



Appendix A

Geotechnical Investigation



GROUP DELTA

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October 7, 2015
Project No. SD439

Attention: Mr. Jeff Justus

**Subject: Report of Geotechnical Investigation
Richmar Park
San Marcos, California**

Dear Mr. Justus,

Group Delta Consultants is pleased to present this report presenting the findings, conclusions, and recommendations of our geotechnical investigation for the planned Richmar Park improvements located in San Marcos, California. There were no conditions apparent in our investigation which would preclude development, provided that the recommendations in this report are followed.

SITE DESCRIPTION AND PROPOSED IMPROVEMENTS

The planned Richmar Park development is located north of Richmar Avenue, west of Firebird Lane, west of the existing United States Postal Service building, and south of an existing child daycare facility. The general location of the project is shown in Figure 1. The scope of our investigation is shown in our Exploration Plan, Figure 2, and overlaid on the Improvement Plans, shown in Figure 3. We understand that the planned improvements will be separated into two phases. Phase I will include a children's play area, shade structures, a stage with enhanced paving, a bio-retention basin with optional bridge crossing, a CMU bathroom structure, and lighted concrete sidewalks. Phase II will include a paved basketball half-court, additional parking, and additional sidewalks. Other considerations during both phases may include utility trenches and supplemental flatwork. The current proposed improvements are shown in Figure 3.

SCOPE OF WORK

Our investigation was conducted in general accordance with our proposal (SD15-030R) dated April 16, 2015. The purpose of our investigation was to evaluate the existing geotechnical conditions at the site as they relate to the proposed development, and to make recommendations regarding design and construction of the proposed improvements. The recommendations contained herein are based on a surface reconnaissance, subsurface

investigation, laboratory testing, engineering analysis, and our previous experience with geologic conditions in the greater San Diego area. Our scope of work included:

- Review of the available plans provided by you.
- Visual reconnaissance and subsurface exploration of the site. Ten exploratory borings were drilled using a truck-mounted drill rig to sample subsurface materials to depths of at least five feet. Bulk and relatively undisturbed samples were collected for testing. Logs of the explorations are presented in Appendix A.
- Laboratory testing of selected samples collected during the subsurface exploration. Testing was intended to assist in characterizing and assessing pertinent engineering characteristics of the on-site soils. Laboratory results are included in Appendix B.
- Two of the ten exploratory borings were converted to borehole percolation tests. All loose soil was cleared from the hole and the hole was presoaked with water. A falling head percolation test was conducted in each borehole; the results are shown in Appendix C.
- Engineering analysis in order to develop recommendations for site preparation, earthwork construction, foundation design, and construction.
- Preparation of this report summarizing our findings, conclusions, and recommendations.

GEOLOGY

The subject site is located within the Peninsular Ranges geomorphic province of southern California. The Peninsular Ranges are characterized by a series of northwest trending mountain ranges separated by valleys, with a coastal plain of subdued landforms. The mountain ranges are underlain primarily by Mesozoic metamorphic rocks that were intruded by plutonic rocks of the southern California batholith, while the coastal plain is underlain by subsequently deposited marine and nonmarine sedimentary formations.

The site lies within the San Marcos Creek drainage underlain at depth by Cretaceous granitic rock and covered with alluvium. The general geology in the site vicinity is shown on the Local Geologic Map, Figure 4.

Alluvium (Map symbol Q_{ya})

Quaternary-age alluvial sediments associated with San Marcos Creek drainage were encountered in all of the exploratory borings conducted at the site. The alluvium most commonly consisted of moist, orangish-brown clayey fine-grained sand (SC), with some

moist, orangish-brown, silty fine-grained sand (SM), light grayish-brown sandy lean and fat clay (CL and CH), and beds of orangish-brown, relatively clean fine to coarse grained sand (SW-SC). Groundwater was not encountered during our investigation.

The alluvium was generally dense to very dense. The clayey materials were typically very stiff to hard in consistency. Laboratory tests indicate that generally the alluvium has low to medium expansion potential. Although the alluvium is mapped as Young Alluvial Flood deposits, the blow count data indicates the alluvium is dense to very dense (average $N_{60} = 62$). This indicates the alluvium at the site may be more accurately designated as Old Alluvial Flood Deposits (Q_{oa}) found nearby, since the older alluvium is generally denser and has a higher degree of cementation than the younger alluvium.

GEOLOGIC HAZARDS AND SEISMICITY

The subject site is not located within an area previously known for significant geologic hazards. Evidence of past landslides, liquefaction, or active faulting at the site was not encountered in our geotechnical investigation or literature review. We anticipate that the main geologic hazards at the site will be associated with the potential for strong ground shaking due to a seismic event. Each of the potential geologic hazards is described below.

Ground Rupture

Ground rupture is the result of movement on an active fault reaching the ground surface. The site is not located within an Alquist-Priolo Earthquake Fault Zone. The nearest known active faults are located more than 20 km west of the site. No indications of active faulting were found in our reconnaissance or literature review. Consequently, ground rupture is not considered to be a substantial geologic hazard at the site.

Seismicity

The site is approximately located at latitude 33.1445° north and longitude 117.1640° west. The locations of known active faults within a 100 km radius of the site are shown on the Fault Location Map, Figure 5. The nearest known active fault is located within the Newport Inglewood-Rose Canyon fault zone, about 20 km west of the site.

The United States Geologic Survey has developed an interactive website that provides Next Generation Attenuation (NGA) probabilistic seismic analyses based on the site location and shear wave velocity (USGS, 2009). Based on our field investigation, we have made an assumption that the site is a Class D site. Based on the NGA analyses, we estimate that the peak ground accelerations (PGA) with a 2, 5, and 10 percent

probability of being exceeded in a 50 year period at the site are approximately 0.45, 0.34g, and 0.27g respectively. These levels of risk are often referred to as the Maximum Considered (MCE), Upper Bound (UBE) and Design Basis Earthquakes (DBE), respectively.

Structures should be designed in general accordance with the seismic provisions of the 2013 California Building Code (CBC). Based on the findings of our subsurface investigation, it is our opinion that a 2013 CBC Site Class D will apply to the site.

The USGS mapped spectral ordinates S_s and S_1 equal 1.019 and 0.398, respectively. For a Site Class D, the Site Coefficients F_a and F_v are equal to 1.093 and 1.603, respectively. The design level spectral ordinates S_{D5} and S_{D1} equal 0.742 and 0.426, respectively. The 2013 CBC Design and MCE Spectra for a Site Class D are provided in Table 1.

Liquefaction and Dynamic Settlement

Liquefaction involves the sudden loss in strength of a saturated, cohesionless soil (sand and non-plastic silts) caused by the build-up of pore water pressure during cyclic loading, such as that produced by an earthquake. This increase in pore water pressure can temporarily transform the soil into a fluid mass, resulting in sand boils, settlement and lateral ground deformations. Typically, liquefaction occurs in areas where there are loose to medium dense sands and silts, and where the depth to groundwater is less than 50 feet from the ground surface. In summary, three simultaneous conditions are required for liquefaction:

- Historic high groundwater within 50 feet of the ground surface
- Liquefiable soils such as loose to medium dense sands
- Strong shaking, such as that caused by an earthquake

Given the absence of groundwater in our investigation, and the dense, clayey sands, the potential for liquefaction and dynamic settlement to adversely affect the planned improvements is considered to be low.

Landslides and Lateral Spreads

Evidence of ancient landslides or slope instabilities was not observed during our literature review or site reconnaissance.

Tsunamis, Seiches and Flooding

The site is not located within a FEMA 100-year flood zone, as shown in Figure 6. The site is not located below any lakes or confined bodies of water. Therefore, the potential for earthquake induced flooding at the site is considered to be low. Given the distance between the subject site and the coast, and the elevation of the site above mean sea level (more than 580 feet), the potential for damage due to tsunamis (seismically induced waves) is also considered to be remote.

Percolation Testing

We have completed two borehole percolation tests in an area designated by you as a potential storm water infiltration basin location. The location of the two test holes are shown in Figure 2 and Figure 3. Based on discussions with you, it was determined the approximate depth of the bottom of the storm water infiltration basin would be five feet or deeper, depending on the results of these tests.

Per the Model BMP Design Manual – San Diego Region, we conducted borehole percolation testing by first drilling two approximately 7-inch diameter test holes to depths of five and six feet. The holes were presoaked with water before the tests were started. After pre-soaking, the rates of fall of the water level was measured using a water meter until consistent results were obtained from each hole. The infiltration rate obtained was relatively low, on the order of a 1/16th of an inch per hour. The typical threshold for on-site infiltration is ½-inch per hour. A detailed explanation of our test method and results are presented in Appendix C.

CONCLUSIONS

- Based on our visual reconnaissance, the site is covered with low vegetation, as well as burrows created by local wildlife. Based on our exploratory borings, the entire site is underlain by dense to very dense alluvium associated with the San Marcos Creek drainage. SPT blow counts ranged between 25 and 160 blows per foot, with an average of 62, indicating very dense soils. The subsurface materials generally consist of clayey sand (SC), with some silty sand (SM), minor amounts of sandy lean and fat clay (CL and CH), and thin beds of relatively clean sand (SW-SC) were also encountered. These findings are detailed in Appendix A.
- Laboratory testing, shown in Appendix B, indicate that the onsite soils have a medium expansion potential (samples tested had Expansion Indices (EI) ranging from 37 to 78). Expansive soil heave may result in cracking and distress to future concrete building slabs, sidewalks, and other improvements. Expansive soil heave can also cause sidewalks to slope

out of ADA compliance. At least two feet of granular fill with a very low expansion potential ($EI \leq 20$) is recommended below all new heave sensitive concrete improvements in order to reduce the potential for distress and sloping sidewalks; this includes the CMU restroom structure. Excavated on-site soils can be used to create the small and other landscaped areas of the park.

- The clayey alluvial sands observed at the site will also provide poor support for new pavements, which will result in relatively thick aggregate base sections. The sample taken from B-1 in the area designated for a future parking lot expansion has an R-Value less than 5, as shown in Appendix B. During grading of the site, additional R-Value tests should be conducted on the subgrade materials. If materials are encountered with R-Values greater than 5, a reduced pavement section may be utilized.
- Based on our borehole percolation testing, the site is not conducive to storm water infiltration. This is most likely due to the high percentage of clay and the density of the soils. The tests produced low rates of infiltration, on the order of a $1/16^{\text{th}}$ of an inch per hour. The typical threshold for on-site infiltration is $\frac{1}{2}$ -inch per hour. A detailed explanation of our test method and results are in Appendix C.

RECOMMENDATIONS

The remainder of this report presents recommendations regarding earthwork construction and the preliminary design the proposed structure and associated improvements. These recommendations are based on empirical and analytical methods typical of the standards of practice in southern California. If these recommendations do not appear to cover a specific feature of the project, please feel free to contact our office for additions or revisions.

Plan Review

We recommend that any demolition, grading, and structural plans be reviewed by Group Delta Consultants prior to construction. Depending on the building and foundation designs, additional geotechnical evaluation may be required, which may result in modifications to the remedial grading and foundation recommendations provided in this report.

Excavation and Grading Observation

Foundation and grading excavations should be observed by Group Delta Consultants. During grading, Group Delta Consultants should provide observation and testing services continuously. Such observations are considered essential to identify field conditions that differ from those anticipated by this investigation, to adjust designs to the actual field conditions, and to determine that the remedial grading is accomplished in general

accordance with the recommendations presented in this report. Our recommendations are contingent upon Group Delta Consultants providing these services. Our personnel should perform sufficient testing of fill and backfill during grading and improvement operations to support our professional opinion as to compliance with the compaction recommendations.

Earthwork

Grading and earthwork should be conducted in general accordance with the applicable local grading ordinance and the requirements of the current California Building Code. The following recommendations are provided regarding specific aspects of the proposed earthwork construction. These recommendations should be considered subject to revision based on the conditions observed by Group Delta Consultants during grading.

Site Preparation

General site preparation should begin with the removal of deleterious materials from the site. Deleterious materials include existing structures, foundations, slabs, trees, vegetation, trash, contaminated soil and demolition debris. Due to the consistent presence of vegetation and animal burrows across the site, we recommend that at a minimum, the upper 12 inches of soils be removed, brought to near optimum moisture content, and re-compacted to a minimum of 90 percent of the maximum laboratory dry density in accordance with test method ASTM-1557.

Building and Improvement Areas

A minimum of two feet of compacted fill with an Expansion Index of 20 or less is recommended beneath all new concrete sidewalks, exterior flatwork areas, and the CMU restroom building. As discussed, expansive soil heave may result in cracking and distress to future concrete building slabs, sidewalks, and other improvements. Expansive soil heave can also cause sidewalks to slope out of ADA compliance. Excavated on-site soils can be used to make grade and create the small hills that are planned in the grass area of the park.

Fill Compaction

All fill and backfill should be placed at slightly above optimum moisture content using equipment that is capable of producing a uniformly compacted product. The minimum recommended relative compaction is 90 percent of the maximum dry density based on ASTM D1557. Sufficient observation and testing should be performed by Group Delta Consultants so that an opinion can be rendered as to the compaction achieved. Rocks

or concrete fragments greater than 6 inches in maximum dimension should not be used in structural fill.

Imported fill sources should be observed prior to hauling onto the site to determine the suitability for use. In general, imported fill materials should consist of granular soil with less than 35 percent passing the No. 200 sieve based on ASTM C136 and an Expansion Index less than 20 based on ASTM D4829. Samples of the proposed import should be tested by Group Delta in order to evaluate the suitability of these soils for their proposed use. During grading operations, soil types may be encountered by the contractor that do not appear to conform to those discussed within this report. Group Delta should be notified to evaluate the suitability of these soils for their proposed use.

Temporary Excavations

Temporary excavations are anticipated for the construction of any proposed utilities. All excavations should conform to Cal-OSHA guidelines. Vertical excavations are acceptable up to a height of 5 feet. Any excavation extending beyond 5 feet will require temporary slopes or temporary shoring in the form of shields, hydraulic shoring, or similar methods. Temporary slopes should be inclined no steeper than 1:1 for heights up to 20 feet. Higher temporary slopes, or any excavations which encounter seepage, should be evaluated by the geotechnical consultant on a case-by-case basis.

Shallow Foundation Recommendations

Phase I will include two shade structures; one will be associated with the stage, and one with the children's play area. There will also be a one-story CMU bathroom structure in the north-east corner of the site. Phase I may also include a pedestrian bridge over the bio-retention basin.

The design of future foundations for these structures should be performed by the project structural engineers. The following preliminary shallow foundation design parameters may be appropriate for use with lightly loaded structures on two or more feet of granular compacted fill, and are considered generally consistent with methods typically used in southern California. The following preliminary design parameters are only minimum criteria, and should not be considered a structural design, or to preclude more restrictive criteria of governing agencies or the structural engineer.

The following foundation design parameters assume that footings will bear on dense soils:

Allowable Bearing: 2,500 lbs/ft² (allow a ⅓ increase for
(Compacted Fill) short term wind or seismic loads).

Minimum Footing Width: 12 inches

Minimum Footing Depth: 18 inches below lowest adjacent soil grade

Minimum Reinforcement: Two No. 4 bars at top and bottom.

Lateral Resistance: Lateral loads against structures may be resisted by friction between the bottoms of footings and slabs and the supporting soil, as well as passive pressure from the portion of vertical foundation members embedded into compacted fill. For preliminary design purposes, a coefficient of friction of 0.30 and a passive pressure of 350 psf per foot of depth is recommended.

Earth-Retaining Structures

For a general wall design for new retaining walls, an allowable bearing capacity of 2,500 lbs/ft², a coefficient of friction of 0.30, and a passive pressure of 350 psf per foot of depth is recommended. Backfilling retaining walls with expansive soil can increase lateral pressures well beyond normal active or at-rest pressures. We recommend that retaining walls be backfilled with a free draining granular material that has an Expansion Index of 20 or less. Retaining wall backfill should be compacted to at least 90 percent relative compaction based on ASTM D1557. Backfill should not be placed until the retaining walls have achieved adequate strength. Heavy compaction equipment, which could cause distress to the walls, should not be used.

Slope Setback

The planned pedestrian bridge will span across the bio-retention area. This will place the bridge foundations in close proximity to the slopes created by the excavation for the bio-retention zone.

All foundations should be setback from any descending slope at least 8 feet. The setback should be measured horizontally from the outside bottom edge of the footing to the slope face. The setback can be reduced by deepening the foundation to achieve the recommended setback as projected from the footing bottom to the slope face. The outer few feet of all slopes are susceptible to gradual down-slope movements due to slope creep. This will affect hardscape such as concrete slabs. We recommend that

settlement sensitive structures not be constructed within ten feet of the slope top without specific review by Group Delta Consultants.

On-Grade Slabs

On-grade slabs should be designed by the project structural engineer. Building slabs should be at least 5½ inches thick, and should be reinforced with at least No. 3 bars on 18-inch centers, each way. Slab thickness, control joints, and reinforcement should be designed by the structural engineer and should conform to the requirements of the current CBC.

Reactive Soils

In order to assess the sulfate exposure of concrete in contact with the site soils, samples were tested for water-soluble sulfate content, as shown in Figure B-3. The test results indicate that the on-site soils have a negligible potential for sulfate attack based on commonly accepted criteria. The sulfate content of the finish grade soils should be determined during mass grading.

In order to assess the reactivity of the site soils with buried metals, the pH, resistivity and chloride contents were also determined (see Figure B-3). These tests suggest that the on-site soils are corrosive to ferrous metals. Typical corrosion control measures should be incorporated into design, such as providing minimum clearances between reinforcing steel and soil, or sacrificial anodes for buried metal structures. A corrosion consultant may be contacted for specific recommendations.

Preliminary Asphalt Concrete Pavement Design

Asphalt concrete pavement design was conducted in general accordance with the Caltrans Design Method (Topic 608.4). The design R-Value was assumed to be a 5 based on test results on a sample taken from B-1. Traffic Indices of 5.0 through 7.0 were assumed for preliminary design purposes. The project civil engineer should review these assumed Traffic Indices to determine if and where they apply to the various new pavements proposed at the site. Based on the assumed range of Traffic Indices, the following preliminary pavement sections would apply:

PAVEMENT TYPE	TRAFFIC INDEX	ASPHALT SECTION	BASE SECTION
Passenger Car Parking	5.0	3 Inches	10 Inches
Truck Traffic Areas	6.0	3 Inches	14 Inches
Heavy Traffic Areas	7.0	4 Inches	16 Inches

Preliminary Concrete Paver Design

If concrete pavers are to be used as decorative pavement, they should be placed on at least 6 inches of aggregate base. The paver blocks should be installed in general accordance with the product manufacturer's recommendations. Once the aggregate base has been compacted, and the concrete edge restraints are in place, bedding sand should be screeded in an even layer over the base. The bedding sand should be at least $\frac{3}{4}$ inch thick, but should not exceed $1\frac{1}{2}$ inches in thickness. The use of more than $1\frac{1}{2}$ inches of bedding sand may result in undesirable settlement of the paver blocks.

The paver blocks should be placed over the bedding sand, and vibrated into place using a high frequency plate compactor. The joint sand should then be swept over the pavers and into the joints, and compacted. Typically, 4 to 6 passes with a compactor would be used to seat the interlocking paver blocks. The bedding sand should conform to the gradation requirements of ASTM C33. ICPI specifications indicate that the bedding sand should be "...as hard as practically available." We recommend that bedding sand be used with a durability exceeding 30 when tested in general accordance with ASTM D3744. A separate joint sand should be used which is finer than the bedding sand, and which conforms to the gradation requirements of ASTM C144.

Children's Play Area Recommendations

Based on our meeting with you, we understand that the children's play area will use resilient surfacing and that a concrete slab will be poured as the base for the resilient surfacing. The upper two feet of the subgrade should contain soil with a very low expansion potential ($EL \leq 20$). The recommendations stated in the **On-Grade Slab** section should be followed.

Basketball Court Recommendations

Phase II of the project will include a half-court basketball playing surface. The upper two feet of the subgrade should consist of soil with a very low expansion potential ($EL \leq 20$).

It is unclear if the playing surface will be concrete or asphalt concrete. If concrete is used, the recommendations stated in the **On-Grade Slab** section should be followed. If asphalt concrete is used, we recommend a minimum pavement section of 3 inches asphalt concrete over 4 inches of aggregate base. Aggregate base should be placed in horizontal lifts at a thickness appropriate for the equipment spreading, mixing, and compacting the material. Aggregate base should be placed at slightly above optimum moisture, mixed, and compacted to at least 95 percent of the maximum dry density. Asphalt concrete should be compacted to at least 95 percent of the HVEEM.

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We appreciate this opportunity to be of professional service. Please feel free to contact the office with any questions or comments, or if you need anything else.

GROUP DELTA CONSULTANTS

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Project Engineer

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TABLES

TABLE 1 - 2013 CBC ACCELERATION RESPONSE SPECTRA

INPUT	$S_s=$	1.019	g = short period (0.2 sec) mapped spectral response acceleration MCE Site Class C (CBC 2010 Fig. 1613.5(3) or USGS Ground Motion Calculator)	Site Latitude:	33.1445
	$S_1=$	0.398	g = 1.0 sec period mapped spectral response acceleration MCE Site Class C (CBC 2010 Fig. 1613.5(4) or USGS Ground Motion Calculator)	Site Longitude:	-117.1640
	Site Class=	D	= Site Class definition based on CBC 2010 Table 1613.5.2	Seismic Design Category:	D
	$F_a=$	1.093	= Site Coefficient applied to S_s to account for soil type (CBC 2010 Table 1613.5.3(1))		
	$F_v=$	1.603	= Site Coefficient applied to S_1 to account for soil type (CBC 2010 Table 1613.5.3(2))		
	$T_L=$	8.00	sec = Long Period Transition Period (ASCE 7-05 Figure 22-16)		
	OUTPUT	$S_{MS}=$	1.114	= site class modified short period (0.2 sec) MCE spectral response acceleration = $F_a \times S_s$ (CBC 2010 Eqn. 16-36)	
$S_{M1}=$		0.638	= site class modified 1.0 sec period MCE spectral response acceleration = $F_v \times S_1$ (CBC 2010 Eqn. 16-37)		
$S_{DS}=$		0.743	= site class modified short period (0.2 sec) Design spectral response acceleration = $2/3 \times S_{MS}$ (CBC 2007 Eqn. 16-38)		
$S_{D1}=$		0.425	= site class modified 1.0 sec period Design spectral response acceleration = $2/3 \times S_{M1}$ (CBC 2007 Eqn. 16-39)		
$T_0=$		0.115	sec = $0.2 S_{D1}/S_{DS}$ = Control Period (left end of peak) for ARS Curve (Section 11.4.5 ASCE 7-05)		
$T_5=$		0.573	sec = S_{D1}/S_{DS} = Control Period (right end of peak) for ARS Curve (Section 11.4.5 ASCE 7-05)		

SPECTRUM CALCULATION	T (seconds)	Design Sa (g)	MCE Sa (g)
	0.000	0.297	0.446
	0.115	0.743	1.114
	0.573	0.743	1.114
	0.600	0.709	1.063
	0.700	0.608	0.911
	0.800	0.532	0.797
	0.900	0.473	0.709
	1.000	0.425	0.638
	1.100	0.387	0.580
	1.200	0.354	0.532
	1.300	0.327	0.491
	1.400	0.304	0.456
	1.500	0.284	0.425
	1.600	0.266	0.399
	1.700	0.250	0.375
	1.800	0.236	0.354
	1.900	0.224	0.336
	2.000	0.213	0.319
	2.100	0.203	0.304
	2.200	0.193	0.290
	2.300	0.185	0.277
	2.400	0.177	0.266
	2.500	0.170	0.255
	2.600	0.164	0.245
	2.700	0.158	0.236
	2.800	0.152	0.228
	2.900	0.147	0.220
	3.000	0.142	0.213
	3.100	0.137	0.206
	3.200	0.133	0.199
	3.300	0.129	0.193
3.400	0.125	0.188	
3.500	0.122	0.182	
3.600	0.118	0.177	
3.700	0.115	0.172	
3.800	0.112	0.168	
3.900	0.109	0.164	
4.000	0.106	0.159	
5.000	0.085	0.128	

Spectral Acceleration (g)	1.2
	1.0
	0.8
	0.6
	0.4
	0.2
	0.0

Period (seconds)	0.0
	0.5
	1.0
	1.5
	2.0
	2.5
	3.0
	3.5
	4.0

FIGURES



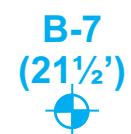
NO SCALE

 GROUP DELTA	
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PROJECT NAME	PROJECT NUMBER
Richmar Park - San Marcos Schmidt Design Group	SD439
	DOCUMENT NUMBER
	15-0144
	FIGURE NUMBER
	1

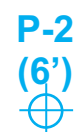
SITE LOCATION MAP



EXPLANATION:



Approximate location and depth of completed borings.



Approximate location and depth of completed percolation testing.



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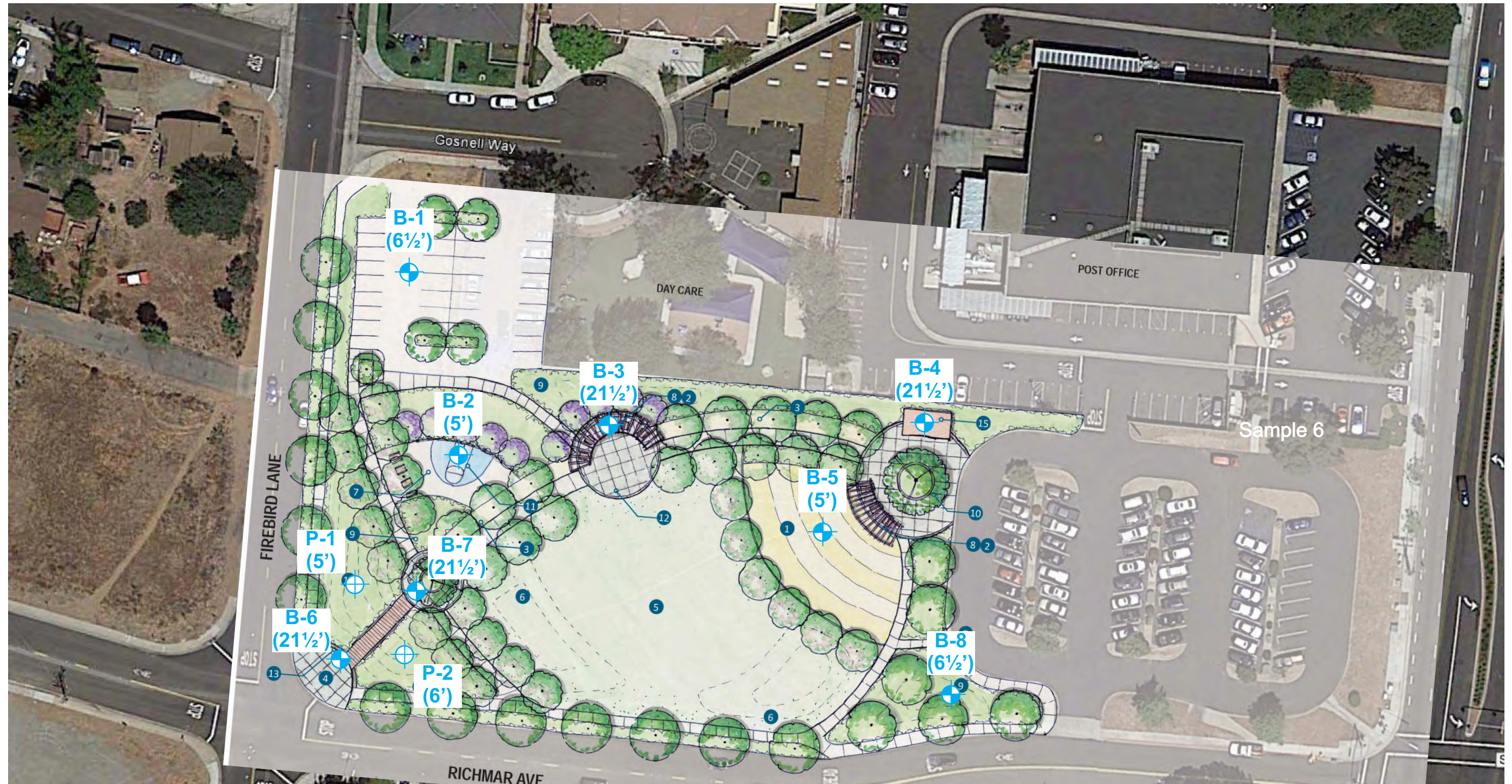
PROJECT NAME
Richmar Park - San Marcos
Schmidt Design Group

PROJECT NUMBER
SD439

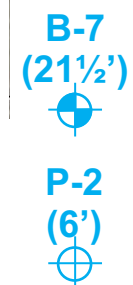
DOCUMENT NUMBER
15-0144

FIGURE NUMBER
2

EXPLORATION PLAN



EXPLANATION:



Approximate location and depth of completed borings.

Approximate location and depth of completed percolation testing.

- 1 Children's Play Area
- 2 Shade Structure
- 3 Decomposed Granite
- 4 Integral Color Concrete

- 5 Turf
- 6 Raised Mound
- 7 Concrete Paving
- 8 Social Picnic / Seating Area

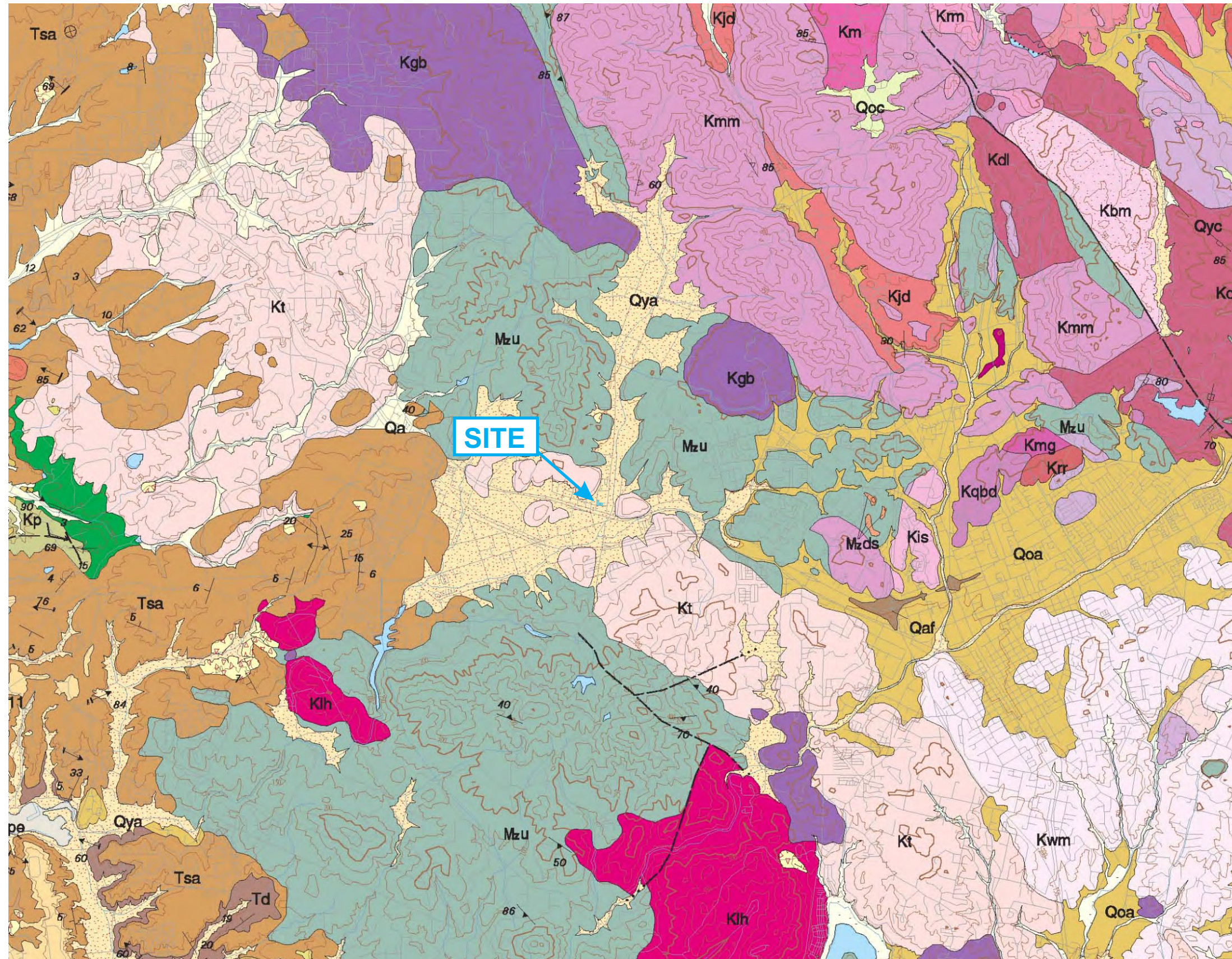
- 9 Planting Area
- 10 Raised Seat Wall Planter
- 11 Half-Court Basketball
- 12 Stage with Enhanced Paving

- 13 Entry Monument Sign
- 14 Bioretention Basin
- 15 Comfort Station



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	DOCUMENT NUMBER 15-0144
	FIGURE NUMBER 3
PROJECT NAME Richmar Park - San Marcos Schmidt Design Group	

EXPLORATION PLAN



EXPLANATION

- Qaf Artificial fill
- Qa Alluvial Flood plain deposits
- Qya Young Alluvial Flood deposits
- Qyc Young colluvial deposits
- Qoa Old alluvial flood deposits
- Td Delmar Formation
- Tsa Santiago Formation
- Kp Point Loma Formation
- Kmg Monzogranite undivided
- Kt Tonalite undivided
- Kqbd Quartz-bering diorite
- Kgb Gabbro undivided
- Kdl Granite of Dixon Lake
- Kjs Granite of Indian Springs
- Kih Leucogranodiorite of Lake Hodges
- Kmm Monzogranite of Merrian Mountain
- Kwm Granodiorite of Woodson Mountain
- Kjd Granodiorite of Jasmond Dean
- Kbm Granodiorite of Burnt Mountain
- Km Granodiorite of Mountain Meadows
- Krr Granodiorite of Rimrock
- Mzu Metasedimentary & metavolcanic rock

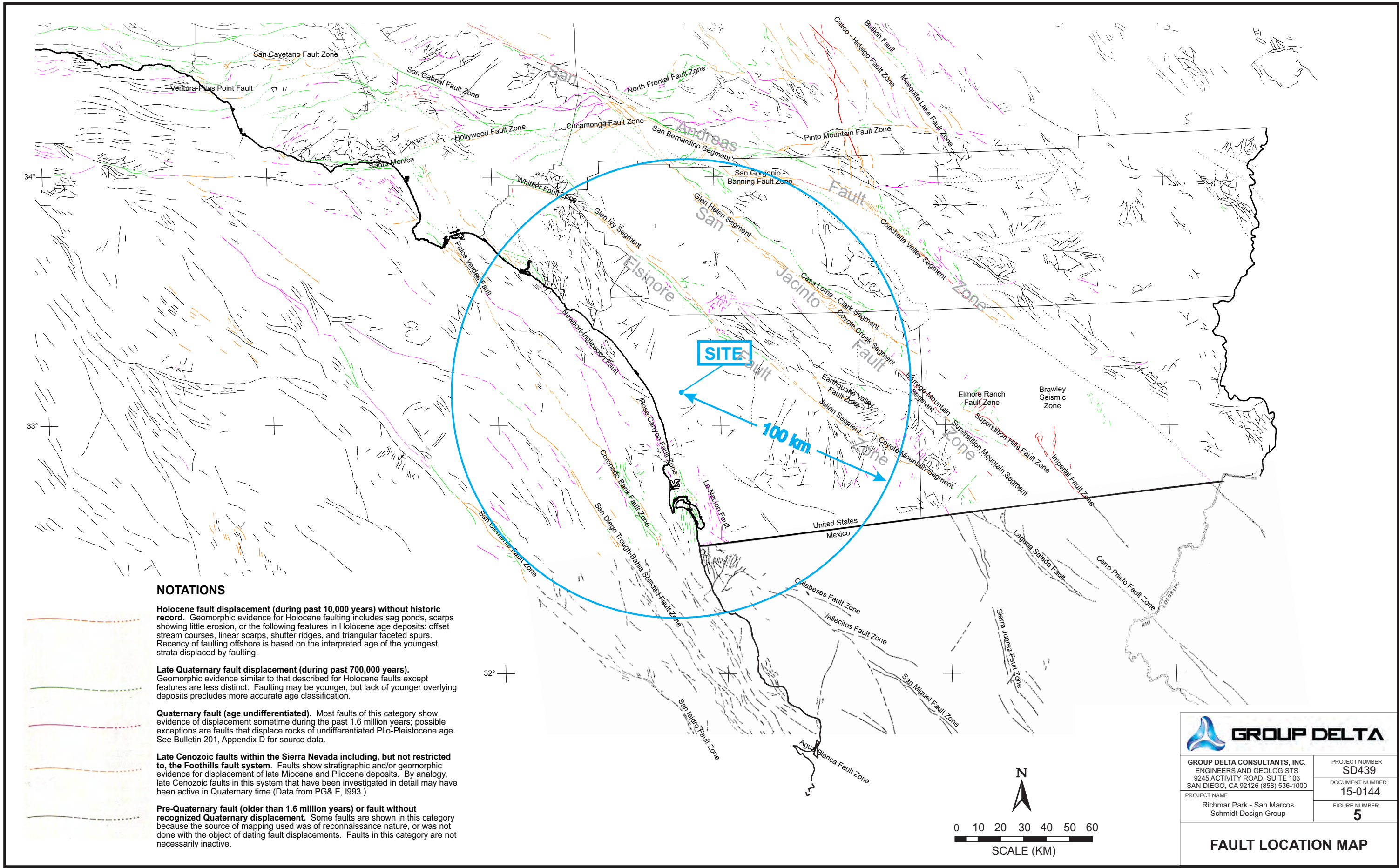


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PROJECT NAME	PROJECT NUMBER
Richmar Park - San Marcos Schmidt Design Group	SD439
	DOCUMENT NUMBER
	15-0144
	FIGURE NUMBER
	4

LOCAL GEOLOGIC MAP

Modified from: Kennedy, M.P and Tan, S.S (2005)



NOTATIONS

Holocene fault displacement (during past 10,000 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.

Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults that displace rocks of undifferentiated Plio-Pleistocene age. See Bulletin 201, Appendix D for source data.

Late Cenozoic faults within the Sierra Nevada including, but not restricted to, the Foothills fault system. Faults show stratigraphic and/or geomorphic evidence for displacement of late Miocene and Pliocene deposits. By analogy, late Cenozoic faults in this system that have been investigated in detail may have been active in Quaternary time (Data from PG&E, 1993.)

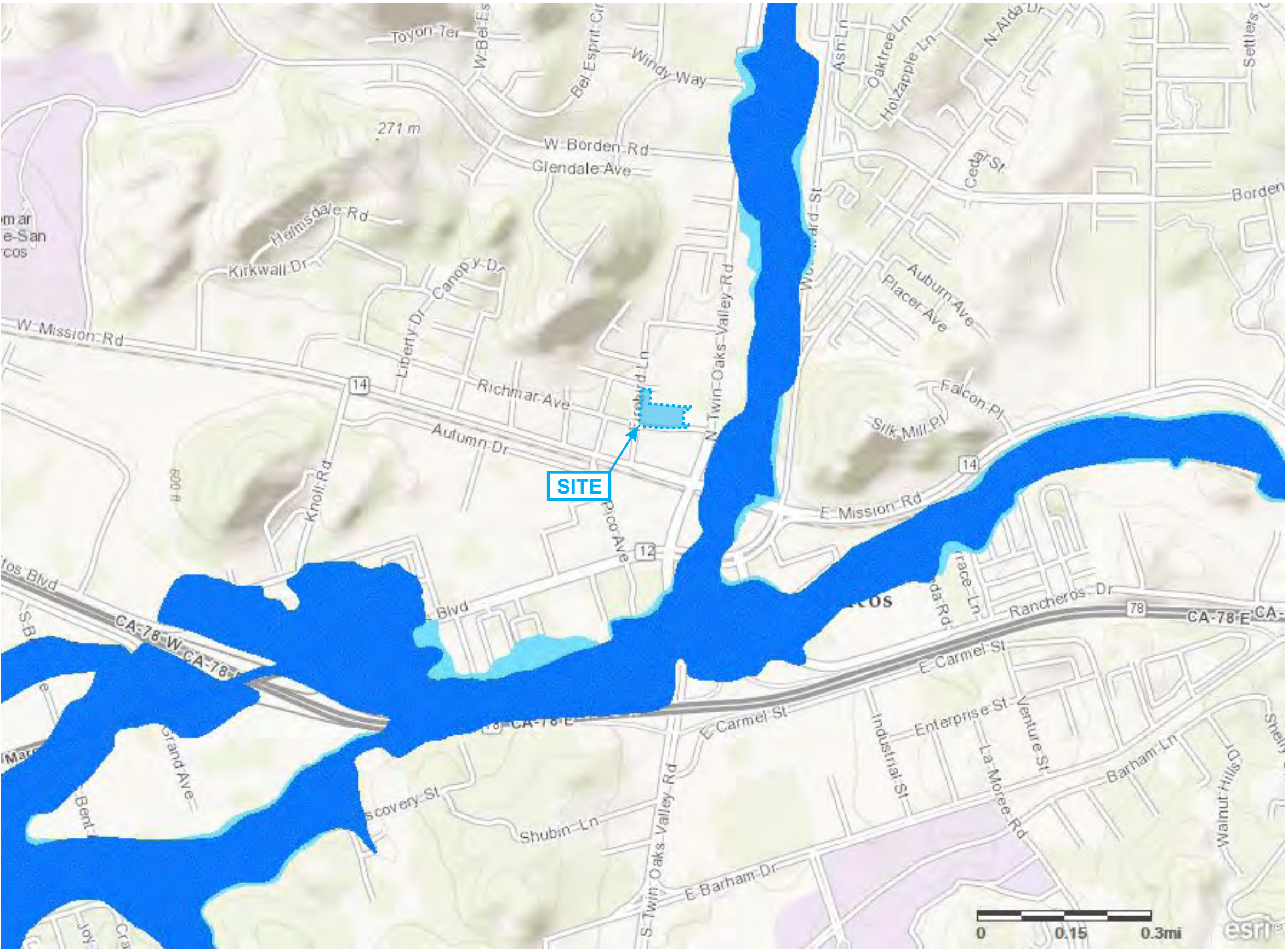
Pre-Quaternary fault (older than 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissance nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.



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PROJECT NUMBER
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DOCUMENT NUMBER
15-0144
FIGURE NUMBER
5

FAULT LOCATION MAP



EXPLANATION:

-  Approximate location of FEMA 100-Year Floodplain
-  Approximate location of FEMA 500-Year Floodplain



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SD439

DOCUMENT NUMBER
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FIGURE NUMBER
6

LOCAL FLOOD MAP

REFERENCE: California Emergency Management Agency (2009). *Hazard Mitigation Portal, FEMA Flood Plains, San Diego County, California.*

APPENDIX A
FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

Field exploration included a visual reconnaissance of the site and the drilling of ten exploratory borings. The borings were advanced using a truck-mounted drill rig on September 18th, 2015. The maximum depth of exploration was about 21½ feet below surrounding grades. The approximate boring locations are shown in Figure 2. Logs of the borings are shown in Figures A-1 to A-10, after the Boring Record Legends.

The borings were advanced by Pacific Drilling Company using a Diedrich D-50 truck mounted drill rig. Drive samples were collected from the borings using an automatic hammer. Disturbed samples were collected from the borings using a 2-inch outside diameter Standard Penetration Test (SPT) sampler. Relatively undisturbed samples were also collected from the borings using a 3-inch outside diameter, ring lined sampler (modified CALifornia sampler). The SPT and CAL samples were sealed in plastic bags, labeled, and returned to the laboratory for testing. For each sample, the number of blows needed to drive the sampler 12 inches was recorded on the logs. Bulk samples were also collected from the borings at selected intervals. The boring logs are presented in Figures A-1 through A-10.

The boring elevations were approximated using Google Earth. The relative difference in elevation between the borings was determined using a site level. The boring locations were determined by visually estimating, pacing and taping distances from landmarks shown in the Figures. The locations shown should not be considered more accurate than is implied by the method of measurement used and the scale of the map. The lines designating the interface between differing soil materials on the logs may be abrupt or gradational. Further, soil conditions at locations between the excavations may be substantially different from those at the specific locations we explored. It should be noted that the passage of time may also result in changes in the soil conditions reported in the logs.

SOIL IDENTIFICATION AND DESCRIPTION SEQUENCE

Sequence	Identification Components	Refer to Section		Required	Optional
		Field	Lab		
1	Group Name	2.5.2	3.2.2	●	
2	Group Symbol	2.5.2	3.2.2	●	
	Description Components				
3	Consistency of Cohesive Soil	2.5.3	3.2.3	●	
4	Apparent Density of Cohesionless Soil	2.5.4		●	
5	Color	2.5.5		●	
6	Moisture	2.5.6		●	
7	Percent or Proportion of Soil	2.5.7	3.2.4	●	○
	Particle Size	2.5.8	2.5.8	●	○
	Particle Angularity	2.5.9			○
	Particle Shape	2.5.10			○
8	Plasticity (for fine-grained soil)	2.5.11	3.2.5		○
9	Dry Strength (for fine-grained soil)	2.5.12			○
10	Dilatency (for fine-grained soil)	2.5.13			○
11	Toughness (for fine-grained soil)	2.5.14			○
12	Structure	2.5.15			○
13	Cementation	2.5.16		●	
14	Percent of Cobbles and Boulders	2.5.17		●	
	Description of Cobbles and Boulders	2.5.18		●	
15	Consistency Field Test Result	2.5.3		●	
16	Additional Comments	2.5.19			○

Describe the soil using descriptive terms in the order shown

Minimum Required Sequence:

USCS Group Name (Group Symbol); Consistency or Density; Color; Moisture; Percent or Proportion of Soil; Particle Size; Plasticity (optional).

○ = optional for non-Caltrans projects

Where applicable:

Cementation; % cobbles & boulders;
Description of cobbles & boulders;
Consistency field test result

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).

HOLE IDENTIFICATION

Holes are identified using the following convention:

H – YY – NNN

Where:

H: Hole Type Code

YY: 2-digit year

NNN: 3-digit number (001-999)

Hole Type Code and Description

Hole Type Code	Description
A	Auger boring (hollow or solid stem, bucket)
R	Rotary drilled boring (conventional)
RC	Rotary core (self-cased wire-line, continuously-sampled)
RW	Rotary core (self-cased wire-line, not continuously sampled)
P	Rotary percussion boring (Air)
HD	Hand driven (1-inch soil tube)
HA	Hand auger
D	Driven (dynamic cone penetrometer)
CPT	Cone Penetration Test
O	Other (note on LOTB)

Description Sequence Examples:

SANDY lean CLAY (CL); very stiff; yellowish brown; moist; mostly fines; some SAND, from fine to medium; few gravels; medium plasticity; PP=2.75.

Well-graded SAND with SILT and GRAVEL and COBBLES (SW-SM); dense; brown; moist; mostly SAND, from fine to coarse; some fine GRAVEL; few fines; weak cementation; 10% GRANITE COBBLES; 3 to 6 inches; hard; subrounded.

Clayey SAND (SC); medium dense, light brown; wet; mostly fine sand; little fines; low plasticity.



Project No. SD439

Richmar Park - San Marcos
Schmidt Design Group

BORING RECORD LEGEND #1

GROUP SYMBOLS AND NAMES

Graphic / Symbol	Group Names	Graphic / Symbol	Group Names
	GW Well-graded GRAVEL Well-graded GRAVEL with SAND		CL Lean CLAY Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
	GP Poorly graded GRAVEL Poorly graded GRAVEL with SAND		CL-ML SILTY CLAY SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
	GW-GM Well-graded GRAVEL with SILT Well-graded GRAVEL with SILT and SAND		ML SILT SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
	GW-GC Well-graded GRAVEL with CLAY (or SILTY CLAY) Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		OL ORGANIC lean CLAY ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
	GP-GM Poorly graded GRAVEL with SILT Poorly graded GRAVEL with SILT and SAND		OL ORGANIC SILT ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
	GP-GC Poorly graded GRAVEL with CLAY (or SILTY CLAY) Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		CH Fat CLAY Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
	GM Silty GRAVEL Silty GRAVEL with SAND		MH Elastic SILT Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
	GC CLAYEY GRAVEL CLAYEY GRAVEL with SAND		OH ORGANIC fat CLAY ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
	GC-GM Silty, CLAYEY GRAVEL Silty, CLAYEY GRAVEL with SAND		OH ORGANIC elastic SILT ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	SW Well-graded SAND Well-graded SAND with GRAVEL		OL/OH ORGANIC SOIL ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	SP Poorly graded SAND Poorly graded SAND with GRAVEL		
	SW-SM Well-graded SAND with SILT Well-graded SAND with SILT and GRAVEL		
	SW-SC Well-graded SAND with CLAY (or SILTY CLAY) Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		
	SP-SM Poorly graded SAND with SILT Poorly graded SAND with SILT and GRAVEL		
	SP-SC Poorly graded SAND with CLAY (or SILTY CLAY) Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		
	SM Silty SAND Silty SAND with GRAVEL		
	SC CLAYEY SAND CLAYEY SAND with GRAVEL		
	SC-SM Silty, CLAYEY SAND Silty, CLAYEY SAND with GRAVEL		
	PT PEAT		

FIELD AND LABORATORY TESTING

C	Consolidation (ASTM D 2435)
CL	Collapse Potential (ASTM D 5333)
CP	Compaction Curve (CTM 216)
CR	Corrosion, Sulfates, Chlorides (CTM 643; CTM 417; CTM 422)
CU	Consolidated Undrained Triaxial (ASTM D 4767)
DS	Direct Shear (ASTM D 3080)
EI	Expansion Index (ASTM D 4829)
M	Moisture Content (ASTM D 2216)
OC	Organic Content (ASTM D 2974)
P	Permeability (CTM 220)
PA	Particle Size Analysis (ASTM D 422)
PI	Liquid Limit, Plastic Limit, Plasticity Index (AASHTO T 89, AASHTO T 90)
PL	Point Load Index (ASTM D 5731)
PM	Pressure Meter
R	R-Value (CTM 301)
SE	Sand Equivalent (CTM 217)
SG	Specific Gravity (AASHTO T 100)
SL	Shrinkage Limit (ASTM D 427)
SW	Swell Potential (ASTM D 4546)
UC	Unconfined Compression - Soil (ASTM D 2166)
	Unconfined Compression - Rock (ASTM D 2938)
UU	Unconsolidated Undrained Triaxial (ASTM D 2850)
UW	Unit Weight (ASTM D 4767)

SAMPLER GRAPHIC SYMBOLS

	Standard Penetration Test (SPT)
	Standard California Sampler
	Modified California Sampler (2.4" ID, 3" OD)
	Shelby Tube
	Piston Sampler
	NX Rock Core
	HQ Rock Core
	Bulk Sample
	Other (see remarks)

DRILLING METHOD SYMBOLS

	Auger Drilling		Rotary Drilling		Dynamic Cone or Hand Driven		Diamond Core
--	----------------	--	-----------------	--	-----------------------------	--	--------------

WATER LEVEL SYMBOLS

	First Water Level Reading (during drilling)
	Static Water Level Reading (after drilling, date)

Definitions for Change in Material

Term	Definition	Symbol
Material Change	Change in material is observed in the sample or core and the location of change can be accurately located.	
Estimated Material Change	Change in material cannot be accurately located either because the change is gradational or because of limitations of the drilling and sampling methods.	
Soil / Rock Boundary	Material changes from soil characteristics to rock characteristics.	

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).



Project No. SD439

Richmar Park - San Marcos
Schmidt Design Group

BORING RECORD LEGEND #2

CONSISTENCY OF COHESIVE SOILS				
Description	Shear Strength (tsf)	Pocket Penetrometer, PP Measurement (tsf)	Torvane, TV, Measurement (tsf)	Vane Shear, VS, Measurement (tsf)
Very Soft	Less than 0.12	Less than 0.25	Less than 0.12	Less than 0.12
Soft	0.12 - 0.25	0.25 - 0.5	0.12 - 0.25	0.12 - 0.25
Medium Stiff	0.25 - 0.5	0.5 - 1	0.25 - 0.5	0.25 - 0.5
Stiff	0.5 - 1	1 - 2	0.5 - 1	0.5 - 1
Very Stiff	1 - 2	2 - 4	1 - 2	1 - 2
Hard	Greater than 2	Greater than 4	Greater than 2	Greater than 2

APPARENT DENSITY OF COHESIONLESS SOILS	
Description	SPT N_{60} (blows / 12 inches)
Very Loose	0 - 5
Loose	5 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Greater than 50

MOISTURE	
Description	Criteria
Dry	No discernable moisture
Moist	Moisture present, but no free water
Wet	Visible free water

PERCENT OR PROPORTION OF SOILS	
Description	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 - 10%
Little	15 - 25%
Some	30 - 45%
Mostly	50 - 100%

PARTICLE SIZE		
Description	Size (in)	
Boulder	Greater than 12	
Cobble	3 - 12	
Gravel	Coarse	3/4 - 3
	Fine	1/5 - 3/4
Sand	Coarse	1/16 - 1/5
	Medium	1/64 - 1/16
	Fine	1/300 - 1/64
Silt and Clay	Less than 1/300	

CEMENTATION	
Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010), with the exception of consistency of cohesive soils vs. N_{60} .

Plasticity

Description	Criteria
Nonplastic	A 1/8-in. thread cannot be rolled at any water content.
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CONSISTENCY OF COHESIVE SOILS	
Description	SPT N_{60} (blows/12 inches)
Very Soft	0 - 2
Soft	2 - 4
Medium Stiff	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	Greater than 30

Ref: Peck, Hansen, and Thornburn, 1974,
"Foundation Engineering," Second Edition.

Note: Only to be used (with caution) when pocket penetrometer or other data on undrained shear strength are unavailable.
Not allowed by Caltrans Soil and Rock Logging and Classification Manual, 2010.



Project No. SD439

Richmar Park - San Marcos
Schmidt Design Group

BORING RECORD LEGEND #3

BORING RECORD				PROJECT NAME Richmar Park - Schmidt Design Group				PROJECT NUMBER SD439		HOLE ID B-1					
SITE LOCATION San Marcos						START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1					
DRILLING COMPANY Pacific Drilling			DRILL RIG Diedrich D-50		DRILLING METHOD Hollow Stem Auger			LOGGED BY T. Latimer		CHECKED BY J. Sanders					
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)			HAMMER EFFICIENCY (ERI)		BORING DIA. (in) 7		TOTAL DEPTH (ft) 6.5		GROUND ELEV (ft) 587		DEPTH/ELEV. GW (ft) ∇ N/A / NE DURING DRILLING ▼ / NE AFTER DRILLING				
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")				NOTES ETR ~ 80%, N ₆₀ ~ 80/60 * N ~ 1.33 * N											
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N* ₆₀	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	585	B-1													ALLUVIUM: Clayey SAND with CLAY clumps (SC); dense, light orangish brown; moist; mostly fine SAND; some fines; low to medium plasticity.
		S-2		15 20 25	45	60									Fine to coarse grained SAND.
	580														Drilling terminated at 6½ feet. No groundwater encountered.
10															
	575														
15															
	570														
20															
	565														

 GROUP DELTA CONSULTANTS, INC. 9245 Activity Road, Suite 103 San Diego, CA 92126	THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.	FIGURE A-1
--	--	---------------------------------

BORING RECORD				PROJECT NAME Richmar Park - Schmidt Design Group				PROJECT NUMBER SD439		HOLE ID B-2					
SITE LOCATION San Marcos						START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1					
DRILLING COMPANY Pacific Drilling			DRILL RIG Diedrich D-50		DRILLING METHOD Hollow Stem Auger			LOGGED BY T. Latimer		CHECKED BY J. Sanders					
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)			HAMMER EFFICIENCY (ERI)		BORING DIA. (in) 7		TOTAL DEPTH (ft) 5		GROUND ELEV (ft) 587		DEPTH/ELEV. GW (ft) N/A / NE				
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")				NOTES ETR ~ 80%, $N_{60} \sim 80/60 * N \sim 1.33 * N$						DURING DRILLING AFTER DRILLING					
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	585	B-1		19	48	64						EI			ALLUVIUM: Silty to clayey SAND (SM/SC); dense; orangish brown; moist; mostly fine SAND; some fines; low plasticity. Fine to coarse grained SAND.
	580	S-2		24											Drilling terminated at 5 feet. No groundwater encountered.
10	575														
15	570														
20	565														



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San Diego, CA 92126

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FIGURE
A-2

BORING RECORD										PROJECT NAME		PROJECT NUMBER		HOLE ID	
SITE LOCATION										START DATE		FINISH DATE		SHEET NO.	
San Marcos										9/18/2015		9/18/2015		1 of 1	
DRILLING COMPANY			DRILL RIG			DRILLING METHOD			LOGGED BY			CHECKED BY			
Pacific Drilling			Diedrich D-50			Hollow Stem Auger			T. Latimer			J. Sanders			
HAMMER TYPE (WEIGHT/DROP)			HAMMER EFFICIENCY (ERI)			BORING DIA. (in)		TOTAL DEPTH (ft)		GROUND ELEV (ft)		DEPTH/ELEV. GW (ft)			
Hammer: 140 lbs., Drop: 30 in. (Automatic)						7		21.5		587		▽ N/A / NE DURING DRILLING			
DRIVE SAMPLER TYPE(S) & SIZE (ID)						NOTES						AFTER DRILLING			
SPT (1.4"), CAL (2.4")						ETR ~ 80%, $N_{60} \sim 80/60 * N \sim 1.33 * N$						▽ / NE			
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
	585		B-1									EI			ALLUVIUM: Silty to clayey SAND (SM/SC); dense; orangish brown; moist; mostly fine SAND; some fines; low plasticity.
			S-2	11 18 20	38	51									Dense.
5			R-3	10 17 31	48	43			14.1	108.5		M UW			Clayey SAND (SC); dense; reddish brown; moist; mostly fine to medium grained SAND; few to little fines; low plasticity.
	580														
10			S-4	11 17 31	48	64									Orangish brown; increased moisture content; mostly fine SAND; some fines; low to medium plasticity.
	575														Fine to coarse grained SAND; fine GRAVEL.
15			R-5	15 21 30	51	45									Light grayish brown; medium plasticity.
	570														
20			S-6	7 10 14	24	32									Light grayish brown and orangish brown/black.
	565														
															Drilling terminated at 21½ feet. No groundwater encountered.



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FIGURE
A-3

BORING RECORD										PROJECT NAME		PROJECT NUMBER		HOLE ID	
SITE LOCATION										START DATE		FINISH DATE		SHEET NO.	
San Marcos										9/18/2015		9/18/2015		1 of 1	
DRILLING COMPANY			DRILL RIG			DRILLING METHOD			LOGGED BY			CHECKED BY			
Pacific Drilling			Diedrich D-50			Hollow Stem Auger			T. Latimer			J. Sanders			
HAMMER TYPE (WEIGHT/DROP)			HAMMER EFFICIENCY (ERI)			BORING DIA. (in)		TOTAL DEPTH (ft)		GROUND ELEV (ft)		DEPTH/ELEV. GW (ft)			
Hammer: 140 lbs., Drop: 30 in. (Automatic)						7		21.5		588		▽ N/A / NE DURING DRILLING			
DRIVE SAMPLER TYPE(S) & SIZE (ID)						NOTES						AFTER DRILLING			
SPT (1.4"), CAL (2.4")						ETR ~ 80%, $N_{60} \sim 80/60 * N \sim 1.33 * N$						▽ / NE			
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
			B-1									EI			ALLUVIUM: Clayey SAND (SC); dense; orangish brown; moist; mostly fine SAND; little to some fines; medium plasticity.
	585		S-2	6 10 15	25	33						PI			LL=56, PI=37
5			R-3	13 25 33	58	52			18.4	102.4		M UW			Orangish brown mottled with black/dark brown.
	580														
10			S-4	9 14 28	42	56									Orangish brown and light grayish brown; trace fine to coarse GRAVEL.
	575														
15			R-5	17 29 38	67	60			15.6	114.3		M UW			Trace fine GRAVEL.
	570														
20			S-6	8 7 12	19	25									Clayey SAND to sandy lean CLAY (SC/CL); very stiff; light grayish brown; increased moisture content; mostly fines; some fine SAND; medium plasticity. PP = 2 TSF
	565														Drilling terminated at 21½ feet. No groundwater encountered.



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FIGURE
 A-4

BORING RECORD										PROJECT NAME Richmar Park - Schmidt Design Group		PROJECT NUMBER SD439		HOLE ID B-5	
SITE LOCATION San Marcos										START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1	
DRILLING COMPANY Pacific Drilling			DRILL RIG Diedrich D-50			DRILLING METHOD Hollow Stem Auger			LOGGED BY T. Latimer		CHECKED BY J. Sanders				
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)			HAMMER EFFICIENCY (ERI)			BORING DIA. (in) 7		TOTAL DEPTH (ft) 5		GROUND ELEV (ft) 588		DEPTH/ELEV. GW (ft) ▽ N/A / NE DURING DRILLING ▽ / NE AFTER DRILLING			
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")						NOTES ETR ~ 80%, N ₆₀ ~ 80/60 * N ~ 1.33 * N									
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N* ₆₀	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	585	B-1 S-2		7 15 21	36	48						CR			ALLUVIUM: Silty to clayey SAND (SM/SC); dense; light orangish brown; moist; mostly fine to medium SAND; some fines; low to medium plasticity.
															Drilling terminated at 5 feet. No groundwater encountered.
10	580														
15	575														
20	570														
	565														



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FIGURE
 A-5

BORING RECORD				PROJECT NAME Richmar Park - Schmidt Design Group				PROJECT NUMBER SD439		HOLE ID B-6					
SITE LOCATION San Marcos						START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1					
DRILLING COMPANY Pacific Drilling			DRILL RIG Diedrich D-50		DRILLING METHOD Hollow Stem Auger			LOGGED BY T. Latimer		CHECKED BY J. Sanders					
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)			HAMMER EFFICIENCY (ERI)		BORING DIA. (in) 7		TOTAL DEPTH (ft) 21.5		GROUND ELEV (ft) 586		DEPTH/ELEV. GW (ft) N/A / NE				
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")				NOTES ETR ~ 80%, $N_{60} \sim 80/60 * N \sim 1.33 * N$						DURING DRILLING N/A / NE					
AFTER DRILLING															
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N_{60}	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	585		B-1									PA			ALLUVIUM: Sandy SILT or sandy lean CLAY (ML/CL); hard; light orangish brown; dry to moist; mostly fines; some fine SAND; low plasticity. 1% GRAVEL: 39% SAND: 60% FINES Light to dark orangish brown; fine to coarse SAND. Clayey SAND (SC); dense; orangish brown; moist; mostly very fine SAND; some fines; low to medium plasticity. Light orangish brown and light grayish brown; fine to medium SAND; medium plasticity; trace fine GRAVEL. Rocky layer approximately 1 foot thick. Sandy lean CLAY (CL); very stiff; light brown; moist; mostly fines; little to some fine SAND; medium plasticity. PP = 2¾ - 3 TSF Drilling terminated at 21½ feet. No groundwater encountered.
			S-2	21 34 36	70	93									
			R-3	27 50 (5")	120	107			12.5	104.1		M UW			
		580													
			S-4	13 17 24	41	55									
10	575														
			S-5	11 11 14	25	33									
15	570														
			S-6	7 8 13	21	28									
20	565														



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FIGURE
A-6

BORING RECORD										PROJECT NAME Richmar Park - Schmidt Design Group		PROJECT NUMBER SD439		HOLE ID B-7		
SITE LOCATION San Marcos										START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1		
DRILLING COMPANY Pacific Drilling			DRILL RIG Diedrich D-50			DRILLING METHOD Hollow Stem Auger			LOGGED BY T. Latimer		CHECKED BY J. Sanders					
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)			HAMMER EFFICIENCY (ERI)			BORING DIA. (in) 7		TOTAL DEPTH (ft) 21.5		GROUND ELEV (ft) 587		DEPTH/ELEV. GW (ft) ∇ N/A / NE DURING DRILLING				
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")						NOTES ETR ~ 80%, N ₆₀ ~ 80/60 * N ~ 1.33 * N						AFTER DRILLING ∇ / NE				
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N* ₆₀	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION	
	585		B-1												ALLUVIUM: Silty or clayey SAND (SM/SC); very dense; light orangish brown; moist; mostly fine SAND; some fines; low to medium plasticity.	
			S-2	18 33 45	78	104										
5			R-3	18 41 60	101	90						DS				Clayey SAND (SC); very dense; light orangish brown; moist; mostly fine to medium SAND; little fines; medium plasticity; weakly cemented.
	580															
10			S-4	14 21 26	47	63										Well-graded SAND with CLAY (SW-SC); very dense; orangish brown; moist; mostly fine to coarse grained SAND; few fines; nonplastic.
	575															
15			S-5	25 50 (5")	120	160									Silty SAND (SM); very dense; orangish brown; moist; mostly fine grained SAND; some fines; low plasticity.	
	570															
20			S-6	9 14 26	40	53									Clayey SAND (SC); dense; light grayish brown and light orangish brown; moist; mostly fine grained SAND; some fines; medium plasticity.	
	565														Drilling terminated at 21½ feet. No groundwater encountered.	



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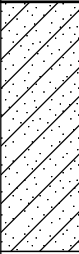
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FIGURE
A-7

BORING RECORD				PROJECT NAME Richmar Park - Schmidt Design Group				PROJECT NUMBER SD439		HOLE ID B-8					
SITE LOCATION San Marcos						START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1					
DRILLING COMPANY Pacific Drilling		DRILL RIG Diedrich D-50		DRILLING METHOD Hollow Stem Auger				LOGGED BY T. Latimer		CHECKED BY J. Sanders					
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)		HAMMER EFFICIENCY (ERI)		BORING DIA. (in) 7		TOTAL DEPTH (ft) 6.5		GROUND ELEV (ft) 587		DEPTH/ELEV. GW (ft) N/A / NE					
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")				NOTES ETR ~ 80%, N ₆₀ ~ 80/60 * N ~ 1.33 * N						DURING DRILLING AFTER DRILLING					
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N* ₆₀	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	585	B-1													ALLUVIUM: Silty or clayey SAND with CLAY clumps (SM); dense; light orangish brown; moist; mostly fine SAND; some fines; low plasticity.
		S-2		8 12 17	29	39									Clayey SAND (SC); dense; brown; moist; mostly fine grained SAND; some fines; medium plasticity.
10	580														Drilling terminated at 6½ feet. No groundwater encountered.
15	575														
20	570														
	565														

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GDC_LOG_BORING_2011_SD431.GPJ GDCLOG.GDT 10/8/15

BORING RECORD										PROJECT NAME Richmar Park - Schmidt Design Group		PROJECT NUMBER SD439		HOLE ID P-1	
SITE LOCATION San Marcos										START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1	
DRILLING COMPANY Pacific Drilling			DRILL RIG Diedrich D-50			DRILLING METHOD Hollow Stem Auger			LOGGED BY T. Latimer		CHECKED BY J. Sanders				
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)			HAMMER EFFICIENCY (ERI)			BORING DIA. (in) 7		TOTAL DEPTH (ft) 5		GROUND ELEV (ft) 587		DEPTH/ELEV. GW (ft) ∇ N/A / NE DURING DRILLING			
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")						NOTES ETR ~ 80%, N ₆₀ ~ 80/60 * N ~ 1.33 * N						AFTER DRILLING ∇ / NE			
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N* ₆₀	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	585		S-1	17 28 27	55	73									ALLUVIUM: Silty or clayey SAND with CLAY clumps (SC); medium dense; orangish brown; moist; mostly fine SAND; some fines; low plasticity. Very dense; fine to medium grained SAND.
	580														Drilling terminated at 5 feet. No groundwater encountered.
10															
	575														
15															
	570														
20															
	565														

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GDC_LOG_BORING_2011_SD431.GPJ GDCLOG.GDT 10/8/15

BORING RECORD										PROJECT NAME Richmar Park - Schmidt Design Group		PROJECT NUMBER SD439		HOLE ID P-2	
SITE LOCATION San Marcos										START DATE 9/18/2015		FINISH DATE 9/18/2015		SHEET NO. 1 of 1	
DRILLING COMPANY Pacific Drilling			DRILL RIG Diedrich D-50			DRILLING METHOD Hollow Stem Auger			LOGGED BY T. Latimer		CHECKED BY J. Sanders				
HAMMER TYPE (WEIGHT/DROP) Hammer: 140 lbs., Drop: 30 in. (Automatic)			HAMMER EFFICIENCY (ERI)			BORING DIA. (in) 7		TOTAL DEPTH (ft) 6		GROUND ELEV (ft) 586		DEPTH/ELEV. GW (ft) ∇ N/A / NE DURING DRILLING			
DRIVE SAMPLER TYPE(S) & SIZE (ID) SPT (1.4"), CAL (2.4")						NOTES ETR ~ 80%, N ₆₀ ~ 80/60 * N ~ 1.33 * N						AFTER DRILLING ∇ / NE			
DEPTH (feet)	ELEVATION (feet)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS / 6 IN)	BLOW/FT "N"	SPT N* ₆₀	RECOVERY (%)	RQD (%)	MOISTURE (%)	DRY DENSITY (pcf)	ATTERBERG LIMITS (LL:PI)	OTHER TESTS	DRILLING METHOD	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5	585	S-1		21 26 27	53	71									ALLUVIUM: Silty or clayey SAND with CLAY clumps (SC); medium dense; orangish brown; moist; mostly fine SAND; some fines; low plasticity.
	580														Very dense; fine to medium grained SAND. 1% GRAVEL: 50% SAND: 49% FINES Drilling terminated at 6 feet. No groundwater encountered.
10	575														
15	570														
20	565														



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FIGURE
A-10

APPENDIX B
LABORATORY TESTING

APPENDIX B

LABORATORY TESTING

Laboratory testing was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions and in the same locality. No warranty, express or implied, is made as to the correctness or serviceability of the test results, or the conclusions derived from these tests. Where a specific laboratory test method has been referenced, such as ASTM or Caltrans, the reference only applies to the specified laboratory test method, which has been used only as a guidance document for the general performance of the test and not as a "Test Standard". A brief description of the various tests performed for this project follows.

Classification: Soils were visually classified according to the Unified Soil Classification System as established by the American Society of Civil Engineers per ASTM D2487. The soil classifications are shown on the boring logs in Appendix A.

Particle Size Analysis: Particle size analyses were performed in general accordance with ASTM D422, and were used to supplement visual soil classifications. The test results are summarized in Figures B-1.1 through B-1.2.

Expansion Index: The expansion potential of selected soil samples was estimated in general accordance with the laboratory procedures outlined in ASTM test method D4829. The test results are summarized in Figure B-2. Figure B-2 also presents common criteria for evaluating the expansion potential based on the expansion index.

R-Value: R-Value tests were performed on selected samples of the on-site soils in general accordance with CTM 301. The test results are shown in Figures B-2.

pH and Resistivity: To assess the potential for reactivity with buried metals, selected soil samples were tested for pH and minimum resistivity using Caltrans test method 643. The corrosivity test results are summarized in Figure B-3.

Sulfate Content: To assess the potential for reactivity with concrete, selected soil samples were tested for water soluble sulfate. The sulfate was extracted from the soil under vacuum using a 10:1 (water to dry soil) dilution ratio. The extracted solution was tested for water soluble sulfate in general accordance with ASTM D516. The test results are also presented in Figure B-3, along with common criteria for evaluating soluble sulfate content.

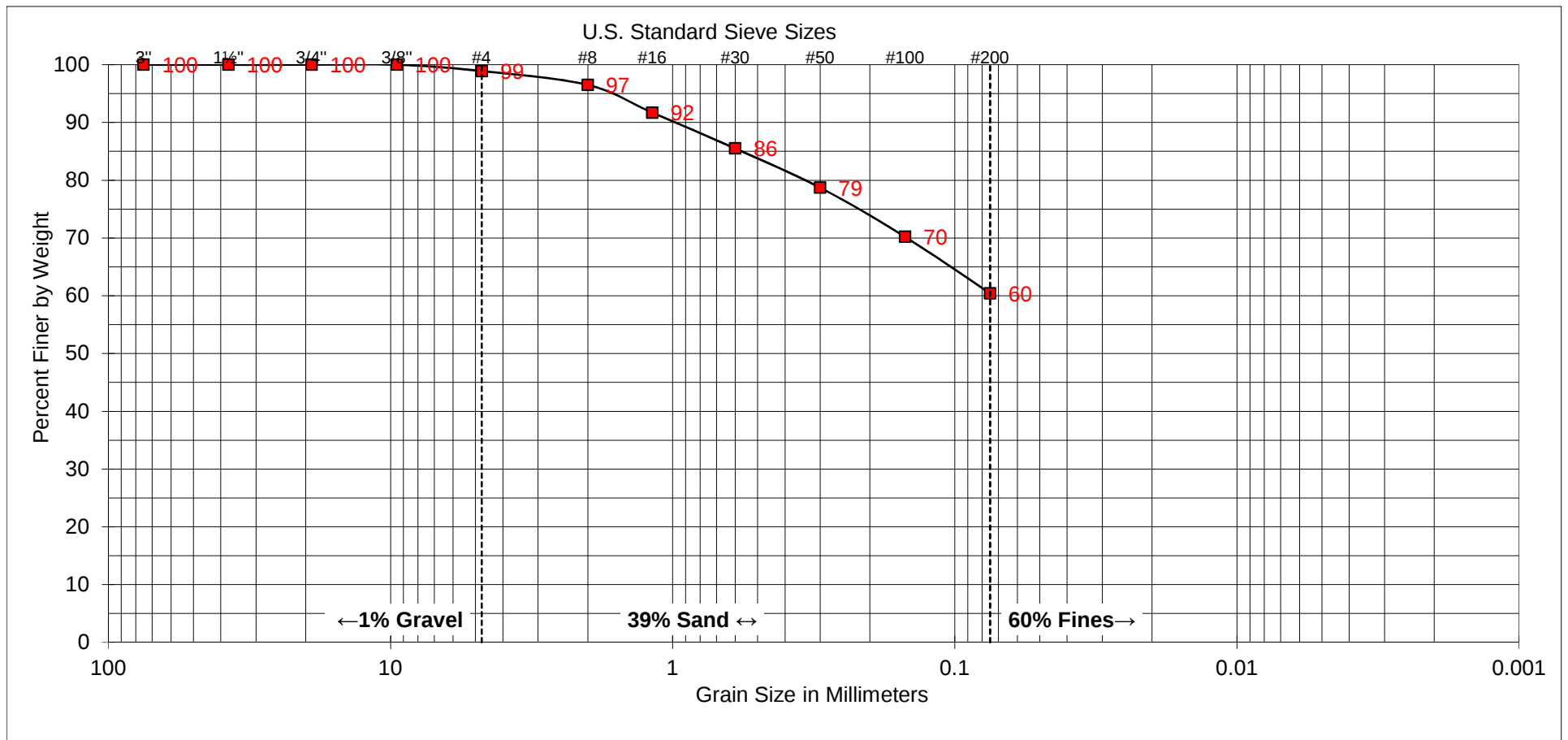
Chloride Content: Soil samples were also tested for water soluble chloride. The chloride was extracted from the soil under vacuum using a 10:1 (water to dry soil) dilution ratio. The extracted solution was then tested for water soluble chloride using a calibrated ion specific electronic probe. The test results are also shown in Figure B-3.

APPENDIX B

LABORATORY TESTING (Continued)

Maximum Density/Optimum Moisture: The maximum density and optimum moisture content of selected soil samples were determined using ASTM D1557 (modified Proctor). The results were corrected for over-size material using ASTM D4718. The test results are summarized in Figure B-4.

Direct Shear: The shear strength of a selected sample of the on-site soil was assessed using direct shear testing performed in general accordance with ASTM D3080. The test results are summarized in Figure B-5.

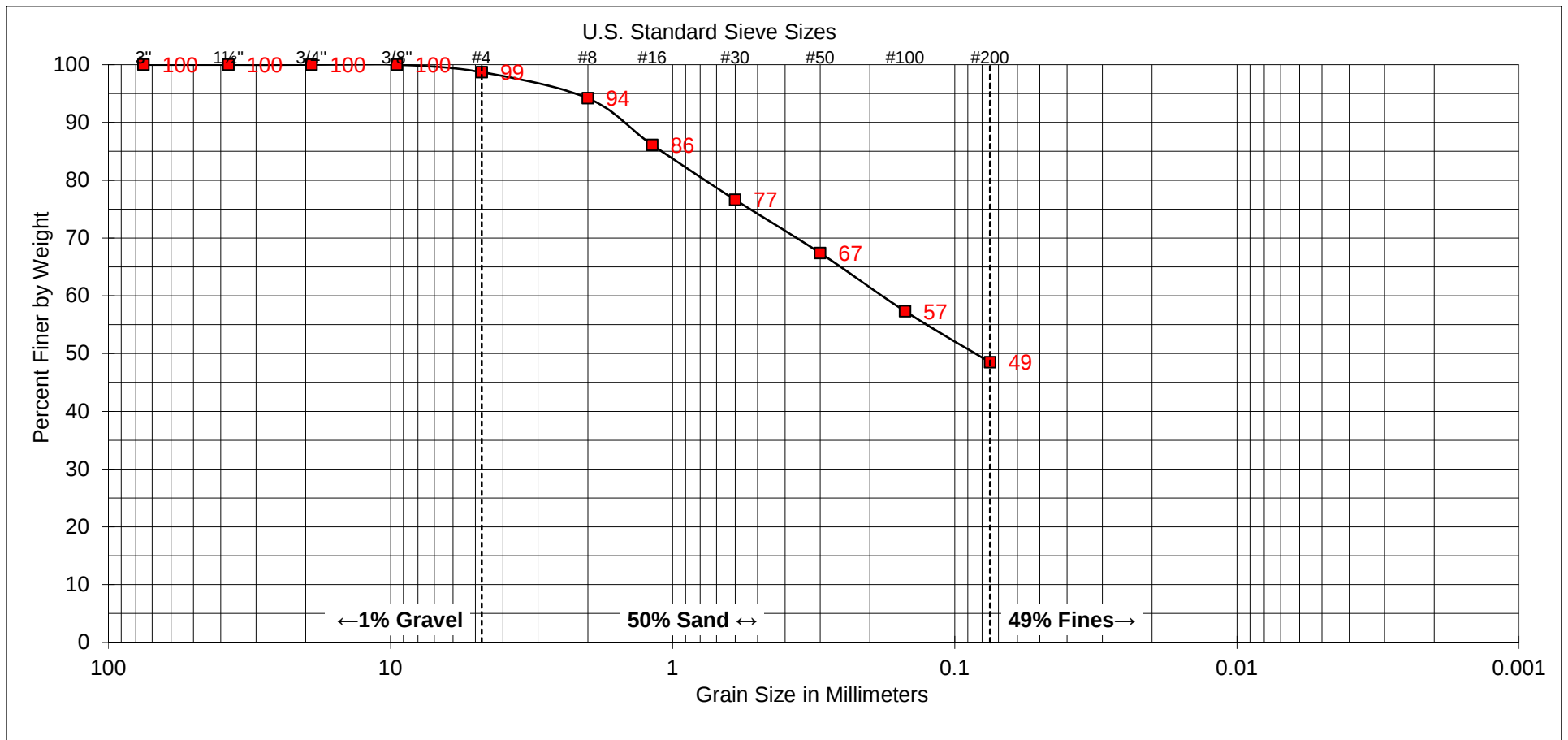


COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
GRAVEL		SAND			

SAMPLE	
BORING NO:	B-6
SAMPLE DEPTH:	0' - 5'

UNIFIED SOIL CLASSIFICATION:	ML/CL
DESCRIPTION:	Sandy SILT to sandy lean CLAY

ATTERBERG LIMITS
LIQUID LIMIT:
PLASTIC LIMIT:
PLASTICITY INDEX:



COARSE	FINE	COARSE	MEDIUM	FINE	SILT AND CLAY
GRAVEL		SAND			

SAMPLE	
BORING NO:	P-2
SAMPLE DEPTH:	4½' - 6'

UNIFIED SOIL CLASSIFICATION:	SM/SC
DESCRIPTION:	Silty to Clayey SAND

ATTERBERG LIMITS
LIQUID LIMIT:
PLASTIC LIMIT:
PLASTICITY INDEX:

EXPANSION TEST RESULTS
(ASTM D4829)

SAMPLE	DESCRIPTION	EXPANSION INDEX
B-2 @ 0'– 5'	<u>Alluvium</u> : Orangish brown clayey sand (SC).	37
B-3 @ 0'– 5'	<u>Alluvium</u> : Light orangish brown clayey sand (SC).	54
B-4 @ 0'– 5'	<u>Alluvium</u> : Orangish brown clayey sand (SC).	78

EXPANSION INDEX	POTENTIAL EXPANSION
0 to 20	Very low
21 to 50	Low
51 to 90	Medium
91 to 130	High
Above 130	Very High

R-VALUE TEST RESULTS
(CTM 301)

SAMPLE	DESCRIPTION	R-VALUE
B-1 @ 0'– 5'	<u>Alluvium</u> : Light orangish brown clayey sand (SC).	<5

CORROSIVITY TEST RESULTS
(ASTM D516, CTM 643)

SAMPLE	pH	RESISTIVITY [OHM-CM]	SULFATE CONTENT [%]	CHLORIDE CONTENT [%]
B-5 @ 0'– 5'	7.59	1776	<0.01	<0.01

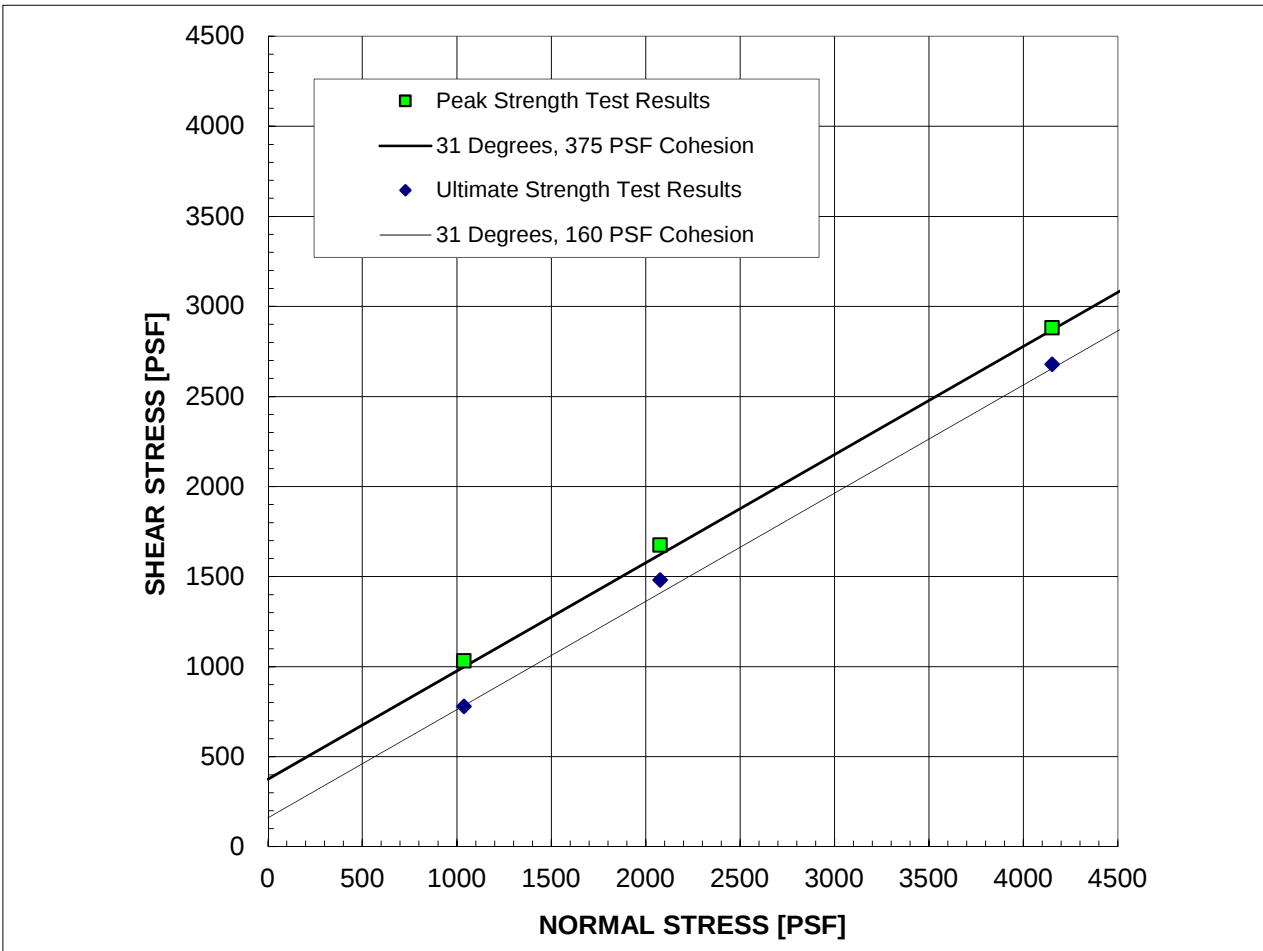
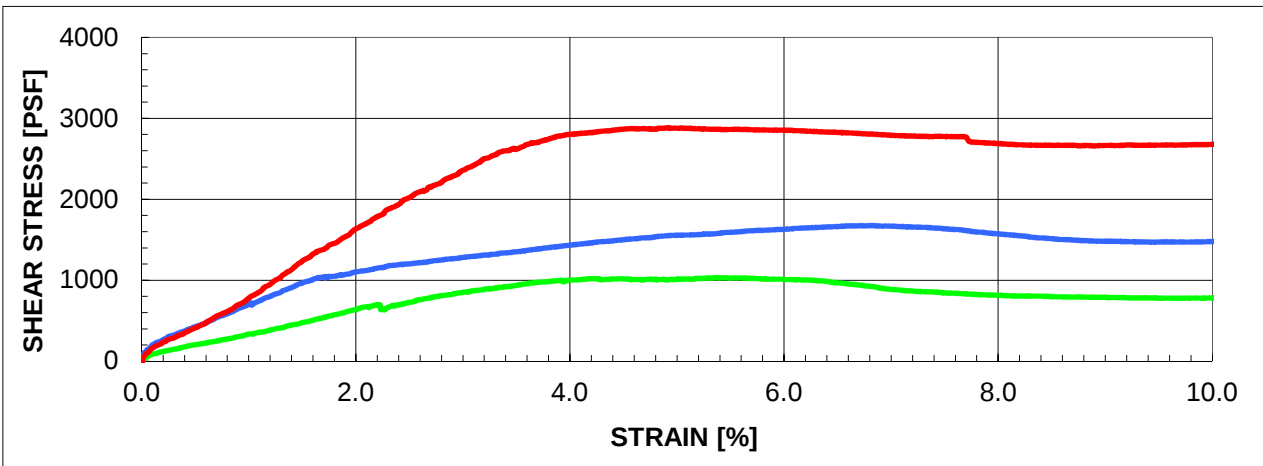
SULFATE CONTENT [%]	SULFATE EXPOSURE	CEMENT TYPE
0.00 to 0.10	Negligible	-
0.10 to 0.20	Moderate	II, IP(MS), IS(MS)
0.20 to 2.00	Severe	V
Above 2.00	Very Severe	V plus pozzolan

SOIL RESISTIVITY [OHM-CM]	GENERAL DEGREE OF CORROSIVITY TO FERROUS METALS
0 to 1,000	Very Corrosive
1,000 to 2,000	Corrosive
2,000 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
Above 10,000	Slightly Corrosive

CHLORIDE (Cl) CONTENT [%]	GENERAL DEGREE OF CORROSIVITY TO METALS
0.00 to 0.03	Negligible
0.03 to 0.15	Corrosive
Above 0.15	Severely Corrosive

MAXIMUM DENSITY & OPTIMUM MOISTURE
(ASTM D1557)

SAMPLE ID	DESCRIPTION	MAXIMUM DENSITY [lb/ft ³]	OPTIMUM MOISTURE [%]
B-3 @ 5'	<u>Alluvium</u> : Reddish brown clayey sand (SC)	108.5	14.1
B-4 @ 5'	<u>Alluvium</u> : Orangish brown clayey sand (SC)	102.4	18.3
B-4 @ 15'	<u>Alluvium</u> : Orangish brown and light gray brown clayey sand (SC)	114.3	15.6
B-6 @ 5'	<u>Alluvium</u> : Orangish brown sandy silt or sandy lean clay (ML/CL)	104.1	12.5



SAMPLE: B-7 @ 5' - 6½'

Light Orangish Brown Clayey Sand (SC).
(Remolded to ~90% Maximum @ Optimum)

PEAK

ϕ'

31 °

C'

375 PSF

ULTIMATE

31 °

160 PSF

STRAIN RATE: 0.0030 IN/MIN

(Sample was consolidated and drained)

IN-SITU

γ_d

109.8 PCF

w_c

11.1 %

AS-TESTED

109.8 PCF

19.8 %



GROUP DELTA

DIRECT SHEAR TEST RESULTS

Project No. SD439

Document No. 15-0144

FIGURE B-5

APPENDIX C
PERCOLATION TESTING

APPENDIX C

PERCOLATION TESTING

We have completed two borehole percolation tests in an area designated by you as a potential storm water infiltration basin location. The location of the two test holes were previously shown in Figure 2 and Figure 3. Based on discussions with you, it was determined the approximate depth of the bottom of the storm water infiltration basin would be five feet or deeper, depending on the results of these tests. The adjacent storm water inlet is at an approximate depth of five feet below ground surface, so if the soils do not support infiltration, the maximum depth of the basin will correspond to this inlet elevation.

Per the Model BMP Design Manual – San Diego Region, we conducted borehole percolation testing by first drilling two approximately 7-inch diameter test holes. All loose soil was removed from the holes, and approximately two inches of gravel was placed at the bottom of each hole. The holes were presoaked with water before the tests were started. After pre-soaking, the rates of fall of the water level was measured using a water meter until consistent results were obtained from each hole. The results of the tests are shown in Figures C-1 and C-2.

The percolation rate was then converted to an infiltration rate using the Porchet Method shown below. The change in head (ΔH), the time interval (Δt), and the average head (H_{avg}) were taken from the final reading. The effective radius ($*r$) was measured in the field.

$$I_t = \frac{\Delta H \pi r^2 60}{\Delta t (\pi r^2 + 2\pi r H_{avg})} = \frac{\Delta H 60 r}{\Delta t (r + 2H_{avg})}$$

Where:

- I_t = tested infiltration rate, inches/hour
- ΔH = change in head over the time interval, inches
- Δt = time interval, minutes
- $*r$ = effective radius of test hole
- H_{avg} = average head over the time interval, inches

The following calculations are based on the results shown in Figures C-1 and C-2.

ΔH	=	0.12	inches	ΔH	=	0.12	inches
Δt	=	15	minutes	Δt	=	15	minutes
$*r$	=	7	inches	$*r$	=	7	inches
H_{avg}	=	16.86	inches	H_{avg}	=	25.26	inches
I_t	=	0.083	inches/hour	I_t	=	0.058	inches/hour

The Model BMP Design Manual – San Diego Region recommends using a factor of safety to more accurately predict a full-scale infiltration rate based on small-scale testing methods, such as the borehole percolation testing that we used. The prescribed method from the BMP Design Manual is shown below:

Factor of Safety and Design Infiltration Rate Worksheet			Worksheet D.5-1		
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) $p = w \times v$
A	Suitability Assessment	Soil assessment methods	0.25	2	0.5
		Predominant soil texture	0.25	3	0.75
		Site soil variability	0.25	1	0.25
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			
B	Design	Level of pretreatment/ expected sediment loads	0.5	2	1
		Redundancy/resiliency	0.25	1	0.25
		Compaction during construction	0.25	2	0.5
		Design Safety Factor, $S_B = \Sigma p$			
Combined Safety Factor, $S_{Total} = S_A \times S_B$				3.5	
Observed Infiltration Rate, inch/hr, $K_{o(adjusted)}$ (corrected for test-specific bias)				0.083	0.058
Design Infiltration Rate, in/hr, $K_{design} = K_{o(adjusted)} / S_{Total}$				0.024	0.017

If the recommended factor of safety is used, the predicted infiltration rates drop to 0.024 inches per hour and 0.017 inches per hour.

FALLING HEAD PERCOLATION TEST FIELD DATA SHEET

Storm Water Infiltration

Project Name:	Richmar Park	Job No.:	SD439	Tested By:	T. Latimer
Test Hole No:	P-1	Date Drilled:	9/18/2015	Date Tested:	9/25/2015
Drilling Method:	6" Hollow-Stem Auger				
Depth of Hole as Drilled:	5 ft	Depth Before Test:	4.8 ft	Depth After Test:	4.05 ft

[illegible]

GROUP DELTA

P-1

Project No. SD439
Document No. 15-0144
FIGURE C-1

FALLING HEAD PERCOLATION TEST FIELD DATA SHEET

Storm Water Infiltration

Project Name:	Richmar Park	Job No.:	SD439	Tested By:	T. Latimer
Test Hole No:	P-2	Date Drilled:	9/18/2015	Date Tested:	9/25/2015
Drilling Method:	6" Hollow-Stem Auger				
Depth of Hole as Drilled:	6 ft	Depth Before Test:	5.8 ft	Depth After Test:	5.00 ft

[illegible]

GROUP DELTA

P-2

Project No. SD439
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FIGURE C-2



Appendix B

Air Quality and Greenhouse Gas Modeling Results

Richmar Park
San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	16.00	Space	1.10	6,400.00	0
City Park	1.70	Acre	1.70	700.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	40
Climate Zone	13			Operational Year	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Recreational acreage: 1.7 acres

Parking lot acreage: 1.1 acres (including 0.2-acre expansion of northwest parking lot)

700 square feet of building area assumed for the restroom building.

Construction Phase - Assume 20 days for grading, 165 days for construction.

Off-road Equipment -

Off-road Equipment - No cranes assumed.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - Conservatively assume 620 cy of soil import and 620 cy of soil export for the turf area.

Architectural Coating - Assume 1,000 sqft of exterior area on restroom building for architectural coating and 3,000 sqft of interior area.

Vehicle Trips - Assume 50 trips/acre/day, based on SANDAG trip rate for city parks.

Area Coating - Assume 1,000 sqft of exterior area on restroom building for architectural coating and 3,000 sqft of interior area.

Mobile Land Use Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	446.00	1,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,338.00	3,000.00
tblAreaCoating	Area_Nonresidential_Interior	1338	3000
tblConstructionPhase	NumDays	220.00	165.00
tblConstructionPhase	NumDays	6.00	20.00
tblGrading	AcresOfGrading	10.00	3.00
tblGrading	MaterialExported	0.00	620.00
tblGrading	MaterialImported	0.00	620.00
tblLandUse	LandUseSquareFeet	74,052.00	700.00
tblLandUse	LotAcreage	0.14	1.10
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	ST_TR	1.59	50.00
tblVehicleTrips	SU_TR	1.59	50.00
tblVehicleTrips	WD_TR	1.59	50.00

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					
2016	5.0072	32.2349	22.0720	0.0273	6.4071	1.6975	8.1045	3.3875	1.5617	4.9492	0.0000	2,803.5714	2,803.5714	0.7516	0.0000	2,819.3543
Total	5.0072	32.2349	22.0720	0.0273	6.4071	1.6975	8.1045	3.3875	1.5617	4.9492	0.0000	2,803.5714	2,803.5714	0.7516	0.0000	2,819.3543

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					
2016	5.0072	32.2349	22.0720	0.0273	6.4071	1.6975	8.1045	3.3875	1.5617	4.9492	0.0000	2,803.5714	2,803.5714	0.7516	0.0000	2,819.3543
Total	5.0072	32.2349	22.0720	0.0273	6.4071	1.6975	8.1045	3.3875	1.5617	4.9492	0.0000	2,803.5714	2,803.5714	0.7516	0.0000	2,819.3543

[illegible]

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	0.1631	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.3181	0.6213	2.9712	5.4600e-003	0.3839	7.6200e-003	0.3916	0.1025	7.0100e-003	0.1095		476.2501	476.2501	0.0214		476.6995
Total	0.4812	0.6213	2.9731	5.4600e-003	0.3839	7.6300e-003	0.3916	0.1025	7.0200e-003	0.1095		476.2539	476.2539	0.0214	0.0000	476.7036

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	0.1631	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.3181	0.6213	2.9712	5.4600e-003	0.3839	7.6200e-003	0.3916	0.1025	7.0100e-003	0.1095		476.2501	476.2501	0.0214		476.6995
Total	0.4812	0.6213	2.9731	5.4600e-003	0.3839	7.6300e-003	0.3916	0.1025	7.0200e-003	0.1095		476.2539	476.2539	0.0214	0.0000	476.7036

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2016	1/5/2016	5	3	
2	Grading	Grading	1/6/2016	2/2/2016	5	20	
3	Building Construction	Building Construction	2/3/2016	9/20/2016	5	165	
4	Paving	Paving	9/21/2016	10/4/2016	5	10	
5	Architectural Coating	Architectural Coating	10/5/2016	10/18/2016	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	0	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	155.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2016

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					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	2.6992	30.8238	18.0600	0.0239		1.5116	1.5116		1.3907	1.3907		2,480.1000	2,480.1000	0.7481		2,495.8099
Total	2.6992	30.8238	18.0600	0.0239	1.5908	1.5116	3.1024	0.1718	1.3907	1.5625		2,480.1000	2,480.1000	0.7481		2,495.8099

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0296	0.0368	0.3477	7.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		65.2537	65.2537	3.4800e-003		65.3268
Total	0.0296	0.0368	0.3477	7.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		65.2537	65.2537	3.4800e-003		65.3268

3.2 Site Preparation - 2016**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					1.5908	0.0000	1.5908	0.1718	0.0000	0.1718			0.0000			0.0000
Off-Road	2.6992	30.8238	18.0600	0.0239		1.5116	1.5116		1.3907	1.3907	0.0000	2,480.1000	2,480.1000	0.7481		2,495.8099
Total	2.6992	30.8238	18.0600	0.0239	1.5908	1.5116	3.1024	0.1718	1.3907	1.5625	0.0000	2,480.1000	2,480.1000	0.7481		2,495.8099

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0296	0.0368	0.3477	7.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		65.2537	65.2537	3.4800e-003		65.3268
Total	0.0296	0.0368	0.3477	7.8000e-004	0.0657	4.9000e-004	0.0662	0.0174	4.5000e-004	0.0179		65.2537	65.2537	3.4800e-003		65.3268

3.3 Grading - 2016**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					6.1899	0.0000	6.1899	3.3287	0.0000	3.3287			0.0000			0.0000
Off-Road	2.8530	29.9470	19.6345	0.0206		1.6671	1.6671		1.5337	1.5337		2,139.274 2	2,139.274 2	0.6453		2,152.825 1
Total	2.8530	29.9470	19.6345	0.0206	6.1899	1.6671	7.8570	3.3287	1.5337	4.8625		2,139.274 2	2,139.274 2	0.6453		2,152.825 1

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	0.1691	2.2419	2.0029	5.7900e-003	0.1350	0.0298	0.1648	0.0370	0.0274	0.0644		582.7301	582.7301	4.2100e-003		582.8185
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0371	0.0460	0.4346	9.8000e-004	0.0822	6.2000e-004	0.0828	0.0218	5.7000e-004	0.0224		81.5671	81.5671	4.3500e-003		81.6585
Total	0.2061	2.2879	2.4375	6.7700e-003	0.2172	0.0304	0.2476	0.0588	0.0279	0.0867		664.2972	664.2972	8.5600e-003		664.4770

3.3 Grading - 2016**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					6.1899	0.0000	6.1899	3.3287	0.0000	3.3287			0.0000			0.0000
Off-Road	2.8530	29.9470	19.6345	0.0206		1.6671	1.6671		1.5337	1.5337	0.0000	2,139.274 2	2,139.274 2	0.6453		2,152.825 1
Total	2.8530	29.9470	19.6345	0.0206	6.1899	1.6671	7.8570	3.3287	1.5337	4.8625	0.0000	2,139.274 2	2,139.274 2	0.6453		2,152.825 1

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	0.1691	2.2419	2.0029	5.7900e-003	0.1350	0.0298	0.1648	0.0370	0.0274	0.0644		582.7301	582.7301	4.2100e-003		582.8185
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0371	0.0460	0.4346	9.8000e-004	0.0822	6.2000e-004	0.0828	0.0218	5.7000e-004	0.0224		81.5671	81.5671	4.3500e-003		81.6585
Total	0.2061	2.2879	2.4375	6.7700e-003	0.2172	0.0304	0.2476	0.0588	0.0279	0.0867		664.2972	664.2972	8.5600e-003		664.4770

3.4 Building Construction - 2016**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	2.9784	16.1005	13.7318	0.0193		1.2386	1.2386		1.2007	1.2007		1,765.989 1	1,765.989 1	0.3652		1,773.657 5
Total	2.9784	16.1005	13.7318	0.0193		1.2386	1.2386		1.2007	1.2007		1,765.989 1	1,765.989 1	0.3652		1,773.657 5

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.0971	0.1497	2.4000e-004	6.6400e-003	1.4500e-003	8.0900e-003	1.8900e-003	1.3300e-003	3.2300e-003		23.6759	23.6759	1.9000e-004		23.6799
Worker	0.0111	0.0138	0.1304	2.9000e-004	0.0246	1.8000e-004	0.0248	6.5400e-003	1.7000e-004	6.7100e-003		24.4701	24.4701	1.3100e-003		24.4976
Total	0.0232	0.1109	0.2801	5.3000e-004	0.0313	1.6300e-003	0.0329	8.4300e-003	1.5000e-003	9.9400e-003		48.1461	48.1461	1.5000e-003		48.1775

3.4 Building Construction - 2016**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	2.9784	16.1005	13.7318	0.0193		1.2386	1.2386		1.2007	1.2007	0.0000	1,765.989 1	1,765.989 1	0.3652		1,773.657 5
Total	2.9784	16.1005	13.7318	0.0193		1.2386	1.2386		1.2007	1.2007	0.0000	1,765.989 1	1,765.989 1	0.3652		1,773.657 5

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0121	0.0971	0.1497	2.4000e-004	6.6400e-003	1.4500e-003	8.0900e-003	1.8900e-003	1.3300e-003	3.2300e-003		23.6759	23.6759	1.9000e-004		23.6799
Worker	0.0111	0.0138	0.1304	2.9000e-004	0.0246	1.8000e-004	0.0248	6.5400e-003	1.7000e-004	6.7100e-003		24.4701	24.4701	1.3100e-003		24.4976
Total	0.0232	0.1109	0.2801	5.3000e-004	0.0313	1.6300e-003	0.0329	8.4300e-003	1.5000e-003	9.9400e-003		48.1461	48.1461	1.5000e-003		48.1775

3.5 Paving - 2016**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	1.7811	17.9300	12.1433	0.0176		1.1252	1.1252		1.0363	1.0363		1,804.8600	1,804.8600	0.5344		1,816.0828
Paving	0.2882					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	2.0693	17.9300	12.1433	0.0176		1.1252	1.1252		1.0363	1.0363		1,804.8600	1,804.8600	0.5344		1,816.0828

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0556	0.0690	0.6519	1.4700e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		122.3507	122.3507	6.5300e-003		122.4878
Total	0.0556	0.0690	0.6519	1.4700e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		122.3507	122.3507	6.5300e-003		122.4878

3.5 Paving - 2016**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	1.7811	17.9300	12.1433	0.0176		1.1252	1.1252		1.0363	1.0363	0.0000	1,804.8600	1,804.8600	0.5344		1,816.0828
Paving	0.2882					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	2.0693	17.9300	12.1433	0.0176		1.1252	1.1252		1.0363	1.0363	0.0000	1,804.8600	1,804.8600	0.5344		1,816.0828

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0556	0.0690	0.6519	1.4700e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		122.3507	122.3507	6.5300e-003		122.4878
Total	0.0556	0.0690	0.6519	1.4700e-003	0.1232	9.2000e-004	0.1242	0.0327	8.5000e-004	0.0335		122.3507	122.3507	6.5300e-003		122.4878

3.6 Architectural Coating - 2016

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	4.6350					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	5.0035	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.7100e-003	4.6000e-003	0.0435	1.0000e-004	8.2100e-003	6.0000e-005	8.2800e-003	2.1800e-003	6.0000e-005	2.2400e-003		8.1567	8.1567	4.4000e-004		8.1659
Total	3.7100e-003	4.6000e-003	0.0435	1.0000e-004	8.2100e-003	6.0000e-005	8.2800e-003	2.1800e-003	6.0000e-005	2.2400e-003		8.1567	8.1567	4.4000e-004		8.1659

3.6 Architectural Coating - 2016

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	4.6350					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	5.0035	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	3.7100e-003	4.6000e-003	0.0435	1.0000e-004	8.2100e-003	6.0000e-005	8.2800e-003	2.1800e-003	6.0000e-005	2.2400e-003		8.1567	8.1567	4.4000e-004		8.1659
Total	3.7100e-003	4.6000e-003	0.0435	1.0000e-004	8.2100e-003	6.0000e-005	8.2800e-003	2.1800e-003	6.0000e-005	2.2400e-003		8.1567	8.1567	4.4000e-004		8.1659

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	0.3181	0.6213	2.9712	5.4600e-003	0.3839	7.6200e-003	0.3916	0.1025	7.0100e-003	0.1095		476.2501	476.2501	0.0214		476.6995
Unmitigated	0.3181	0.6213	2.9712	5.4600e-003	0.3839	7.6200e-003	0.3916	0.1025	7.0100e-003	0.1095		476.2501	476.2501	0.0214		476.6995

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	85.00	85.00	85.00	181,462	181,462
Parking Lot	0.00	0.00	0.00		
Total	85.00	85.00	85.00	181,462	181,462

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas 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

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					
City Park	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		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
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
City Park	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		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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	0.1631	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003
Unmitigated	0.1631	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0109					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8000e-004	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003
Total	0.1631	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0109					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1519					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8000e-004	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003
Total	0.1631	2.0000e-005	1.8500e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.8700e-003	3.8700e-003	1.0000e-005		4.1000e-003

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
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10.0 Vegetation

Richmar Park
San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	16.00	Space	1.10	6,400.00	0
City Park	1.70	Acre	1.70	700.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.6	Precipitation Freq (Days)	40
Climate Zone	13			Operational Year	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Recreational acreage: 1.7 acres

Parking lot acreage: 1.1 acres (including 0.2-acre expansion of northwest parking lot)

700 square feet of building area assumed for the restroom building.

Construction Phase - Assume 20 days for grading, 165 days for construction.

Off-road Equipment -

Off-road Equipment - No cranes assumed.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Grading - Conservatively assume 620 cy of soil import and 620 cy of soil export for the turf area.

Architectural Coating - Assume 1,000 sqft of exterior area on restroom building for architectural coating and 3,000 sqft of interior area.

Vehicle Trips - Assume 50 trips/acre/day, based on SANDAG trip rate for city parks.

Area Coating - Assume 1,000 sqft of exterior area on restroom building for architectural coating and 3,000 sqft of interior area.

Mobile Land Use Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	446.00	1,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,338.00	3,000.00
tblAreaCoating	Area_Nonresidential_Interior	1338	3000
tblConstructionPhase	NumDays	220.00	165.00
tblConstructionPhase	NumDays	6.00	20.00
tblGrading	AcresOfGrading	10.00	3.00
tblGrading	MaterialExported	0.00	620.00
tblGrading	MaterialImported	0.00	620.00
tblLandUse	LandUseSquareFeet	74,052.00	700.00
tblLandUse	LotAcreage	0.14	1.10
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblVehicleTrips	ST_TR	1.59	50.00
tblVehicleTrips	SU_TR	1.59	50.00
tblVehicleTrips	WD_TR	1.59	50.00

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					
2016	0.3177	1.8081	1.4753	2.0500e-003	0.0697	0.1282	0.1978	0.0350	0.1231	0.1581	0.0000	174.7748	174.7748	0.0370	0.0000	175.5519
Total	0.3177	1.8081	1.4753	2.0500e-003	0.0697	0.1282	0.1978	0.0350	0.1231	0.1581	0.0000	174.7748	174.7748	0.0370	0.0000	175.5519

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					
2016	0.3177	1.8081	1.4753	2.0500e-003	0.0697	0.1282	0.1978	0.0350	0.1231	0.1581	0.0000	174.7746	174.7746	0.0370	0.0000	175.5517
Total	0.3177	1.8081	1.4753	2.0500e-003	0.0697	0.1282	0.1978	0.0350	0.1231	0.1581	0.0000	174.7746	174.7746	0.0370	0.0000	175.5517

[illegible]

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	0.0297	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8406	1.8406	7.0000e-005	2.0000e-005	1.8469
Mobile	0.0540	0.1126	0.5232	1.0000e-003	0.0682	1.3800e-003	0.0696	0.0183	1.2700e-003	0.0195	0.0000	79.1901	79.1901	3.5300e-003	0.0000	79.2642
Waste						0.0000	0.0000		0.0000	0.0000	0.0305	0.0000	0.0305	1.8000e-003	0.0000	0.0682
Water						0.0000	0.0000		0.0000	0.0000	0.0000	7.3543	7.3543	3.0000e-004	6.0000e-005	7.3796
Total	0.0837	0.1126	0.5234	1.0000e-003	0.0682	1.3800e-003	0.0696	0.0183	1.2700e-003	0.0195	0.0305	88.3853	88.4158	5.7000e-003	8.0000e-005	88.5592

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0297	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8406	1.8406	7.0000e-005	2.0000e-005	1.8469
Mobile	0.0540	0.1126	0.5232	1.0000e-003	0.0682	1.3800e-003	0.0696	0.0183	1.2700e-003	0.0195	0.0000	79.1901	79.1901	3.5300e-003	0.0000	79.2642
Waste						0.0000	0.0000		0.0000	0.0000	0.0305	0.0000	0.0305	1.8000e-003	0.0000	0.0682
Water						0.0000	0.0000		0.0000	0.0000	0.0000	7.3543	7.3543	3.0000e-004	6.0000e-005	7.3796
Total	0.0837	0.1126	0.5234	1.0000e-003	0.0682	1.3800e-003	0.0696	0.0183	1.2700e-003	0.0195	0.0305	88.3853	88.4158	5.7000e-003	8.0000e-005	88.5592

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2016	1/5/2016	5	3	
2	Grading	Grading	1/6/2016	2/2/2016	5	20	
3	Building Construction	Building Construction	2/3/2016	9/20/2016	5	165	
4	Paving	Paving	9/21/2016	10/4/2016	5	10	
5	Architectural Coating	Architectural Coating	10/5/2016	10/18/2016	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 3,000; Non-Residential Outdoor: 1,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	0	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	155.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	3.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2016

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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0500e-003	0.0462	0.0271	4.0000e-005		2.2700e-003	2.2700e-003		2.0900e-003	2.0900e-003	0.0000	3.3749	3.3749	1.0200e-003	0.0000	3.3962
Total	4.0500e-003	0.0462	0.0271	4.0000e-005	2.3900e-003	2.2700e-003	4.6600e-003	2.6000e-004	2.0900e-003	2.3500e-003	0.0000	3.3749	3.3749	1.0200e-003	0.0000	3.3962

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	4.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0897	0.0897	0.0000	0.0000	0.0898
Total	4.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0897	0.0897	0.0000	0.0000	0.0898

3.2 Site Preparation - 2016**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					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0500e-003	0.0462	0.0271	4.0000e-005		2.2700e-003	2.2700e-003		2.0900e-003	2.0900e-003	0.0000	3.3749	3.3749	1.0200e-003	0.0000	3.3962
Total	4.0500e-003	0.0462	0.0271	4.0000e-005	2.3900e-003	2.2700e-003	4.6600e-003	2.6000e-004	2.0900e-003	2.3500e-003	0.0000	3.3749	3.3749	1.0200e-003	0.0000	3.3962

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	4.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0897	0.0897	0.0000	0.0000	0.0898
Total	4.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0897	0.0897	0.0000	0.0000	0.0898

3.3 Grading - 2016**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					0.0619	0.0000	0.0619	0.0333	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0285	0.2995	0.1964	2.1000e-004		0.0167	0.0167		0.0153	0.0153	0.0000	19.4072	19.4072	5.8500e-003	0.0000	19.5301
Total	0.0285	0.2995	0.1964	2.1000e-004	0.0619	0.0167	0.0786	0.0333	0.0153	0.0486	0.0000	19.4072	19.4072	5.8500e-003	0.0000	19.5301

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	1.6200e-003	0.0225	0.0185	6.0000e-005	1.3200e-003	3.0000e-004	1.6200e-003	3.6000e-004	2.7000e-004	6.4000e-004	0.0000	5.2937	5.2937	4.0000e-005	0.0000	5.2944
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	3.4000e-004	4.5000e-004	4.3200e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7473	0.7473	4.0000e-005	0.0000	0.7481
Total	1.9600e-003	0.0230	0.0229	7.0000e-005	2.1200e-003	3.1000e-004	2.4300e-003	5.7000e-004	2.8000e-004	8.6000e-004	0.0000	6.0410	6.0410	8.0000e-005	0.0000	6.0426

3.3 Grading - 2016**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					0.0619	0.0000	0.0619	0.0333	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0285	0.2995	0.1963	2.1000e-004		0.0167	0.0167		0.0153	0.0153	0.0000	19.4072	19.4072	5.8500e-003	0.0000	19.5301
Total	0.0285	0.2995	0.1963	2.1000e-004	0.0619	0.0167	0.0786	0.0333	0.0153	0.0486	0.0000	19.4072	19.4072	5.8500e-003	0.0000	19.5301

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	1.6200e-003	0.0225	0.0185	6.0000e-005	1.3200e-003	3.0000e-004	1.6200e-003	3.6000e-004	2.7000e-004	6.4000e-004	0.0000	5.2937	5.2937	4.0000e-005	0.0000	5.2944
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	3.4000e-004	4.5000e-004	4.3200e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.1000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.7473	0.7473	4.0000e-005	0.0000	0.7481
Total	1.9600e-003	0.0230	0.0229	7.0000e-005	2.1200e-003	3.1000e-004	2.4300e-003	5.7000e-004	2.8000e-004	8.6000e-004	0.0000	6.0410	6.0410	8.0000e-005	0.0000	6.0426

3.4 Building Construction - 2016**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	0.2457	1.3283	1.1329	1.5900e-003		0.1022	0.1022		0.0991	0.0991	0.0000	132.1715	132.1715	0.0273	0.0000	132.7454
Total	0.2457	1.3283	1.1329	1.5900e-003		0.1022	0.1022		0.0991	0.0991	0.0000	132.1715	132.1715	0.0273	0.0000	132.7454

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	9.4000e-004	8.0600e-003	0.0113	2.0000e-005	5.4000e-004	1.2000e-004	6.6000e-004	1.5000e-004	1.1000e-004	2.6000e-004	0.0000	1.7799	1.7799	1.0000e-005	0.0000	1.7802
Worker	8.5000e-004	1.1200e-003	0.0107	2.0000e-005	1.9800e-003	2.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.8496	1.8496	1.0000e-004	0.0000	1.8517
Total	1.7900e-003	9.1800e-003	0.0220	4.0000e-005	2.5200e-003	1.4000e-004	2.6600e-003	6.8000e-004	1.2000e-004	8.0000e-004	0.0000	3.6295	3.6295	1.1000e-004	0.0000	3.6319

3.4 Building Construction - 2016**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	0.2457	1.3283	1.1329	1.5900e-003		0.1022	0.1022		0.0991	0.0991	0.0000	132.1713	132.1713	0.0273	0.0000	132.7452
Total	0.2457	1.3283	1.1329	1.5900e-003		0.1022	0.1022		0.0991	0.0991	0.0000	132.1713	132.1713	0.0273	0.0000	132.7452

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	9.4000e-004	8.0600e-003	0.0113	2.0000e-005	5.4000e-004	1.2000e-004	6.6000e-004	1.5000e-004	1.1000e-004	2.6000e-004	0.0000	1.7799	1.7799	1.0000e-005	0.0000	1.7802
Worker	8.5000e-004	1.1200e-003	0.0107	2.0000e-005	1.9800e-003	2.0000e-005	2.0000e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.8496	1.8496	1.0000e-004	0.0000	1.8517
Total	1.7900e-003	9.1800e-003	0.0220	4.0000e-005	2.5200e-003	1.4000e-004	2.6600e-003	6.8000e-004	1.2000e-004	8.0000e-004	0.0000	3.6295	3.6295	1.1000e-004	0.0000	3.6319

3.5 Paving - 2016**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	8.9100e-003	0.0897	0.0607	9.0000e-005		5.6300e-003	5.6300e-003		5.1800e-003	5.1800e-003	0.0000	8.1867	8.1867	2.4200e-003	0.0000	8.2376
Paving	1.4400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0104	0.0897	0.0607	9.0000e-005		5.6300e-003	5.6300e-003		5.1800e-003	5.1800e-003	0.0000	8.1867	8.1867	2.4200e-003	0.0000	8.2376

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	2.6000e-004	3.4000e-004	3.2400e-003	1.0000e-005	6.0000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5605	0.5605	3.0000e-005	0.0000	0.5611
Total	2.6000e-004	3.4000e-004	3.2400e-003	1.0000e-005	6.0000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5605	0.5605	3.0000e-005	0.0000	0.5611

3.5 Paving - 2016**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	8.9100e-003	0.0897	0.0607	9.0000e-005		5.6300e-003	5.6300e-003		5.1800e-003	5.1800e-003	0.0000	8.1867	8.1867	2.4200e-003	0.0000	8.2376
Paving	1.4400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0104	0.0897	0.0607	9.0000e-005		5.6300e-003	5.6300e-003		5.1800e-003	5.1800e-003	0.0000	8.1867	8.1867	2.4200e-003	0.0000	8.2376

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	2.6000e-004	3.4000e-004	3.2400e-003	1.0000e-005	6.0000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5605	0.5605	3.0000e-005	0.0000	0.5611
Total	2.6000e-004	3.4000e-004	3.2400e-003	1.0000e-005	6.0000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5605	0.5605	3.0000e-005	0.0000	0.5611

3.6 Architectural Coating - 2016

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	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798
Total	0.0250	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798

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-005	2.0000e-005	2.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0374	0.0374	0.0000	0.0000	0.0374
Total	2.0000e-005	2.0000e-005	2.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0374	0.0374	0.0000	0.0000	0.0374

3.6 Architectural Coating - 2016

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	0.0232					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798
Total	0.0250	0.0119	9.4200e-003	1.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	1.2766	1.2766	1.5000e-004	0.0000	1.2798

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-005	2.0000e-005	2.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0374	0.0374	0.0000	0.0000	0.0374
Total	2.0000e-005	2.0000e-005	2.2000e-004	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0374	0.0374	0.0000	0.0000	0.0374

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	0.0540	0.1126	0.5232	1.0000e-003	0.0682	1.3800e-003	0.0696	0.0183	1.2700e-003	0.0195	0.0000	79.1901	79.1901	3.5300e-003	0.0000	79.2642
Unmitigated	0.0540	0.1126	0.5232	1.0000e-003	0.0682	1.3800e-003	0.0696	0.0183	1.2700e-003	0.0195	0.0000	79.1901	79.1901	3.5300e-003	0.0000	79.2642

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	85.00	85.00	85.00	181,462	181,462
Parking Lot	0.00	0.00	0.00		
Total	85.00	85.00	85.00	181,462	181,462

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

5.1 Mitigation Measures Energy

[illegible]

5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

Mitigated

[illegible]

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	5632	1.8406	7.0000e-005	2.0000e-005	1.8469
Total		1.8406	7.0000e-005	2.0000e-005	1.8469

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	5632	1.8406	7.0000e-005	2.0000e-005	1.8469
Total		1.8406	7.0000e-005	2.0000e-005	1.8469

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	0.0297	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004
Unmitigated	0.0297	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004

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	2.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0277					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004
Total	0.0298	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.0000e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0277					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004
Total	0.0298	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.2000e-004	3.2000e-004	0.0000	0.0000	3.4000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.3543	3.0000e-004	6.0000e-005	7.3796
Unmitigated	7.3543	3.0000e-004	6.0000e-005	7.3796

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.02552	7.3543	3.0000e-004	6.0000e-005	7.3796
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		7.3543	3.0000e-004	6.0000e-005	7.3796

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.02552	7.3543	3.0000e-004	6.0000e-005	7.3796
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		7.3543	3.0000e-004	6.0000e-005	7.3796

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0305	1.8000e-003	0.0000	0.0682
Unmitigated	0.0305	1.8000e-003	0.0000	0.0682

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.15	0.0305	1.8000e-003	0.0000	0.0682
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.0305	1.8000e-003	0.0000	0.0682

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.15	0.0305	1.8000e-003	0.0000	0.0682
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.0305	1.8000e-003	0.0000	0.0682

9.0 Operational Offroad

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



Appendix C

Cultural Resource Records (Confidential)

APPENDIX C

CONFIDENTIAL DISTRIBUTION

Appendix C contains sensitive and confidential information concerning Native American site and component locations and this report is not for general distribution.

Archaeological site locations are exempted from the California Public Records Act, as specified in Government Code 6254.10, and from the Freedom of Information Act (Exemption 3), under the legal authority of both the National Historic Preservation Act (PL 102-574, Section 304[a]) and the Archaeological Resources Protection Act (PL 96-95, Section 9[a]). Sections of this report contain maps and other sensitive information.

Distribution should be restricted appropriately.



Appendix D

Tribal Letters

**PALA TRIBAL HISTORIC
PRESERVATION OFFICE**

PMB 50, 35008 Pala Temecula Road
Pala, CA 92059
760-891-3510 Office | 760-742-3189 Fax



September 3, 2015

Susan Vandrew Rodriquez
City of San Marcos
1 Civic Center Drive
San Marcos, CA 92069

Re: 2.6 acre park site P15-0057

Dear Mrs. Rodriquez:

The Pala Band of Mission Indians Tribal Historic Preservation Office has received your notification of the project referenced above. This letter constitutes our response on behalf of Robert Smith, Tribal Chairman.

We have consulted our maps and determined that the project as described is not within the boundaries of the recognized Pala Indian Reservation. The project is also beyond the boundaries of the territory that the tribe considers its Traditional Use Area (TUA). It is, however, situated in close proximity to the Reservation and information generated would likely be useful in better understanding regional culture and history. Therefore, we request as a courtesy to be kept in the information loop as the project progresses and would appreciate being maintained on the receiving list for project updates, reports of investigations, and/or any documentation that might be generated regarding previously reported or newly discovered sites. Further, if the project boundaries are modified to extend beyond the currently proposed limits, we do request updated information and the opportunity to respond to your changes.

We appreciate involvement with your initiative and look forward to working with you on future efforts. If you have questions or need additional information, please do not hesitate to contact me by telephone at 760-891-3515 or by e-mail at sgaughen@palatribe.com.

Sincerely,

Shasta C. Gaughen, PhD
Tribal Historic Preservation Officer
Pala Band of Mission Indians

ATTENTION: THE PALA TRIBAL HISTORIC PRESERVATION OFFICE IS RESPONSIBLE FOR ALL REQUESTS FOR CONSULTATION. PLEASE ADDRESS CORRESPONDENCE TO **SHASTA C. GAUGHEN** AT THE ABOVE ADDRESS. IT IS NOT NECESSARY TO ALSO SEND NOTICES TO PALA TRIBAL CHAIRMAN ROBERT SMITH.



PECHANGA CULTURAL RESOURCES
Temecula Band of Luiseño Mission Indians

Post Office, Box 2183 • Temecula, CA 92593
Telephone (951) 308-9295 • Fax (951) 506-9491

September 17, 2015

Chairperson:
Mary Bear Magee

Vice Chairperson:
Darlene Miranda

Committee Members:
Evie Gerber
Bridgett Barcello Maxwell
Richard B. Searce, III
Neal Ibanez
Michael Vasquez

Director:
Gary DuBois

Coordinator:
Paul Macarro

Planning Specialist:
Tuba Ebru Ozdil

Cultural Analyst:
Anna Hoover

VIA E-MAIL and USPS

Susan Vandrew Rodriquez
Associate Planner
City of San Marcos
1 Civic Center Drive
San Marcos, CA. 92069-2918

Re: Pechanga Tribe Request for Consultation Pursuant to AB 52 for P15-0057, APN: 220-320-08 to 13 and 22

Dear Ms. Vandrew Rodriquez:

This letter is written on behalf of the Pechanga Band of Luiseño Indians (hereinafter, "the Tribe" and/or "Payómkawichum"), a federally recognized Indian tribe and sovereign government in response to the AB 52 notice provided by the City of San Marcos August 21, 2015 and received in our office September 2, 2015

This letter serves as the Tribe's formal request to begin consultation under AB 52 for this Project. Per AB 52, we intend to assist the City of San Marcos in determining the type of environmental document that should be prepared for this Project (i.e. EIR, MND, ND); with identifying potential tribal cultural resources (TCRs); determining whether potential substantial adverse effects will occur to them; and to develop appropriate preservation, avoidance and/or mitigation measures, as appropriate. Preferred TCR mitigation is always avoidance and the Tribe requests that all efforts to preserve sensitive TCRs be made as early in the development process as possible.

Please add the Tribe to your distribution list(s) for public notices and circulation of all documents, including environmental review documents, archaeological reports, development plans, conceptual grading plans (if available), and all other applicable documents pertaining to this Project. The Tribe further requests to be directly notified of all public hearings and scheduled approvals concerning this Project, and that these comments be incorporated into the record of approval for this Project.

The Pechanga Tribe asserts that the Project area is part of Payómkawichum (Luiseño), and therefore the Tribe's, aboriginal territory as evidenced by the existence of Payómkawichum cultural resources, named places, *tóota yixélval* (rock art, pictographs, petroglyphs), and an extensive Payómkawichum artifact record in the vicinity of the Project. This culturally sensitive

area is affiliated with the Pechanga Band of Luiseño Indians because of the Tribe's cultural ties to this area as well as our extensive history with the City of San Marcos and other projects within the area. During our consultation we will provide more specific, confidential information on potential TCRs that may be impacted by the proposed Project.

As you know, the AB 52 consultation process is ongoing and continues until appropriate mitigation has been agreed upon for the TCRs that may be impacted by the Project. As such, under both AB 52 and CEQA, we look forward to working closely with the City of San Marcos on ensuring that a full, comprehensive environmental review of the Project's impacts is completed, including addressing the culturally appropriate and respectful treatment of human remains and inadvertent discoveries.

In addition to those rights granted to the Tribe under AB 52, the Tribe reserves the right to fully participate in the environmental review process, as well as to provide further comment on the Project's impacts to cultural resources and potential mitigation for such impacts.

The Pechanga Tribe looks forward to working together with the City of San Marcos in protecting the invaluable Pechanga cultural resources found in the Project area. The formal contact person for this Project will be Anna Hoover. Please contact her at 951-770-8104 or at ahoover@pechanga-nsn.gov within 30 days of receiving these comments so that we can begin the consultation process. Thank you.

Sincerely,



Anna Hoover
Cultural Analyst

Cc Pechanga Office of the General Counsel



Appendix E

Noise Results

Freq Weight : A
Time Weight : FAST
Level Range : 40-100
Max dB : 77.8 - 2015/08/07 07:42:18
Level Range : 40-100
SEL : 90.2
Leq : 60.7

No.s	Date Time	(dB)
1	2015/08/07 07:32:50	51.4
2	2015/08/07 07:32:51	51.7
3	2015/08/07 07:32:52	53.6
4	2015/08/07 07:32:53	52.4
5	2015/08/07 07:32:54	53.2
6	2015/08/07 07:32:55	50.9
7	2015/08/07 07:32:56	50.8
8	2015/08/07 07:32:57	52.4
9	2015/08/07 07:32:58	51.8
10	2015/08/07 07:32:59	52.0
11	2015/08/07 07:33:00	51.7
12	2015/08/07 07:33:01	50.1
13	2015/08/07 07:33:02	53.4
14	2015/08/07 07:33:03	54.3
15	2015/08/07 07:33:04	54.8
16	2015/08/07 07:33:05	55.5
17	2015/08/07 07:33:06	58.3
18	2015/08/07 07:33:07	63.1
19	2015/08/07 07:33:08	63.8
20	2015/08/07 07:33:09	62.9
21	2015/08/07 07:33:10	60.7
22	2015/08/07 07:33:11	58.4
23	2015/08/07 07:33:12	57.2
24	2015/08/07 07:33:13	55.1
25	2015/08/07 07:33:14	54.2
26	2015/08/07 07:33:15	55.7
27	2015/08/07 07:33:16	55.5
28	2015/08/07 07:33:17	53.8
29	2015/08/07 07:33:18	55.7
30	2015/08/07 07:33:19	59.0
31	2015/08/07 07:33:20	61.5
32	2015/08/07 07:33:21	62.2
33	2015/08/07 07:33:22	60.2
34	2015/08/07 07:33:23	61.6
35	2015/08/07 07:33:24	65.6
36	2015/08/07 07:33:25	66.5
37	2015/08/07 07:33:26	64.0
38	2015/08/07 07:33:27	60.5
39	2015/08/07 07:33:28	58.4
40	2015/08/07 07:33:29	56.6
41	2015/08/07 07:33:30	54.0
42	2015/08/07 07:33:31	55.5
43	2015/08/07 07:33:32	54.1
44	2015/08/07 07:33:33	52.5
45	2015/08/07 07:33:34	52.7
46	2015/08/07 07:33:35	53.4
47	2015/08/07 07:33:36	50.8
48	2015/08/07 07:33:37	50.2
49	2015/08/07 07:33:38	50.1
50	2015/08/07 07:33:39	50.3
51	2015/08/07 07:33:40	50.3
52	2015/08/07 07:33:41	49.6
53	2015/08/07 07:33:42	50.8
54	2015/08/07 07:33:43	53.0
55	2015/08/07 07:33:44	55.3
56	2015/08/07 07:33:45	55.0
57	2015/08/07 07:33:46	59.8
58	2015/08/07 07:33:47	63.0
59	2015/08/07 07:33:48	61.2
60	2015/08/07 07:33:49	60.1
61	2015/08/07 07:33:50	57.4
62	2015/08/07 07:33:51	54.8
63	2015/08/07 07:33:52	52.5
64	2015/08/07 07:33:53	52.1
65	2015/08/07 07:33:54	51.8
66	2015/08/07 07:33:55	52.5
67	2015/08/07 07:33:56	52.2
68	2015/08/07 07:33:57	52.0
69	2015/08/07 07:33:58	53.2
70	2015/08/07 07:33:59	52.9
71	2015/08/07 07:34:00	53.1
72	2015/08/07 07:34:01	55.9
73	2015/08/07 07:34:02	56.1
74	2015/08/07 07:34:03	57.3
75	2015/08/07 07:34:04	57.2
76	2015/08/07 07:34:05	58.5
77	2015/08/07 07:34:06	60.3
78	2015/08/07 07:34:07	63.8
79	2015/08/07 07:34:08	64.9
80	2015/08/07 07:34:09	62.8
81	2015/08/07 07:34:10	60.2
82	2015/08/07 07:34:11	58.4
83	2015/08/07 07:34:12	58.6
84	2015/08/07 07:34:13	58.4
85	2015/08/07 07:34:14	58.9

86	2015/08/07	07:34:15	61.7
87	2015/08/07	07:34:16	61.6
88	2015/08/07	07:34:17	61.2
89	2015/08/07	07:34:18	60.8
90	2015/08/07	07:34:19	60.6
91	2015/08/07	07:34:20	60.8
92	2015/08/07	07:34:21	61.2
93	2015/08/07	07:34:22	62.6
94	2015/08/07	07:34:23	61.6
95	2015/08/07	07:34:24	58.3
96	2015/08/07	07:34:25	57.0
97	2015/08/07	07:34:26	57.1
98	2015/08/07	07:34:27	59.6
99	2015/08/07	07:34:28	56.5
100	2015/08/07	07:34:29	57.8
101	2015/08/07	07:34:30	59.1
102	2015/08/07	07:34:31	60.9
103	2015/08/07	07:34:32	60.8
104	2015/08/07	07:34:33	61.0
105	2015/08/07	07:34:34	59.2
106	2015/08/07	07:34:35	57.4
107	2015/08/07	07:34:36	59.8
108	2015/08/07	07:34:37	58.5
109	2015/08/07	07:34:38	59.1
110	2015/08/07	07:34:39	59.8
111	2015/08/07	07:34:40	60.6
112	2015/08/07	07:34:41	58.5
113	2015/08/07	07:34:42	59.1
114	2015/08/07	07:34:43	59.5
115	2015/08/07	07:34:44	62.0
116	2015/08/07	07:34:45	62.4
117	2015/08/07	07:34:46	62.8
118	2015/08/07	07:34:47	61.2
119	2015/08/07	07:34:48	61.0
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579	2015/08/07	07:42:28	50.2
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786	2015/08/07	07:45:55	58.6
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828	2015/08/07	07:46:37	58.1
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848	2015/08/07	07:46:57	67.2
849	2015/08/07	07:46:58	66.2
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897	2015/08/07	07:47:46	53.9
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Freq Weight : A
Time Weight : FAST
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Max dB : 90.4 - 2015/08/07 07:58:09
Level Range : 40-100
SEL : 99.5
Leq : 70.0

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76	2015/08/07 07:56:30	67.7
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91	2015/08/07	07:56:45	63.3
92	2015/08/07	07:56:46	62.0
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96	2015/08/07	07:56:50	56.2
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98	2015/08/07	07:56:52	55.8
99	2015/08/07	07:56:53	56.0
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103	2015/08/07	07:56:57	59.4
104	2015/08/07	07:56:58	65.4
105	2015/08/07	07:56:59	66.9
106	2015/08/07	07:57:00	71.9
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111	2015/08/07	07:57:05	79.0
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502	2015/08/07	08:03:36	66.9
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504	2015/08/07	08:03:38	69.4
505	2015/08/07	08:03:39	67.5
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507	2015/08/07	08:03:41	63.8
508	2015/08/07	08:03:42	64.5
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510	2015/08/07	08:03:44	64.9
511	2015/08/07	08:03:45	62.4
512	2015/08/07	08:03:46	62.4
513	2015/08/07	08:03:47	63.9
514	2015/08/07	08:03:48	65.9
515	2015/08/07	08:03:49	67.7
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517	2015/08/07	08:03:51	63.4
518	2015/08/07	08:03:52	61.9
519	2015/08/07	08:03:53	62.7
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522	2015/08/07	08:03:56	67.5
523	2015/08/07	08:03:57	69.5
524	2015/08/07	08:03:58	68.3
525	2015/08/07	08:03:59	69.5
526	2015/08/07	08:04:00	70.4
527	2015/08/07	08:04:01	65.1
528	2015/08/07	08:04:02	67.4
529	2015/08/07	08:04:03	67.3
530	2015/08/07	08:04:04	68.0
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532	2015/08/07	08:04:06	78.8
533	2015/08/07	08:04:07	74.1
534	2015/08/07	08:04:08	71.8
535	2015/08/07	08:04:09	74.2
536	2015/08/07	08:04:10	75.0
537	2015/08/07	08:04:11	72.0
538	2015/08/07	08:04:12	76.9
539	2015/08/07	08:04:13	73.9
540	2015/08/07	08:04:14	69.7
541	2015/08/07	08:04:15	68.3
542	2015/08/07	08:04:16	67.2
543	2015/08/07	08:04:17	68.0
544	2015/08/07	08:04:18	65.9
545	2015/08/07	08:04:19	66.2
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555	2015/08/07	08:04:29	66.8
556	2015/08/07	08:04:30	65.8
557	2015/08/07	08:04:31	64.9
558	2015/08/07	08:04:32	68.6
559	2015/08/07	08:04:33	75.8
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562	2015/08/07	08:04:36	65.6
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587	2015/08/07	08:05:01	62.0
588	2015/08/07	08:05:02	59.4
589	2015/08/07	08:05:03	57.4
590	2015/08/07	08:05:04	63.4
591	2015/08/07	08:05:05	58.4
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596	2015/08/07	08:05:10	53.9
597	2015/08/07	08:05:11	54.4
598	2015/08/07	08:05:12	55.7
599	2015/08/07	08:05:13	55.4
600	2015/08/07	08:05:14	54.0
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603	2015/08/07	08:05:17	57.4
604	2015/08/07	08:05:18	58.8
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607	2015/08/07	08:05:21	63.0
608	2015/08/07	08:05:22	64.5
609	2015/08/07	08:05:23	66.3
610	2015/08/07	08:05:24	65.3
611	2015/08/07	08:05:25	64.7
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613	2015/08/07	08:05:27	64.1
614	2015/08/07	08:05:28	64.3
615	2015/08/07	08:05:29	64.6
616	2015/08/07	08:05:30	63.2
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618	2015/08/07	08:05:32	69.8
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627	2015/08/07	08:05:41	71.7
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636	2015/08/07	08:05:50	76.4
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640	2015/08/07	08:05:54	69.5
641	2015/08/07	08:05:55	74.5
642	2015/08/07	08:05:56	75.2
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645	2015/08/07	08:05:59	67.7
646	2015/08/07	08:06:00	68.6
647	2015/08/07	08:06:01	69.4
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652	2015/08/07	08:06:06	66.4
653	2015/08/07	08:06:07	72.5
654	2015/08/07	08:06:08	73.0
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658	2015/08/07	08:06:12	63.2
659	2015/08/07	08:06:13	59.3
660	2015/08/07	08:06:14	57.9
661	2015/08/07	08:06:15	55.7
662	2015/08/07	08:06:16	55.5
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664	2015/08/07	08:06:18	55.7
665	2015/08/07	08:06:19	55.8
666	2015/08/07	08:06:20	56.1
667	2015/08/07	08:06:21	57.0
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669	2015/08/07	08:06:23	58.1
670	2015/08/07	08:06:24	61.1
671	2015/08/07	08:06:25	63.2
672	2015/08/07	08:06:26	63.9
673	2015/08/07	08:06:27	59.5
674	2015/08/07	08:06:28	56.4
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676	2015/08/07	08:06:30	56.5
677	2015/08/07	08:06:31	57.2
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679	2015/08/07	08:06:33	61.4

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683	2015/08/07	08:06:37	72.8
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686	2015/08/07	08:06:40	69.5
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706	2015/08/07	08:07:00	62.7
707	2015/08/07	08:07:01	63.9
708	2015/08/07	08:07:02	66.7
709	2015/08/07	08:07:03	68.8
710	2015/08/07	08:07:04	73.2
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714	2015/08/07	08:07:08	61.1
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716	2015/08/07	08:07:10	62.9
717	2015/08/07	08:07:11	63.5
718	2015/08/07	08:07:12	67.0
719	2015/08/07	08:07:13	67.1
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723	2015/08/07	08:07:17	74.5
724	2015/08/07	08:07:18	76.0
725	2015/08/07	08:07:19	72.7
726	2015/08/07	08:07:20	74.6
727	2015/08/07	08:07:21	72.5
728	2015/08/07	08:07:22	69.2
729	2015/08/07	08:07:23	71.9
730	2015/08/07	08:07:24	71.6
731	2015/08/07	08:07:25	68.7
732	2015/08/07	08:07:26	66.3
733	2015/08/07	08:07:27	67.2
734	2015/08/07	08:07:28	73.4
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736	2015/08/07	08:07:30	68.7
737	2015/08/07	08:07:31	66.0
738	2015/08/07	08:07:32	64.4
739	2015/08/07	08:07:33	67.2
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741	2015/08/07	08:07:35	70.5
742	2015/08/07	08:07:36	66.1
743	2015/08/07	08:07:37	66.4
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783	2015/08/07	08:08:17	61.2
784	2015/08/07	08:08:18	61.3
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786	2015/08/07	08:08:20	62.9
787	2015/08/07	08:08:21	65.5
788	2015/08/07	08:08:22	64.5
789	2015/08/07	08:08:23	69.3
790	2015/08/07	08:08:24	69.7
791	2015/08/07	08:08:25	71.4
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793	2015/08/07	08:08:27	70.2
794	2015/08/07	08:08:28	70.0
795	2015/08/07	08:08:29	68.2
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797	2015/08/07	08:08:31	76.8
798	2015/08/07	08:08:32	78.6
799	2015/08/07	08:08:33	79.2
800	2015/08/07	08:08:34	77.1
801	2015/08/07	08:08:35	75.6
802	2015/08/07	08:08:36	73.0
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824	2015/08/07	08:08:58	74.5
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848	2015/08/07	08:09:22	69.9
849	2015/08/07	08:09:23	75.9
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883	2015/08/07	08:09:57	65.0
884	2015/08/07	08:09:58	64.4
885	2015/08/07	08:09:59	63.7
886	2015/08/07	08:10:00	63.4
887	2015/08/07	08:10:01	62.4
888	2015/08/07	08:10:02	61.7
889	2015/08/07	08:10:03	61.5
890	2015/08/07	08:10:04	61.4
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892	2015/08/07	08:10:06	60.5
893	2015/08/07	08:10:07	59.1
894	2015/08/07	08:10:08	58.7
895	2015/08/07	08:10:09	58.8
896	2015/08/07	08:10:10	59.9
897	2015/08/07	08:10:11	60.2
898	2015/08/07	08:10:12	60.6
899	2015/08/07	08:10:13	58.8
900	2015/08/07	08:10:14	56.9

<Organization?>
<Analysis By?>

16 September 2015
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT:

RUN: <Project Name?>
BARRIER DESIGN: <Run Title?>
INPUT HEIGHTS

ATMOSPHERICS: 20 deg C, 50% RH

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing		No Barrier		Increase over existing		Type Impact	With Barrier		
			LAeq1h	Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Calculated LAeq1h		Noise Reduction Calculated	Goal	Calculated minus Goal
			dBa	dBa	dBa	dB	dB			dBa	dB	dB
SeniorCenter	1	1	0.0	57.1	66	57.1	10	—	57.1	0.0	8	-8.0
SingleFamilyHouseonRichmar	2	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
ChildrenPlayground	3	1	0.0	65.6	66	65.6	10	—	65.6	0.0	8	-8.0
NoiseMeasurement2	4	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
NoiseMeasurement1	5	1	0.0	61.0	66	61.0	10	—	61.0	0.0	8	-8.0
ApartmentsonTwinOaks	6	1	0.0	67.9	66	67.9	10	Snd Lvl	67.9	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		6	0.0	0.0	0.0							
All Impacted		3	0.0	0.0	0.0							
All that meet NFR Goal		0	0.0	0.0	0.0							



Appendix F

Response to Comments

APPENDIX F

Response to Comments on the Draft Initial Study- Mitigated Negative Declaration

This appendix contains the written comments received in response to the Draft Initial Study-Mitigated Negative Declaration (IS-MND). The Draft IS-MND was circulated for a period of 20 days, beginning on October 8, 2015 and concluding on October 29, 2015. Each comment letter pertaining to the IS-MND that was received by the City of San Marcos (City) has been included within this section. Responses to the comments have been prepared to address the environmental concerns raised by the commenters and to indicate where and how the IS-MND addresses these environmental issues. Each letter is presented first, with the responses following.

During the comment period, the City received the following three written comment letters on the Draft IS-MND:

<u>Commenter</u>	<u>Page #</u>
1. Ginger Hitzke	F-2
2. Ginger Hitzke	F-4
3. Tuba Ebru Ozdil, Pechanga Band of Luiseno Indians	F-6

The comment letters and the City's responses follow. Each comment letter has been numbered sequentially and each separate issue raised by the commenter is also numbered.



From: Ginger Hitzke [ginger@hitzkedevlopment.com]
Sent: Monday, October 12, 2015 7:49 PM
To: Vandrew Rodriguez, Susan
Subject: support for Richmar Park project

Letter 1

Hello Ms. Vandrew-Rodriguez,

I have received the Notice of Intent to Adopt a Mitigated Negative Declaration for the Richmar Park Project. The purpose of this e-mail is to support the proposed park project as it will serve a need for additional active open space in the Richmar Neighborhood. This support is on behalf of Autumn Terrace Development Partners, L.P., owner of Autumn Terrace Apartments located at 251 - 291 Autumn Drive.

1.1

Should you have any questions regarding support, please email me.

Thank you.

- Ginger -

Letter 1

COMMENTER: Ginger Hitzke

DATE: October 12, 2015

RESPONSE:

Response 1.1

The commenter presents a letter of support for the proposed park, on behalf of Autumn Terrace Development Partners, L.P., which owns the Autumn Terrace Apartments located at 251-291 Autumn Drive. The commenter asserts that the project would serve a need for additional active open space in the Richmar neighborhood. While this comment does not pertain to the Draft IS-MND's environmental analysis, it will be forwarded to City decision-makers for their consideration.

From: Ginger Hitzke [ginger@hitzkedevlopment.com]
Sent: Monday, October 12, 2015 7:50 PM
To: Vandrew Rodriguez, Susan
Subject: Re: support for Richmar Park project

Letter 2

Hello again,

I also represent ATCS, LLC and Hitzke Commercial Real Estate, LLC -- owners of commercial property along Autumn Drive and both of those entities also support the park.

2.1

- Ginger -

From: Ginger Hitzke <ginger@hitzkedevlopment.com>
To: "svandrew@san-marcos.net" <svandrew@san-marcos.net>
Sent: Monday, October 12, 2015 7:48 PM
Subject: support for Richmar Park project

Hello Ms. Vandrew-Rodriguez,

I have received the Notice of Intent to Adopt a Mitigated Negative Declaration for the Richmar Park Project. The purpose of this e-mail is to support the proposed park project as it will serve a need for additional active open space in the Richmar Neighborhood. This support is on behalf of Autumn Terrace Development Partners, L.P., owner of Autumn Terrace Apartments located at 251 - 291 Autumn Drive.

Should you have any questions regarding support, please email me.

Thank you.

- Ginger -

Letter 2

COMMENTER: Ginger Hitzke

DATE: October 12, 2015

RESPONSE:

Response 2.1

Speaking as a representative of ATCS, LLC, and Hitzke Commercial Real Estate, LLC, which own commercial property along Autumn Drive, the commenter states that these entities support the proposed park. This comment does not pertain to the Draft IS-MND's environmental analysis but will be forwarded to City decision-makers for their consideration.



PECHANGA CULTURAL RESOURCES

Temecula Band of Luiseño Mission Indians

Post Office, Box 2183 • Temecula, CA 92593
Telephone (951) 308-9295 • Fax (951) 506-9491

October 23, 2015

Letter 3

Chairperson:
Mary Bear Magee

Vice Chairperson:
Darlene Miranda

Committee Members:
Evie Gerber
Bridgett Barcello Maxwell
Richard B. Searce, III
Neal Ibanez
Michael Vasquez

Director:
Gary DuBois

Coordinator:
Paul Macarro

Planning Specialist:
Tuba Ebru Ozdil

Cultural Analyst:
Anna Hoover

VIA E-MAIL and USPS

Susan Vandrew Rodriquez
Associate Planner
City of San Marcos
1 Civic Center Drive
San Marcos, CA. 92069-2918

Re: Pechanga Tribe Request for Consultation Pursuant to SB 18 for the Richmar Park Project; P15-0057, APN: 220-320-08 to 13 and 22

Dear Ms. Rodriquez

This letter is written on behalf of the Pechanga Band of Luiseño Indians (hereinafter, “the Tribe”), a federally recognized Indian tribe and sovereign government in response to the SB 18 notice provided by City of San Marcos dated August 21, 2015. This letter serves as the Tribe’s formal request for consultation under SB 18 for this Project. At this time, we do not have sufficient information to engage in meaningful consultation, as required by SB 18. As such, the Tribe hereby invokes its right to consult with the City under SB 18 and after reviewing the information requested below, we may request additional consultation, which may include a face-to-face meeting.

3.1

Further, the Tribe formally requests, pursuant to Public Resources Code §21092.2, to be notified and involved in the entire CEQA environmental review process for the duration of the above referenced project (the “Project”). Please add the Tribe to your distribution list(s) for public notices and circulation of all documents, including environmental review documents, archeological reports, and all documents pertaining to this Project. The Tribe further requests to be directly notified of all public hearings and scheduled approvals concerning this Project. Please also incorporate these comments into the record of approval for this Project.

3.2

The Pechanga Tribe asserts that the Project area is part of *Payómkawichum* (Luiseño), and therefore the Tribe’s, aboriginal territory as evidenced by the existence of *Payómkawichum* place names, *tóota yixélval* (rock art, pictographs, petroglyphs), and an extensive Luiseño artifact record in the vicinity of the Project. This culturally sensitive area is affiliated with the Pechanga Band of Luiseño Indians because of the Tribe’s cultural ties to this area as well as extensive history with both this Project and other projects within the area. During our consultation we will provide more specific, confidential information on the resources located on and near this Project.

3.3

The Tribe has not received archeological report, geotechnical study and conceptual grading plans for this Project. Please provide us copies of all available reports as soon as possible so that we may review them prior to our initial SB 18 meeting.

3.4

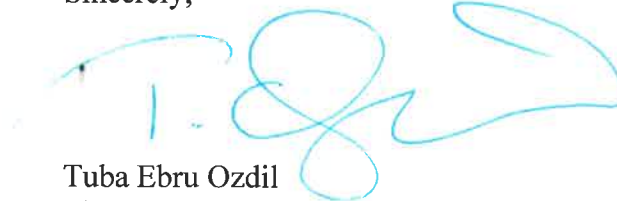
As you know, the SB 18 consultation process is ongoing and continues for the duration of the Project. As such, under both CEQA and SB 18 we look forward to working closely with City of San Marcos on ensuring that a full, comprehensive environmental review of the Project's impacts is completed. Further, we hope to assist the City with ensuring that the Project is designed to avoid impacts to cultural resources, as mandated by CEQA, in addition to developing mitigation measures addressing the culturally appropriate and respectful treatment of human remains, cultural resources and inadvertent discoveries.

3.5

In addition to those rights granted to the Tribe under SB 18, the Tribe reserves the right to fully participate in the environmental review process, as well as to provide further comment on the Project's impacts to cultural resources and potential mitigation for such impacts. Further, the Tribe reserves the right to participate in the regulatory process and provide comment on issues pertaining to the regulatory process and Project approval.

The Pechanga Tribe looks forward to working together with the City of San Marcos in protecting the invaluable Pechanga cultural resources found in the Project area. Please contact me at 951-770-8113 or at eozdil@pechanga-nsn.gov once you have had a chance to review these comments so that we might address the issues concerning the mitigation language. Thank you.

Sincerely,



Tuba Ebru Ozdil
Planning Specialist

cc Pechanga Office of the General Counsel

Letter 3

COMMENTER: Tuba Ebru Ozdil, Planning Specialist, Pechanga Band of Luiseño Indians

DATE: October 23, 2015

RESPONSE:

Response 3.1

The commenter states that the Pechanga Band (Tribe) does not have sufficient information at this time to engage in meaningful consultation under Senate Bill (SB) 18. The commenter formally requests to begin this consultation and states that the Tribe may ask for further consultation after reviewing the requested information (an archaeological report, geotechnical study, and conceptual grading plans). Pursuant to SB 18 (Government Code Section 65362.3) and Assembly Bill 52 (Public Resources Code 21092.2), the City has initiated the requested consultation process with the Pechanga Band both prior to, and during, the CEQA process. The consultation process is ongoing, and tribal input has been included in the Draft IS-MND and will be included in project conditioning prior to the public hearing for proposed project.

With regard to the requested information, a separate archaeological report has not been prepared for the project; however, Section III, *Cultural Resources*, of the Draft IS-MND discusses the potential presence of cultural resources on-site and the project's impacts on such resources, based on the results of a search of cultural resource records housed at the California Historical Resources Information System (CHRIS), South Coastal Information Center (SCIC). The confidential Appendix B to the IS-MND includes the complete results of this records search. Access to CHRIS information may only be granted in accordance with Section III of the CHRIS Information Center Rules of Operation Manual (amended September 2008), which is available at <http://ohp.parks.ca.gov/pages/1069/files/ic%20operations%20manual%209-26-08%20amendment%203.pdf>. In general, such information is restricted to qualified archaeologists or historians. A memorandum of agreement between an Information Center and a federally recognized Native American tribe also may allow tribal access to CHRIS information. Nevertheless, the City will send the conceptual grading plans to the Tribe. The requested geotechnical study for the project was prepared by Group Delta Consultants on October 7, 2015, and has been added as Appendix A to the Final IS-MND.

Response 3.2

The commenter states that the Tribe formally requests, pursuant to Public Resources Code Section 21092.2, to be notified and involved in the entire environmental review process under CEQA for the project. The commenter requests that the Tribe be added to the City's distribution lists for public notices and circulation of all documents and that it receive direct notification of all public hearings and scheduled approvals. As noted in Response 3.1, the City has initiated a consultation process with the Pechanga Band both prior to, and during, the CEQA process. In addition, the City will continue to directly notify the Tribe of all public notices, circulated documents, public hearings, and scheduled approvals for the project.



Response 3.3

The Tribe asserts that the project site is part of aboriginal Luiseño territory, as evidenced by the existence of tribal place names, rock art, pictographs, petroglyphs, and an extensive Luiseño artifact record in the vicinity. The commenter describes the project area as culturally sensitive. This background information on Luiseño cultural resources is acknowledged and has been included in Section III, *Cultural Resources*, of the Draft IS-MND.

The commenter adds that more specific, confidential information on the resources located on and near the project site will be provided during consultation. This statement is noted, and the City will continue to seek tribal input in the ongoing consultation process prior to the public hearing for the project.

Response 3.4

The commenter requests copies of all available reports, including an archaeological report, geotechnical study, and conceptual grading plans, as soon as possible, in order to review them prior to the initial SB 18 meeting. Please see Response 3.1 for a discussion of these reports. As noted therein, a separate archaeological report has not been prepared; however, the results of a cultural records search, the geotechnical study, and the conceptual grading plans for the project will be made available to the Tribe.

Response 3.5

The commenter expresses a desire to work closely with the City on ensuring a full, comprehensive environmental review of the project's impacts as part of the SB 18 consultation process. The commenter also hopes to assist the City with ensuring that the project is designed to avoid impacts to cultural resources and that appropriate mitigation measures are developed. In addition, the commenter states that the Tribe reserves the right to participate in the environmental review and regulatory processes and provide further comment. This comment is acknowledged, and the City will continue to seek tribal input in the ongoing consultation process with regard to environmental impacts, prior to the public hearing for the project.





Appendix G

Mitigation Monitoring and Reporting Program

Mitigation Monitoring and Reporting Program

Richmar Park Project Initial Study-Mitigated Negative Declaration

Prepared by:

City of San Marcos
Public Works Department
Engineering Division
201 Mata Way
San Marcos, California 92069

Contact:

Susan Vandrew-Rodriguez, Associate Planner
(760) 744-1050

Prepared with the assistance of:

Rincon Consultants, Inc.
5135 Avenida Encinas, Suite A
Carlsbad, California 92008

November 2015

MITIGATION MONITORING AND REPORTING PROGRAM

The Final Initial Study-Mitigated Negative Declaration identifies the mitigation measures that will be implemented to reduce the impacts associated with the Richmar Park Project. The California Environmental Quality Act (CEQA) requires a public agency to adopt a monitoring and reporting program for assessing and ensuring compliance with any required mitigation measures applied to proposed development. As stated in section 21081.6(a)(1) of the Public Resources Code:

... the public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment.

Section 21081.6 also provides general guidelines for implementing mitigation monitoring programs and indicates that specific reporting and/or monitoring requirements, to be enforced during project implementation, must be defined as part of adopting a mitigated negative declaration.

The mitigation monitoring table lists those mitigation measures that may be included as conditions of approval for the project. To ensure that the mitigation measures are properly implemented, a monitoring program has been devised which identifies the timing and responsibility for monitoring each measure. The project applicant will have the responsibility for implementing the measures, and the various City of San Marcos departments will have the primary responsibility for monitoring and reporting the implementation of the mitigation measures.

Richmar Park Project Final Initial Study-Mitigated Negative Declaration							
Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
BIOLOGICAL RESOURCES							
BIO-1	Nesting Birds/Raptors Surveys and Avoidance. Direct disturbance (clearing/grading/vegetation removal) to nesting habitat shall be conducted outside of the nesting season (i.e., between September 1 and January 31) to the greatest extent possible. Early removal of nesting structures shall prevent mated pairs from nesting in areas subject to disturbance.	Conduct direct disturbance to nesting habitat outside of the nesting season.	For pre-construction surveys during nesting season: prior to site disturbance.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			
	If direct disturbance is unavoidable during the nesting season, prior to any site disturbance (i.e., mobilization, staging, grading or construction) a qualified biologist shall to conduct pre-construction surveys for nesting birds in all areas within 500 feet of proposed disturbance areas, where accessible. Surveys shall be completed within 3 days prior to ground disturbance or tree removal. If active nests are found, they shall be protected with a no-work buffer. Buffer distance shall be a minimum of 100 feet for songbirds and 500 feet for raptors. The prescribed buffers may be adjusted by the qualified biologist to reflect existing conditions including ambient noise, topography, and disturbance. The buffer zone shall be clearly delineated to avoid disturbance to nesting birds. Depending on their proximity to disturbance areas, buffer zones may be designated in the field in various ways, including flagging, fencing, and/or signage.	If such disturbance is unavoidable, conduct pre-construction surveys for nesting birds and delineate a buffer zone.	If active nests are found: during site disturbance.				
	If buffers and follow-up monitoring are required, the biologist shall submit a monthly monitoring report identifying active nests, monitoring results, and condition of buffer zones.	If buffers and follow-up monitoring are needed, submit a monthly monitoring report.					
CULTURAL RESOURCES							



Richmar Park Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
CR-1	Construction Monitoring. An archaeological monitor and a <i>Luiseño</i> Native American monitor shall be present during all earth moving and grading activities to assure that any potential cultural resources, including tribal, found during project grading be protected.	Monitor grading activities for cultural resources.	During all grading activities.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			
CR-2	Retention of Qualified Archaeologist. Prior to beginning project construction, the Project Applicant shall retain a San Diego County qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. Any newly discovered cultural resource deposits shall be subject to cultural resources evaluation, which shall include archaeological documentation, analysis and report generation.	Retain a qualified archaeological monitor.	Prior to all grading activities.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			
CR-3	Cultural Resource Treatment and Monitoring Agreement. At least 30 days prior to beginning project construction, the Project Applicant shall enter into a Cultural Resource Treatment and Monitoring Agreement (also known as a pre-excavation agreement) with a <i>Luiseño</i> Tribe. The Agreement shall address the treatment of known cultural resources, the designation, responsibilities, and participation of professional Native American Tribal monitors during grading, excavation and ground disturbing activities; project grading and development scheduling; terms of compensation for the monitors; and treatment and final disposition of any cultural resources, sacred	Enter into a Cultural Resources Treatment and Monitoring Agreement with a <i>Luiseño</i> Tribe.	At least 30 days prior to construction.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			



Richmar Park Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
	sites, and human remains discovered on site.						
CR-4	Pre-Grading Report. Prior to beginning project construction, the Project Archaeologist shall file a pre-grading report with the City to document the proposed methodology for grading activity observation, which will be determined in consultation with the <i>contracted Luiseño Tribe referenced in Mitigation Measure CR-3</i> . Said methodology shall include the requirement for a qualified archaeological monitor to be present and to have the authority to stop and redirect grading activities. In accordance with the agreement required in Mitigation Measure CR-3, the archaeological monitor's authority to stop and redirect grading will be exercised in consultation with the <i>Luiseño Native American monitor</i> in order to evaluate the significance of any archaeological resources discovered on the property. Tribal and archaeological monitors shall be allowed to monitor all grading, excavation, and groundbreaking activities, and shall also have the authority to stop and redirect grading activities.	Consult with Luiseño monitor to develop methodology for grading activity observation. File pre-grading report to document proposed methodology.	Prior to all grading activities.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			
CR-5	Curation of Cultural Resources. The landowner shall relinquish ownership of all cultural resources collected during the grading monitoring program and from any previous archaeological studies or excavations on the project site to the appropriate Tribe for proper treatment and disposition per the Cultural Resource Treatment and Monitoring Agreement referenced in Mitigation Measure CR-3. All cultural materials that are deemed by the Tribe to be associated with burial and/or funerary goods will be repatriated to the Most Likely Descendant as determined by the Native American Heritage Commission per California Public Resources Code Section 5097.98.	Relinquish ownership of all resources collected to the appropriate Tribe. Repatriate burial and/or funerary goods to Most Likely Descendant.	During all grading activities.	City of San Marcos Public Works Department			



Richmar Park Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
	In the event that curation of cultural resources is required, curation shall be conducted by an approved facility and the curation shall be guided by California State Historic Resource Commissions Guidelines for the Curation of Archaeological Collections. The City of San Marcos shall provide the developer final curation language and guidance on the project grading plans prior to issuance of the grading permit, if applicable, during project construction.	Curate cultural resources if found.					
CR-6	Avoidance of Sacred Sites. All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible.	Avoid sacred sites if feasible.	During all grading activities.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			
CR-7	Human Remains. If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the San Diego County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. Suspected Native American remains shall be examined in the field and kept in a secure location at the site if the San Diego County Coroner determines the remains to be Native American, and the Native American Heritage Commission (NAHC) must be contacted within 24 hours. The NAHC must then immediately notify the "most likely descendant(s)" of receiving notification of the discovery. The most likely descendants(s) shall then make recommendations	If human remains found: avoid further disturbance and notify County Coroner and NAHC.	During grading if human remains found.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			



Richmar Park Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
	within 48 hours, and engage in consultation concerning treatment of remains as provided in Public Resources Code 5097.98.						
CR-8	Unanticipated Archaeological Resources. If inadvertent discoveries of subsurface archaeological/cultural resources are discovered during grading, the Developer, the project archaeologist, and the Luiseño Tribe under agreement with the landowner described in Mitigation Measure CR-3 shall assess the significance of such resources and shall meet and confer regarding the mitigation for such resources. Pursuant to California Public Resources Code Section 21083.2(b) avoidance is the preferred method of preservation for archaeological resources. If the Developer, the project archaeologist and the Tribe cannot agree on the significance of mitigation for such resources, these issues will be presented to the Planning Director for decision. The Planning Director shall make a determination based upon the provisions of the California Environmental Quality Act with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Tribe. Notwithstanding any other rights available under law, the decision of the Planning Director shall be appealable to the Planning Commission and/or City Council.	If cultural resources are found: assess their significance, confer with Luiseño Tribe, and preserve the resources.	During all grading activities.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building Division			
CR-9	Paleontological Resources. At the commencement of project construction, a qualified professional paleontologist shall be retained to give all workers associated with earth-disturbing procedures an orientation regarding the probability of exposing paleontological resources and directions as to what steps are to be taken if a find is encountered. If paleontological resources are encountered during construction or land modification, the construction manager shall ensure that all ground disturbance activities are stopped, and shall notify the City of San Marcos Public Works Department immediately to arrange for a qualified	Retain a qualified paleontologist. If resources are found: stop all ground-disturbing activities and mitigate impacts.	During all grading activities.	City of San Marcos Public Works Department; City of San Marcos Development Services, Building			



Richmar Park Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
	paleontologist to assess the nature, extent, and potential significance of any fossils. If such fossils are determined to be significant, appropriate actions to mitigate impacts to the fossils shall be identified in consultation with a qualified paleontologist. Depending upon the nature of the find, such mitigation may include, but would not be limited to, avoidance, documentation, collection, accession or other appropriate actions to be determined by a qualified paleontologist. A data collection program may be warranted, including mapping the location of fossils, collection, and curation of fossils. All locality documentation, field collections and curation activity would occur under the direct supervision of a qualified principal paleontologist.			Division			