis as part of CEQA compliance. The California Office of Planning and Research (OPR) has updated the CEQA Guidelines and provided a final technical advisory in December 2018, which recommends vehicle miles traveled (VMT) as the most appropriate measure of transportation impacts

under CEQA. The California Natural Resources Agency certified and adopted the CEQA Guidelines including the Guidelines section implementing SB 743. The final text, final statement of reasons, and related materials are posted at http://resources.ca.gov/ceqa. The changes have been approved by the Office of the Administrative Law and are now in effect. Under CEQA, a lead agency has the authority to determine its own significance thresholds and methodologies for technical analysis, taking into account its own development patterns, policy goals, and context.

The City of Malibu and SMMUSD have not adopted VMT methodologies and thresholds to evaluate projects. Thus, for the purpose of this analysis, the guidelines recommended by OPR are used to analyze VMT impacts. OPR recommends different approaches in its Technical Advisory depending on the type of land use. OPR has provided recommended metrics and thresholds for residential, office, and retail projects on the assumption that they have the greatest influence of land use projects on VMT in California. For residential and office projects, OPR recommends the use of an efficiency metric (VMT/capita or VMT/employee). For retail, the recommendation is to measure the total VMT. OPR's Technical Advisory does not provide explicit guidelines for public schools. As local agencies adopt their own VMT methodologies and thresholds, some have included guidance on public schools.

Agencies such as the City of San Jose and the City of Menlo Park, use total VMT in the city as the appropriate VMT metric, with the impact threshold being any increase in total VMT. As previously discussed, the total trip generation for the school for an enrollment of 1,000 students is 10,280 miles. The attendance boundaries of the school are not changing, and the Project will not be increasing student capacity, which would not result in more trips. In addition, the Project would not modify primary site access locations and traffic patterns and therefore would not result in an increase in the average trip lengths. As total VMT is a function of the total number of trips multiplied by the average trip lengths, the Project would not result in a VMT increase.

Other agencies, such as the City of Los Angeles and the City of Carlsbad determined that public schools that serve the immediate community are exempt from CEQA analysis, as they normally serve local residential areas within a defined attendance boundary and are not considered a regional generator of vehicle trips. Public schools normally have an effect of reducing overall VMT, as students normally would have to travel further if a local school was not present. Because the campus contains the only public middle and high schools in Malibu, it is considered a local serving school that have an effect of reducing overall VMT. Therefore, no transportation impacts related to VMT would occur.

OFF-SITE INTERSECTIONS AND ROADWAY ANALYSIS

As previously discussed, the Project is not expected to increase capacity or enrollment and therefore is not expected to generate new school trips. School traffic patterns were determined based on reviews of the attendance boundaries, the circulation system, and the previous 2011 traffic study for the MMHS Campus Improvement Project. Based on these factors, 70 percent of traffic travel to and from the east originates via Morning View Drive and PCH and 30 percent of traffic travel to and from the west originates via Morning View Drive, Guernsey Avenue, and PCH.

To project traffic conditions in 2024 (Phase 1 Buildout) and 2031 (Project Completion – Campus Buildout), a review of traffic growth patterns and reasonable and foreseeable cumulative projects was conducted. Traffic volumes on surrounding roadways have been added to ambient growth and traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. The ambient growth rate is added to account for areawide growth not reflected by cumulative development projects. City of Malibu planning staff have provided a list of cumulative projects, which are included in Appendix G. Given the amount of traffic, the direction, and the distance that these cumulative projects would generate, none of these projects would result in a substantial amount of traffic to the study area. Traffic from these projects is accounted for as part of ambient growth traffic. Ambient background traffic growth is estimated at 0.5 percent per year. This growth rate is provided by the Los Angeles County Congestion Management Plan, published in 2010. For this analysis, a conservative growth increase of 1.5 percent was used to adjust traffic from 2021 to 2024, and 5.1 percent from 2021 to 2031. This is growth that would occur with or without the Project.

Project Phase 1 (2024) Conditions

The potential near-term effects of Phase 1 on existing operations at the study intersections are discussed in this section. Other impacts, such as those associated with pedestrian and bicycle facilities, site access and circulation, and safety are discussed in the Additional Transportation Needs Assessments section.

Intersection Operations

As shown in Table 6, the following intersections already operate at an unacceptable LOS, and this would be expected to continue with Phase 1:

- Morning View Drive and Pacific Coast Highway, AM Peak
- Morning View Drive and Merritt Drive
- Guernsey Avenue and Pacific Coast Highway

Because the Project will not be adding trips, the change in delay and worsening LOS is only due to background traffic. Appendix E includes the Phase 1 2024 Synchro LOS worksheets.

Table 6: Phase 1 2024 Intersection Operations

No.	Location	Control[1]	Peak Hour	Phase 1 2024	
				Delay[2]	LOS[3]
1	Morning View Drive & PCH	Signal	AM	**55.2**	**E**
			PM	44.1	D
2	Morning View Drive & Merritt	SSSC	AM	**30.6**	**D**
			PM	**42.6**	**E**
3	Morning View Drive & Ebbtide Way	None	AM	11.6	B
			PM	12.1	B
4	Guernsey Ave & PCH	SSSC	AM	**91.9**	**F**
			PM	**452.2**	**F**

5	Clover Heights & Harvester Road	SSSC	AM	8.5	A
			PM	8.8	A

Notes: Synchro Version 10, HCM 6th Edition methodology
1. SSSC = Side-Street Stop Control
2. Average delay in seconds is presented for signalized and all-way stop-controlled intersections. Worst approach average delay shown for side-street stop-controlled intersections.
3. **Bold** indicates LOS E and F.

Source: Kittelson & Associates, 2021

Similar to existing conditions, the 95th percentile queues under 2024 conditions are summarized in the table below. As shown below in Table 7, the 95th percentile queue will continue to exceed the storage capacity on the southbound left movement by five feet in the AM peak hour. However, this is an uncommon occurrence as the average queues will not exceed the storage length. The storage capacity will not be exceeded in the PM peak hour.

Much like the existing conditions, on the westbound approach of Morning View Drive to PCH, the 95th percentile queue is anticipated to reach the intersection of Morning View Drive and Merritt Drive. However, this is an uncommon occurrence, as the average queue length will not reach Merritt Drive. The school is not adding traffic or modifying traffic patterns; therefore, the Project would not worsen the queues identified.

Table 7: Phase 1 2024 Queuing

Intersection	Movement		Storage	95th Percentile Queues			
				AM Queue (ft.)	Exceed Storage?	PM Queue (ft.)	Exceed Storage?
PCH & Morning View Drive	NB	Right	130	17		47	
	SB	Left	115	120	**Yes**	80	
	WB	Left	-	179	**Yes**[1]	450	**Yes**
		Right	-	15	**Yes**[1]	17	
Merritt Drive & Morning View Drive	EB	Left/Right	-	0		0	
	WB	Left/Right	-	24		280	**Yes**[1]
PCH & Guernsey Avenue	SB	Left	100	18		10	
	WB	Left/Right	-	183		553	

Source: Kittelson & Associates, 2021

1. Queue spills over to Merritt Drive & Morning View Drive

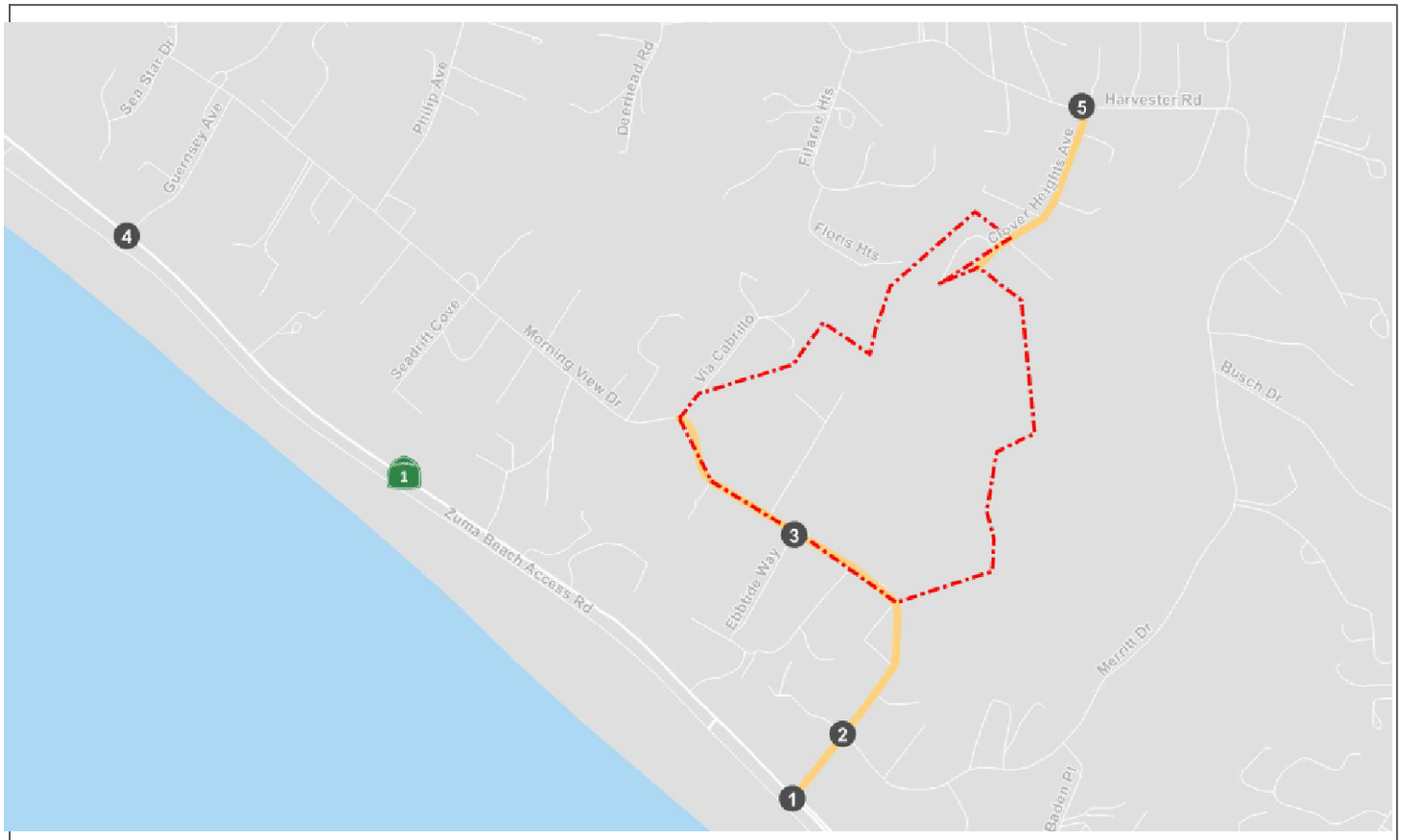
The roadway segment volumes for 2024 are summarized below in Table 8Table 5. The capacity for a two-lane undivided road is 13,400. Given the low traffic volumes in the study area, all roadways in the vicinity of the school will continue to operate at acceptable LOS A.

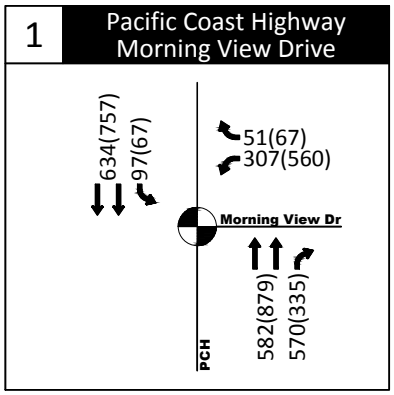
Table 8: Roadway Segment Operations, 2024 Conditions

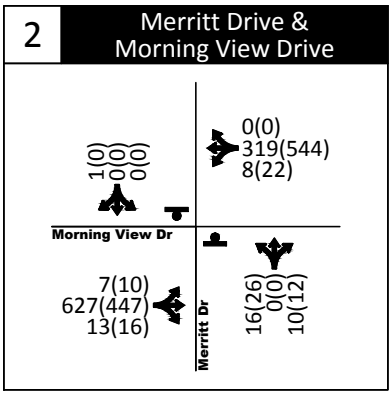
Roadway	Segment	Lanes	2024 ADT	V/C	LOS
Morning View Drive	east of Merritt Drive	2U	5,803	0.69	B
Morning View Drive	west of campus	2U	5,081	0.20	A
Clover Heights Avenue	south of Harvester Road	2U	195	0.04	A
Harvester Road	east of Clover Heights	2U	1,508	0.11	A
Merritt Drive	south of Morning View Drive	2U	804	0.17	A

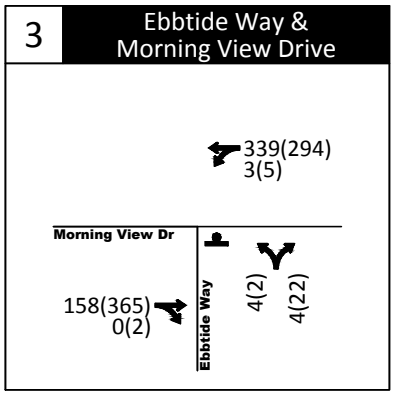
Notes:
U = undivided, D = divided

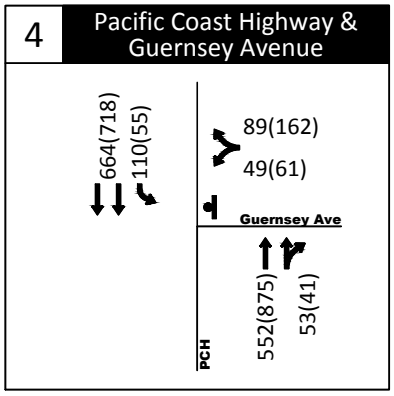
Source: Kittelson & Associates, 2021

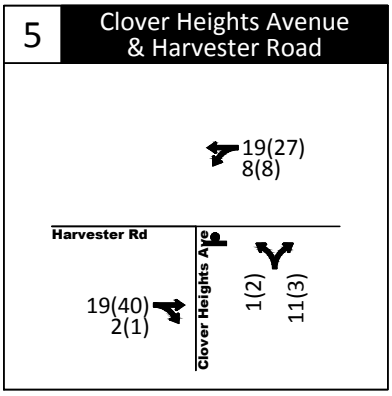












AM(PM) - Traffic Volume
STOP - All-Way Stop
- Stop Sign
- Traffic Signal

Phase 1 Build (2024)
Intersection Traffic Volumes and Geometries
Malibu, California

Figure
9

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Complete Buildout (2031) Conditions

The buildout of all four phases of the Project is expected to be completed in 2031. This section analyzes the intersection operations and queues at the Project Complete Buildout.

Intersection Operations

As shown in Table 9, the following intersections already operate at an unacceptable LOS and this would be expected to continue with complete buildout of the project:

- Morning View Drive and Pacific Coast Highway, AM Peak
- Morning View Drive and Merritt Drive
- Guernsey Avenue and Pacific Coast Highway

Because the Project will not be adding trips, the degradation in LOS is only due to background traffic. Appendix F includes the Existing plus Project Synchro LOS worksheets.

Table 9: 2031 Intersection Operations

No.	Location	Control[1]	Peak Hour	Completion 2031	
				Delay[2]	LOS[3]
1	Morning View Drive & PCH	Signal	AM	**62.7**	**E**
			SD	51.7	D
2	Morning View Drive & Merritt Drive	SSSC	AM	**33.3**	**D**
			SD	**49.6**	**E**
3	Morning View Drive & Ebbtide Way	None	AM	11.8	B
			SD	12.3	B
4	Guernsey Avenue & PCH	SSSC	AM	**120.9**	**F**
			SD	**572.1**	**F**
5	Clover Heights Avenue & Harvester Road	SSSC	AM	8.5	A
			SD	8.8	A

Notes: Synchro Version 10, HCM 6th Edition methodology
1. SSSC = Side-Street Stop Control
2. Average delay in seconds is presented for signalized and all-way stop-controlled intersections. Worst approach average delay shown for side-street stop-controlled intersections.
3. **Bold** indicates LOS E and F.

Source: Kittelson & Associates, 2021

Similar to existing conditions, the 95th percentile queues under 2031 conditions are summarized in Table 10. As shown, the 95th percentile queue will continue to exceed the storage capacity on the southbound left movement by five feet in the AM peak hour. However, this is an uncommon occurrence as the average queues will not exceed the storage length. The storage capacity will not be exceeded in the PM peak hour.

Much like the existing conditions, on the westbound approach of Morning View Drive to PCH, the 95th percentile queue is anticipated to reach the intersection of Morning View Drive at Merritt Drive. However, this is an uncommon occurrence, as the average queue length will not reach Merritt Drive. The school is not adding traffic or modifying traffic patterns; therefore, the Project would not worsen the queues identified.

Table 10: 2031 Queuing

Intersection	Movement		Storage	95th Percentile Queues			
				AM Queue (ft.)	Exceed Storage?	PM Queue (ft.)	Exceed Storage?
PCH & Morning View Drive	NB	Right	130	17		52	
	SB	Left	115	126	**Yes**	83	
	WB	Left	-	186	**Yes**[1]	470	**Yes**
		Right	-	16	**Yes**[1]	17	
Merritt Drive & Morning View Drive	EB	Left/Right	-	0		0	
	WB	Left/Right	-	32		300	**Yes**[1]
PCH & Guernsey Ave	SB	Left	100	18		13	
	WB	Left/Right	-	215		623	**Yes**

Notes:

1. Queue spills over to Merritt Drive & Morning View Drive

Source: Kittelson & Associates, 2021

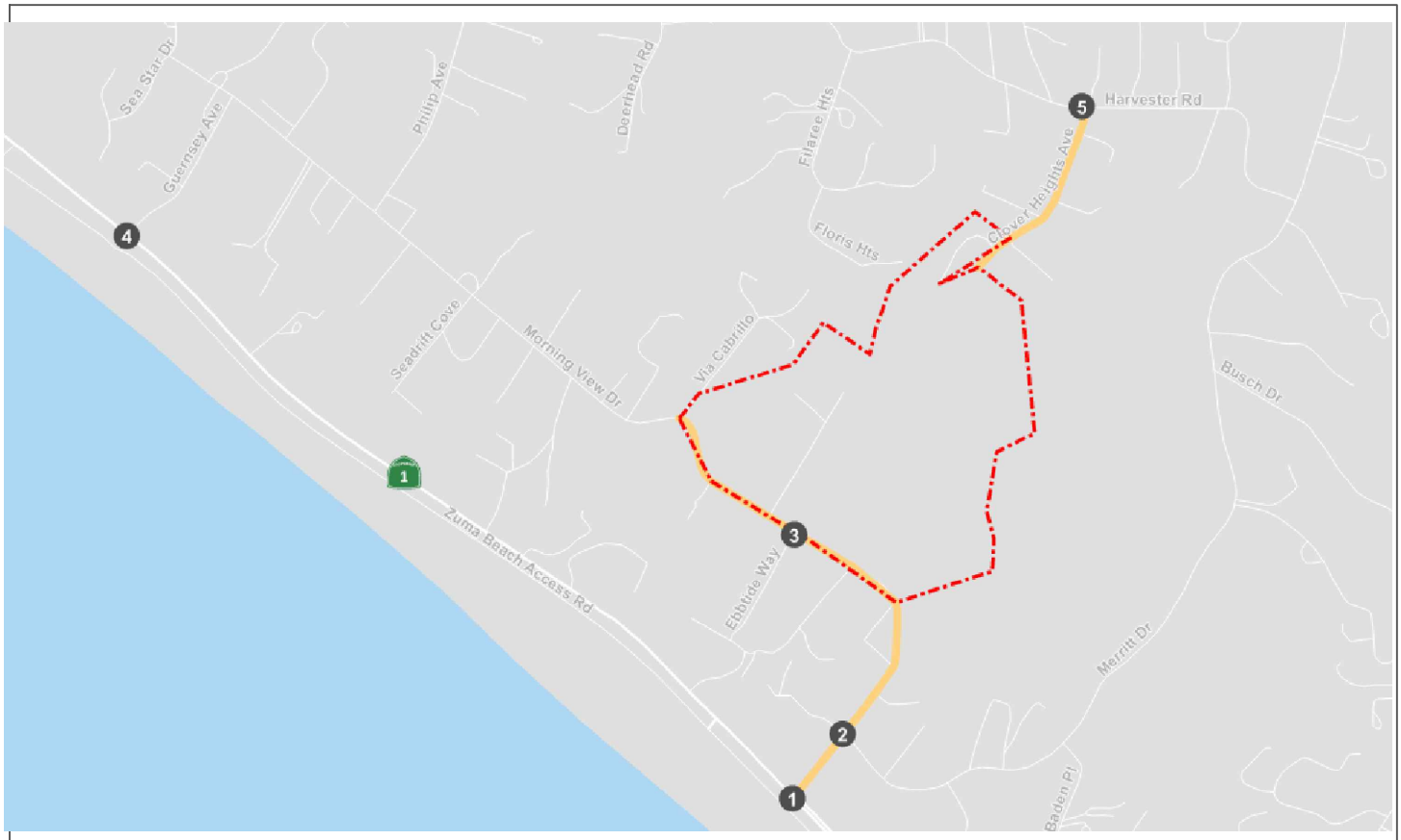
The roadway segment volumes for 2031 are summarized below in Table 11. The capacity for a two-lane undivided road is 13,400. Given the low traffic volumes in the study area, all roadways in the vicinity of the school will continue to operate at acceptable LOS A.

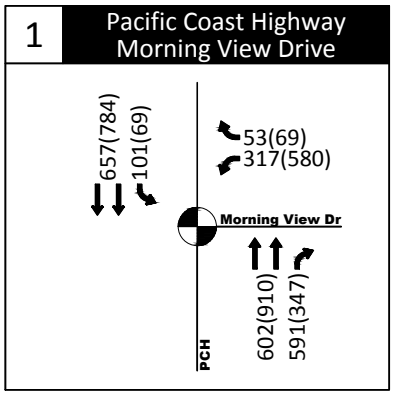
Table 11: Roadway Segment Operations, 2031 Conditions

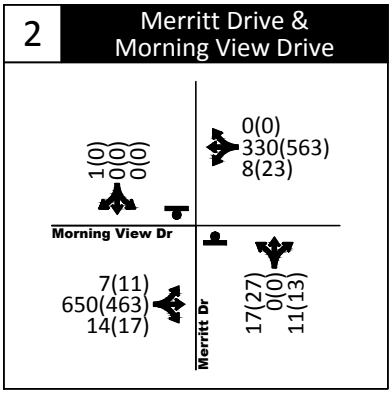
Roadway	Segment	Lanes[1]	2031 ADT	V/C	LOS
Morning View Drive	east of Merritt Drive	2U	6,009	0.71	C
Morning View Drive	west of campus	2U	5,262	0.21	A
Clover Heights Avenue	south of Harvester Road	2U	202	0.04	A
Harvester Road	east of Clover Heights	2U	1,562	0.12	A
Merritt Drive	south of Morning View Drive	2U	833	0.17	A

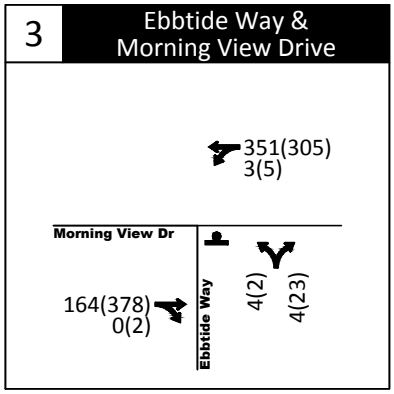
Notes:
U = undivided, D = divided

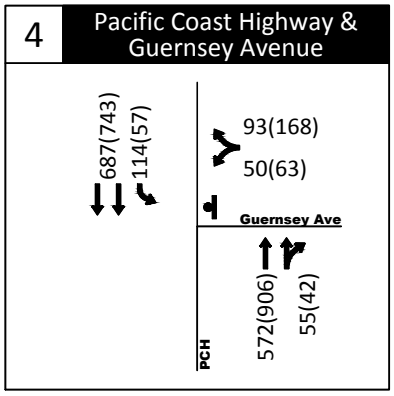
Source: Kittelson & Associates, 2021

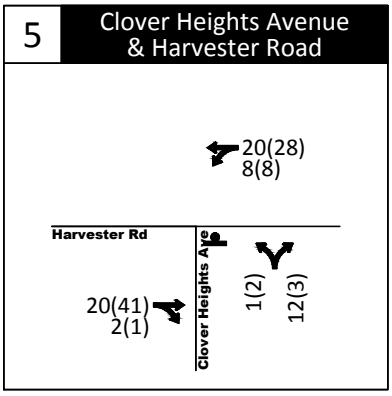












AM(PM) - Traffic Volume
STOP - All-Way Stop
- Stop Sign
- Traffic Signal

Project Completion (2031)
Intersection Traffic Volumes and Geometries
Malibu, California

Figure
10

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OTHER TRANSPORTATION IMPACTS

Site Plan Review and Drop-Off/Pick-Up Activities Assessment

In addition to analyzing the operations of the study intersections, school access and site circulation proposed to be modified as part of implementation of the Project are analyzed in this section. Figure 11 depicts the proposed circulation plan.

As previously discussed, the Project site is accessed from Morning View Drive at two main points of vehicular entry. The first entry is on the eastern edge of campus from Morning View Drive at the Lower Parking Lot B. The Lower Lot D (to be renamed Parking Lot B) provides for 62 spaces; this location has historically been used for student drop-off. There is also a 150-space Upper Lot (named A in the proposed Project layout) accessible by the shared driveway with the Lower Lot from Morning View Drive, which is used for school buses.

The second entry is at the access road between the former Juan Cabrillo Elementary School and the MMHS campus. This entry point provides access to the JCES Parking Lot, where most drop-off and pick-up activity occurs for high school students at the Upper Lot located west of the track and field area.

According to MMHS staff, the primary drop-off locations are the Morning View Drive drop-off area, taking place along the northern curb and the Lower Lot B. A few students are dropped-off at the JCES Parking Lot and at the Morning View Drive and Merritt Drive intersection. Several students are dropped-off in three buses that use Parking Lot E (now Parking Lot A). There is also an entrance to the north, accessible via Clover Heights Avenue, that a handful of students use, some of whom stop on Clover Heights Avenue or walk from the neighborhood.

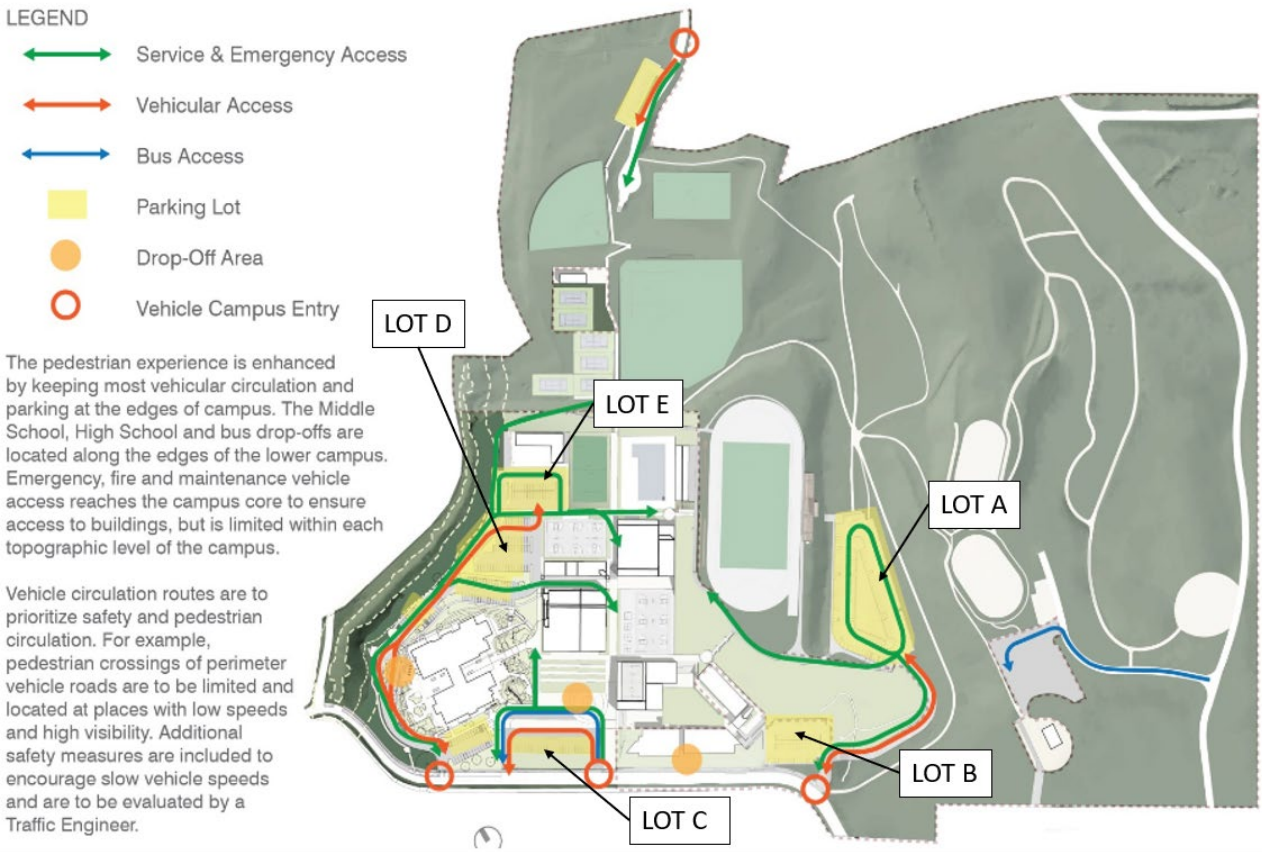
The Project will remove existing Lot A, the JCES Lots, and the Service Lot, which are located in the western side of the campus (see Figure 2). Existing Parking Lots D and E will be renamed to Lot A (150 spaces) and Lot B (62 spaces), respectively. New parking lots will be constructed as follows:

- Lot C, 25 spaces
- Lot D, 129 spaces
- Lot E, 32 spaces
- Lot F, 14 spaces

The new Parking Lots C and D will also serve as the drop-off and pick-up areas for MMHS. The new parking lot locations are shown in the Proposed Site Plan in Figure 3. In the 2021-2022 school year, drop-off and pick-up is taking place at the upper lot A and at the upper lot in the areas where Lots E and F would be constructed as part of the Project. The areas of Morning View Drive are being used for bus drop-off in the morning and for student pick-up in the afternoon. The proposed access driveways and parking lot configurations would provide several locations for student drop-off and pick-up away from the curbside area on Morning View Drive, serving to improve overall traffic flow related to school operations. The Project is not substantially changing the access configurations, and as previously discussed, the Project would not result in more trips or a change in traffic patterns. The access and configurations of the parking

lots would not worsen traffic conditions in the study area. The configuration of the new Parking Lots C, D, and E would improve traffic conditions because access to Lots D and E are located farther west and away from the drop-off and pick-up area adjacent to the school on Morning View Drive, and Parking Lot C compared to the existing JCES parking lot provides better on-site circulation and vehicular storage.

Figure 11: Vehicle Circulation Plan



The majority of drivers arrive at the school and return to the south. The primary route consists of approaching the campus via Morning View Drive from PCH (to/from the south). The existing and future parking lots and access driveways provide several opportunities for drivers heading west on Morning View Drive to make a U-turn to return to the south via PCH.

In summary, the Project would not result in additional traffic to the area or a change in traffic patterns in the area. Further, the proposed access driveways and parking lot configurations would improve circulation, as they provide better separation from the drop-off area off Morning View Drive, and the parking lots provide better off-street queuing for vehicles.

Pedestrian and Bicycle Facilities Assessment

All circulation is wheelchair accessible via a network of ramps and elevators, connecting parking lots with athletic and educational facilities. The Project also includes a pedestrian trail system that connects to a larger system of existing trails around the Equestrian Park and surrounding hills.

There is no existing or planned bicycle infrastructure near the site; therefore, no bicycle facilities will be affected with implementation of the Project.

Pedestrian access to the campus would remain along Morning View Drive with access at the new drop-off area, and Clover Heights Avenue, with access to the athletic fields. As discussed previously, access to the parking areas at the western portion of the campus will be located further west and away from the student drop-off area on Morning View Drive. Due to the location of the proposed access driveways, the existing location of the crosswalks on Morning View Drive may have to be relocated. As a mitigation measure, the SMMUSD shall request City of Malibu Public Works to relocate crosswalks and school area signage in relation to the proposed access driveways according to City of Malibu and applicable state criteria, and potentially relocate crossing guards.

Clover Heights Access Neighborhood Traffic

A new parking area (Lot F) is being proposed on the northern part of the campus, which would be accessed via Clover Heights Avenue and consist of 14 parking spaces. It would be developed during Phase 3 of the Project. This parking lot would be the most accessible to the upper fields (baseball and soccer). Lot F is intended to serve athletic programs for school and non-school related youth sports during after-school hours. Some school pick-up/drop-off occurs on Clover Heights Boulevard as well. The existing fields can also be accessed via parking lots from Morning View Drive. Pedestrian access is currently possible via an existing gate on Clover Heights Avenue that is locked at all times (no vehicle access permitted). The Project would not add or expand the fields nor provide lighting to extend the usage or the fields. The parking lot may result in more trips to the neighborhood areas near Clover Heights Avenue due to the availability of the new 14 parking spaces. Based on data from MMHS staff, the majority of field users access the fields from parking lots and driveways via Morning View Drive.

Based on the number of parking spaces and the anticipated field usage in each season, the number of anticipated trips due to the new 14-space parking area have been calculated. The parking lot is estimated to result in 126 new trips to Clover Heights Avenue, which will be accessed by field users primarily via Morning View Drive, Merritt Drive, Busch Drive, and Harvester Drive. Table 12, Table 13, and Table 14 show the traffic volumes with and without added traffic from the parking lot under existing, 2024, and 2031 conditions. As shown in Tables 11 to 13, most roads would continue to operate at acceptable LOS A, B, or C, below their capacity. No improvements would be required form a roadway capacity standpoint.

Table 12: Roadway Segment Volumes and LOS, Existing + Lot F Conditions

Roadway	Segment	Lanes	Volume (ADT)	Fields Traffic	Total Traffic	Road Capacity	V/C Ratio	LOS
Morning View Drive	east of PCH	2U	5,717	126	5,843	10,900	0.53	A
Morning View Drive	east of Merritt Drive	2U	5,006	126	5,132	7,400	0.68	B
Morning View Drive	west of Ebbtide Way	2U	2,312	0	2,312	7,400	0.31	A
Morning View Drive	west of campus	2U	1,486	0	1,486	7,400	0.20	A
Clover Heights Avenue	south of Harvester Road	2U	192	126	318	4,800	0.04	A
Merritt Drive	south of Morning View Drive	2U	792	126	918	4,800	0.17	A
Pacific Coast Highway	south of Morning View Drive	4D	24,800	126	24,926	39,300	0.63	B

Table 13: Roadway Segment Volumes, 2024 + Lot F Conditions

Roadway	Segment	Lanes	Volume (ADT)	Fields Traffic	Total Traffic	Road Capacity	V/C Ratio	LOS
Morning View Drive	east of PCH	2U	5,803	126	5,929	10,900	0.54	A
Morning View Drive	east of Merritt Drive	2U	5,081	126	5,207	7,400	0.69	B
Morning View Drive	west of Ebbtide Way	2U	2,347	0	2,347	7,400	0.32	A
Morning View Drive	west of campus	2U	1,508	0	1,508	7,400	0.20	A
Clover Heights Avenue	south of Harvester Road	2U	195	126	321	4,800	0.04	A
Merritt Drive	south of Morning View Drive	2U	804	126	930	4,800	0.17	A
Pacific Coast Highway	south of Morning View Drive	4D	25,174	126	25,300	39,300	0.64	B

Table 14: Roadway Segment Volumes, 2031 + Lot F Conditions

Roadway	Segment	Lanes	Volume (ADT)	Fields Traffic	Total Traffic	Road Capacity	V/C Ratio	LOS
Morning View Drive	east of PCH	2U	6,009	126	6,135	10,900	0.56	A
Morning View Drive	east of Merritt Drive	2U	5,262	126	5,388	7,400	0.71	C
Morning View Drive	west of Ebbtide Way	2U	2,430	0	2,430	7,400	0.33	A
Morning View Drive	west of campus	2U	1,562	0	1,562	7,400	0.21	A
Clover Heights Avenue	south of Harvester Road	2U	202	126	328	4,800	0.04	A
Merritt Drive	south of Morning View Drive	2U	833	126	959	4,800	0.17	A
Pacific Coast Highway	south of Morning View Drive	4D	26,068	126	26,194	39,300	0.66	B

Notes:
U = undivided roadway, D = divided roadway
Source: Kittelson & Associates, 2021

Bus Barn Relocation Assessment

The existing bus barn is currently north of the JCES campus buildings and west of the gym and is accessed via an access driveway between the former JCES campus and the MMHS campus. Three buses are in typical operation. This service access driveway also provides access to the Maintenance and Operations Warehouse and Student Parking Lot A.

The bus barn will be relocated to the east of Parking Lot A within the District-owned Malibu Equestrian Park as part of Phase 4 of the Project. The relocated bus barn will hold up to five buses that will operate from 6:45AM to 6:00PM every weekday. No refueling or maintenance will occur at the new bus barn. Buses will access the bus barn via an existing access driveway from Merritt Drive, approximately 0.3 miles from the intersection at Morning View Drive and Merritt Drive. The existing driveway provides sufficient road width access for bus circulation as it currently serves horse trailers.

Bus ingress and egress to/from the bus barn areas do not coincide with student drop-off and pick-up times. This is because the school buses are already running their routes during student drop-off and pick-up times. In addition, the relocated bus barn and driveway access would reroute buses away from the sections of Morning View Drive where heavy pedestrian and vehicular school activity occur.

Due to the operation of three buses, bus access would continue to come from Morning View Drive, and the impacts to the circulation network and changes in VMT would be negligible.

Construction Impacts to Circulation

Construction of the Project would require the mobilization of workers, vendors, equipment, and haul trucks. Construction activities will generate a increase in traffic and may cause intermittent delays on roadways adjacent to the Project site. Construction traffic is expected to travel to and from the Project via Morning View Drive and PCH (to/from the south) and could occur both during the regular school calendar year, as well as during summer months, when school is not in session. The following reviews: (1) potential impacts due to added construction-related traffic to roadways and intersections in the study area, and (2) potential impacts to local circulation on Morning View Drive adjacent to the school related to site access and staging. The following provides an analysis at the Project level for Phase 1 and at a programmatic level for Phases 2 to 4.

Phase 1 Demolition and Build (Fall 2022 to Fall 2024)

Phase 1 Construction Traffic Volumes

Table 15 shows the anticipated number of daily trips related to construction activity. Trucks have a greater effect on roadway and intersection operations. Thus, the volume of trucks is converted to a Passenger Car Equivalent (PCE) for this analysis. While the Project is being constructed, the peak volume of construction traffic is estimated to be approximately 299 trips per day during the Rough Grading phase of construction. Over a typical eight-hour workday, this adds approximately 38 trips per hour. The school

generates approximately 2,482 trips per day, 651 during the AM peak, and 405 during student dismissal. However, the construction trips that would be fewer than 299 per day would be substantially lower compared to school-related traffic. Trips from construction workers and haul trucks would not overlap with student pick-up and drop-off occurring outside the school peak hours. The potential 38 hauling trips and 60 worker trips related to construction would be substantially lower compared to school traffic during student drop-off and pick-up, having negligible effect on traffic conditions in the study area.

Phase 1 Construction VMT

While construction will be adding trips to the project site, the increase in trips and the subsequent increase in VMT to the project site is temporary. Thus, the impact should be considered less-than-significant. To reduce the amount of VMT to the project site, the construction management team can include strategies to encourage workers to carpool or use transit when possible and source materials and equipment locally.

Table 15: Phase 1 Construction Activity

Construction Activities	Dates	Worker	Vendor	Vendor MDT (PCE)	Vendor HDT (PCE)	Haul	Haul (PCE)	Total (PCE)
Building/Asphalt Demolition	6/1/22 – 8/15/22	15	4	2	4	11	22	43
Rough Grading	9/7/22 – 10/31/22	15	4	2	4	139	278	299
Utility Trenching	11/1/22 – 12/14/22	8	4	2	4	0	0	16
Building Construction 1	12/15/22 – 11/9/23	119	46	23	46	0	0	188
Construction, Fine Grading	11/10/23 – 11/24/23	119	50	25	50	0	0	194
Building Construction 2	11/25/23 – 3/31/24	119	46	23	46	0	0	188
Architectural Coating	4/1/24 – 4/30/24	24	0	0	0	0	0	24
Paving	5/1/24 – 6/30/24	15	0	0	0	0	0	15
Finishing, Landscaping	7/1/24 – 8/31/24	3	0	0	0	0	0	3

Notes:
1. PCE = Passenger Car Equivalent
2. PCE factor, HDT and Haul Trucks = 2 PCE
3. Vendor MDT = 50% of Vendor MDT/HDT
4. Vendor HDT = 50% of Vendor MDT/HDT

Source: Kittelson & Associates, 2021

Phase 1 Site Access Considerations

Because Phase 1 is in the final design process, specific information regarding access is available. Phase 1 consists of demolishing the existing JCES campus and constructing Building C and Parking Lot C and D.

The JCES parking lot currently serves as a turnaround for high school drop-off and pick-up. The existing Parking Lots A and B will be available for student drop-off and pick-up during Phase 1 construction. However, vehicles that use the curbside drop-off area on Morning View Drive adjacent to the school campus will not be able to make a U-turn to return to the south, as the former JCES parking lot would be demolished in Phase 1. There are few opportunities to make U-turns back south, and the intersection of Guernsey Avenue at PCH is not signalized and cannot accommodate high traffic volumes on the Guernsey Avenue approach. Without mitigation, there would be the potential for substantial congestion on

Morning View Drive and at the intersection of Guernsey at PCH. Drop-off on Morning View Drive shall only be allowed in conjunction with a path to allow vehicles to make a U-turn. To help facilitate traffic flow, the school shall require people who are dropping-off and picking-up students at parking lots A, D, and E to take the routes shown by the red arrows in Figure 12, which will remove drop-off on Morning View Drive and route traffic through on-site parking lots. Mitigation Measure 1 is required to provide adequate vehicular circulation during student pick-up and drop-off.

Mitigation Measure 1: To facilitate vehicular and pedestrian circulation during student drop-off and pick-up times during Phase 1, prior to initiation of construction activities SMMUSD shall work with the City of Malibu Public Works Department to develop and implement a Traffic and Parking C Plan that will include the following:

- Designate vehicular drop-off and pick-areas outside morning view drive at of-street parking lots A, D, and E. Vehicular access to these lots shall allow vehicles to enter from and return from the area of the intersection of Morning View Drive at PCH.
- Student drop-off and pick-up shall be implemented in a counter-clockwise circulation pattern. Figure 12 depicts vehicular circulation patterns using lots A, D, and E.
- The school shall educate students and parents on drop-off and pick-up routes and procedures. This may be achieved with a combination of information bulletins shared with students and parents.

Figure 13 depicts the staging area and access locations to the construction area. As shown, all parking will be on-site, and the primary access driveways will be one ingress driveway and one egress driveway, allowing for a one-way counterclockwise circulation. The access driveways will be located on the western edge of the campus at a distance from the drop-off and access areas for school traffic. A secondary access will be located via the driveway that runs along the eastern edge of Phase 1 area. Mitigation Measure 2 is required to reduce any influence of construction activities during Phase 1 during student pick-up and drop-off activities.

Mitigation Measure 2: To, prior to initiation of consturction activities SMMUSD shall work with the City of Malibu Public Works Department to develop and implement a Construction Traffic Mitigation Plan that will include the following:

- Haul trucks and vendor truck traffic ingress and egress to/from the construction area shall not occur during the drop-off/pick-up hours of 7:00 to 9:00 AM and 2:30 to 4:30 PM.
- Eliminate curbside parking on the south side of Morning View Drive south of the construction staging area to provide adequate turn radius and site distance to access for trucks entering and leaving the site.
- *Traffic Education Program:* Educate parents, students, and staff on drop-off/pick-up procedures.
    - Disseminate student drop-off and pick-up procedures with flyers and post on the school website.
    - This could also include the use of portable message signs and information signs at the construction site.

- *Coordination with the City, the School, and all Affected Agencies:* All construction work shall be coordinated with affected agencies 5 to 10 days prior to the start of the work. SMMUSD shall coordinate with the City in the event that vehicle, pedestrian, or bicycle construction detours are needed, construction work encroaches into the public right-of-way, or any use of public streets surrounding the proposed Project site for construction-related activities is needed. Timely notification of schedule changes shall be provided to all involved City and Los Angeles County departments, such as City of Malibu Public Works and Planning departments, and Los Angeles County Sheriff and Los Angeles County Fire Departments.

Figure 12: Phase 1 Circulation

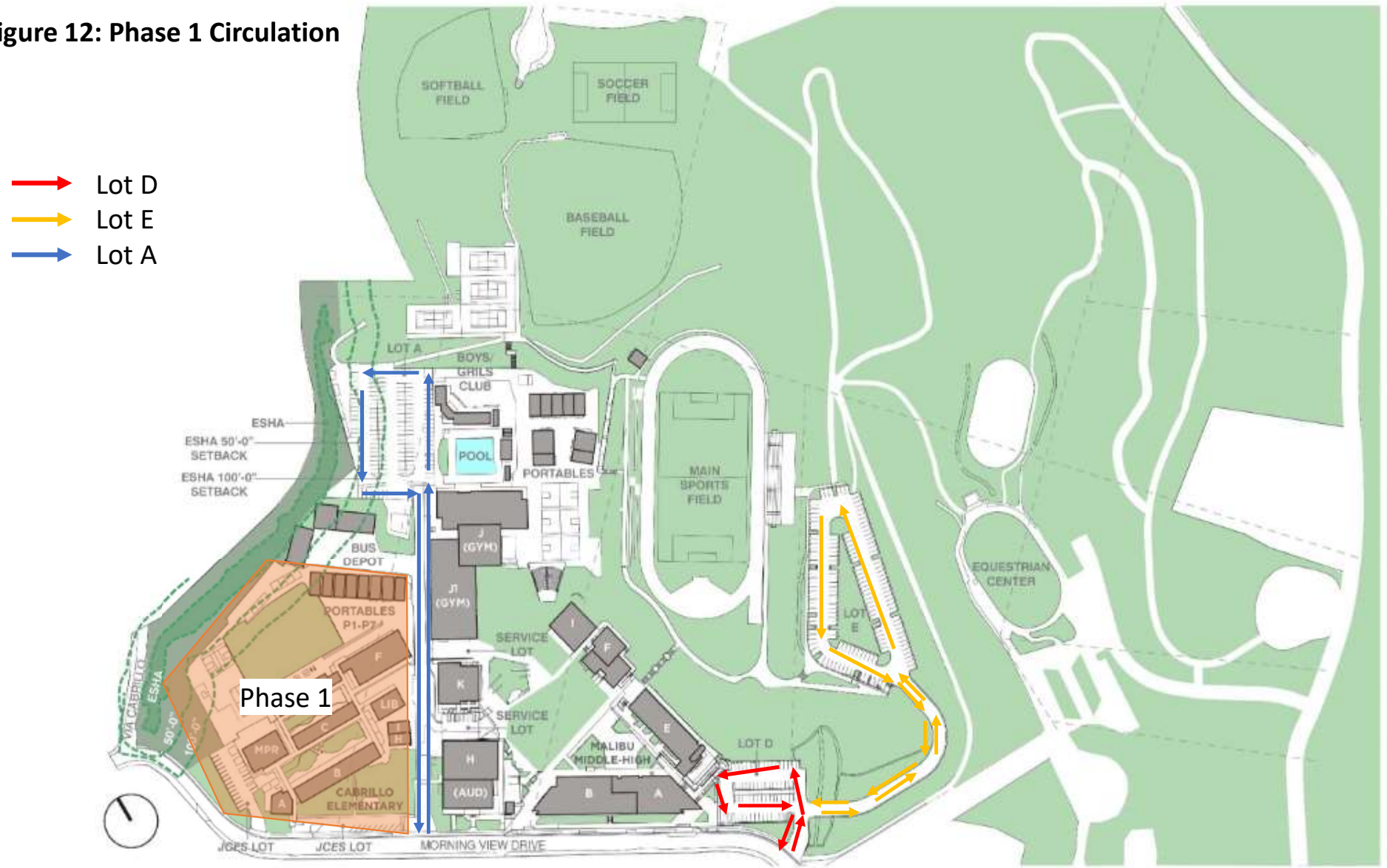
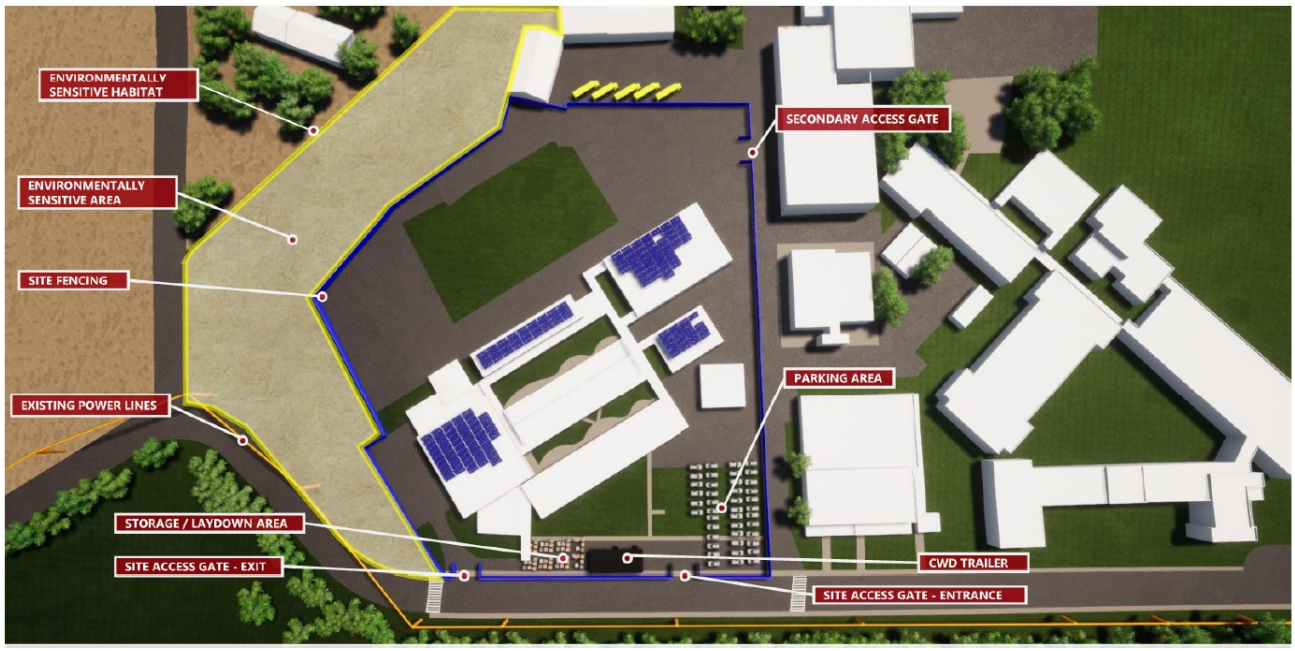


Figure 13: Phase 1 Staging Area and Access



Source: CW Driver, 2021

Phases 2 to 4 Construction

During Phases 2 to 4, a majority of construction traffic during the peak hours consist of construction workers coming to the job site. Vendors will likely be traveling to and from the site throughout the day. Like in Phase 1, only a few trips will be occurring during the AM peak hour. The Construction Traffic Mitigation Plan should include phase-specific circulation patterns and volume estimates to identify potential temporary modifications to the roadway or construction operations. If needed, construction traffic can be restricted to ensure that most construction trips occur outside of the drop-off and pick-up periods.

Drop-off and pick-up during Phases 2 to 4 can take place in the newly constructed drop-off and pick-up areas in Parking Lots C and D. The school can continue to use Parking Lots B and the Parking Lots D and E that will be implemented in Phase 1. During Phases 2 to 4, the following mitigation measures would be required to ensure proper circulation is provided:

- *Restrict construction activities resulting in lane closures*: Construction activities that would result potential lane closures along Morning View Drive, including, but not limited to reconstruction of the student drop-off/pick-up area and sidewalks along Morning View Drive, shall be scheduled to occur during summer months when MMHS is not in session in order to eliminate conflicts with local traffic and pedestrian activities.
    - Haul trucks and vendor truck traffic ingress and egress to/from the construction area shall not occur during the drop-off/pick-up hours of 7:00 to 9:00 AM and 2:30 to 4:30 PM.
    - Eliminate curbside parking on the south side of Morning View Drive south of the construction staging area to provide adequate turn radius and site distance to access for trucks entering and leaving the site.
- *Traffic Education Program*: Educate parents, students, and staff on drop-off/pick-up procedures.
    - Disseminate student drop-off and pick-up procedures with flyers and post on the school website.
    - This could also include the use of portable message signs and information signs at the construction site.
- *Coordination with the City, the School, and all Affected Agencies*: All construction work shall be coordinated with affected agencies 5 to 10 days prior to the start of the work. SMMUSD shall coordinate with the City in the event that vehicle, pedestrian, or bicycle construction detours are needed, construction work encroaches into the public right-of-way, or any use of public streets surrounding the proposed Project site for construction-related activities is needed. Alternate routes that provide adequate facilities for all roadway users should be provided to the extent possible. To the extend feasible, construction activities that would occur or block driveways and sidewalks on Morning View Drive should occur outside school days. Timely notification of schedule changes shall be provided to all involved City and Los Angeles County departments, such as City of Malibu Public Works and Planning departments, and Los Angeles County Sheriff and Los Angeles County Fire Departments.

Phases 2 to 4 Construction VMT

Construction of these phases will occur over several years and generate temporary construction trips. The number of construction trips will vary greatly depending on the current construction activity. While construction traffic will be adding trips to the project site, it is not establishing permanent traffic patterns that will contribute to ongoing VMT increases. Any subsequent increase in VMT to the project site during phase of construction is temporary. Thus, the impact should be considered less-than-significant. To reduce the amount of VMT to the project site, the construction management team can include strategies to encourage workers to carpool or use transit when possible and source materials and equipment locally.

Appendix A: Memorandum of Understanding

KITTELSON & ASSOCIATES
750 THE CITY DRIVE, SUITE 410
ORANGE, CA 92868
P 714.468.1997

MEMORANDUM

Date:	November 06, 2020	Project #: 25023
To:	Rob Duboux, Public Works Director City of Malibu 23825 Stuart Ranch Road Malibu, CA 90265	
From:	Fernando Sotelo	
Project:	Malibu Middle and High School Campus Improvements Project	
Subject:	Memorandum of Understanding for Transportation Analysis	

Kittelson is preparing a traffic impact analysis for the Malibu Middle School and High School Campus Master Plan Project (Project) on behalf of the Santa Monica/Malibu Unified School District (SMMUSD or District). The Malibu High School and Middle School (MMHS) campus is located at 30215 Morning View Drive and had a student population of 862 students (334 at the middle school, 528 at the high school) for the 2019-2020 academic year[1]. MMHS also employs 134 teachers and staff members. The existing site contains the Boys and Girls Club of Malibu Teen Center and the MMHS campuses, as well as the former Juan Cabrillo Elementary School. As part of SMMUSD's wider Malibu Schools Alignment Project, the JCES student population combined with the Point Dume Marine Science School student population and moved to the Point Dume Marine Science School campus, renamed Malibu Elementary School, at the beginning of the 2019-20 school year. The former JCES campus is being utilized by middle and high school students.

This memorandum of understanding (MOU) describes the Project and outlines the proposed methodologies and basic assumptions for the traffic impact analysis for the Project. This MOU has been prepared for City of Malibu for review and comment to ensure that the traffic study uses appropriate assumptions to evaluate potential traffic impacts from the Project. This MOU was prepared in consultation with City staff and by reviewing the methodologies described in the most recent City of Malibu TIA Guidelines published in December 2019. The traffic impact analysis will rely on methodologies and impact criteria to analyze roadway segments and intersections included in the city's TIA guidelines. The MOU includes a trip generation estimate for the Project, a list of study area intersections to be evaluated, and identification of an ambient growth rate and scenarios to be evaluated. In addition, criteria to evaluate levels of service and an evaluation of vehicle miles travelled (VMT) are also included in this memo.

School Traffic

This Proposed Project will not increase the student capacity, rather it will improve the existing facilities to serve the student population in Malibu. The historic enrollment of MMHS has dropped over the last decade and no major development in the area is expected. For informational purposes and illustrate the amount of vehicular traffic associated with the capacity of 1,200 students in the campus, the number of trips at capacity was calculated. As no trip generation surveys were taken at the school, the trips associated with 1,200 students were calculated using trip rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition. As shown in Table 1, the school campus at capacity has the potential

[1] We refer to the 2019-2020 prior to Covid-19 conditions that could have affected enrollment.

to generate 651 trips during the AM peak hour (7-9AM), 404 during the student dismissal hour (2:30-4:30 PM), and 2,482 daily trips.

Table 1: School Campus Trip Generation at Capacity

		Trip Generation[1]							
				AM Peak Hour			Student Dismissal Hour		
Land Use	Unit	Amount	Daily	In	Out	Total	In	Out	Total
Middle School	Students	450	959	141	120	261	72	85	157
High School	Students	750	1,523	261	129	390	79	168	247
School Campus Trips			2,482	402	249	651	151	253	404

[1] Trip generation rates for peak hour of adjacent streets, per the ITE Trip Generation Manual 10th Edition.

School trip distribution was determined based on a review of the School's attendance boundaries, a review of the circulation system and a review of the traffic study for the Malibu Middle and High School Campus Improvement Project[2]. Based on these factors:

- 70 percent of traffic travel to and from the east via Morning View Drive and Pacific Coast Highway
- 30 percent of traffic travel to and from the west via Morning View Drive, Guernsey Avenue and Pacific Coast Highway

Study Area Intersections and Roadways

This analysis will review potential impacts to the student drop-off areas and nearby streets, and to off-site intersections in the vicinity of the site. The following existing intersections will be analyzed:

1. Morning View Drive and Pacific Coast Highway
2. Morning View Drive and Merritt Drive
3. Morning View Drive and Ebbtide Way/ proposed school access
4. Guernsey Avenue at Pacific Coast Highway

In addition, local-access roads, project access driveways and drop-off areas will be analyzed to identify bottlenecks and potential vehicular and pedestrian conflicts.

Roadway segment traffic will be evaluated at the following locations:

- Morning View Drive between Merritt Drive and school campus
- Morning View Drive between school campus and Via Cabrillo
- Merritt Drive between Morning View Drive and Baden Place
- Harvester Road between Clover Heights Avenue and Busch Drive
- Clover Heights Drive south of Harvester Road

[2] Counts obtained from the SMMUSD Malibu Middle and High School Campus Improvement Project EIR Traffic Impact Analysis, prepared by Atkins in June 2011.

Traffic Counts and Adjustments

Because of the current restrictions due to COVID-19 with many students, staff and parents working remotely, existing traffic conditions are not representative of typical conditions. For this analysis, historic counts taken in 2010[3] will be used and adjusted to reflect traffic conditions in the area, and they will be adjusted according to annual growth factors in Malibu. It shall be noted that the combined enrollment of the middle and high school when the counts were taken in 2010 were 1,235 students. Therefore the historic traffic counts reflect local traffic conditions related to the school operating at its student capacity. The 2011 traffic study pointed out that enrollment levels were expected to decline in the past decade. The current combined enrolment in the 2020-2021 year is 782 and the combined enrollment in the 2019-2021 year was 862. For this analysis, the existing and future conditions will be based on 2010 counts adjusted for an ambient annual growth rate, but no additional trips related to increased enrollment will be considered.

The Project location is in Malibu, thus an ambient growth rate of 0.5% per year, for a total of 5.6% growth from 2020 to 2031, is utilized based on the Exhibit D-1 in the 2010 Congestion Management Program by the Los Angeles County Metropolitan Transportation Authority. Trip generation for the cumulative developments will be estimated for inclusion in the background traffic conditions at Project opening year.

Traffic Analyses Scenarios

Construction is anticipated to begin with Phase 1 in September 2022, and the full buildout will be completed in 2030. Construction phasing is described below[4]:

- Phase 1 Demolition: Former Juan Cabrillo Elementary School Campus (Summer 2022)
- Phase 1 Build (9/2022-8/2024): High school academic building, loading dock, new bus/vehicle turnaround and parking area
- Phase 2 Build (9/2024-9/2026): Middle school gym/Multi-Purpose Room, PE classrooms/locker rooms, lunch shelter
- Phase 3 Demolition: Portables, Buildings F & I, tennis courts, amphitheater, field house
- Phase 3 Build (9/2026-9/2028): HS gym, field houses, aquatic center, tennis courts and hardcourts
- Phase 4A Demolition: Bldg. K, gyms, pool, bus barn
- Phase 4A Build (9/2028-9/2030): Theater, VAPA & Special Education classrooms, wellness center, Boys & Girls Club relocation, soccer field, hardcourts, parking
- Phase 4B Demolition: Building H
- Phase 4B Build (3/2030-3/2031): TBD

For the purpose of this analysis, a long-range 11-year timeframe is assumed for Project Completion (2031). As discussed previously, there is no change in student capacity and anticipated number of additional trips with the project. Thus, the following analysis scenarios will be provided for the weekday peak hours for existing, project opening year and project completion years:

» Existing (2020)
» Phase 1 Build (2024) Without Project
» Phase 1 Build (2024) With Project
» Project Completion (2031) Without Project
» Project Completion (2031) With Project

[3] Counts obtained from the SMMUSD Malibu Middle and High School Campus Improvement Project EIR Traffic Impact Analysis, prepared by Atkins in June 2011.

[4] As described in the LPA Phasing Diagrams as of March 23, 2020

Intersection Operations and Queuing Analysis

The methodology used to assess intersection operations will be based on the HCM 6th Edition. For intersections 1 and 4 at Pacific Coast Highway, Caltrans procedures to evaluate intersection impacts and queuing will be utilized.

Queue lengths for all approaches and left- and right-turn lanes and two-way left turn lanes will be evaluated to ensure queues do not overflow into adjacent through lanes. The analysis will be conducted using the HCM methodology for the 95th percentile queue for all approaches at the study intersections, per City and Caltrans guidelines. In addition, a queuing analysis will be conducted for the project's access points during school drop-off and pick-up. Due to COVID-19, current data cannot be collected for school pick-up and drop-off queues; historic data will be used to conduct the analysis.

If intersections and roadway impacts are identified within City or Caltrans right of way, the Public Works Commission will be consulted to discuss potential mitigation measures at the affected locations.

Vehicle Miles Travel Assessment

The Project's potential increase in VMT will also be assessed according to new requirements for CEQA. The attendance boundary would not change with the project. It is our understanding that the City of Malibu has not yet adopted guidelines, metrics and thresholds to assess impacts from land use projects under CEQA. Thus, OPR guidelines will be used to analyze VMT impacts. OPR does not provide explicit guidelines for public schools but have suggested that public schools use the same criteria as retail. The City of San Jose and the City of Menlo Park also use this approach. The total change in VMT will be estimated and a net increase in VMT will be considered a significant impact.

Site Access and Circulation

Access for pedestrians will be reviewed to ensure conflicts are minimized. School access and internal circulation will also be reviewed to ensure that the site complies with CDE Title 5 standards and that it is designed with pedestrian safety considerations. Recommendations will be prepared to accommodate the demand during peak traffic hours including turn restrictions and turn pocket lengths at Project access intersections and existing intersections in the vicinity of the site.

The analysis will review the proposed site plan and circulation to identify potential bottlenecks and solutions to minimize queuing and congestion in the area.

Parking

The project site and vicinity will be reviewed to describe and identify parking supply for students and staff during each construction phase, and project completion. This analysis will identify public curbside and on-site parking spaces that will be available at each construction phase. The number of spaces will be compared to the existing parking supply to identify net gains and losses and identify parking overflow areas if a shortage may occur.

Construction Impact Analysis

A description of the construction activities, potential road closures, staging areas, and truck haul activity will be presented for each phase of project construction listed previously. The analysis will assess potential changes to access such as construction staging, truck access routes and driveways, and interference with school pick-up and drop-off. Construction truck volumes and routes to and from the school will be assessed.

This analysis will identify potential impacts to temporary relocations within the School campus that would affect student activities/operations. To this end, Kittelson will verify if project construction would temporarily change the circulation patterns in the surrounding neighborhood, and temporary modify school access and drop-off areas.

Please review the following assumptions and authorize so we can proceed. Or feel free to call if you have any questions or would like to discuss.

Sincerely,

Fernando Sotelo, PE, PTP
Associate Engineer

CC: Carey Upton, Chief Operations Officer, SMMUSD

Appendix B: Historic Student Enrollment Data

Table B-1 Student Enrollment by Grade Level

Year	SCHOOL	TK	K	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	Percent Decrease per Year
2006	CABRILLO		44	40	45	52	48	52								281	
2006	MALIBU HS								161	174	173	219	197	202	169	1295	
2006	**TOTALS**	**0**	**44**	**40**	**45**	**52**	**48**	**52**	**161**	**174**	**173**	**219**	**197**	**202**	**169**	**1576**	**-**
2007	CABRILLO		57	41	38	47	56	51								290	
2007	MALIBU HS								148	162	172	177	224	188	207	1278	
2007	**TOTALS**	**0**	**57**	**41**	**38**	**47**	**56**	**51**	**148**	**162**	**172**	**177**	**224**	**188**	**207**	**1568**	**1%**
2008	CABRILLO		48	54	47	41	51	56								297	
2008	MALIBU HS								140	164	164	177	174	215	173	1207	
2008	**TOTALS**	**0**	**48**	**54**	**47**	**41**	**51**	**56**	**140**	**164**	**164**	**177**	**174**	**215**	**173**	**1504**	**4%**
2009	CABRILLO		32	41	50	52	42	55								272	
2009	MALIBU HS								163	156	173	178	168	170	205	1213	
2009	**TOTALS**	**0**	**32**	**41**	**50**	**52**	**42**	**55**	**163**	**156**	**173**	**178**	**168**	**170**	**205**	**1485**	**1%**
2010	CABRILLO		40	32	41	51	46	44								254	
2010	MALIBU HS								145	161	150	176	174	177	177	1160	
2010	**TOTALS**	**0**	**40**	**32**	**41**	**51**	**46**	**44**	**145**	**161**	**150**	**176**	**174**	**177**	**177**	**1414**	**5%**
2011	CABRILLO		38	37	35	44	54	45								253	
2011	MALIBU HS								137	161	166	153	183	175	182	1157	
2011	**TOTALS**	**0**	**38**	**37**	**35**	**44**	**54**	**45**	**137**	**161**	**166**	**153**	**183**	**175**	**182**	**1410**	**0%**
2012	CABRILLO		34	38	37	41	45	55								250	
2012	MALIBU HS								157	142	162	176	151	181	175	1144	
2012	**TOTALS**	**0**	**34**	**38**	**37**	**41**	**45**	**55**	**157**	**142**	**162**	**176**	**151**	**181**	**175**	**1394**	**1%**
2013	CABRILLO		34	32	37	38	46	48								235	
2013	MALIBU HS								172	153	144	177	184	151	182	1163	
2013	**TOTALS**	**0**	**34**	**32**	**37**	**38**	**46**	**48**	**172**	**153**	**144**	**177**	**184**	**151**	**182**	**1398**	**0%**
2014	CABRILLO		37	35	33	39	33	48								225	
2014	MALIBU HS								157	137	158	148	170	182	148	1100	
2014	**TOTALS**	**0**	**37**	**35**	**33**	**39**	**33**	**48**	**157**	**137**	**158**	**148**	**170**	**182**	**148**	**1325**	**5%**
2015	CABRILLO		22	33	35	29	40	35								194	
2015	MALIBU HS								127	158	147	169	154	175	175	1105	

Year	SCHOOL	TK	K	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL	Percent Decrease per Year
2015	**TOTALS**	**0**	**22**	**33**	**35**	**29**	**40**	**35**	**127**	**158**	**147**	**169**	**154**	**175**	**175**	**1299**	**2%**
2016	CABRILLO	11	26	22	31	33	32	40								195	
2016	MALIBU HS								99	117	161	155	158	154	159	1003	
2016	**TOTALS**	**11**	**26**	**22**	**31**	**33**	**32**	**40**	**99**	**117**	**161**	**155**	**158**	**154**	**159**	**1198**	**8%**
2017	CABRILLO	6	31	28	22	35	39	34								195	
2017	MALIBU HS								113	107	116	159	153	152	152	952	
2017	**TOTALS**	**6**	**31**	**28**	**22**	**35**	**39**	**34**	**113**	**107**	**116**	**159**	**153**	**152**	**152**	**1147**	**4%**
2018	CABRILLO	14	20	28	32	24	35	44								197	
2018	MALIBU HS								116	112	112	135	163	151	156	945	
2018	**TOTALS**	**14**	**20**	**28**	**32**	**24**	**35**	**44**	**116**	**112**	**112**	**135**	**163**	**151**	**156**	**1142**	**0%**
2019	MALIBU MIDDLE/HIGH								112	114	108	108	125	147	148	862	
2019	**TOTALS**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**112**	**114**	**108**	**108**	**125**	**147**	**148**	**862**	**25%**
2020	MALIBU MIDDLE								85	125	115					325	
2020	MALIBU HIGH											111	114	123	149	497	
2020	**TOTALS**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**85**	**125**	**115**	**111**	**114**	**123**	**149**	**822**	**5%**
															Percent Decrease between 2006 and 2020		**48%**

Note: Student enrollment for the 2020-2021 school year is 784 students.

Source: California Department of Education

Appendix C: Traffic Count Data

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

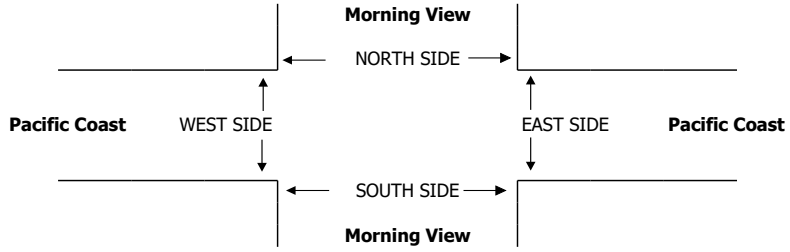
DATE:	LOCATION:	Malibu	PROJECT #:	SC2930
Thu, Jun 3, 21	NORTH & SOUTH:	Morning View	LOCATION #:	2
	EAST & WEST:	Pacific Coast	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☐ Add U-Turns to Left Turns

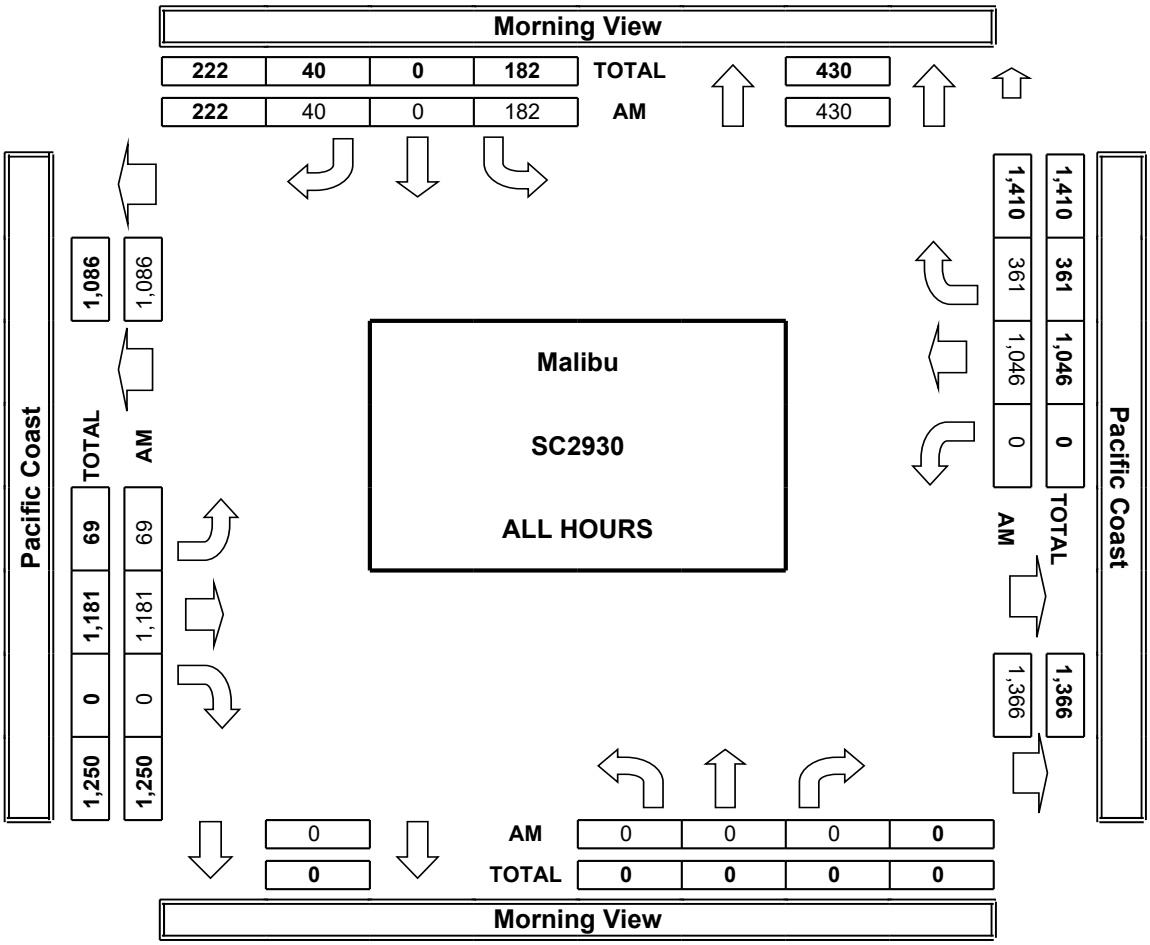
		NORTHBOUND (Morning View)			SOUTHBOUND (Morning View)			EASTBOUND (Pacific Coast)			WESTBOUND (Pacific Coast)				U-TURNS				
	LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
		X	X	X	0	X	0	1	2	X	X	2	1		0	0	0	0	
AM	7:00 AM	0	0	0	2	0	3	6	118	0	0	127	17	273	0	0	0	0	0
	7:15 AM	0	0	0	5	0	1	4	141	0	0	102	23	276	0	0	0	0	0
	7:30 AM	0	0	0	10	0	3	4	132	0	0	114	21	284	0	0	0	0	0
	7:45 AM	0	0	0	14	0	8	7	165	0	0	130	19	343	0	0	0	0	0
	8:00 AM	0	0	0	19	0	3	7	167	0	0	130	26	352	0	0	0	1	1
	8:15 AM	0	0	0	16	0	5	6	144	0	0	167	41	379	0	0	0	0	0
	8:30 AM	0	0	0	29	0	5	15	156	0	0	125	75	405	0	0	0	1	1
	8:45 AM	0	0	0	87	0	12	20	158	0	0	151	139	567	0	0	0	1	1
	VOLUMES	0	0	0	182	0	40	69	1,181	0	0	1,046	361	2,882	0	0	0	3	3
	APPROACH %	0%	0%	0%	82%	0%	18%	6%	94%	0%	0%	74%	26%						
	APP/DEPART	0	/	430	222	/	0	1,250	/	1,366	1,410	/	1,086	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	0	0	0	151	0	25	48	625	0	0	573	281	1,706					
	APPROACH %	0%	0%	0%	86%	0%	14%	7%	93%	0%	0%	67%	33%						
	PEAK HR FACTOR		0.000			0.444			0.945			0.736		0.751					
	APP/DEPART	0	/	329	176	/	0	673	/	779	857	/	598	0					

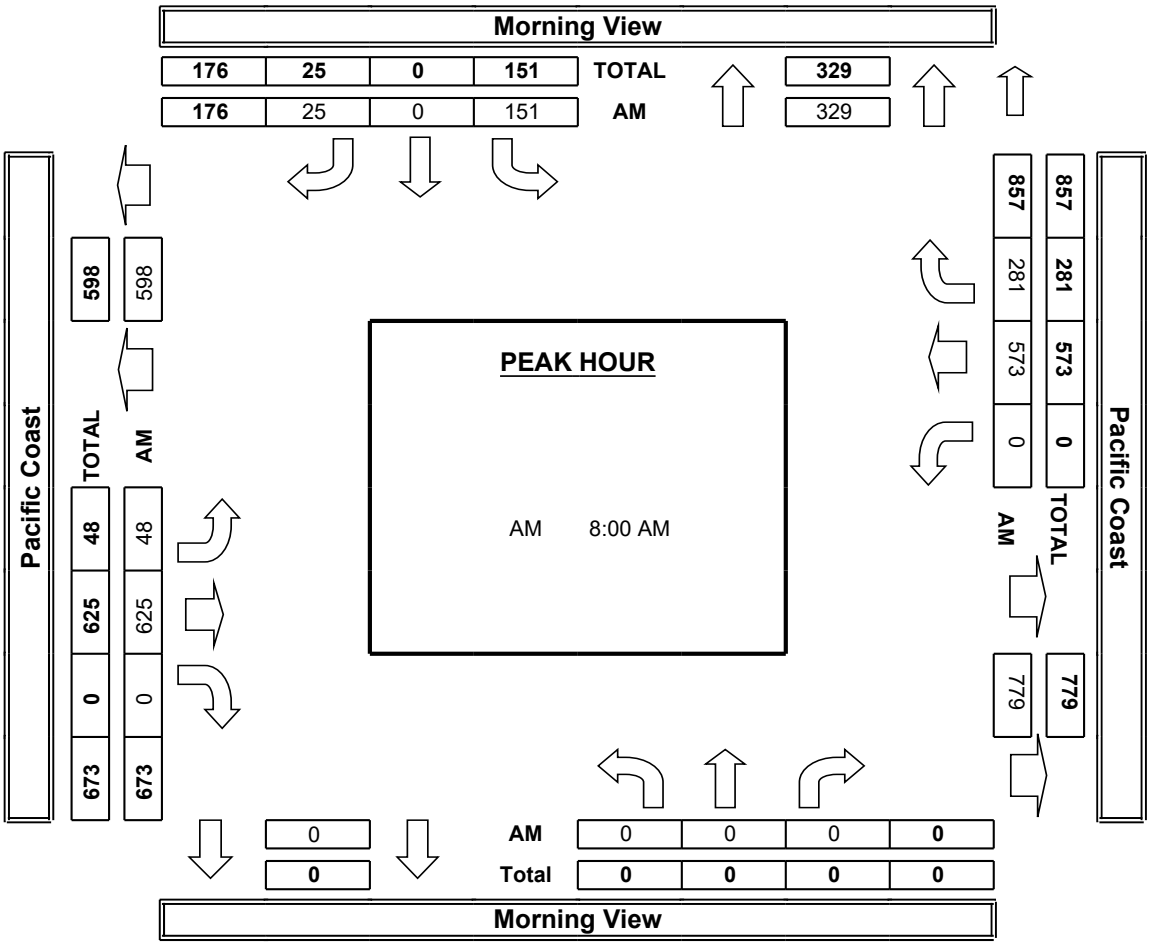


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	8:00 AM	1	0	0	1	2	1	0	0	1	2	0	0	0	0	0
	8:15 AM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	8:30 AM	2	0	0	2	4	0	0	0	2	2	2	0	0	0	2
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	3	0	0	7	10	1	0	0	7	8	2	0	0	0	2
	AM BEGIN PEAK HR	8:00 AM					1	0	0	5	6					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T121

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jun 3, 21 THURSDAY

LOCATION: Malibu
NORTH & SOUTH: Morning View
EAST & WEST: Pacific Coast

PROJECT #: SC2930
LOCATION #: 2
CONTROL: SIGNAL

NOTES:

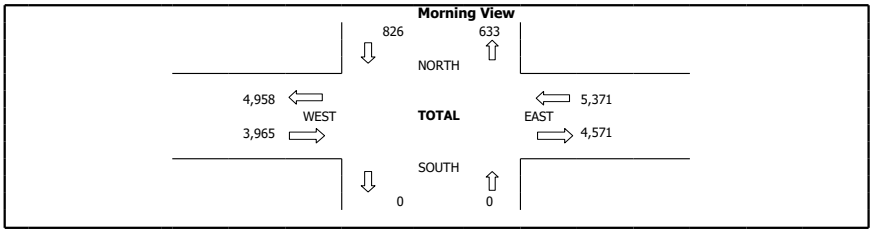
AM / PM / MD / OTHER / OTHER

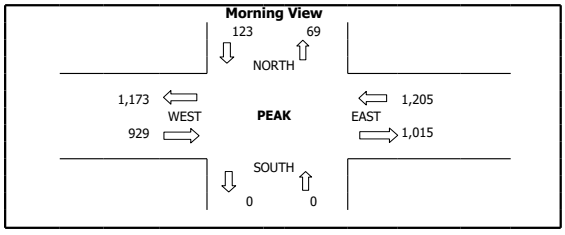
N ▲ S ▼ ◄ W E ►

☐ Add U-Turns to Left Turns

INTERSECTION TURNING MOVEMENT COUNTS

	NORTHBOUND Morning View			SOUTHBOUND Morning View			EASTBOUND Pacific Coast			WESTBOUND Pacific Coast				VEHICLE U-TURNS				
LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
1:00 PM	0	0	0	30	0	3	5	156	0	0	166	9	369	0	0	0	0	0
1:15 PM	0	0	0	19	0	4	5	152	0	0	181	23	384	0	0	1	2	3
1:30 PM	0	0	0	16	0	2	4	167	0	0	205	32	426	0	0	0	0	0
1:45 PM	0	0	0	25	0	2	15	196	0	0	229	66	533	0	0	0	0	0
2:00 PM	0	0	0	107	0	11	14	199	0	0	212	74	617	0	0	0	1	1
2:15 PM	0	0	0	101	0	8	10	174	0	0	221	31	545	0	0	0	1	1
2:30 PM	0	0	0	38	0	9	5	187	0	0	192	31	462	0	0	0	0	0
2:45 PM	0	0	0	30	0	5	4	186	0	0	241	29	495	0	0	0	0	0
3:00 PM	0	0	0	33	0	5	4	211	0	0	274	33	560	0	0	0	1	1
3:15 PM	0	0	0	29	0	10	9	206	0	0	246	29	529	0	0	2	0	2
3:30 PM	0	0	0	30	0	6	3	264	0	0	276	12	591	0	0	0	0	0
3:45 PM	0	0	0	19	0	11	3	219	0	0	281	18	551	0	0	0	0	0
4:00 PM	0	0	0	29	0	8	1	204	0	0	302	16	560	0	0	0	0	0
4:15 PM	0	0	0	17	0	3	2	233	0	0	286	14	555	0	0	0	0	0
4:30 PM	0	0	0	19	0	3	3	197	0	0	245	12	479	0	0	0	0	0
4:45 PM	0	0	0	20	0	5	3	200	0	0	256	19	503	0	0	0	0	0
5:00 PM	0	0	0	34	0	1	2	177	0	0	259	17	490	0	0	0	0	0
5:15 PM	0	0	0	42	0	7	9	206	0	0	286	22	572	0	0	0	0	0
5:30 PM	0	0	0	47	0	10	2	164	0	0	234	23	480	0	0	0	1	1
5:45 PM	0	0	0	21	0	7	2	159	0	0	243	18	450	0	0	0	2	2
VOLUMES	0	0	0	706	0	120	105	3,857	0	0	4,835	528	10,162	0	0	3	8	11
APPROACH %	0%	0%	0%	85%	0%	15%	3%	97%	0%	0%	90%	10%						
APP/DEPART	0	/	633	826	/	0	3,965	/	4,571	5,371	/	4,958	0					
BEGIN PEAK HR		3:30 PM																
VOLUMES	0	0	0	95	0	28	9	920	0	0	1,145	60	2,257					
APPROACH %	0%	0%	0%	77%	0%	23%	1%	99%	0%	0%	95%	5%						
PEAK HR FACTOR		0.000			0.628			0.870			0.947		0.955					
APP/DEPART	0	/	69	123	/	0	929	/	1,015	1,205	/	1,173	0					





PEDESTRIAN & BIKE STUDY

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 6/3/21 THURSDAY

LOCATION: Malibu
NORTH/SOUTH: Morning View
EAST/WEST: Pacific Coast

PROJECT #: SC2930
LOCATION #: 2
CONTROL: SIGNAL

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

PEDESTRIAN & BIKE STUDY

START TIME PERIOD	HOUR TOTAL	PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
1:00 PM	5	1	0	0	1	2	1	0	0	1	2	0	0	0	0	0
1:15 PM	6	1	0	0	2	3	0	0	0	2	2	1	0	0	0	1
1:30 PM	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	10	0	0	0	3	3	0	0	0	2	2	0	0	0	1	1
2:15 PM	9	0	1	0	2	3	0	0	0	2	2	0	1	0	0	1
2:30 PM	7	1	0	0	3	4	0	0	0	3	3	1	0	0	0	1
2:45 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	18	0	1	0	1	2	0	0	0	1	1	0	1	0	0	1
3:15 PM	19	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
3:30 PM	20	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
3:45 PM	10	0	1	0	5	6	0	0	0	5	5	0	1	0	0	1
4:00 PM	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	8	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2
4:30 PM	6	0	1	0	1	2	0	0	0	1	1	0	1	0	0	1
4:45 PM	10	2	0	0	2	4	2	0	0	2	4	0	0	0	0	0
5:00 PM	6	1	0	0	2	3	0	0	0	2	2	1	0	0	0	1
5:15 PM	3	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
5:30 PM	1	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		6	7	0	26	39	3	0	0	25	28	3	7	0	1	11

PEAK HOUR 3:30 PM

Morning View
NORTH LEG 6
WEST LEG 26 | 39 | 0 EAST LEG
7 SOUTH LEG

Morning View
NORTH LEG 3
WEST LEG 25 | 28 | 0 EAST LEG
0 SOUTH LEG

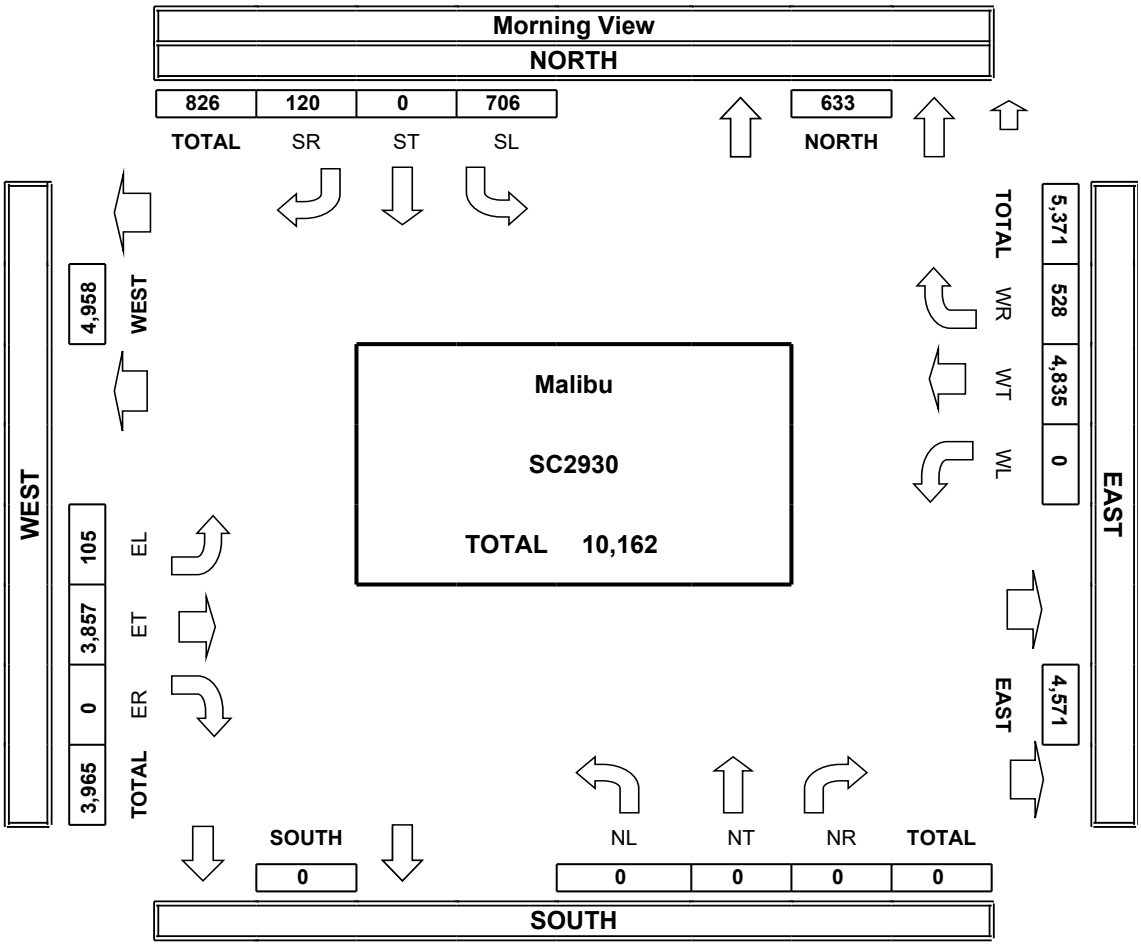
Morning View
NORTH LEG 3
WEST LEG 1 | 11 | 0 EAST LEG
7 SOUTH LEG

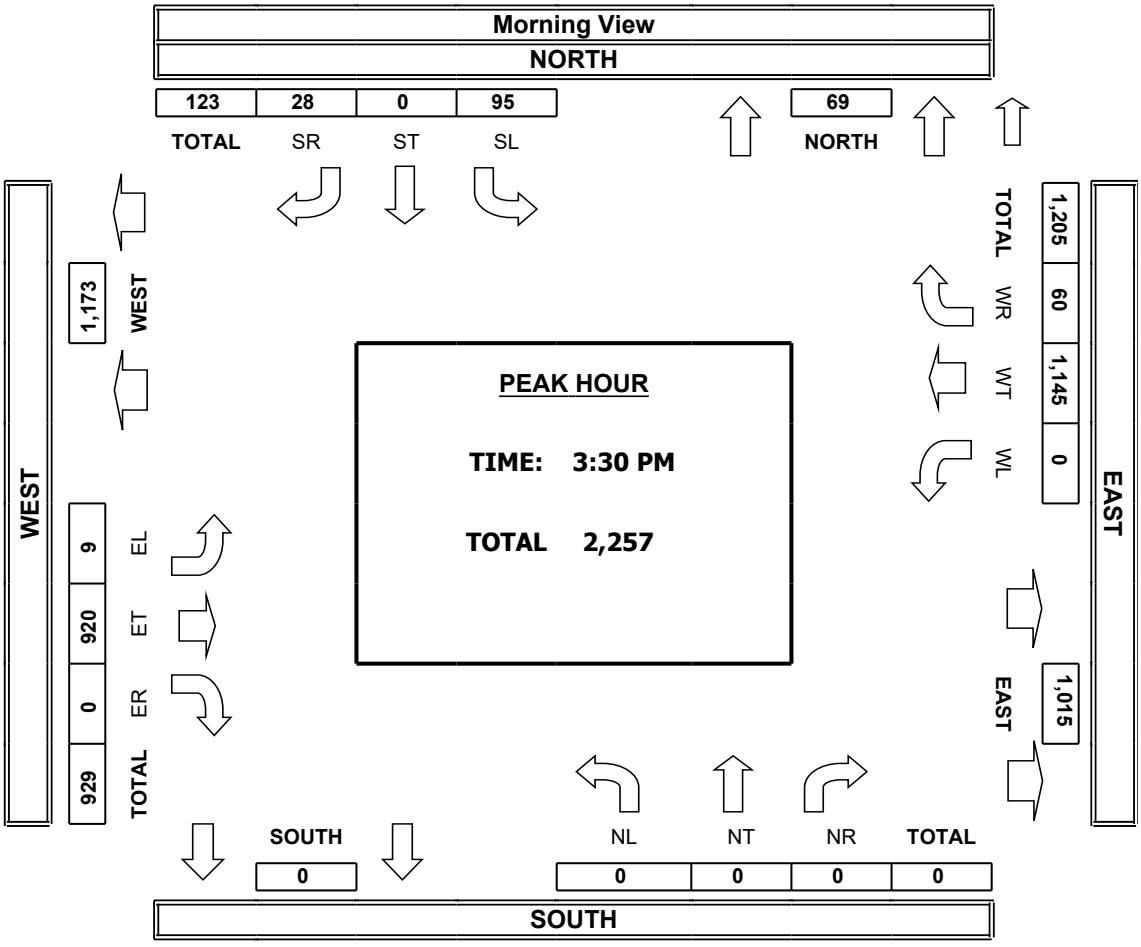
PEAK HOUR 3:30 PM

3	5	0	12	20	2	0	0	12	14	1	5	0	0	6	

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jun 3, 21

LOCATION: Malibu
NORTH & SOUTH: Morning View
EAST & WEST: Merritt

PROJECT #: SC2930
LOCATION #: 5
CONTROL: STOP E/W

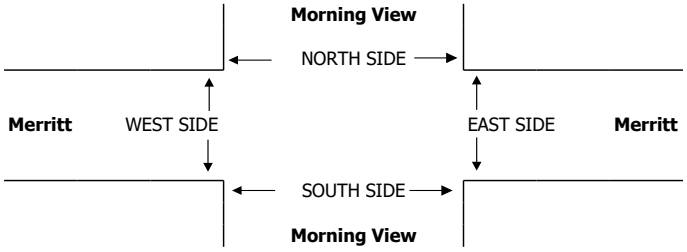
NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W E ►
S ▼

☑ Add U-Turns to Left Turns

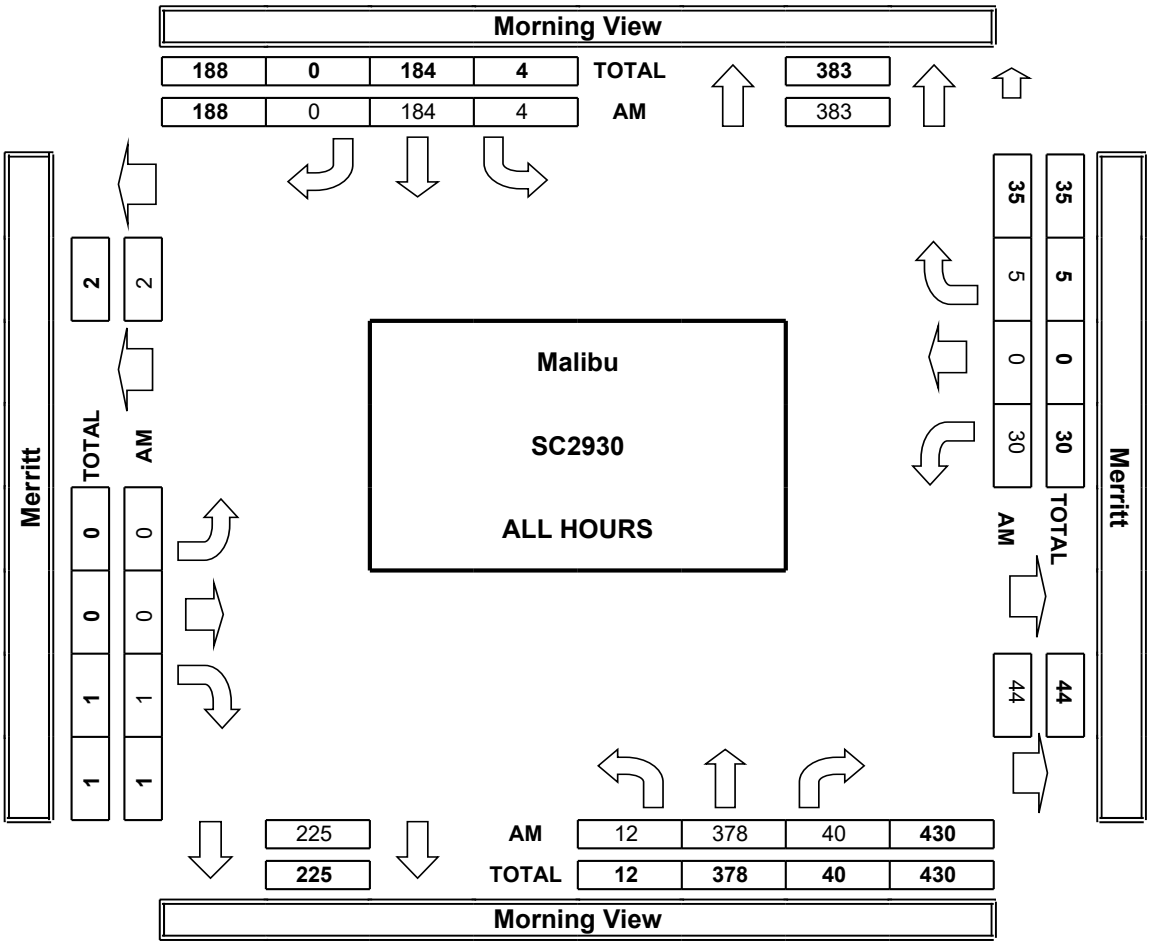
		NORTHBOUND Morning View			SOUTHBOUND Morning View			EASTBOUND Merritt			WESTBOUND Merritt				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	14	9	0	2	0	0	0	0	3	0	0	28	0	0	0	0	0
	7:15 AM	0	22	5	0	4	0	0	0	0	2	0	0	33	0	0	0	0	0
	7:30 AM	4	13	8	0	7	0	0	0	0	2	0	0	34	4	0	0	0	4
	7:45 AM	1	20	5	0	14	0	0	0	0	7	0	0	47	1	0	0	0	1
	8:00 AM	2	29	2	0	15	0	0	0	0	6	0	0	54	1	0	0	0	1
	8:15 AM	1	40	6	0	16	0	0	0	1	3	0	1	68	1	0	0	0	1
	8:30 AM	2	85	3	0	33	0	0	0	0	2	0	1	126	2	0	0	0	2
	8:45 AM	2	155	2	4	93	0	0	0	0	5	0	3	264	1	0	0	0	1
	VOLUMES	12	378	40	4	184	0	0	0	1	30	0	5	654	10	0	0	0	10
	APPROACH %	3%	88%	9%	2%	98%	0%	0%	0%	100%	86%	0%	14%						
	APP/DEPART	430	/	383	188	/	225	1	/	44	35	/	2	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	7	309	13	4	157	0	0	0	1	16	0	5	512					
	APPROACH %	2%	94%	4%	2%	98%	0%	0%	0%	100%	76%	0%	24%						
	PEAK HR FACTOR		0.517			0.415			0.250			0.656		0.485					
	APP/DEPART	329	/	314	161	/	179	1	/	17	21	/	2	0					

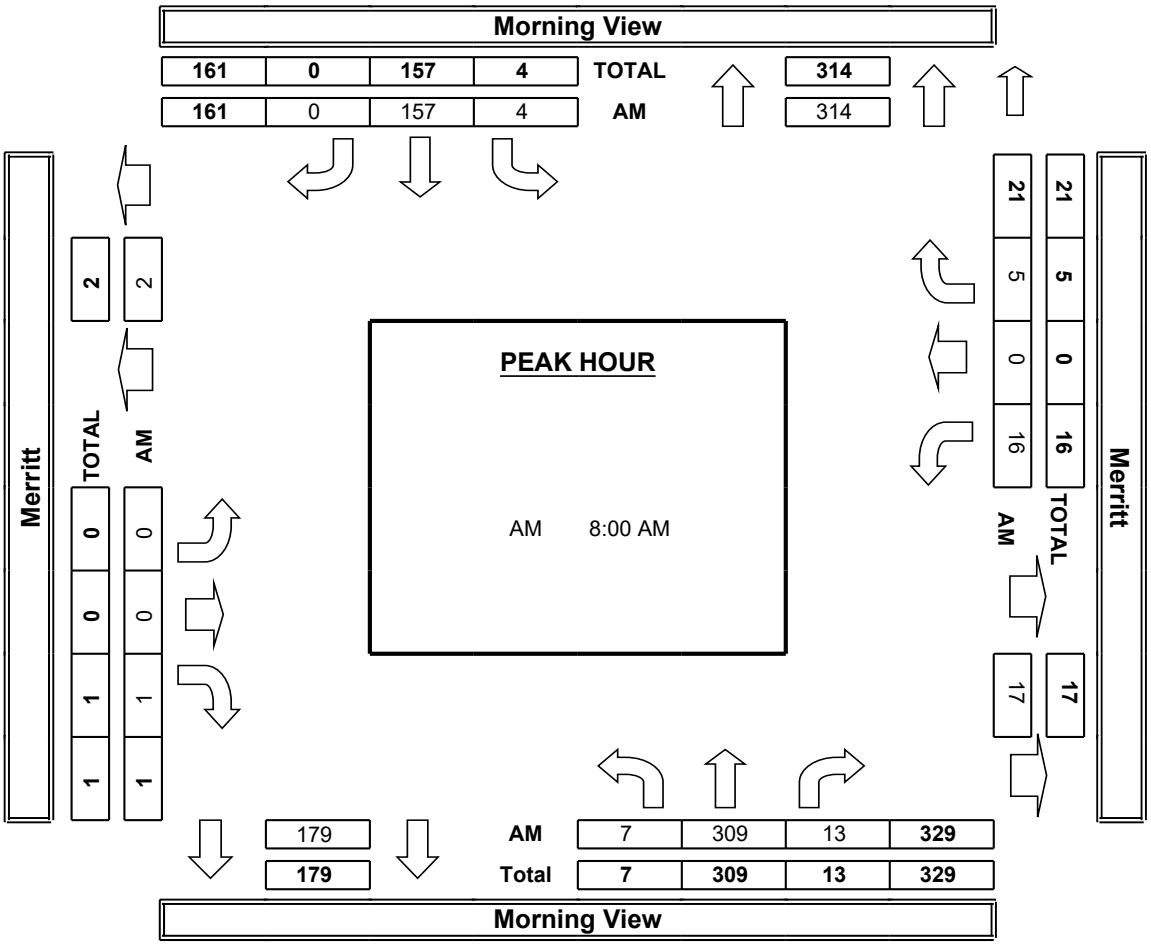


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	1	0	0	1	2	1	0	0	1	2	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	1	2	3	0	0	1	2	3	0	0	0	0	0
	8:00 AM	1	0	2	1	4	1	0	2	1	4	0	0	0	0	0
	8:15 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
	8:30 AM	0	0	1	1	2	0	0	1	1	2	0	0	0	0	0
	8:45 AM	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
	TOTAL	2	0	4	8	14	2	0	4	8	14	0	0	0	0	0
	AM BEGIN PEAK HR			8:00 AM			1	0	3	5	9					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T121

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jun 3, 21 THURSDAY

LOCATION: Malibu
NORTH & SOUTH: Morning View
EAST & WEST: Merritt

PROJECT #: SC2930
LOCATION #: 5
CONTROL: STOP E/W

NOTES:
Minor Queue SB

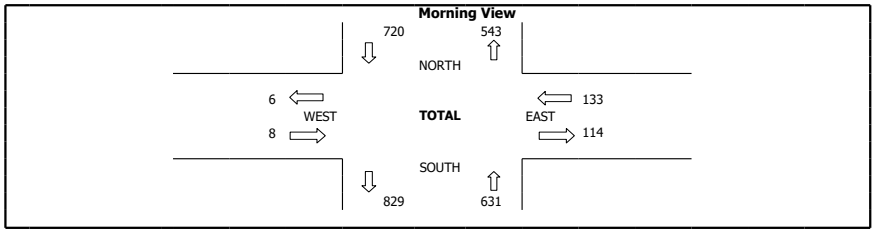
AM / PM / MD / OTHER / OTHER

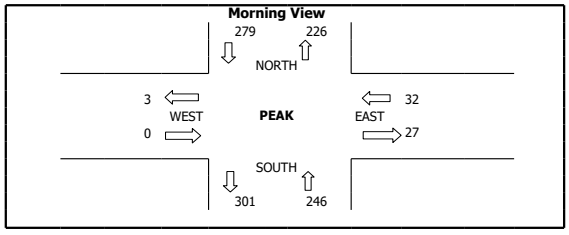
▲ N
◄ W E ►
S ▼

☑ Add U-Turns to Left Turns

INTERSECTION TURNING MOVEMENT COUNTS

	NORTHBOUND (Morning View)			SOUTHBOUND (Morning View)			EASTBOUND (Merritt)			WESTBOUND (Merritt)				VEHICLE U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0		0	0	0	0	
1:00 PM	1	7	6	0	21	0	0	0	2	9	0	1	47	1	0	0	0	1
1:15 PM	1	19	8	0	16	0	0	1	0	6	0	1	52	1	0	0	0	1
1:30 PM	3	29	4	0	15	0	0	0	0	4	0	0	55	2	0	0	0	2
1:45 PM	5	72	4	0	19	0	0	0	0	4	0	0	104	4	0	0	0	4
2:00 PM	1	84	3	7	113	0	0	0	0	5	0	3	216	0	0	0	0	0
2:15 PM	3	32	6	3	98	0	0	0	0	9	0	3	154	2	0	0	0	2
2:30 PM	1	32	3	1	38	0	0	0	0	8	0	0	83	1	0	0	0	1
2:45 PM	2	27	4	4	31	0	0	0	0	2	1	2	73	2	0	0	0	2
3:00 PM	2	26	9	1	23	0	0	0	2	12	0	1	76	1	0	0	0	1
3:15 PM	1	29	8	0	28	0	0	0	0	10	0	3	79	1	0	0	0	1
3:30 PM	1	12	2	1	31	0	0	0	0	4	0	2	53	1	0	0	0	1
3:45 PM	2	18	1	1	18	0	0	0	1	9	0	1	51	2	0	0	0	2
4:00 PM	3	12	2	1	25	0	0	0	2	7	0	0	52	3	0	0	0	3
4:15 PM	0	11	3	1	18	0	0	0	0	2	0	1	36	0	0	0	0	0
4:30 PM	1	13	1	2	20	0	0	0	0	1	0	1	39	1	0	0	0	1
4:45 PM	2	17	3	0	18	0	0	0	0	5	0	1	46	2	0	0	0	2
5:00 PM	0	17	2	2	32	0	0	0	0	3	0	1	57	0	0	0	0	0
5:15 PM	1	24	6	1	47	0	0	0	0	1	0	2	82	1	0	0	0	1
5:30 PM	0	24	1	3	55	0	0	0	0	2	0	1	86	0	0	0	0	0
5:45 PM	1	13	6	3	23	0	0	0	0	4	0	1	51	1	0	0	0	1
VOLUMES	31	518	82	31	689	0	0	1	7	107	1	25	1,492	26	0	0	0	26
APPROACH %	5%	82%	13%	4%	96%	0%	0%	13%	88%	80%	1%	19%						
APP/DEPART	631	/	543	720	/	829	8	/	114	133	/	6	0					
BEGIN PEAK HR		1:45 PM																
VOLUMES	10	220	16	11	268	0	0	0	0	26	0	6	557					
APPROACH %	4%	89%	7%	4%	96%	0%	0%	0%	0%	81%	0%	19%						
PEAK HR FACTOR		0.699			0.581			0.000			0.667		0.645					
APP/DEPART	246	/	226	279	/	301	0	/	27	32	/	3	0					





PEDESTRIAN & BIKE STUDY

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 6/3/21 THURSDAY

LOCATION: Malibu
NORTH/SOUTH: Morning View
EAST/WEST: Merritt

PROJECT #: SC2930
LOCATION #: 5
CONTROL: STOP E/W

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

PEDESTRIAN & BIKE STUDY

START TIME PERIOD	HOUR TOTAL	PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
1:00 PM	5	0	1	0	2	3	0	1	0	2	3	0	0	0	0	0
1:15 PM	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	12	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
1:45 PM	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	11	1	0	0	4	5	1	0	0	3	4	0	0	0	1	1
2:15 PM	6	0	0	0	5	5	0	0	0	5	5	0	0	0	0	0
2:30 PM	1	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
2:45 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	15	0	0	0	3	3	0	0	0	3	3	0	0	0	0	0
3:45 PM	4	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
4:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	4	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
4:30 PM	3	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
4:45 PM	10	0	0	2	0	2	0	0	2	0	2	0	0	0	0	0
5:00 PM	8	0	0	2	2	4	0	0	2	2	4	0	0	0	0	0
5:15 PM	4	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
5:30 PM	2	0	0	0	2	2	0	0	0	2	2	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		2	1	4	26	33	2	1	4	25	32	0	0	0	1	1

PEAK HOUR 1:45 PM

Morning View
NORTH LEG 2
WEST LEG 26 | 33 | 4 EAST LEG
1 SOUTH LEG

Morning View
NORTH LEG 2
WEST LEG 25 | 32 | 4 EAST LEG
1 SOUTH LEG

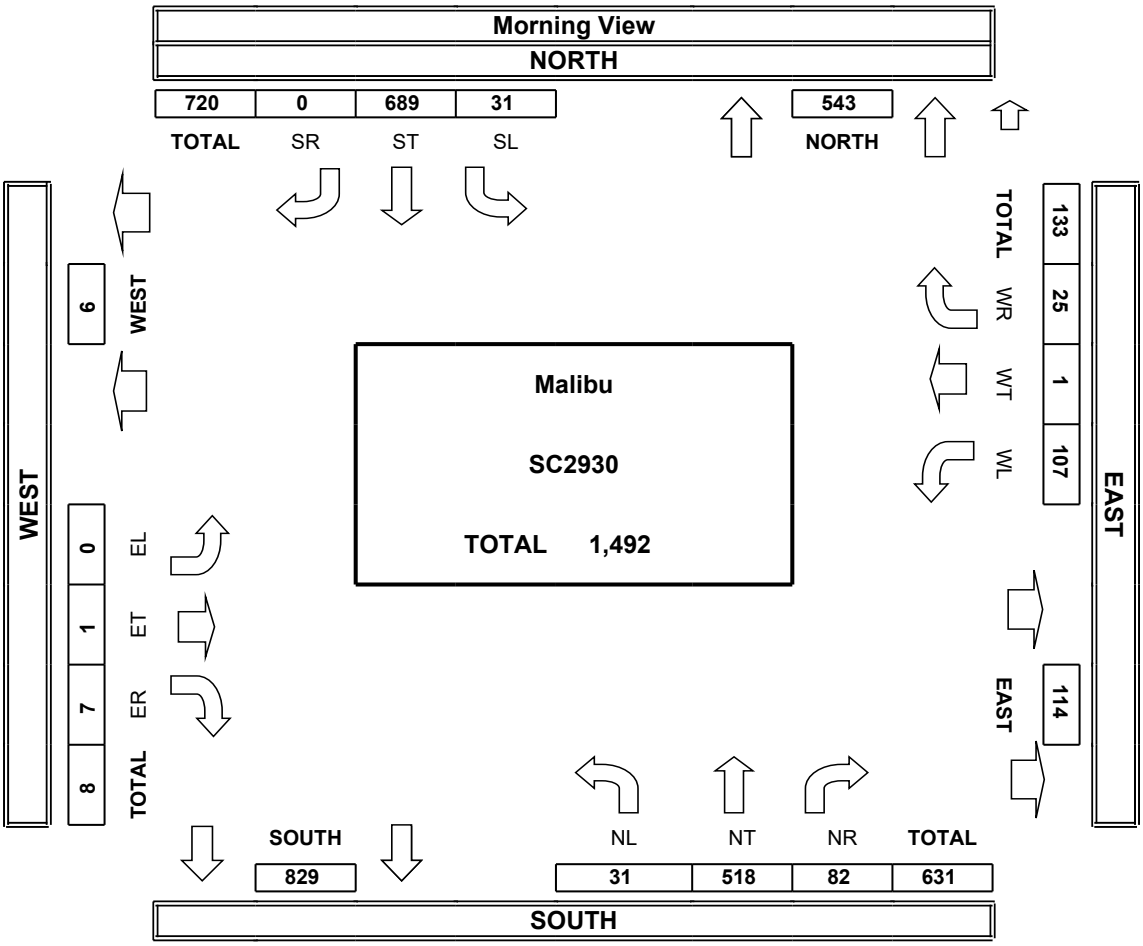
Morning View
NORTH LEG 0
WEST LEG 1 | 1 | 0 EAST LEG
0 SOUTH LEG

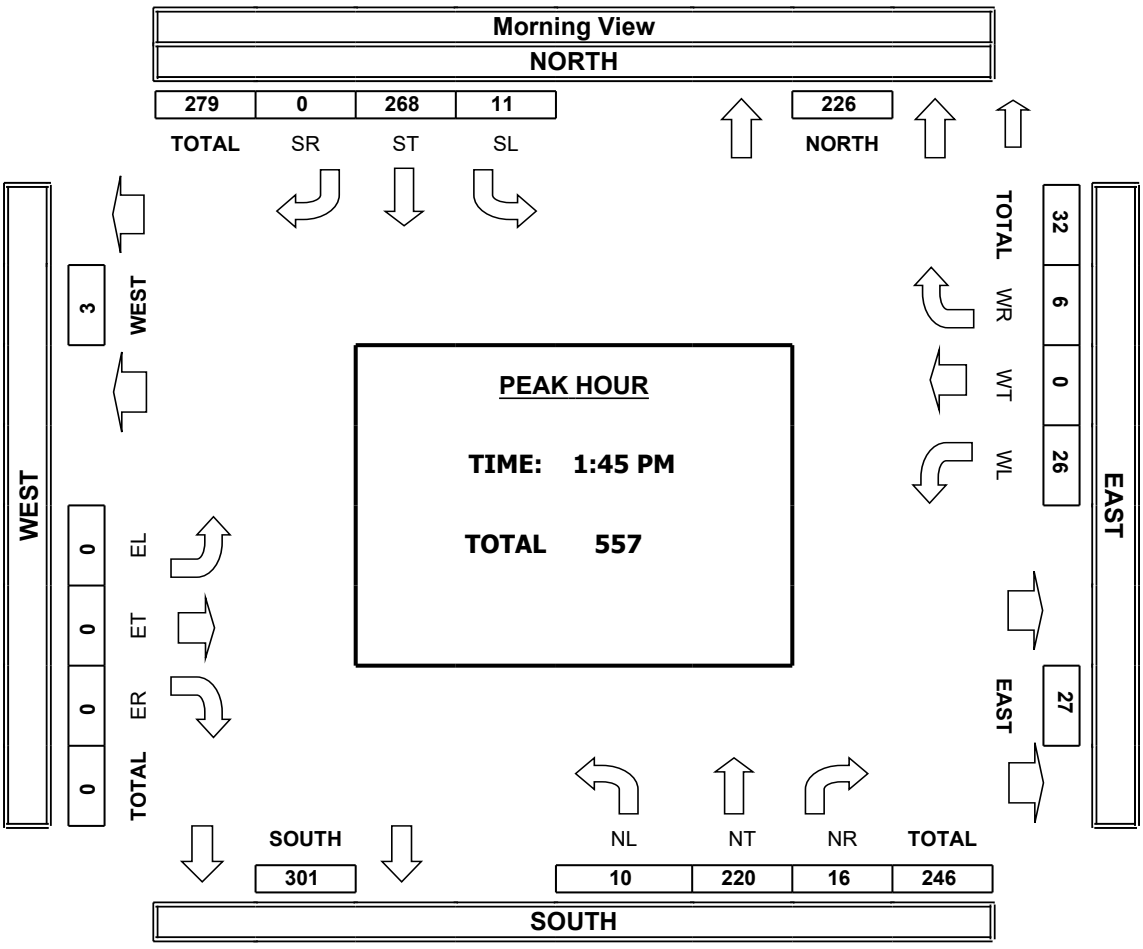
PEAK HOUR 1:45 PM

1	0	0	10	11	1	0	0	9	10	0	0	0	1	1

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

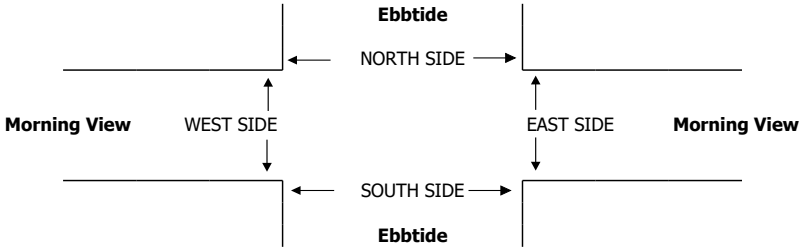
DATE:	LOCATION:	Malibu	PROJECT #:	SC2930
Thu, Jun 3, 21	NORTH & SOUTH:	Ebbtide	LOCATION #:	3
	EAST & WEST:	Morning View	CONTROL:	STOP N

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

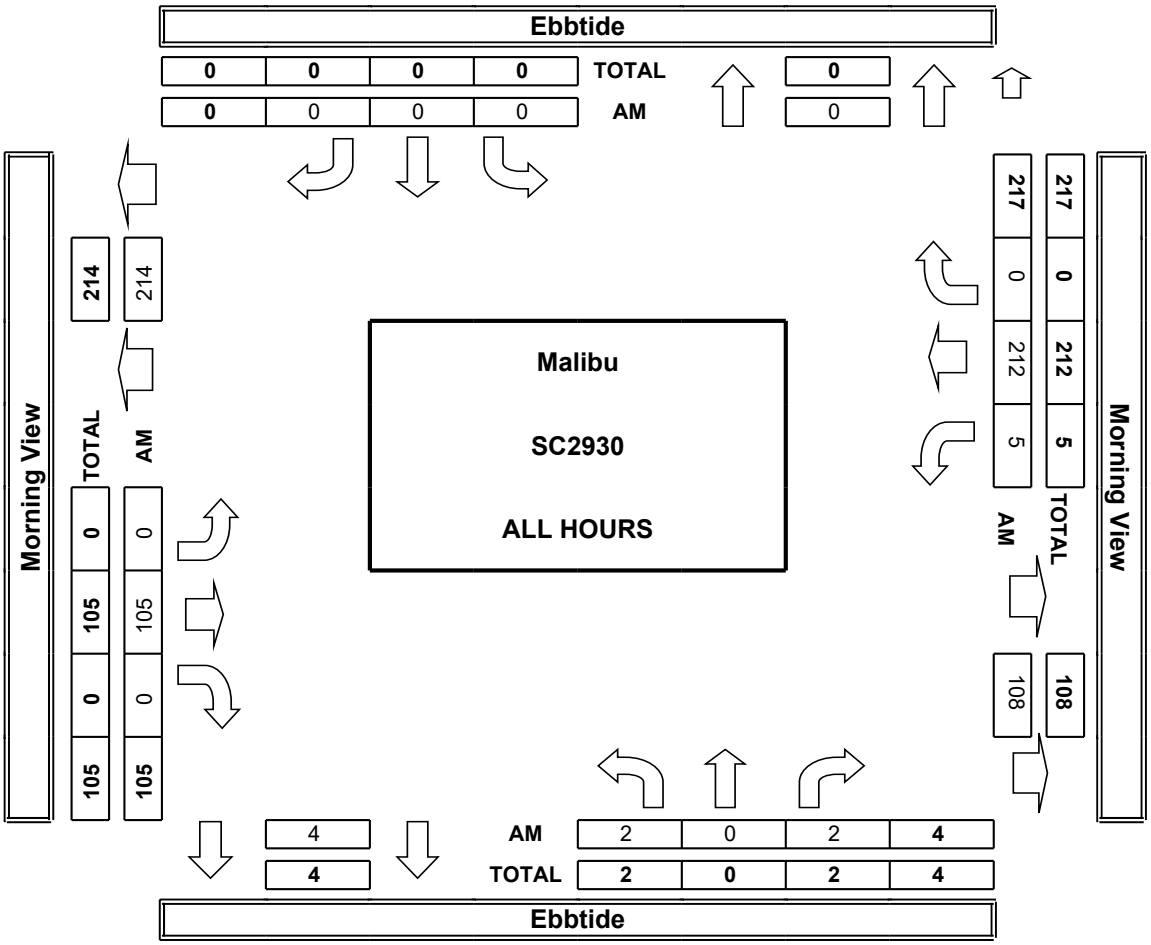
		NORTHBOUND (Ebbtide)			SOUTHBOUND (Ebbtide)			EASTBOUND (Morning View)			WESTBOUND (Morning View)				U-TURNS				
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 1	ER 0	WL 0	WT 1	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	0	0	0	0	7	0	0	11	0	18	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	4	0	0	14	0	18	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	6	0	0	10	0	16	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	10	0	2	10	0	22	0	0	0	0	0
	8:00 AM	1	0	1	0	0	0	0	17	0	1	17	0	37	0	0	0	0	0
	8:15 AM	1	0	0	0	0	0	0	6	0	1	20	0	28	0	0	0	1	1
	8:30 AM	0	0	0	0	0	0	0	13	0	0	41	0	54	0	0	0	0	0
	8:45 AM	0	0	1	0	0	0	0	42	0	1	89	0	133	0	0	0	0	0
	VOLUMES	2	0	2	0	0	0	0	105	0	5	212	0	326	0	0	0	1	1
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	100%	0%	2%	98%	0%						
	APP/DEPART	4	/	0	0	/	4	105	/	108	217	/	214	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	2	0	2	0	0	0	0	78	0	3	167	0	252					
	APPROACH %	50%	0%	50%	0%	0%	0%	0%	100%	0%	2%	98%	0%						
	PEAK HR FACTOR		0.500			0.000			0.464			0.472		0.474					
	APP/DEPART	4	/	0	0	/	2	78	/	81	170	/	169	0					

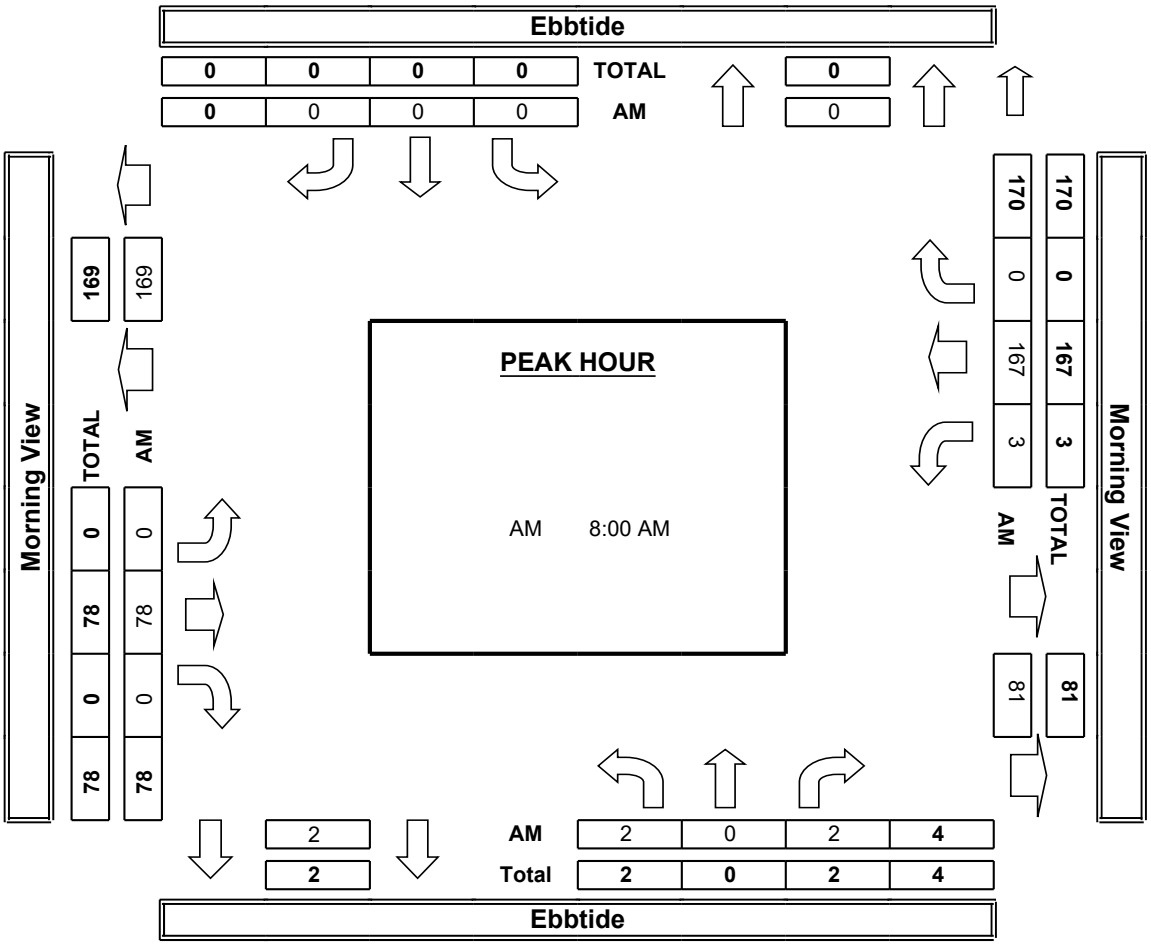


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	1	0	0	2	3	0	0	0	2	2	1	0	0	0	1
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	1	0	0	2	3	0	0	0	2	2	1	0	0	0	1
	AM BEGIN PEAK HR	8:00 AM					0	0	0	2	2					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T121

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jun 3, 21 THURSDAY

LOCATION: Malibu
NORTH & SOUTH: Ebbtide
EAST & WEST: Morning View

PROJECT #: SC2930
LOCATION #: 3
CONTROL: STOP N

NOTES:

AM PM MD OTHER OTHER — ▲ N ◄ W E ► S ▼

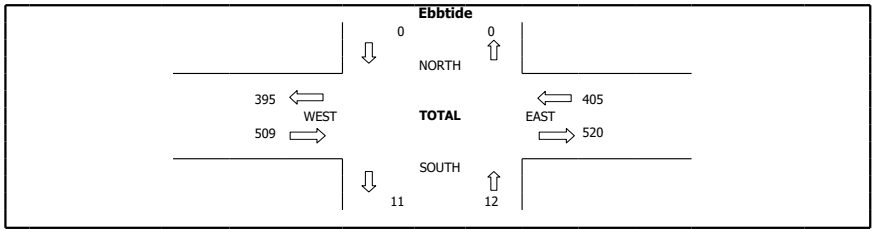
☑ Add U-Turns to Left Turns

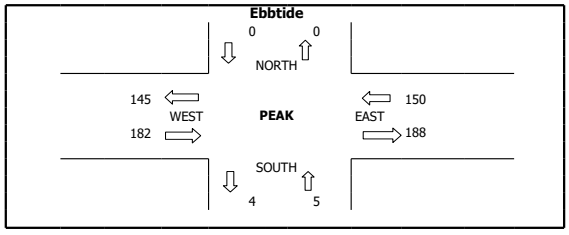
INTERSECTION TURNING MOVEMENT COUNTS

	NORTHBOUND Ebbtide			SOUTHBOUND Ebbtide			EASTBOUND Morning View			WESTBOUND Morning View			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	X	0	X	X	X	X	1	0	0	1	X	
1:00 PM	0	0	1	0	0	0	0	10	0	1	4	0	16
1:15 PM	0	0	0	0	0	0	0	10	0	1	14	0	25
1:30 PM	1	0	0	0	0	0	0	12	0	0	23	0	36
1:45 PM	0	0	0	0	0	0	0	15	0	1	22	0	38
2:00 PM	0	0	2	0	0	0	0	102	0	4	57	0	165
2:15 PM	0	0	2	0	0	0	0	36	1	0	29	0	68
2:30 PM	0	0	0	0	0	0	0	26	0	0	32	0	58
2:45 PM	0	0	1	0	0	0	0	16	1	1	27	0	46
3:00 PM	0	0	0	0	0	0	0	17	0	0	17	0	34
3:15 PM	0	0	1	0	0	0	0	17	1	0	29	0	48
3:30 PM	0	0	1	0	0	0	0	26	0	0	13	0	40
3:45 PM	0	0	0	0	0	0	0	14	0	0	17	0	31
4:00 PM	0	0	0	0	0	0	0	16	0	1	9	0	26
4:15 PM	0	0	0	0	0	0	0	16	0	1	11	0	28
4:30 PM	0	0	0	0	0	0	0	20	0	0	9	0	29
4:45 PM	0	0	0	0	0	0	0	14	0	0	13	0	27
5:00 PM	0	0	1	0	0	0	0	31	0	0	18	0	50
5:15 PM	0	0	1	0	0	0	0	53	0	1	20	0	75
5:30 PM	0	0	0	0	0	0	0	35	0	0	23	0	58
5:45 PM	0	0	1	0	0	0	0	20	0	0	7	0	28
VOLUMES	1	0	11	0	0	0	0	506	3	11	394	0	926
APPROACH %	8%	0%	92%	0%	0%	0%	0%	99%	1%	3%	97%	0%	
APP/DEPART	12	/	0	0	/	11	509	/	520	405	/	395	0
BEGIN PEAK HR		2:00 PM											
VOLUMES	0	0	5	0	0	0	0	180	2	5	145	0	337
APPROACH %	0%	0%	100%	0%	0%	0%	0%	99%	1%	3%	97%	0%	
PEAK HR FACTOR		0.625			0.000			0.446			0.615		0.511
APP/DEPART	5	/	0	0	/	4	182	/	188	150	/	145	0

VEHICLE U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	3	3
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	3	3





PEDESTRIAN & BIKE STUDY

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 6/3/21 THURSDAY

LOCATION: Malibu
NORTH/SOUTH: Ebbtide
EAST/WEST: Morning View

PROJECT #: SC2930
LOCATION #: 3
CONTROL: STOP N

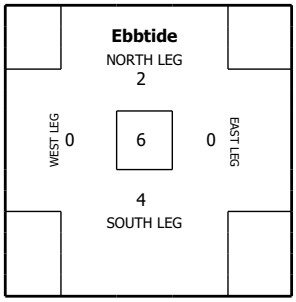
AM PM MD OTHER OTHER

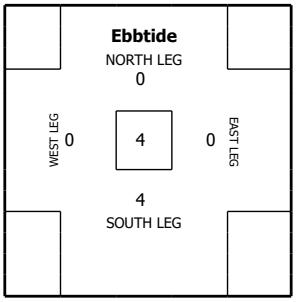
▲ N
◄ W E ►
S ▼

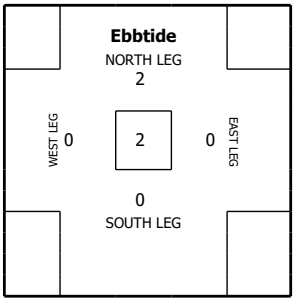
PEDESTRIAN & BIKE STUDY

START TIME PERIOD	HOUR TOTAL	PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
1:00 PM	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
1:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
4:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	2	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		2	4	0	0	6	0	4	0	0	4	2	0	0	0	2

PEAK HOUR 2:00 PM





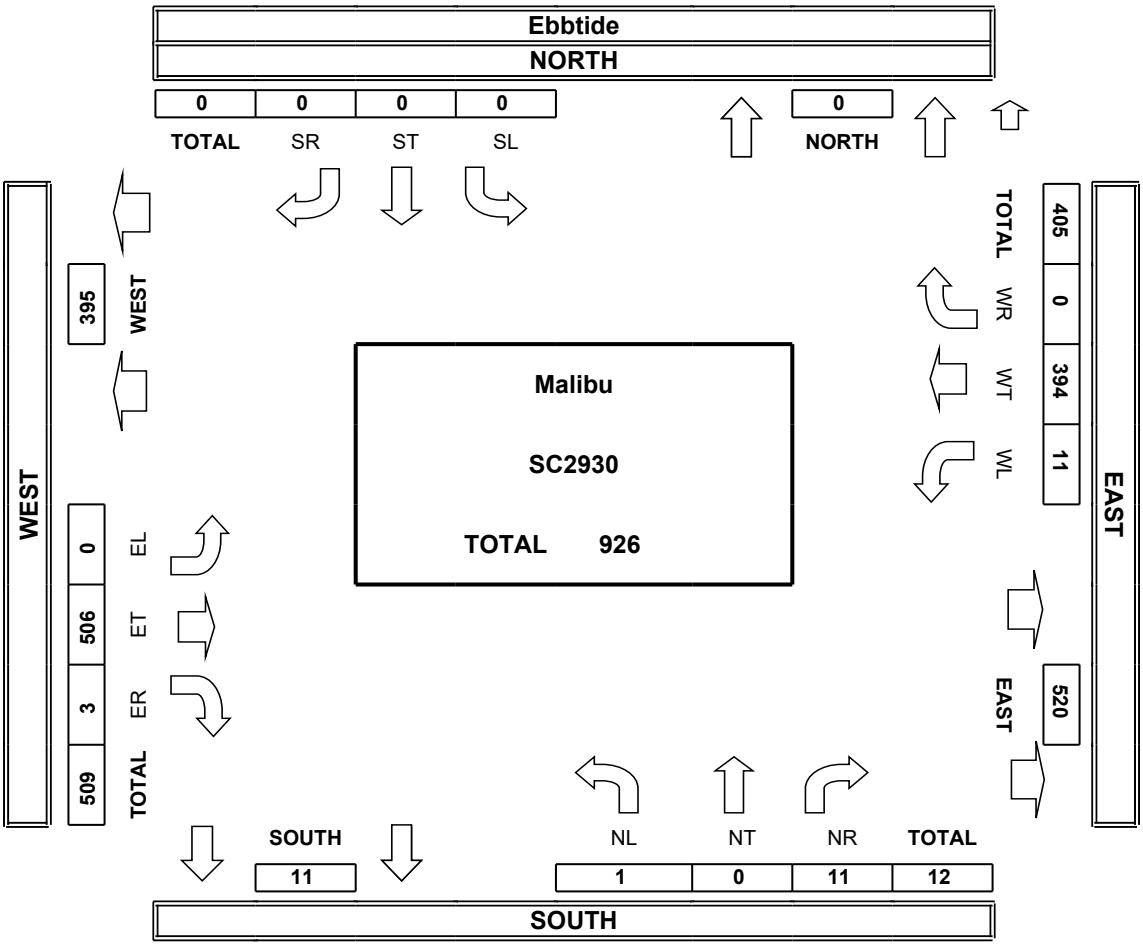


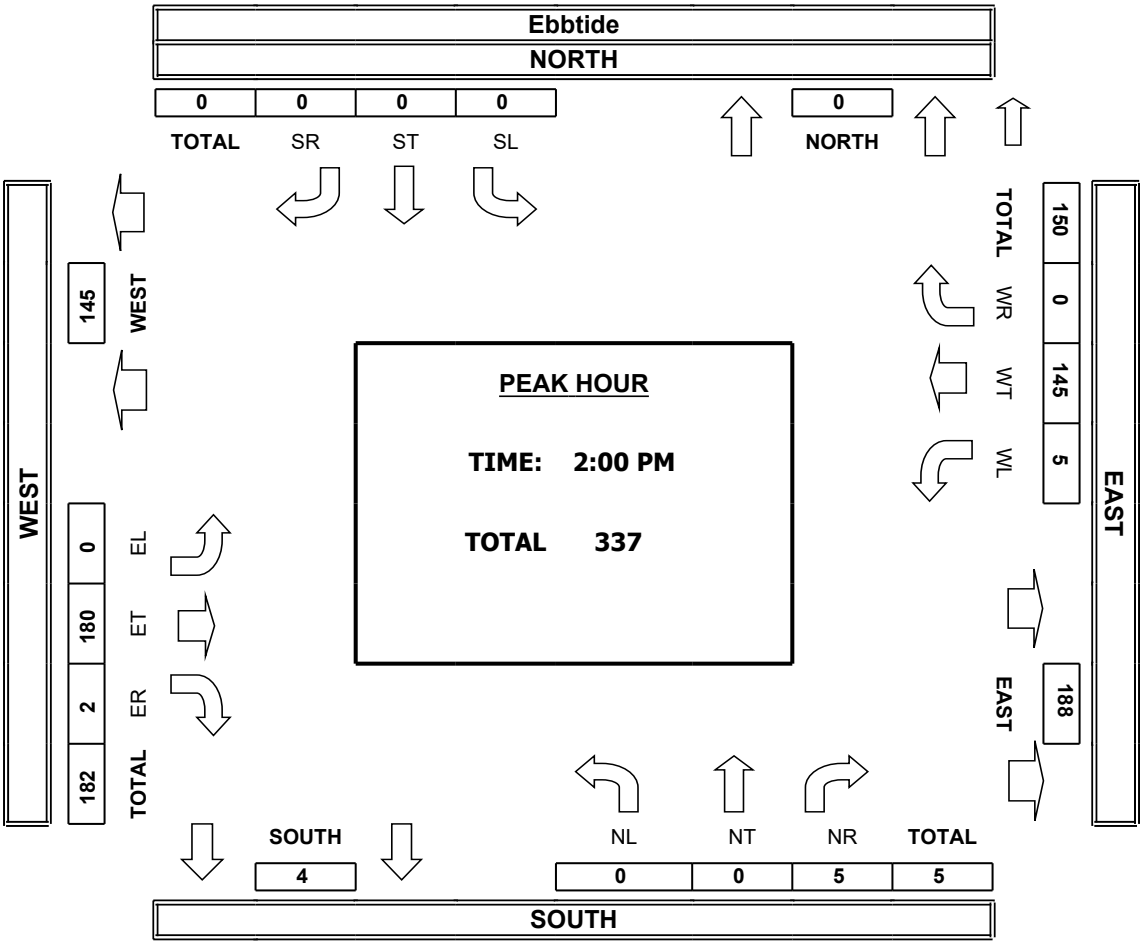
PEAK HOUR 2:00 PM

1	0	0	0	1	0	0	0	0	0	1	0	0	0	1

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

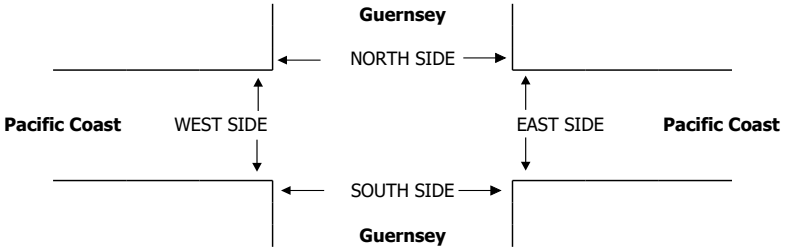
DATE:	LOCATION:	Malibu	PROJECT #:	SC2930
Thu, Jun 3, 21	NORTH & SOUTH:	Guernsey	LOCATION #:	4
	EAST & WEST:	Pacific Coast	CONTROL:	STOP S

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☐ Add U-Turns to Left Turns

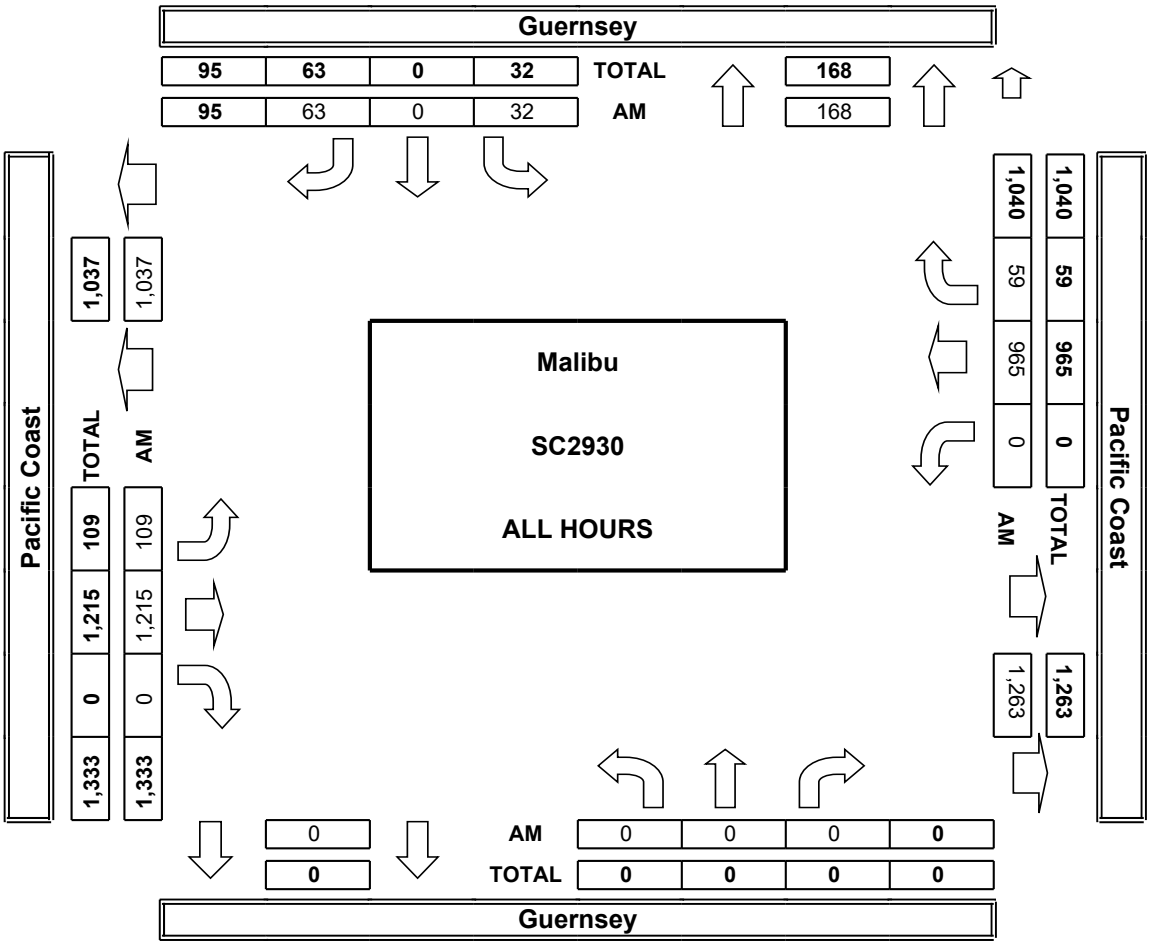
		NORTHBOUND Guernsey			SOUTHBOUND Guernsey			EASTBOUND Pacific Coast			WESTBOUND Pacific Coast				U-TURNS				
	LANES:	NL X	NT X	NR X	SL 0	ST X	SR 0	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	0	2	0	3	18	119	0	0	104	13	259	0	0	0	1	1
	7:15 AM	0	0	0	3	0	2	7	145	0	0	103	8	268	0	0	1	1	2
	7:30 AM	0	0	0	1	0	9	13	121	0	0	99	5	248	0	0	2	0	2
	7:45 AM	0	0	0	2	0	5	17	176	0	0	115	7	322	0	0	0	3	3
	8:00 AM	0	0	0	5	0	4	6	174	0	0	142	5	336	0	0	1	2	3
	8:15 AM	0	0	0	3	0	8	9	135	0	0	132	9	296	0	0	1	4	5
	8:30 AM	0	0	0	6	0	14	17	170	0	0	126	8	341	0	0	2	2	4
	8:45 AM	0	0	0	10	0	18	22	175	0	0	144	4	373	0	0	2	3	5
	VOLUMES	0	0	0	32	0	63	109	1,215	0	0	965	59	2,468	0	0	9	16	25
	APPROACH %	0%	0%	0%	34%	0%	66%	8%	91%	0%	0%	93%	6%						
	APP/DEPART	0	/	168	95	/	0	1,333	/	1,263	1,040	/	1,037	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	0	0	0	24	0	44	54	654	0	0	544	26	1,363					
	APPROACH %	0%	0%	0%	35%	0%	65%	8%	92%	0%	0%	94%	4%						
	PEAK HR FACTOR		0.000			0.607			0.897			0.962		0.901					
	APP/DEPART	0	/	80	68	/	0	714	/	689	581	/	594	0					

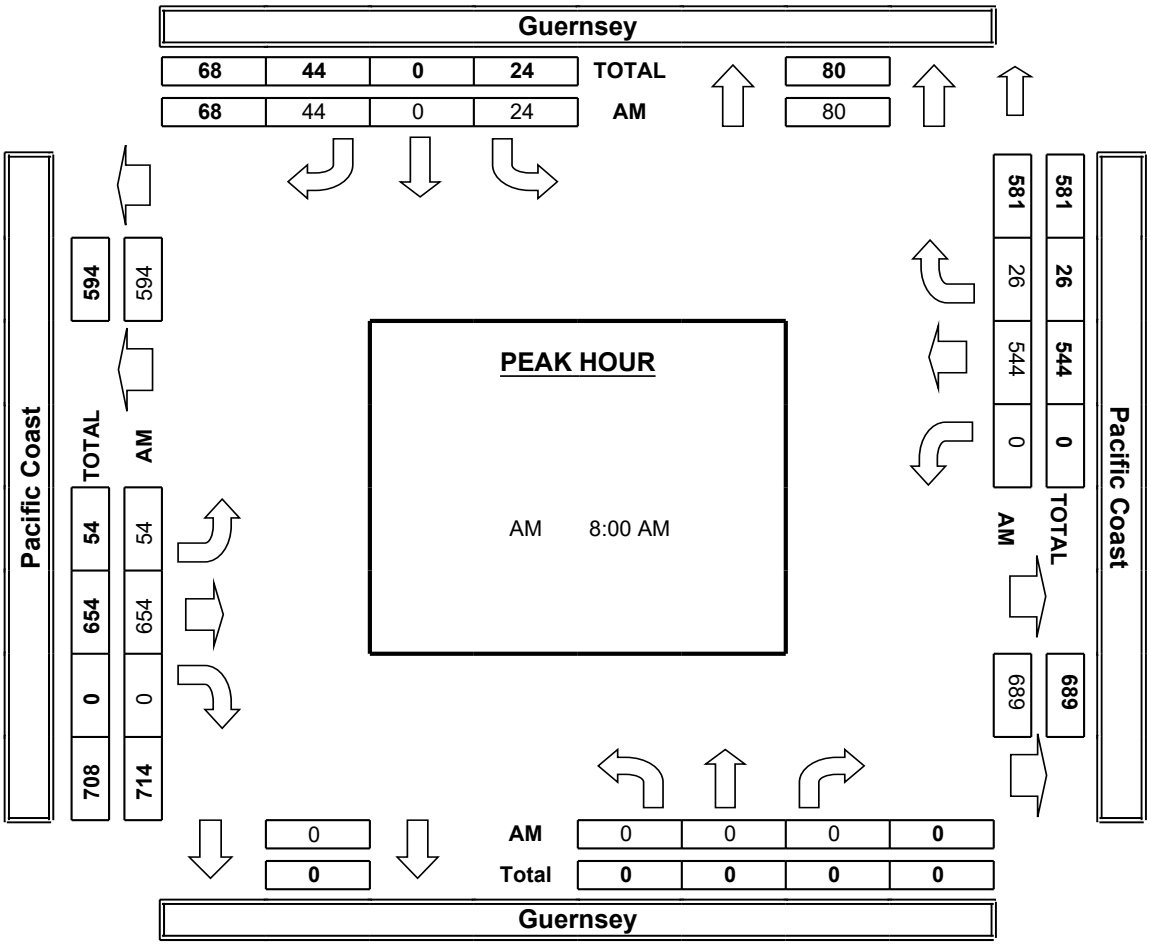


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	8:30 AM	2	0	0	0	2	0	0	0	0	0	2	0	0	0	2
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	3	0	0	0	3	1	0	0	0	1	2	0	0	0	2
	AM BEGIN PEAK HR	8:00 AM					1	0	0	0	1					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T121

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jun 3, 21 THURSDAY

LOCATION: Malibu
NORTH & SOUTH: Guernsey
EAST & WEST: Pacific Coast

PROJECT #: SC2930
LOCATION #: 4
CONTROL: STOP S

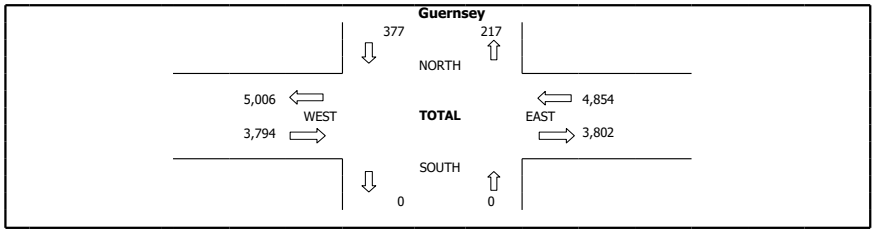
NOTES:

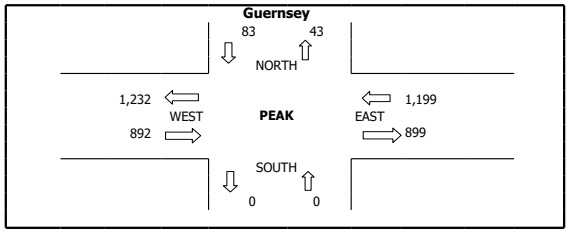
AM | PM | MD | OTHER | OTHER — ▲ N ◄ W E ► S ▼

☐ Add U-Turns to Left Turns

INTERSECTION TURNING MOVEMENT COUNTS

	NORTHBOUND (Guernsey)			SOUTHBOUND (Guernsey)			EASTBOUND (Pacific Coast)			WESTBOUND (Pacific Coast)				VEHICLE U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	X	X	X	0	X	0	1	2	X	X	2	0		0	0	0	0	
1:00 PM	0	0	0	8	0	10	9	149	0	0	155	6	337	0	0	1	7	8
1:15 PM	0	0	0	5	0	4	5	139	0	0	177	4	334	0	0	1	5	6
1:30 PM	0	0	0	2	0	14	6	174	0	0	200	3	399	0	0	3	0	3
1:45 PM	0	0	0	6	0	9	9	171	0	0	198	6	399	0	0	2	2	4
2:00 PM	0	0	0	11	0	38	8	185	0	0	202	5	449	0	0	2	4	6
2:15 PM	0	0	0	7	0	15	10	177	0	0	228	5	442	0	0	2	0	2
2:30 PM	0	0	0	3	0	13	4	175	0	0	176	5	376	0	0	3	2	5
2:45 PM	0	0	0	9	0	14	5	170	0	0	256	5	459	0	0	1	1	2
3:00 PM	0	0	0	9	0	11	10	200	0	0	235	5	470	0	0	1	3	4
3:15 PM	0	0	0	9	0	20	4	189	0	0	245	2	469	0	0	1	1	2
3:30 PM	0	0	0	10	0	15	6	225	0	0	275	5	536	0	0	3	0	3
3:45 PM	0	0	0	6	0	18	10	210	0	0	264	4	512	0	0	1	0	1
4:00 PM	0	0	0	5	0	12	6	181	0	0	298	4	506	0	0	1	1	2
4:15 PM	0	0	0	10	0	7	3	244	0	0	336	5	605	0	0	2	7	9
4:30 PM	0	0	0	5	0	7	4	183	0	0	234	3	436	0	0	2	3	5
4:45 PM	0	0	0	2	0	6	5	200	0	0	246	7	466	0	0	1	0	1
5:00 PM	0	0	0	7	0	13	3	187	0	0	245	1	456	0	0	1	1	2
5:15 PM	0	0	0	4	0	8	10	186	0	0	285	3	496	0	0	0	3	3
5:30 PM	0	0	0	1	0	11	5	153	0	0	247	3	420	0	0	0	2	2
5:45 PM	0	0	0	4	0	9	8	136	0	0	220	6	383	0	0	2	3	5
VOLUMES	0	0	0	123	0	254	130	3,634	0	0	4,722	87	9,025	0	0	30	45	75
APPROACH %	0%	0%	0%	33%	0%	67%	3%	96%	0%	0%	97%	2%						
APP/DEPART	0	/	217	377	/	0	3,794	/	3,802	4,854	/	5,006	0					
BEGIN PEAK HR		3:30 PM																
VOLUMES	0	0	0	31	0	52	25	860	0	0	1,173	18	2,174					
APPROACH %	0%	0%	0%	37%	0%	63%	3%	96%	0%	0%	98%	2%						
PEAK HR FACTOR		0.000			0.830			0.896			0.861		0.885					
APP/DEPART	0	/	43	83	/	0	892	/	899	1,199	/	1,232	0					





PEDESTRIAN & BIKE STUDY

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	Malibu	PROJECT #:	SC2930
6/3/21	NORTH/SOUTH:	Guernsey	LOCATION #:	4
THURSDAY	EAST/WEST:	Pacific Coast	CONTROL:	STOP S

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

PEDESTRIAN & BIKE STUDY

START TIME PERIOD	HOUR TOTAL	PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
1:00 PM	2	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
1:15 PM	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
1:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	4	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
2:30 PM	3	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
2:45 PM	3	0	1	0	1	2	0	0	0	0	0	0	1	0	1	2
3:00 PM	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	8	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
3:45 PM	6	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
4:00 PM	5	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
4:15 PM	4	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2
4:30 PM	2	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2
4:45 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	2	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1
5:30 PM	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		4	10	0	1	15	0	0	0	0	0	4	10	0	1	15

PEAK HOUR 3:30 PM

Guernsey

NORTH LEG	WEST LEG		EAST LEG	SOUTH LEG
4	1	15	0	10

Guernsey

NORTH LEG	WEST LEG		EAST LEG	SOUTH LEG
0	0	0	0	0

Guernsey

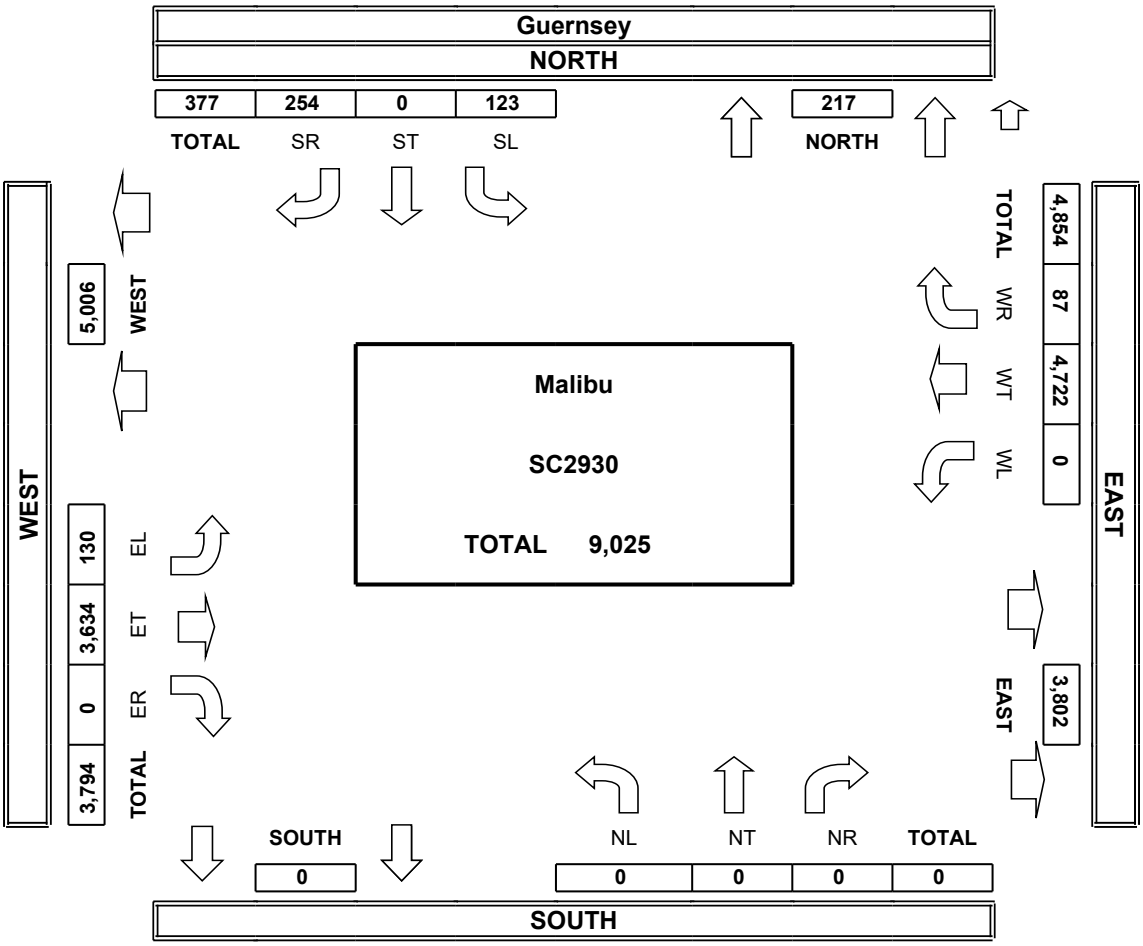
NORTH LEG	WEST LEG		EAST LEG	SOUTH LEG
4	1	15	0	10

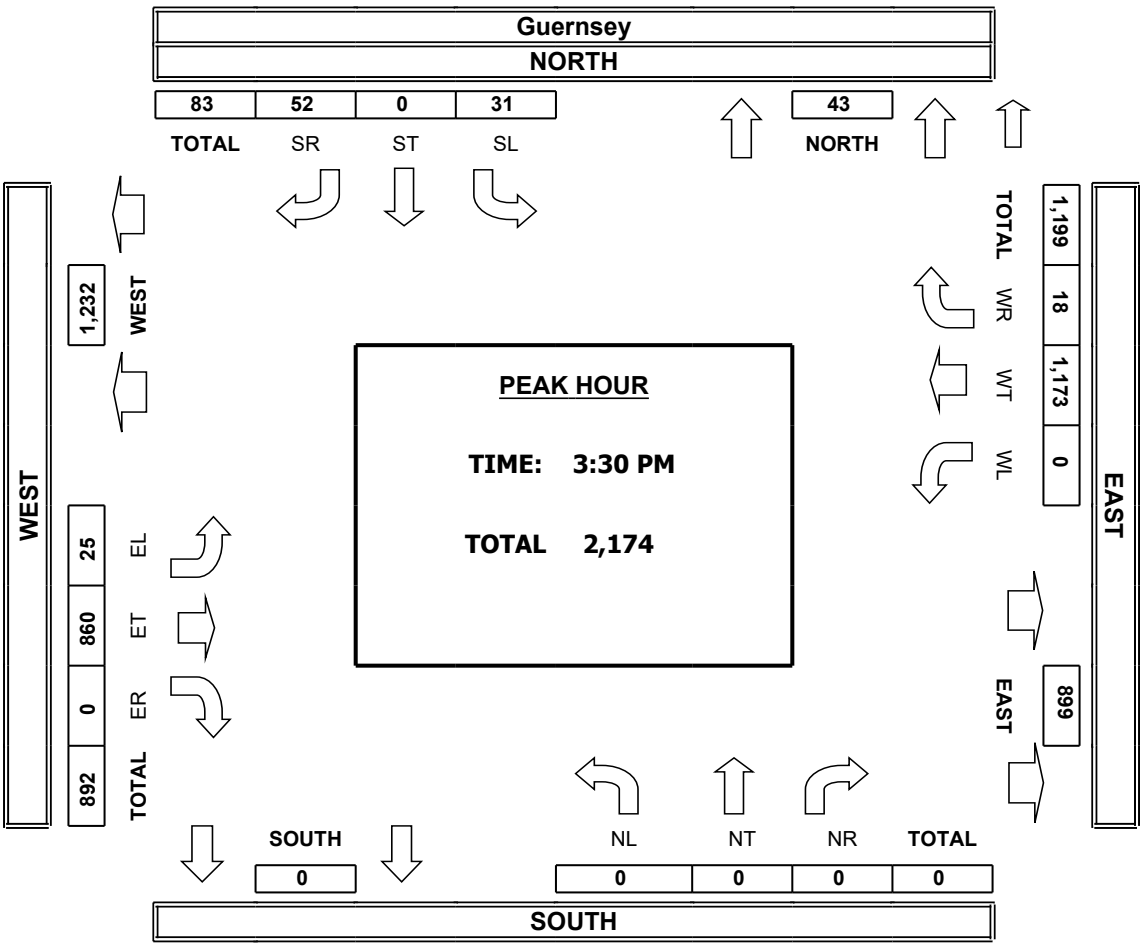
PEAK HOUR 3:30 PM

2	6	0	0	8	0	0	0	0	0	2	6	0	0	8

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jun 3, 21

LOCATION: Malibu
NORTH & SOUTH: Clover Heights
EAST & WEST: Harvester

PROJECT #: SC2930
LOCATION #: 1
CONTROL: STOP N

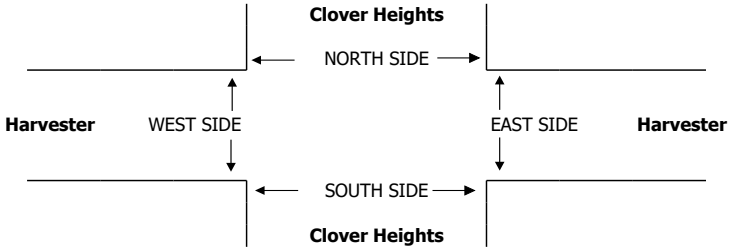
NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
E ►
S ▼

☑ Add U-Turns to Left Turns

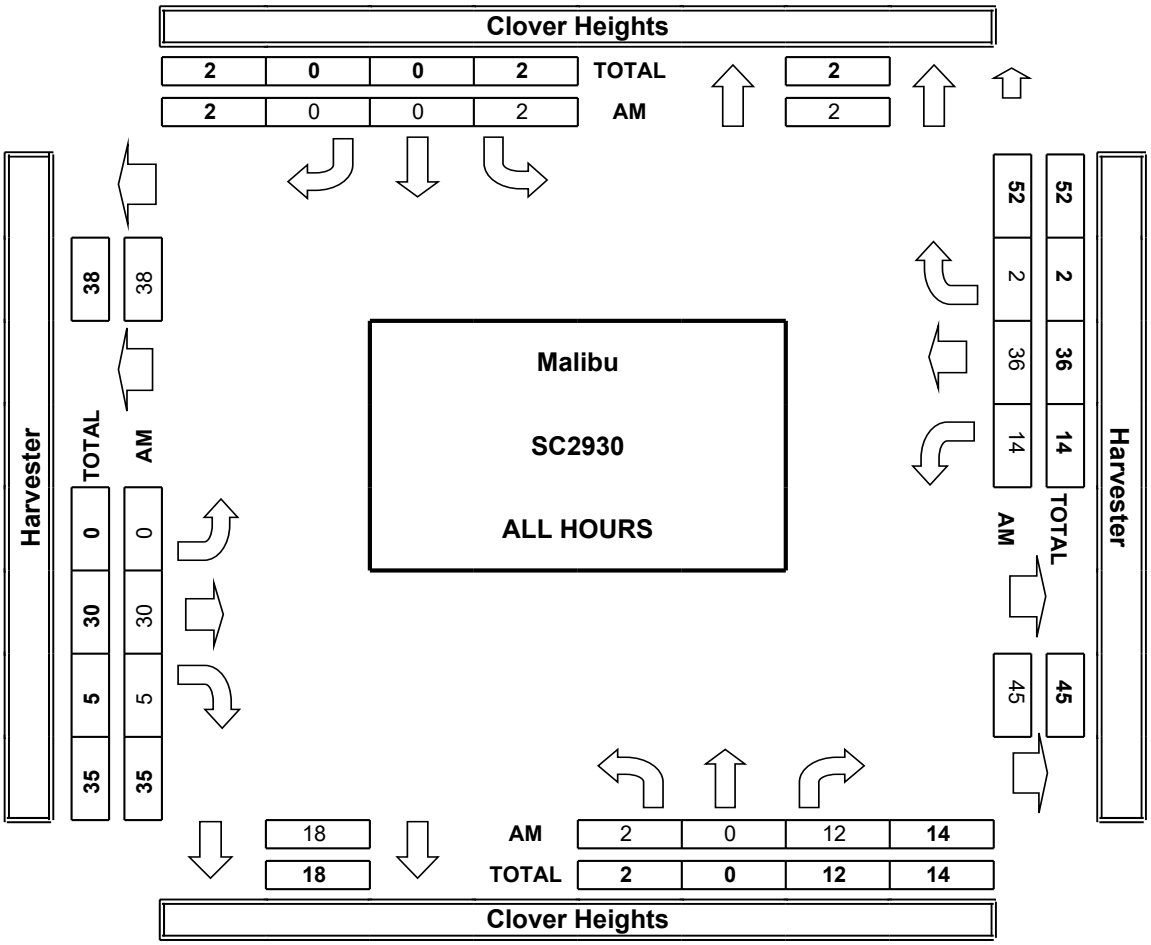
	NORTHBOUND Clover Heights			SOUTHBOUND Clover Heights			EASTBOUND Harvester			WESTBOUND Harvester				U-TURNS				
LANES:	NL 0	NT 1	NR 0	SL 0	ST 1	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
7:00 AM	0	0	0	0	0	0	0	0	1	1	6	0	8	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	3	0	0	3	1	8	0	0	0	0	0
7:30 AM	0	0	0	1	0	0	0	4	1	4	5	0	15	0	0	0	1	1
7:45 AM	1	0	0	0	0	0	0	4	1	1	3	1	11	0	0	0	0	0
8:00 AM	0	0	4	0	0	0	0	5	0	1	7	0	17	0	0	0	0	0
8:15 AM	1	0	2	1	0	0	0	5	1	1	1	0	12	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	3	0	1	5	0	10	0	0	0	0	0
8:45 AM	0	0	4	0	0	0	0	6	1	5	6	0	22	0	0	0	0	0
AM VOLUMES	2	0	12	2	0	0	0	30	5	14	36	2	103	0	0	0	1	1
APPROACH %	14%	0%	86%	100%	0%	0%	0%	86%	14%	27%	69%	4%						
APP/DEPART	14	/	2	2	/	18	35	/	45	52	/	38	0					
BEGIN PEAK HR	8:00 AM																	
VOLUMES	1	0	11	1	0	0	0	19	2	8	19	0	61					
APPROACH %	8%	0%	92%	100%	0%	0%	0%	90%	10%	30%	70%	0%						
PEAK HR FACTOR	0.750			0.250			0.750			0.614			0.693					
APP/DEPART	12	/	0	1	/	10	21	/	31	27	/	20	0					

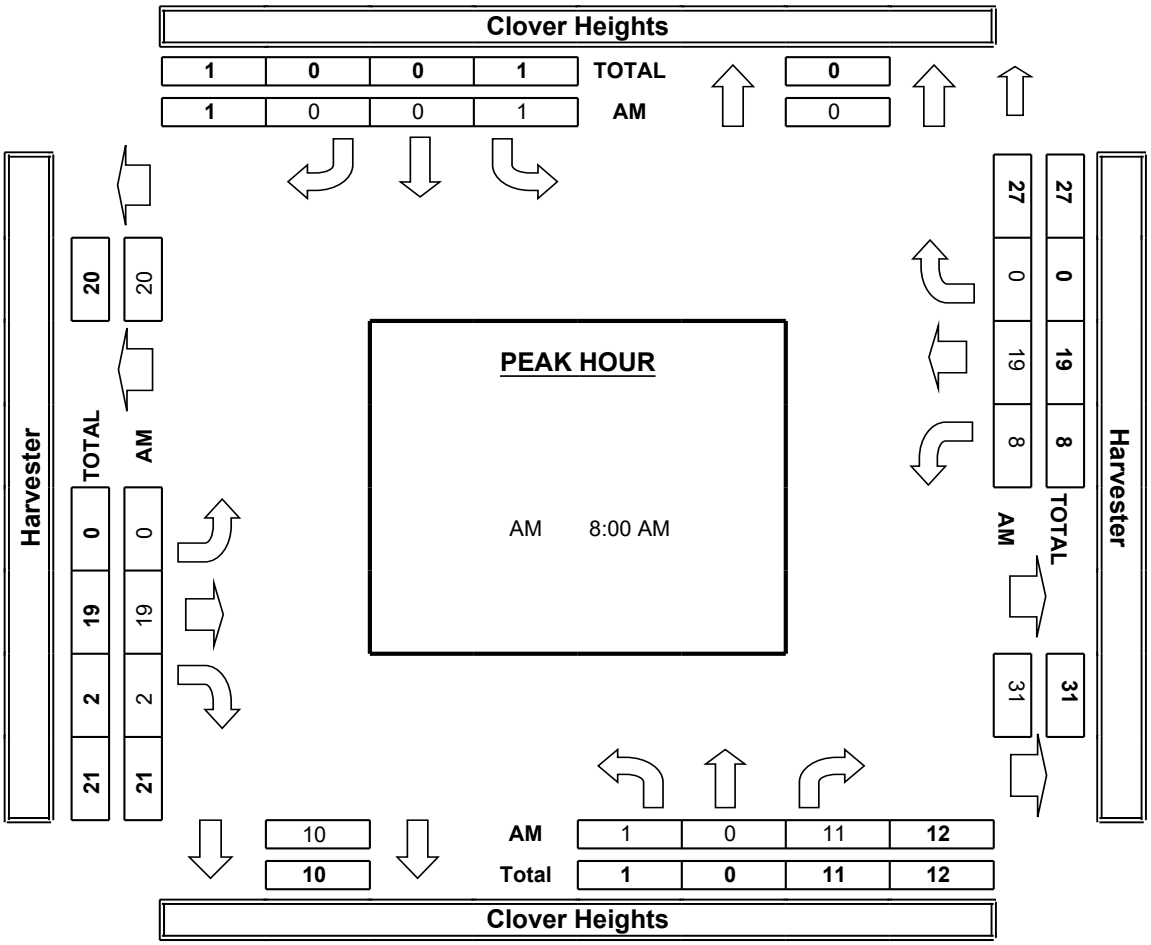


	PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
7:00 AM	0	1	1	0	2	0	1	0	0	1	0	0	1	0	1
7:15 AM	0	0	2	1	3	0	0	0	1	1	0	0	2	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
AM TOTAL	2	1	3	2	8	2	1	0	2	5	0	0	3	0	3
AM BEGIN PEAK HR	8:00 AM					2	0	0	1	3					

AimTD LLC

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

T121

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Thu, Jun 3, 21 THURSDAY

LOCATION: Malibu
NORTH & SOUTH: Clover Heights
EAST & WEST: Harvester

PROJECT #: SC2930
LOCATION #: 1
CONTROL: STOP N

NOTES:

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

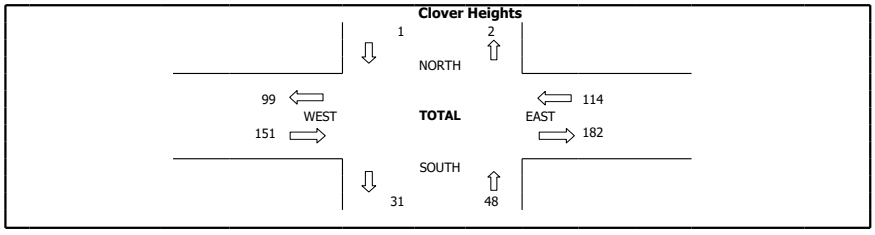
☑ Add U-Turns to Left Turns

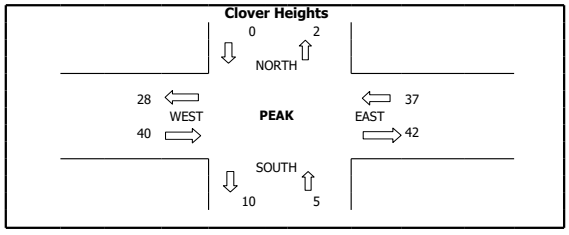
INTERSECTION TURNING MOVEMENT COUNTS

	NORTHBOUND Clover Heights			SOUTHBOUND Clover Heights			EASTBOUND Harvester			WESTBOUND Harvester			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	X	0	X	X	X	X	1	0	0	1	X	
1:00 PM	0	0	9	0	0	0	0	4	1	0	9	0	23
1:15 PM	0	0	1	0	0	0	0	7	0	2	3	0	13
1:30 PM	1	0	0	0	0	0	0	8	0	3	6	1	19
1:45 PM	0	0	2	0	0	0	0	13	1	0	7	0	23
2:00 PM	1	0	0	0	0	0	0	8	0	4	8	1	22
2:15 PM	0	0	1	0	0	0	0	10	0	1	6	0	18
2:30 PM	0	0	2	0	0	0	0	12	0	1	3	0	18
2:45 PM	0	0	0	0	0	0	0	7	0	1	4	0	12
3:00 PM	1	0	3	0	0	0	0	12	0	0	1	0	17
3:15 PM	0	0	2	1	0	0	0	10	0	2	7	0	22
3:30 PM	0	0	3	0	0	0	0	6	1	1	5	0	16
3:45 PM	1	0	4	0	0	0	0	8	1	4	5	0	23
4:00 PM	0	0	2	0	0	0	0	11	1	0	6	0	20
4:15 PM	0	0	2	0	0	0	0	7	0	1	3	0	13
4:30 PM	0	0	1	0	0	0	1	3	0	0	4	0	9
4:45 PM	2	0	1	0	0	0	0	3	0	0	3	0	9
5:00 PM	1	0	2	0	0	0	0	5	0	1	2	0	11
5:15 PM	0	0	3	0	0	0	0	1	2	0	0	0	6
5:30 PM	1	0	1	0	0	0	0	4	0	0	4	0	10
5:45 PM	1	0	0	0	0	0	1	3	0	2	3	0	10
VOLUMES	9	0	39	1	0	0	2	142	7	23	89	2	314
APPROACH %	19%	0%	81%	100%	0%	0%	1%	94%	5%	20%	78%	2%	
APP/DEPART	48	/	2	1	/	31	151	/	182	114	/	99	0
BEGIN PEAK HR	1:30 PM												
VOLUMES	2	0	3	0	0	0	0	39	1	8	27	2	82
APPROACH %	40%	0%	60%	0%	0%	0%	0%	98%	3%	22%	73%	5%	
PEAK HR FACTOR		0.625			0.000			0.714			0.712		0.891
APP/DEPART	5	/	2	0	/	10	40	/	42	37	/	28	0

VEHICLE U-TURNS

NB	SB	EB	WB	TTL
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
1	0	0	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	1	0	1
1	0	2	0	3





PEDESTRIAN & BIKE STUDY

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: 6/3/21 THURSDAY	LOCATION: Malibu	PROJECT #: SC2930	AM / PM / MD / OTHER / OTHER
	NORTH/SOUTH: Clover Heights	LOCATION #: 1	◄ W / N / S / E ►
	EAST/WEST: Harvester	CONTROL: STOP N	

START TIME PERIOD	HOUR TOTAL	PEDESTRIAN + BIKE CROSSINGS N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	PEDESTRIAN CROSSINGS N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	BICYCLE CROSSINGS N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
1:00 PM	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
1:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	2	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
2:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	3	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
3:00 PM	9	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
3:15 PM	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	8	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0
3:45 PM	3	0	0	2	0	2	0	0	1	0	1	0	0	1	0	1
4:00 PM	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	5	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
4:30 PM	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	5	1	0	0	3	4	0	0	0	2	2	1	0	0	1	2
5:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	2	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
5:45 PM	1	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
TOTAL		3	4	2	5	14	2	2	1	4	9	1	2	1	1	5

PEAK HOUR 1:30 PM

Clover Heights
NORTH LEG 3
WEST LEG 5 | 14 | 2 EAST LEG
4 SOUTH LEG

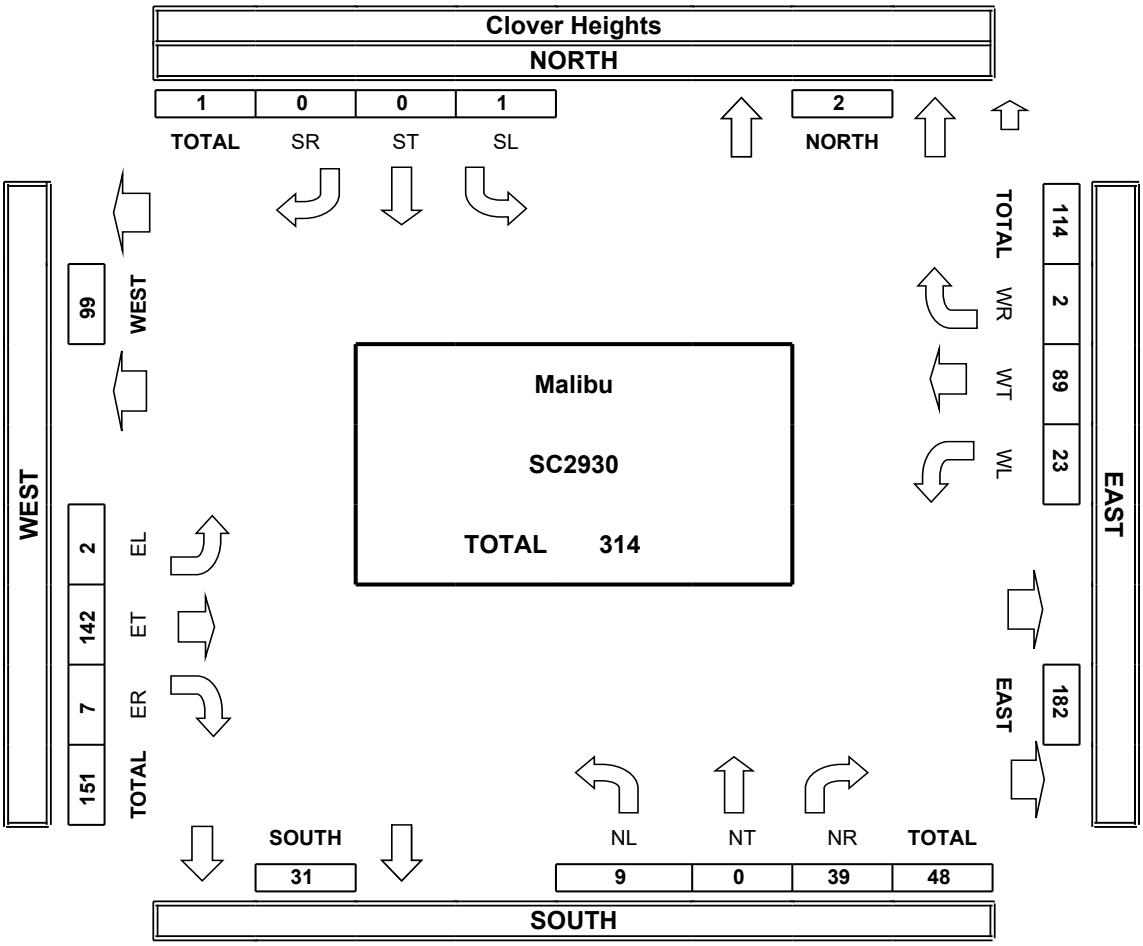
Clover Heights
NORTH LEG 2
WEST LEG 4 | 9 | 1 EAST LEG
2 SOUTH LEG

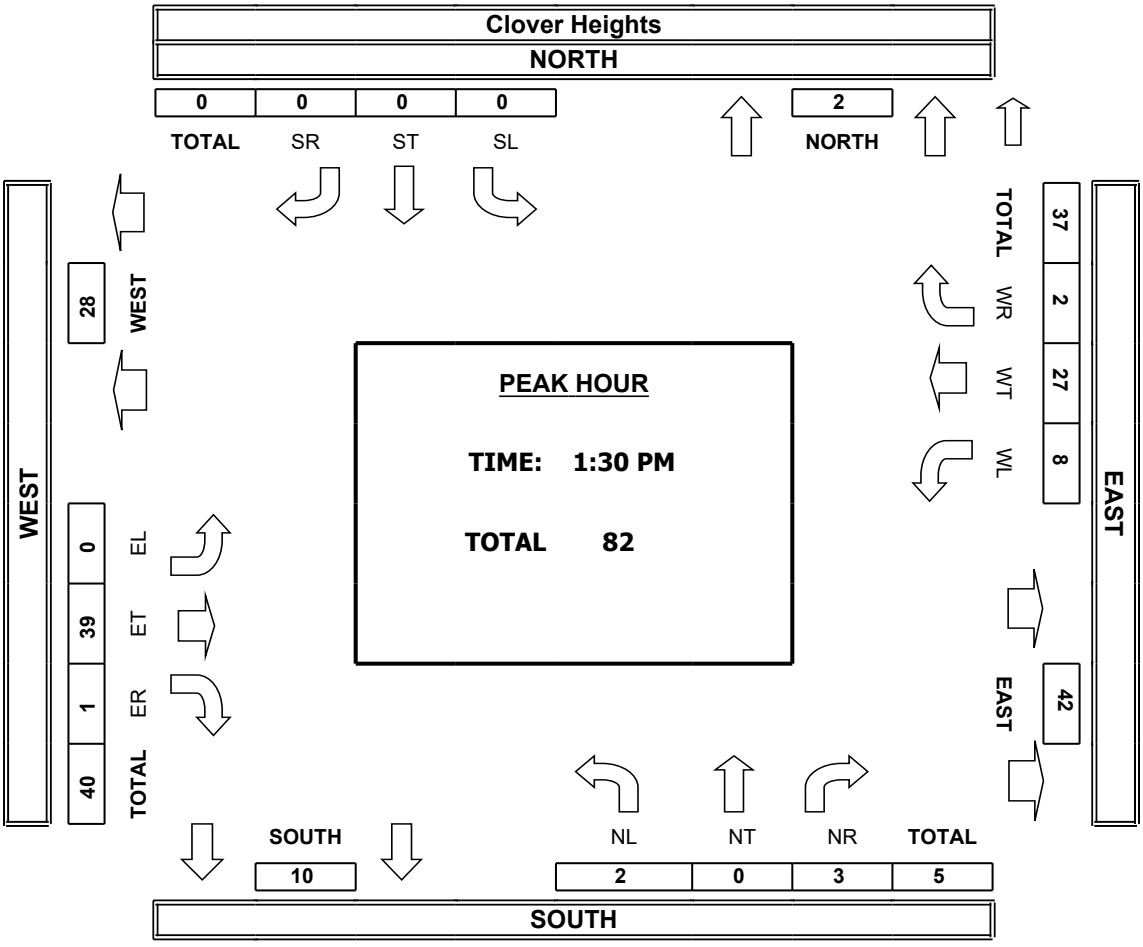
Clover Heights
NORTH LEG 1
WEST LEG 1 | 5 | 1 EAST LEG
2 SOUTH LEG

PEAK HOUR 1:30 PM															
	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0

AimTD LLC

TURNING MOVEMENT COUNTS





Appendix D:Year 2021 Baseline LOS and Queuing Worksheets

1: PCH & Morning View Drive

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	403	67	764	749	128	833
v/c Ratio	0.81	0.14	0.71	0.77	1.02	0.54
Control Delay	33.7	5.1	22.4	8.6	123.4	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	5.1	22.4	8.6	123.4	12.8
Queue Length 50th (ft)	135	0	132	0	~55	110
Queue Length 95th (ft)	176	15	155	18	#120	130
Internal Link Dist (ft)	64		507			721
Turn Bay Length (ft)	370	370		130	115	
Base Capacity (vph)	596	575	1078	968	125	1539
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.12	0.71	0.77	1.02	0.54

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	302	50	573	562	96	625
Future Volume (veh/h)	302	50	573	562	96	625
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	2059	2059	1796	1796	1796	1796
Adj Flow Rate, veh/h	403	67	764	749	128	833
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	490	436	1310	584	153	1870
Arrive On Green	0.25	0.25	0.38	0.38	0.09	0.55
Sat Flow, veh/h	1961	1745	3501	1522	1710	3501
Grp Volume(v), veh/h	403	67	764	749	128	833
Grp Sat Flow(s),veh/h/ln	1961	1745	1706	1522	1710	1706
Q Serve(g_s), s	10.9	1.7	10.0	21.5	4.1	8.2
Cycle Q Clear(g_c), s	10.9	1.7	10.0	21.5	4.1	8.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	490	436	1310	584	153	1870
V/C Ratio(X)	0.82	0.15	0.58	1.28	0.84	0.45
Avail Cap(c_a), veh/h	806	717	1310	584	153	1870
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	16.4	13.7	17.3	25.1	7.6
Incr Delay (d2), s/veh	3.5	0.2	1.9	139.7	30.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.6	3.2	28.2	2.7	2.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.3	16.5	15.6	156.9	55.4	8.3
LnGrp LOS	C	B	B	F	E	A
Approach Vol, veh/h	470		1513			961
Approach Delay, s/veh	22.4		85.6			14.6
Approach LOS	C		F			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.2	27.7		19.1		36.9
Change Period (Y+Rc), s	* 4.2	6.2		5.1		6.2
Max Green Setting (Gmax), s	* 5	21.5		23.0		30.7
Max Q Clear Time (g_c+I1), s	6.1	23.5		12.9		10.2
Green Ext Time (p_c), s	0.0	0.0		1.2		12.6

Intersection Summary	
HCM 6th Ctrl Delay	52.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	618	13	8	314	0	16	0	10	0	0	1
Future Vol, veh/h	7	618	13	8	314	0	16	0	10	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	824	17	11	419	0	21	0	13	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	419	0	0	841	0	0	1293	1292	833	1298	1300	419
Stage 1	-	-	-	-	-	-	851	851	-	441	441	-
Stage 2	-	-	-	-	-	-	442	441	-	857	859	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1140	-	-	794	-	-	140	163	369	139	161	634
Stage 1	-	-	-	-	-	-	355	376	-	595	577	-
Stage 2	-	-	-	-	-	-	594	577	-	352	373	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1140	-	-	794	-	-	136	158	369	131	156	634
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	158	-	131	156	-
Stage 1	-	-	-	-	-	-	350	370	-	586	567	-
Stage 2	-	-	-	-	-	-	582	567	-	334	367	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	29.7	10.7
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	180	1140	-	-	794	-	-	634
HCM Lane V/C Ratio	0.193	0.008	-	-	0.013	-	-	0.002
HCM Control Delay (s)	29.7	8.2	0	-	9.6	0	-	10.7
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	156	0	3	334	4	4
Future Vol, veh/h	156	0	3	334	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	208	0	4	445	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	208	0	661	208
Stage 1	-	-	-	-	208	-
Stage 2	-	-	-	-	453	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1363	-	427	832
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	640	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1363	-	425	832
Mov Cap-2 Maneuver	-	-	-	-	425	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	637	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	563	-	-	1363	-
HCM Lane V/C Ratio	0.019	-	-	0.003	-
HCM Control Delay (s)	11.5	-	-	7.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	7.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	88	544	52	108	654
Future Vol, veh/h	48	88	544	52	108	654
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	117	725	69	144	872

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1484	397	0	0	794	0
Stage 1	760	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	116	602	-	-	823	-
Stage 1	422	-	-	-	-	-
Stage 2	441	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	96	602	-	-	823	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	422	-	-	-	-	-
Stage 2	364	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	78.6	0	1.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	210	823	-
HCM Lane V/C Ratio	-	-	0.863	0.175	-
HCM Control Delay (s)	-	-	78.6	10.3	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	6.6	0.6	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	2	8	19	1	11
Future Vol, veh/h	19	2	8	19	1	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	3	11	25	1	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	74	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	47	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1585	-	930	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	923	1048
Mov Cap-2 Maneuver	-	-	-	-	923	-
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1036	-	-	1585	-
HCM Lane V/C Ratio	0.015	-	-	0.007	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	736	88	1155	440	88	995
v/c Ratio	1.29	0.16	1.07	0.61	0.73	0.70
Control Delay	168.1	4.7	73.7	7.9	67.1	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	168.1	4.7	73.7	7.9	67.1	16.8
Queue Length 50th (ft)	~386	0	~288	19	35	152
Queue Length 95th (ft)	#441	17	#299	45	#79	162
Internal Link Dist (ft)	64		516			868
Turn Bay Length (ft)	370	370		130	115	
Base Capacity (vph)	569	566	1077	722	120	1470
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.29	0.16	1.07	0.61	0.73	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	552	66	866	330	66	746
Future Volume (veh/h)	552	66	866	330	66	746
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	2059	2059	1796	1796	1796	1796
Adj Flow Rate, veh/h	736	88	1155	440	88	995
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	703	626	1143	510	111	1588
Arrive On Green	0.36	0.36	0.34	0.34	0.06	0.47
Sat Flow, veh/h	1961	1745	3501	1522	1710	3501
Grp Volume(v), veh/h	736	88	1155	440	88	995
Grp Sat Flow(s),veh/h/ln	1961	1745	1706	1522	1710	1706
Q Serve(g_s), s	23.0	2.2	21.5	17.4	3.3	14.1
Cycle Q Clear(g_c), s	23.0	2.2	21.5	17.4	3.3	14.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	703	626	1143	510	111	1588
V/C Ratio(X)	1.05	0.14	1.01	0.86	0.79	0.63
Avail Cap(c_a), veh/h	703	626	1143	510	133	1632
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	13.9	21.3	20.0	29.6	12.9
Incr Delay (d2), s/veh	46.8	0.1	29.2	17.3	19.4	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.5	0.8	11.6	7.4	1.8	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.4	14.0	50.5	37.3	49.0	14.8
LnGrp LOS	F	B	F	D	D	B
Approach Vol, veh/h	824		1595			1083
Approach Delay, s/veh	61.7		46.9			17.6
Approach LOS	E		D			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.4	27.7		28.1		36.1
Change Period (Y+Rc), s	* 4.2	6.2		5.1		6.2
Max Green Setting (Gmax), s	* 5	21.5		23.0		30.7
Max Q Clear Time (g_c+I1), s	5.3	23.5		25.0		16.1
Green Ext Time (p_c), s	0.0	0.0		0.0		11.0

Intersection Summary	
HCM 6th Ctrl Delay	41.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	440	16	22	536	0	26	0	12	0	0	0
Future Vol, veh/h	10	440	16	22	536	0	26	0	12	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	587	21	29	715	0	35	0	16	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	715	0	0	608	0	0	1397	1397	598	1405	1407	715
Stage 1	-	-	-	-	-	-	624	624	-	773	773	-
Stage 2	-	-	-	-	-	-	773	773	-	632	634	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	885	-	-	970	-	-	118	141	502	117	139	431
Stage 1	-	-	-	-	-	-	473	478	-	392	409	-
Stage 2	-	-	-	-	-	-	392	409	-	468	473	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	885	-	-	970	-	-	112	131	502	107	129	431
Mov Cap-2 Maneuver	-	-	-	-	-	-	112	131	-	107	129	-
Stage 1	-	-	-	-	-	-	463	467	-	383	389	-
Stage 2	-	-	-	-	-	-	372	389	-	443	463	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	41.5	0
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	148	885	-	-	970	-	-	-
HCM Lane V/C Ratio	0.342	0.015	-	-	0.03	-	-	-
HCM Control Delay (s)	41.5	9.1	0	-	8.8	0	-	0
HCM Lane LOS	E	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	1.4	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	360	2	5	290	2	10
Future Vol, veh/h	360	2	5	290	2	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	480	3	7	387	3	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	483	0	883	482
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	401	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1080	-	316	584
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	676	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1080	-	313	584
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	671	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	510	-	-	1080	-
HCM Lane V/C Ratio	0.031	-	-	0.006	-
HCM Control Delay (s)	12.3	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	48.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	160	862	40	54	707
Future Vol, veh/h	60	160	862	40	54	707
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	213	1149	53	72	943

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1792	601	0	0	1202	0
Stage 1	1176	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 72	443	-	-	576	-
Stage 1	255	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 63	443	-	-	576	-
Mov Cap-2 Maneuver	~ 63	-	-	-	-	-
Stage 1	255	-	-	-	-	-
Stage 2	438	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 411.3	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	167	576	-
HCM Lane V/C Ratio	-	-	1.756	0.125	-
HCM Control Delay (s)	-	-	$ 411.3	12.1	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	21	0.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	39	1	8	27	2	3
Future Vol, veh/h	39	1	8	27	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	1	11	36	3	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	53	0	111	53
Stage 1	-	-	-	-	53	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1553	-	886	1014
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1553	-	880	1014
Mov Cap-2 Maneuver	-	-	-	-	880	-
Stage 1	-	-	-	-	970	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	956	-	-	1553	-
HCM Lane V/C Ratio	0.007	-	-	0.007	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix E: 2024 Phase 1 LOS Worksheets

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	307	51	582	570	97	634
Future Volume (veh/h)	307	51	582	570	97	634
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	2059	2059	1796	1796	1796	1796
Adj Flow Rate, veh/h	409	68	776	760	129	845
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	496	441	1305	582	152	1863
Arrive On Green	0.25	0.25	0.38	0.38	0.09	0.55
Sat Flow, veh/h	1961	1745	3501	1522	1710	3501
Grp Volume(v), veh/h	409	68	776	760	129	845
Grp Sat Flow(s),veh/h/ln	1961	1745	1706	1522	1710	1706
Q Serve(g_s), s	11.1	1.7	10.2	21.5	4.2	8.4
Cycle Q Clear(g_c), s	11.1	1.7	10.2	21.5	4.2	8.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	496	441	1305	582	152	1863
V/C Ratio(X)	0.82	0.15	0.59	1.31	0.85	0.45
Avail Cap(c_a), veh/h	802	714	1305	582	152	1863
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	16.3	13.9	17.4	25.2	7.7
Incr Delay (d2), s/veh	3.8	0.2	2.0	149.8	32.3	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.6	3.3	29.7	2.8	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.6	16.5	15.9	167.2	57.6	8.5
LnGrp LOS	C	B	B	F	E	A
Approach Vol, veh/h	477		1536			974
Approach Delay, s/veh	22.6		90.7			15.0
Approach LOS	C		F			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.2	27.7		19.3		36.9
Change Period (Y+Rc), s	* 4.2	6.2		5.1		6.2
Max Green Setting (Gmax), s	* 5	21.5		23.0		30.7
Max Q Clear Time (g_c+I1), s	6.2	23.5		13.1		10.4
Green Ext Time (p_c), s	0.0	0.0		1.2		12.7

Intersection Summary			
HCM 6th Ctrl Delay		55.2	
HCM 6th LOS		E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	409	68	776	760	129	845
v/c Ratio	0.82	0.14	0.72	0.78	1.03	0.55
Control Delay	34.1	5.1	23.0	8.8	127.0	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	5.1	23.0	8.8	127.0	13.0
Queue Length 50th (ft)	138	0	136	0	~57	114
Queue Length 95th (ft)	179	15	158	17	#120	132
Internal Link Dist (ft)	64		210			363
Turn Bay Length (ft)				130	115	
Base Capacity (vph)	594	574	1074	974	125	1534
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.12	0.72	0.78	1.03	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	627	13	8	319	0	16	0	10	0	0	1
Future Vol, veh/h	7	627	13	8	319	0	16	0	10	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	836	17	11	425	0	21	0	13	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	425	0	0	853	0	0	1311	1310	845	1316	1318	425
Stage 1	-	-	-	-	-	-	863	863	-	447	447	-
Stage 2	-	-	-	-	-	-	448	447	-	869	871	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1134	-	-	786	-	-	136	159	363	135	157	629
Stage 1	-	-	-	-	-	-	349	372	-	591	573	-
Stage 2	-	-	-	-	-	-	590	573	-	347	368	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1134	-	-	786	-	-	132	154	363	127	152	629
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	154	-	127	152	-
Stage 1	-	-	-	-	-	-	344	366	-	582	563	-
Stage 2	-	-	-	-	-	-	578	563	-	329	362	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	30.6	10.7
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	175	1134	-	-	786	-	-	629
HCM Lane V/C Ratio	0.198	0.008	-	-	0.014	-	-	0.002
HCM Control Delay (s)	30.6	8.2	0	-	9.6	0	-	10.7
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	158	0	3	339	4	4
Future Vol, veh/h	158	0	3	339	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	211	0	4	452	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	211	0	671	211
Stage 1	-	-	-	-	211	-
Stage 2	-	-	-	-	460	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1360	-	422	829
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	636	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1360	-	420	829
Mov Cap-2 Maneuver	-	-	-	-	420	-
Stage 1	-	-	-	-	824	-
Stage 2	-	-	-	-	633	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	558	-	-	1360	-
HCM Lane V/C Ratio	0.019	-	-	0.003	-
HCM Control Delay (s)	11.6	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	9.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	49	89	552	53	110	664
Future Vol, veh/h	49	89	552	53	110	664
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	119	736	71	147	885

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1509	404	0	0	807	0
Stage 1	772	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	111	596	-	-	814	-
Stage 1	416	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	91	596	-	-	814	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	416	-	-	-	-	-
Stage 2	355	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	91.9	0	1.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	201	814	-
HCM Lane V/C Ratio	-	-	0.915	0.18	-
HCM Control Delay (s)	-	-	91.9	10.4	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	7.3	0.7	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	19	2	8	19	1	11
Future Vol, veh/h	19	2	8	19	1	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	3	11	25	1	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	74	27
Stage 1	-	-	-	-	27	-
Stage 2	-	-	-	-	47	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1585	-	930	1048
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	975	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	923	1048
Mov Cap-2 Maneuver	-	-	-	-	923	-
Stage 1	-	-	-	-	996	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1036	-	-	1585	-
HCM Lane V/C Ratio	0.015	-	-	0.007	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	560	67	879	335	67	757
Future Volume (veh/h)	560	67	879	335	67	757
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	2059	2059	1796	1796	1796	1796
Adj Flow Rate, veh/h	747	89	1172	447	89	1009
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	703	625	1142	509	112	1589
Arrive On Green	0.36	0.36	0.33	0.33	0.07	0.47
Sat Flow, veh/h	1961	1745	3501	1522	1710	3501
Grp Volume(v), veh/h	747	89	1172	447	89	1009
Grp Sat Flow(s),veh/h/ln	1961	1745	1706	1522	1710	1706
Q Serve(g_s), s	23.0	2.2	21.5	17.8	3.3	14.4
Cycle Q Clear(g_c), s	23.0	2.2	21.5	17.8	3.3	14.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	703	625	1142	509	112	1589
V/C Ratio(X)	1.06	0.14	1.03	0.88	0.79	0.63
Avail Cap(c_a), veh/h	703	625	1142	509	133	1631
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	13.9	21.4	20.1	29.6	13.0
Incr Delay (d2), s/veh	52.0	0.1	33.5	18.8	19.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.5	0.8	12.2	7.8	1.8	4.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.6	14.0	54.8	39.0	49.4	15.0
LnGrp LOS	F	B	F	D	D	B
Approach Vol, veh/h	836		1619			1098
Approach Delay, s/veh	66.4		50.4			17.7
Approach LOS	E		D			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.4	27.7		28.1		36.1
Change Period (Y+Rc), s	* 4.2	6.2		5.1		6.2
Max Green Setting (Gmax), s	* 5	21.5		23.0		30.7
Max Q Clear Time (g_c+I1), s	5.3	23.5		25.0		16.4
Green Ext Time (p_c), s	0.0	0.0		0.0		10.9

Intersection Summary						
HCM 6th Ctrl Delay			44.1			
HCM 6th LOS			D			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	747	89	1172	447	89	1009
v/c Ratio	1.31	0.16	1.09	0.62	0.74	0.71
Control Delay	176.8	4.7	78.8	8.2	68.2	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	176.8	4.7	78.8	8.2	68.2	17.0
Queue Length 50th (ft)	~395	0	~296	21	35	155
Queue Length 95th (ft)	#450	17	#306	47	#80	165
Internal Link Dist (ft)	64		210			363
Turn Bay Length (ft)				130	115	
Base Capacity (vph)	569	566	1078	723	120	1468
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.31	0.16	1.09	0.62	0.74	0.69

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	447	16	22	544	0	26	0	12	0	0	0
Future Vol, veh/h	10	447	16	22	544	0	26	0	12	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	596	21	29	725	0	35	0	16	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	725	0	0	617	0	0	1416	1416	607	1424	1426	725
Stage 1	-	-	-	-	-	-	633	633	-	783	783	-
Stage 2	-	-	-	-	-	-	783	783	-	641	643	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	878	-	-	963	-	-	115	137	496	113	135	425
Stage 1	-	-	-	-	-	-	468	473	-	387	404	-
Stage 2	-	-	-	-	-	-	387	404	-	463	468	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	878	-	-	963	-	-	109	127	496	103	125	425
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	127	-	103	125	-
Stage 1	-	-	-	-	-	-	457	462	-	378	384	-
Stage 2	-	-	-	-	-	-	368	384	-	438	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.3	42.6	0
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	145	878	-	-	963	-	-	-
HCM Lane V/C Ratio	0.349	0.015	-	-	0.03	-	-	-
HCM Control Delay (s)	42.6	9.2	0	-	8.9	0	-	0
HCM Lane LOS	E	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	1.4	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	365	2	5	294	2	22
Future Vol, veh/h	365	2	5	294	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	487	3	7	392	3	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	490	0	895	489
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	406	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1073	-	311	579
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	673	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1073	-	309	579
Mov Cap-2 Maneuver	-	-	-	-	309	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	668	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	540	-	-	1073	-
HCM Lane V/C Ratio	0.059	-	-	0.006	-
HCM Control Delay (s)	12.1	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	53.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	61	162	875	41	55	718
Future Vol, veh/h	61	162	875	41	55	718
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	216	1167	55	73	957

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1820	611	0	0	1222	0
Stage 1	1195	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 69	437	-	-	566	-
Stage 1	250	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 60	437	-	-	566	-
Mov Cap-2 Maneuver	~ 60	-	-	-	-	-
Stage 1	250	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 452.2	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	161	566	-
HCM Lane V/C Ratio	-	-	1.847	0.13	-
HCM Control Delay (s)	-	-	$ 452.2	12.3	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	22.1	0.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	40	1	8	27	2	3
Future Vol, veh/h	40	1	8	27	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	1	11	36	3	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	54	0	112	54
Stage 1	-	-	-	-	54	-
Stage 2	-	-	-	-	58	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1551	-	885	1013
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1551	-	879	1013
Mov Cap-2 Maneuver	-	-	-	-	879	-
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	955	-	-	1551	-
HCM Lane V/C Ratio	0.007	-	-	0.007	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix F: 2031 Project Completion LOS Worksheets

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	317	53	602	591	101	657
Future Volume (veh/h)	317	53	602	591	101	657
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	2059	2059	1796	1796	1796	1796
Adj Flow Rate, veh/h	423	71	803	788	135	876
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	509	453	1293	577	151	1846
Arrive On Green	0.26	0.26	0.38	0.38	0.09	0.54
Sat Flow, veh/h	1961	1745	3501	1522	1710	3501
Grp Volume(v), veh/h	423	71	803	788	135	876
Grp Sat Flow(s),veh/h/ln	1961	1745	1706	1522	1710	1706
Q Serve(g_s), s	11.5	1.8	10.8	21.5	4.4	9.0
Cycle Q Clear(g_c), s	11.5	1.8	10.8	21.5	4.4	9.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	509	453	1293	577	151	1846
V/C Ratio(X)	0.83	0.16	0.62	1.37	0.90	0.47
Avail Cap(c_a), veh/h	795	708	1293	577	151	1846
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.8	16.2	14.3	17.6	25.6	8.0
Incr Delay (d2), s/veh	4.4	0.2	2.3	175.8	43.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.7	3.5	33.7	3.4	2.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.2	16.4	16.6	193.4	68.8	8.9
LnGrp LOS	C	B	B	F	E	A
Approach Vol, veh/h	494		1591			1011
Approach Delay, s/veh	23.1		104.1			16.9
Approach LOS	C		F			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	9.2	27.7		19.8		36.9
Change Period (Y+Rc), s	* 4.2	6.2		5.1		6.2
Max Green Setting (Gmax), s	* 5	21.5		23.0		30.7
Max Q Clear Time (g_c+I1), s	6.4	23.5		13.5		11.0
Green Ext Time (p_c), s	0.0	0.0		1.2		12.8

Intersection Summary			
HCM 6th Ctrl Delay		62.7	
HCM 6th LOS		E	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	423	71	803	788	135	876
v/c Ratio	0.83	0.14	0.75	0.80	1.09	0.58
Control Delay	35.2	5.0	24.4	9.3	143.3	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	5.0	24.4	9.3	143.3	13.6
Queue Length 50th (ft)	144	0	146	0	~63	124
Queue Length 95th (ft)	186	16	164	17	#126	137
Internal Link Dist (ft)	64		210			363
Turn Bay Length (ft)				130	115	
Base Capacity (vph)	589	572	1065	990	124	1521
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.12	0.75	0.80	1.09	0.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	7	650	14	8	330	0	17	0	11	0	0	1
Future Vol, veh/h	7	650	14	8	330	0	17	0	11	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	867	19	11	440	0	23	0	15	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	886	0	0	1358	1357	877	1364	1366	440
Stage 1	-	-	-	-	-	-	895	895	-	462	462	-
Stage 2	-	-	-	-	-	-	463	462	-	902	904	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1120	-	-	764	-	-	126	149	348	125	147	617
Stage 1	-	-	-	-	-	-	335	359	-	580	565	-
Stage 2	-	-	-	-	-	-	579	565	-	332	356	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1120	-	-	764	-	-	122	144	348	117	142	617
Mov Cap-2 Maneuver	-	-	-	-	-	-	122	144	-	117	142	-
Stage 1	-	-	-	-	-	-	330	353	-	571	554	-
Stage 2	-	-	-	-	-	-	567	554	-	313	350	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.2	33.3	10.8
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	164	1120	-	-	764	-	-	617
HCM Lane V/C Ratio	0.228	0.008	-	-	0.014	-	-	0.002
HCM Control Delay (s)	33.3	8.2	0	-	9.8	0	-	10.8
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	164	0	3	351	4	4
Future Vol, veh/h	164	0	3	351	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	219	0	4	468	5	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	219	0	695	219
Stage 1	-	-	-	-	219	-
Stage 2	-	-	-	-	476	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1350	-	408	821
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	625	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1350	-	406	821
Mov Cap-2 Maneuver	-	-	-	-	406	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	623	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	543	-	-	1350	-
HCM Lane V/C Ratio	0.02	-	-	0.003	-
HCM Control Delay (s)	11.8	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	11.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	93	572	55	114	687
Future Vol, veh/h	50	93	572	55	114	687
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	124	763	73	152	916

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1562	418	0	0	836	0
Stage 1	800	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	103	584	-	-	794	-
Stage 1	403	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	83	584	-	-	794	-
Mov Cap-2 Maneuver	83	-	-	-	-	-
Stage 1	403	-	-	-	-	-
Stage 2	341	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	120.9	0	1.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	188	794	-
HCM Lane V/C Ratio	-	-	1.014	0.191	-
HCM Control Delay (s)	-	-	120.9	10.6	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	8.6	0.7	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	2	8	20	1	12
Future Vol, veh/h	20	2	8	20	1	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	3	11	27	1	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	30	0	78	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	49	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1583	-	925	1046
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	973	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1583	-	919	1046
Mov Cap-2 Maneuver	-	-	-	-	919	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	966	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1035	-	-	1583	-
HCM Lane V/C Ratio	0.017	-	-	0.007	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	580	69	910	347	69	784
Future Volume (veh/h)	580	69	910	347	69	784
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	2059	2059	1796	1796	1796	1796
Adj Flow Rate, veh/h	773	92	1213	463	92	1045
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	701	624	1140	508	116	1594
Arrive On Green	0.36	0.36	0.33	0.33	0.07	0.47
Sat Flow, veh/h	1961	1745	3501	1522	1710	3501
Grp Volume(v), veh/h	773	92	1213	463	92	1045
Grp Sat Flow(s),veh/h/ln	1961	1745	1706	1522	1710	1706
Q Serve(g_s), s	23.0	2.3	21.5	18.7	3.4	15.1
Cycle Q Clear(g_c), s	23.0	2.3	21.5	18.7	3.4	15.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	701	624	1140	508	116	1594
V/C Ratio(X)	1.10	0.15	1.06	0.91	0.79	0.66
Avail Cap(c_a), veh/h	701	624	1140	508	133	1627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	14.0	21.4	20.5	29.6	13.2
Incr Delay (d2), s/veh	65.7	0.1	45.6	23.0	21.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.2	0.9	14.1	8.7	1.9	4.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	86.4	14.1	67.0	43.5	50.6	15.3
LnGrp LOS	F	B	F	D	D	B
Approach Vol, veh/h	865		1676			1137
Approach Delay, s/veh	78.7		60.5			18.2
Approach LOS	E		E			B

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	8.6	27.7		28.1		36.3
Change Period (Y+Rc), s	* 4.2	6.2		5.1		6.2
Max Green Setting (Gmax), s	* 5	21.5		23.0		30.7
Max Q Clear Time (g_c+I1), s	5.4	23.5		25.0		17.1
Green Ext Time (p_c), s	0.0	0.0		0.0		10.7

Intersection Summary			
HCM 6th Ctrl Delay		51.7	
HCM 6th LOS		D	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	773	92	1213	463	92	1045
v/c Ratio	1.37	0.16	1.12	0.64	0.77	0.73
Control Delay	199.4	4.7	89.6	8.9	72.6	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	199.4	4.7	89.6	8.9	72.6	17.5
Queue Length 50th (ft)	~417	0	~314	25	37	164
Queue Length 95th (ft)	#470	17	#322	52	#83	172
Internal Link Dist (ft)	64		210			363
Turn Bay Length (ft)				130	115	
Base Capacity (vph)	566	565	1087	726	119	1460
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.37	0.16	1.12	0.64	0.77	0.72

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	11	463	17	23	563	0	27	0	13	0	0	0
Future Vol, veh/h	11	463	17	23	563	0	27	0	13	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	617	23	31	751	0	36	0	17	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	751	0	0	640	0	0	1472	1472	629	1480	1483	751
Stage 1	-	-	-	-	-	-	659	659	-	813	813	-
Stage 2	-	-	-	-	-	-	813	813	-	667	670	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	858	-	-	944	-	-	105	127	482	104	125	411
Stage 1	-	-	-	-	-	-	453	461	-	372	392	-
Stage 2	-	-	-	-	-	-	372	392	-	448	455	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	858	-	-	944	-	-	98	117	482	94	115	411
Mov Cap-2 Maneuver	-	-	-	-	-	-	98	117	-	94	115	-
Stage 1	-	-	-	-	-	-	441	449	-	362	370	-
Stage 2	-	-	-	-	-	-	351	370	-	420	443	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	49.6	0
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	132	858	-	-	944	-	-	-
HCM Lane V/C Ratio	0.404	0.017	-	-	0.032	-	-	-
HCM Control Delay (s)	49.6	9.3	0	-	8.9	0	-	0
HCM Lane LOS	E	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	1.7	0.1	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	378	2	5	305	2	23
Future Vol, veh/h	378	2	5	305	2	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	504	3	7	407	3	31

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	507	0	927	506
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	421	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1058	-	298	566
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	662	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1058	-	295	566
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	656	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	527	-	-	1058	-
HCM Lane V/C Ratio	0.063	-	-	0.006	-
HCM Control Delay (s)	12.3	-	-	8.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	67.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	168	906	42	57	743
Future Vol, veh/h	63	168	906	42	57	743
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	224	1208	56	76	991

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1884	632	0	0	1264	0
Stage 1	1236	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	~ 62	423	-	-	546	-
Stage 1	237	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 53	423	-	-	546	-
Mov Cap-2 Maneuver	~ 53	-	-	-	-	-
Stage 1	237	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 572.1	0	0.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	146	546	-
HCM Lane V/C Ratio	-	-	2.11	0.139	-
HCM Control Delay (s)	-	-	$ 572.1	12.7	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	24.9	0.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	41	1	8	28	2	3
Future Vol, veh/h	41	1	8	28	2	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	1	11	37	3	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	56	0	115	56
Stage 1	-	-	-	-	56	-
Stage 2	-	-	-	-	59	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1549	-	881	1011
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1549	-	875	1011
Mov Cap-2 Maneuver	-	-	-	-	875	-
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	952	-	-	1549	-
HCM Lane V/C Ratio	0.007	-	-	0.007	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix G:Cumulative Projects

Appendix F

KITTELSON & ASSOCIATES

Cumlative Projects
Malibu, CA

- Whole Foods and The Park Shopping Center
    - Location: Civic Center Way and Cross Creek Road
    - 24549 sq ft Whole Foods
    - 13876 sq ft commercial retail buildings
    - Up to 4000 sq ft restaurant
- Malibu Inn Motel (Replaced Malibu Surfrider Plaza)
    - Location: 22959 PCH
    - 7693 sq ft motel - 20 lodging units
    - 47 parking spaces for motel
    - 40 surface spaces for overflow
    - Project completion: July 2022
- Malibu Memorial Park
    - Location: 4000 Malibu Canyon Rd
    - 6000 sq ft chapel
    - 47 mausoleum structures
    - 28265 in-ground burial plot spaces
- SMC – Malibu Campus
    - Location: 23555 Civic Center Way
    - 27500 sq ft
    - Project completion August 2022
- La Paz Ranch
    - 112058 sq ft of commercial office and retail uses
    - 20000 sq ft City Hall complex
    - Location: 3700 La Paz Ln
- Malibu Jewish Center and Synagogue
    - 2-story 16,410 square foot classroom/admin building
    - 2,013 sq ft synagogue building and basement
    - Location: 24855 PCH
- Malibu Beach Inn Hotel
    - Constructing amenities
- Sea View Hotel
    - Location: 22729 and 22741 Pacific Coast Highway
    - 39 room hotel, 23278 sq ft buildings
    - 91 parking spaces
    - Project completion Jan 2023
- Malibu Skate Park
    - 12500 sq ft skate park
    - Location: PCH and Malibu Canyon Rd
- Trancas Bridge Replacement Project
    - Completion July 2023
    - Location: Bridge on PCH at Trancas Creek
- Phase 1 of the Malibu Schools Alignment Project
    - Location: 6955 Fernhill Drive
    - 15000 sq ft, 8-classroom building
    - 2500 sq ft admin building

Appendix H:Malibu Middle and High School Historical Enrollment Data

California Department of Education

DataQuest Home / Enrollment Report

Enrollment Multi-Year Summary by Grade

Malibu High Report (19-64980-1995737)

+ Report Description

− Report Options and Filters

Report Selection

Report:
Enrollment Multi-Year Summary by Grade ▼

County:
19 - Los Angeles ▼

District:
1964980 - Santa Monica-Malibu Unified ▼

School:
19649801995737 - Malibu High ▼

Report Filters

School Type:
(•) **All Schools** ( ) **Charter** ( ) **Non-Charter**

Gender:

All Students **Male** **Female**

English Learners:

All Students **Yes** **No**

Students With Disabilities:

All Students **Yes** **No**

Program Subgroups:

- No Subgroup Filters ▼

Report filters have been disabled to protect student privacy. Why?

Display Options

View Data As:

Percents **Numbers**

Academic Year	Total	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Ungr Elem	Grade 9	Grade 10	Grade 11	Grade 12
2019-20	**528**	0	0	0	0	0	0	0	0	0	0	108	125	148	147
2018-19	**948**	0	0	0	0	0	0	116	112	112	0	136	163	152	157
2017-18	**951**	0	0	0	0	0	0	113	107	116	0	159	153	152	151
2016-17	**1,004**	0	0	0	0	0	0	99	117	161	0	156	157	155	159
2015-16	**1,106**	0	0	0	0	0	0	127	158	147	0	169	154	175	176
2014-15	**1,107**	0	0	0	0	0	0	157	142	158	0	148	170	183	149

California Department of Education

DataQuest Home / Enrollment Report

Enrollment Multi-Year Summary by Grade

Malibu Middle Report (19-64980-0139311)

+ Report Description

− Report Options and Filters

Report Selection

Report:
Enrollment Multi-Year Summary by Grade ▼

County:
19 - Los Angeles ▼

District:
1964980 - Santa Monica-Malibu Unified ▼

School:
19649800139311 - Malibu Middle ▼

Report Filters

School Type:
(•) **All Schools** ( ) **Charter** ( ) **Non-Charter**

Gender:

All Students **Male** **Female**

English Learners:

All Students **Yes** **No**

Students With Disabilities:

All Students **Yes** **No**

Program Subgroups:

- No Subgroup Filters ▼

Report filters have been disabled to protect student privacy. Why?

Display Options

View Data As:

Percents **Numbers**

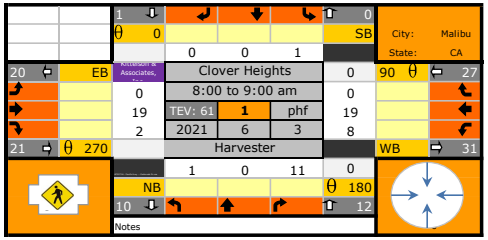
Academic Year	Total	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Ungr Elem	Grade 9	Grade 10	Grade 11	Grade 12	
2019-20	**334**	0	0	0	0	0	0	112	114	108	0	0	0	0	0	

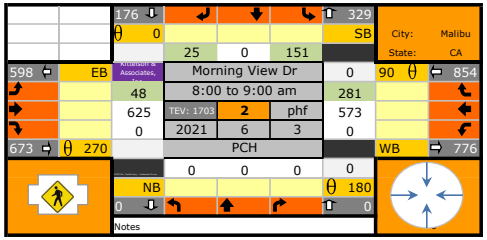
Appendix I: Traffic Count Adjustments

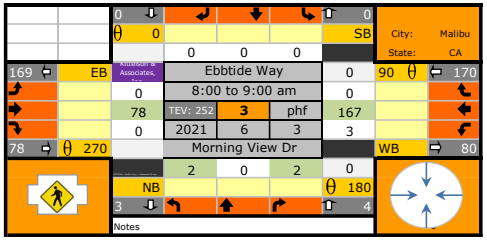
Volume adjustments for school traffic

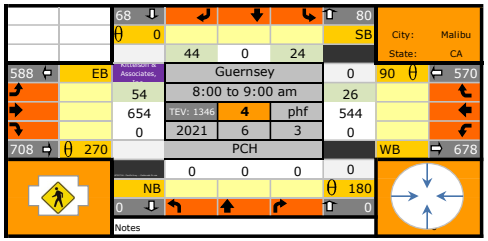
- Volumes at movements associated with school traffic (going towards the school or away from the school) were doubled.
    - Currently, only 500 students are enrolled while capacity is 1200 – doubling school traffic is a conservative estimate for when school is fully in session with roughly 1000 students.
    - 2018-2019 enrollment was around 940 students, so 1000 is a conservative estimate.
    - Peak hours at PCH were too late, so peak hours were chosen based on school traffic.
- The doubled volumes were then added to the peak hours in the ADT counts for each count location (8-9am, 2-3 pm)
- Clover Heights and Harvester are not associated with school traffic and thus the volumes were not doubled at this intersection.
- Peak hour to ADT adjustment factor – because not all the traffic to the school occurs during the peak hour, the additional traffic needs to be adjusted by a factor of 2.03/0.85, because the peak hour is only about 85% of the daily traffic, and the adjustment factor is 2.03 trips per student (?)
    - Additional school trips were added using this method.
    - For ADT on MVD west of the school, the existing school traffic was scaled up, but no additional trips were added.
    - Clover Heights was not scaled up for existing conditions.
- Adjusted ADTs: H:\25\25023 - Malibu HS Campus Master Plan TIA\counts\adjusted ADTs
- Adjusted TMCs: H:\25\25023 - Malibu HS Campus Master Plan TIA\analysis\NetworkTool-2021.xlsm

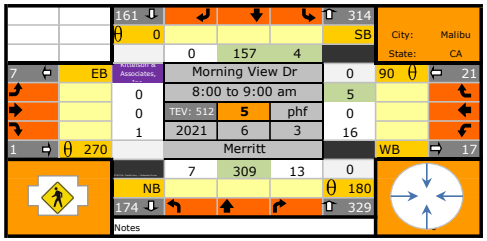
school traffic



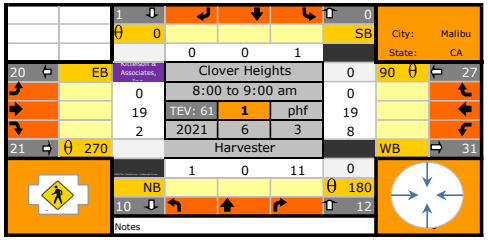


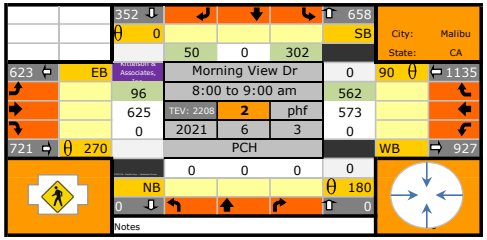


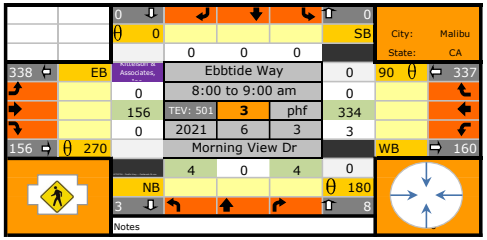


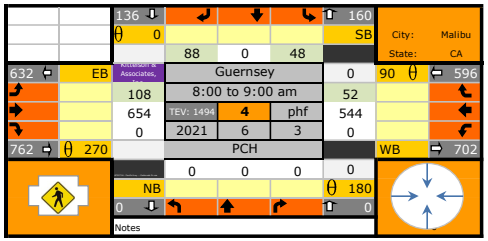


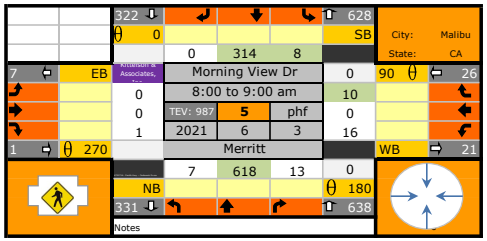
school traffic



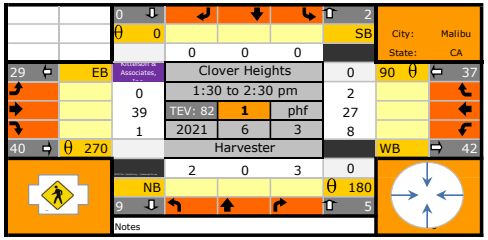


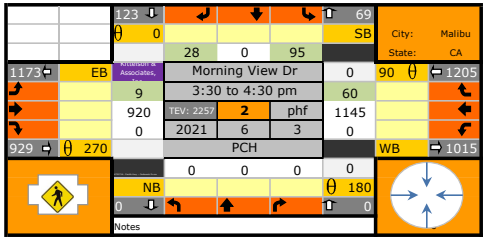


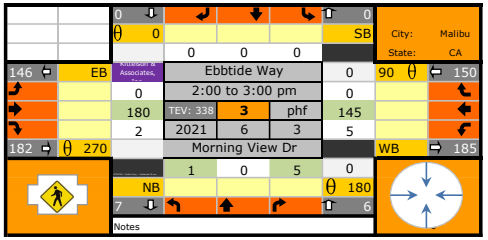


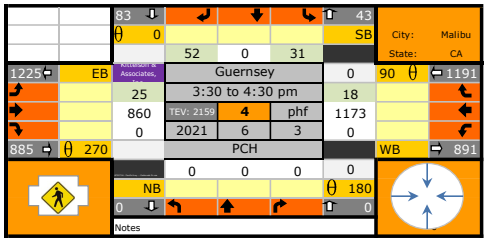


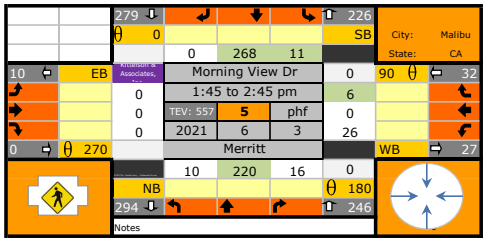
school traffic



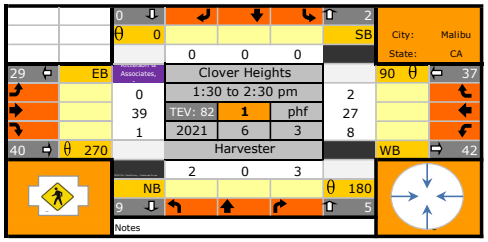


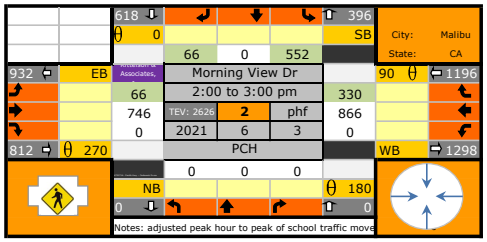


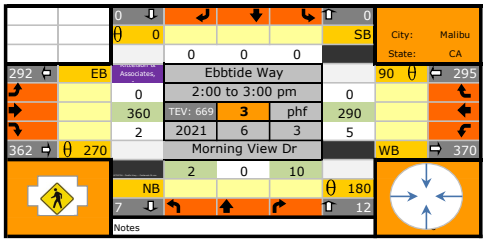


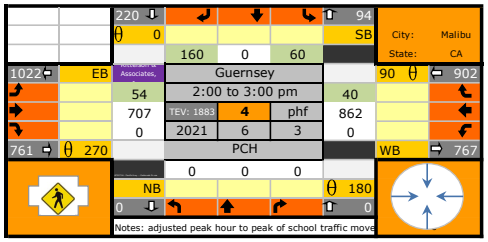


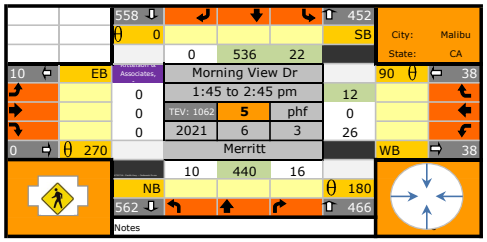
school traffic











1.588
1.733

Thursday, June 03, 2021 CITY: Malibu PROJECT: SC2930

ADT1 MVD north of PCH **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	NB		SB					PM Period	NB		SB				
0:00	1		4					12:00	17		37				
0:15	1		0					12:15	22		21				
0:30	2		1					12:30	19		29				
0:45	0	4	0	5			9	12:45	17	75	21	108			183
1:00	2		0					13:00	13		34				
1:15	0		0					13:15	24		23				
1:30	0		0					13:30	38		18				
1:45	0	2	0	0			2	13:45	74	149	28	103			252
2:00	0		0					14:00	92		117				
2:15	0		0					14:15	44		100				
2:30	1		1					14:30	35		46				
2:45	1	2	1	2			4	14:45	35	206	35	298	198	309	1011
3:00	0		0					15:00	30		43				
3:15	0		0					15:15	39		39				
3:30	1		0					15:30	18		37				
3:45	0	1	0	0			1	15:45	21	108	32	151			259
4:00	1		0					16:00	16		38				
4:15	0		0					16:15	18		21				
4:30	0		0					16:30	16		22				
4:45	1	2	0	0			2	16:45	21	71	25	106			177
5:00	3		1					17:00	23		32				
5:15	12		0					17:15	28		49				
5:30	1		0					17:30	27		56				
5:45	9	25	1	2			27	17:45	21	99	30	167			266
6:00	11		6					18:00	18		22				
6:15	18		5					18:15	24		15				
6:30	19		9					18:30	15		14				
6:45	16	64	7	27			91	18:45	11	68	14	65			133
7:00	20		6					19:00	13		7				
7:15	27		5					19:15	4		10				
7:30	27		17					19:30	3		8				
7:45	29	103	20	48			151	19:45	4	24	30	55			79
8:00	38		24					20:00	6		16				
8:15	47		23					20:15	1		15				
8:30	88		31					20:30	11		6				
8:45	153	326	95	173	329	176	1004	20:45	7	25	7	44			69
9:00	65		56					21:00	2		6				
9:15	19		21					21:15	8		4				
9:30	19		24					21:30	5		0				
9:45	10	113	33	134			247	21:45	2	17	2	12			29
10:00	28		15					22:00	2		2				
10:15	16		11					22:15	3		2				
10:30	19		16					22:30	2		4				
10:45	18	81	9	51			132	22:45	2	9	1	9			18
11:00	25		15					23:00	0		2				
11:15	26		13					23:15	3		1				
11:30	22		21					23:30	1		2				
11:45	19	92	13	62			154	23:45	2	6	1	6			12
Total Vol.		815		504	329	176	**1824**			857		1124	198	309	**2488**

Daily Totals

NB	SB			**Combined**
1672	1628	527	485	**4312**

	AM					**PM**				
Split %	44.7%	27.6%	18.0%	9.6%	**42.3%**	34.4%	45.2%	8.0%	12.4%	**57.7%**
Peak Hour	8:15	8:15			**8:15**	13:30	14:00			**13:45**
Volume	353	205			**558**	248	298			**536**
P.H.F.	0.58	0.54			**0.56**	0.80	0.64			**0.64**

cs@aimtd.com Tell. 714 253 7888

Thursday, June 03, 2021 CITY: Malibu PROJECT: SC2930

ADT2 MVD North of Merritt. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	NB		SB					PM Period	NB		SB				
0:00	0		3					12:00	15		28				
0:15	0		0					12:15	15		14				
0:30	0		0					12:30	5		22				
0:45	0	0	0	3			3	12:45	12	47	15	79			126
1:00	1		0					13:00	5		21				
1:15	0		0					13:15	17		15				
1:30	0		0					13:30	28		10				
1:45	0	1	0	0			1	13:45	62	112	19	65			177
2:00	0		0					14:00	92		113				
2:15	0		0					14:15	40		103				
2:30	0		0					14:30	31		38				
2:45	0	0	0	0				14:45	31	194	35	289	226	279	988
3:00	0		0					15:00	27		25				
3:15	0		0					15:15	33		26				
3:30	1		0					15:30	21		32				
3:45	0	1	0	0			1	15:45	19	100	18	101			201
4:00	1		0					16:00	11		25				
4:15	0		0					16:15	15		19				
4:30	0		0					16:30	12		22				
4:45	1	2	0	0			2	16:45	16	54	16	82			136
5:00	3		1					17:00	19		32				
5:15	11		0					17:15	27		45				
5:30	1		0					17:30	25		55				
5:45	9	24	1	2			26	17:45	12	83	23	155			238
6:00	7		2					18:00	8		11				
6:15	15		4					18:15	20		11				
6:30	11		8					18:30	12		9				
6:45	11	44	7	21			65	18:45	10	50	10	41			91
7:00	13		2					19:00	13		6				
7:15	21		3					19:15	3		8				
7:30	16		6					19:30	2		2				
7:45	21	71	13	24			95	19:45	3	21	32	48			69
8:00	35		17					20:00	3		15				
8:15	38		20					20:15	1		14				
8:30	79		33					20:30	9		5				
8:45	156	308	86	156	314	161	939	20:45	6	19	5	39			58
9:00	56		49					21:00	2		4				
9:15	13		15					21:15	9		3				
9:30	7		17					21:30	4		1				
9:45	6	82	18	99			181	21:45	1	16	1	9			25
10:00	21		8					22:00	1		1				
10:15	10		6					22:15	2		2				
10:30	16		10					22:30	2		3				
10:45	12	59	5	29			88	22:45	1	6	1	7			13
11:00	17		11					23:00	0		2				
11:15	23		7					23:15	1		1				
11:30	16		19					23:30	0		0				
11:45	16	72	8	45			117	23:45	2	3	0	3			6
Total Vol.		664		379	314	161	**1518**			705		918	226	279	**2128**

Daily Totals

NB	SB			**Combined**
1369	1297	540	440	**3646**

	AM					PM				
Split %	43.7%	25.0%	20.7%	10.6%	**41.6%**	33.1%	43.1%	10.6%	13.1%	**58.4%**
Peak Hour	8:15	8:15			**8:15**	13:45	14:00			**13:45**
Volume	329	188			**517**	225	289			**498**
P.H.F.	0.53	0.55			**0.53**	0.64	0.64			**0.61**

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Thursday, June 03, 2021 CITY: Malibu PROJECT: SC2930

ADT3 MVD west of Ebbtide Way. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	EB		WB					PM Period	EB		WB				
0:00	1		0					12:00	23		7				
0:15	0		0					12:15	14		8				
0:30	0		0					12:30	14		6				
0:45	0	1	0	0			1	12:45	12	63	10	31			94
1:00	0		1					13:00	10		3				
1:15	0		0					13:15	10		14				
1:30	0		0					13:30	11		22				
1:45	0	0	0	1			1	13:45	16	47	26	65			112
2:00	0		0					14:00	101		53				
2:15	0		0					14:15	37		28				
2:30	0		0					14:30	23		30				
2:45	0	0	0	0				14:45	21	182	28	139	146	181	648
3:00	0		0					15:00	19		21				
3:15	0		0					15:15	18		29				
3:30	0		1					15:30	25		14				
3:45	0	0	1	2			2	15:45	13	75	16	80			155
4:00	0		1					16:00	18		11				
4:15	0		0					16:15	16		11				
4:30	0		0					16:30	19		9				
4:45	0	0	0	1			1	16:45	14	67	12	43			110
5:00	1		3					17:00	28		17				
5:15	1		10					17:15	52		19				
5:30	0		0					17:30	36		24				
5:45	0	2	9	22			24	17:45	20	136	7	67			203
6:00	1		8					18:00	12		5				
6:15	6		13					18:15	9		6				
6:30	6		10					18:30	8		7				
6:45	7	20	10	41			61	18:45	9	38	10	28			66
7:00	1		13					19:00	7		10				
7:15	4		15					19:15	4		3				
7:30	5		10					19:30	0		2				
7:45	11	21	11	49			70	19:45	13	24	3	18			42
8:00	16		17					20:00	11		4				
8:15	11		20					20:15	11		1				
8:30	15		40					20:30	3		9				
8:45	40	82	88	165	171	78	496	20:45	1	26	5	19			45
9:00	28		45					21:00	4		2				
9:15	16		11					21:15	3		8				
9:30	15		7					21:30	1		4				
9:45	17	76	5	68			144	21:45	1	9	2	16			25
10:00	5		11					22:00	1		0				
10:15	4		11					22:15	1		2				
10:30	10		13					22:30	3		2				
10:45	7	26	9	44			70	22:45	0	5	0	4			9
11:00	10		12					23:00	1		0				
11:15	8		14					23:15	1		1				
11:30	11		8					23:30	0		0				
11:45	8	37	13	47			84	23:45	0	2	0	1			3
Total Vol.		265		440	171	78	**954**			674		511	146	181	**1512**

Daily Totals

EB	WB			**Combined**
939	951	317	259	**2466**

	AM					PM				
Split %	27.8%	46.1%	17.9%	8.2%	**38.7%**	44.6%	33.8%	9.7%	12.0%	**61.3%**
Peak Hour	8:30	8:15			**8:15**	14:00	14:00			**14:00**
Volume	99	193			**287**	182	139			**321**
P.H.F.	0.62	0.55			**0.56**	0.46	0.66			**0.52**

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Thursday, June 03, 2021 CITY: Malibu PROJECT: SC2930

ADT4 MVD west of school near Via Cabrillo. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
0:00	1		0			12:00	8		8		
0:15	0		0			12:15	6		6		
0:30	0		0			12:30	9		7		
0:45	0	1	0	0	1	12:45	4	27	6	27	54
1:00	0		1			13:00	4		2		
1:15	0		0			13:15	8		7		
1:30	0		0			13:30	4		10		
1:45	0	0	0	1	1	13:45	12	28	6	25	53
2:00	0		0			14:00	17		46		
2:15	0		0			14:15	11		15		
2:30	0		0			14:30	9		5		
2:45	0	0	0	0		14:45	4	41	10	76	117
3:00	0		0			15:00	14		5		
3:15	0		0			15:15	18		15		
3:30	0		1			15:30	16		6		
3:45	0	0	0	1	1	15:45	13	61	10	36	97
4:00	0		0			16:00	16		4		
4:15	0		0			16:15	10		7		
4:30	0		0			16:30	13		11		
4:45	0	0	0	0		16:45	9	48	8	30	78
5:00	1		0			17:00	8		10		
5:15	0		0			17:15	8		15		
5:30	0		0			17:30	8		12		
5:45	0	1	1	1	2	17:45	9	33	7	44	77
6:00	2		3			18:00	6		4		
6:15	8		2			18:15	10		3		
6:30	0		4			18:30	3		5		
6:45	5	15	8	17	32	18:45	4	23	6	18	41
7:00	3		5			19:00	5		5		
7:15	1		11			19:15	2		4		
7:30	0		7			19:30	0		2		
7:45	12	16	8	31	47	19:45	3	10	7	18	28
8:00	13		8			20:00	2		6		
8:15	4		7			20:15	0		4		
8:30	8		11			20:30	0		7		
8:45	28	53	20	46	99	20:45	0	2	10	27	29
9:00	10		19			21:00	3		2		
9:15	14		7			21:15	3		8		
9:30	16		5			21:30	1		4		
9:45	8	48	5	36	84	21:45	1	8	2	16	24
10:00	3		6			22:00	1		0		
10:15	4		1			22:15	1		2		
10:30	6		10			22:30	3		2		
10:45	2	15	6	23	38	22:45	0	5	0	4	9
11:00	8		8			23:00	1		0		
11:15	5		6			23:15	1		1		
11:30	9		7			23:30	0		0		
11:45	5	27	7	28	55	23:45	0	2	0	1	3
Total Vol.		176		184	**360**			288		322	**610**

Daily Totals

EB	WB	Combined
464	506	**970**

	AM			PM		
Split %	48.9%	51.1%	**37.1%**	47.2%	52.8%	**62.9%**
Peak Hour	8:45	8:15	**8:45**	15:15	13:30	**13:30**
Volume	68	57	**119**	63	77	**121**
P.H.F.	0.61	0.71	**0.62**	0.83	0.42	**0.48**

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